Active Transportation Plan

Folsom, California | Spring 2022

CITY OF FOLSOM
DISTINCTIVE BY NATURE

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Chapter I | Introduction

Plan Purpose

The City of Folsom Active Transportation Plan (ATP) is the city's plan for improving mobility for all residents and visitors who walk, bike, run, and roll[1] in and around Folsom. It evaluates what exists today and recommends policies, infrastructure projects, supporting programs, and implementation priorities to achieve this vision. Through improved bikeways, shared use paths, and sidewalks, the ATP establishes a complete and connected network that supports people of all ages and abilities.

The ATP is an update to the previously-adopted *Bicycle Master Plan* (2007) and *Pedestrian Master Plan* (2014). It focuses on improving the safety and comfort of active transportation facilities, improving connections among on- and off-street facilities, and supporting connections to destinations across the city.

PLAN CONTENTS

Chapter 1: Introduction outlines the purpose of the ATP, its relationship to other plans, and considers the benefits of active transportation.

Chapter 2: Goals, Objectives, and Policies establishes the vision and priorities for the ATP.

Chapter 3: Existing Conditions evaluates the broader context of the ATP, including demographic and development trends; the transportation system; and the current state of the active transportation network, including bicycle, pedestrian, and shared use path facilities in the city.

Chapter 4: Outreach & Community Engagement summarizes the engagement activities and findings conducted as part of the ATP.

Chapter 5: Recommendations describes the proposed improvements to the pedestrian, path, and bicycle networks. Recommendations include programs and policies to support an expanded active transportation system.

Chapter 6: Implementation prioritizes recommended active transportation improvements, presents ranked project lists, and explores implementation opportunities and strategies

RELATIONSHIP TO OTHER PLANS

The City of Folsom ATP aims to create a complete and balanced system of walking, biking, and rolling conditions to support residents as they travel and recreate in and around the city. The ATP builds on prior planning and policy efforts to create a cohesive and comprehensive plan. A thorough review of relevant and applicable planning and policy efforts from local, regional, and federal level plans helped inform the process, goals, and recommendations in the ATP.

Local and regional planning documents—specifically those aimed at improving walking and biking—informed development of the ATP.

1 The term roll refers to a person who might use a wheelchair, assistive mobility devices, or other human-powered device on wheels.

Local plans reviewed include the *City of Folsom Bicycle Master Plan* (2007), the *City of Folsom Pedestrian Master Plan* (2014), the *Folsom General Plan*, the *City of Folsom Americans with Disabilities Act (ADA) Self-Evaluation and Transition Plan* (2009) and the *Folsom Plan Area Specific Plan* (FPA). Regional plans reviewed include the *Sacramento Area Council of Governments (SACOG) Metropolitan Transportation Plan/ Sustainable Communities Strategy (2020)*; the *Regional Bicycle, Pedestrian, and Trails Master Plan* (2013); the *Sacramento County Bicycle Master Plan* (2011); the *Sacramento County Pedestrian Master Plan* (2007); the *Sacramento County Americans with Disabilities Act Transition Plan* (2020); the *Sacramento Region Parks and Trails Strategic Development Plan*; the *California State Parks Recreational Trail Plan* (2002); and the *El Dorado County Active Transportation Plan* (2020).

Recommendations put forth in the ATP incorporate previous planning efforts, while acknowledging changing conditions in the city influencing the growth of active transportation networks.

BENEFITS OF ACTIVE TRANSPORTATION

Investment in active transportation infrastructure—including bikeways, sidewalks, and shared use paths—supports residents, employees, and visitors as they travel in and around Folsom. Active transportation can support a more active lifestyle; support people as they connect to employment, educational opportunities, or recreation; or serve as the primary way to travel. The benefits of active transportation are well-documented and broad-reaching, including environmental, economic, and health and wellness. Benefits Include:

Health and Equity Benefits

A connected active transportation network can provide safer and more comfortable ways to travel for all ages and abilities. Low-stress networks can expand access to schools, jobs, homes, and parks—connecting residents to economic, educational, and recreational opportunities. Active transportation supports those who cannot drive, choose not to drive, or cannot afford to own a car.

Furthermore, active transportation supports mental and physical well-being through reduced stress and anxiety, and other health benefits associated with higher levels of activity. Creating reliable bicycling and pedestrian infrastructure can also improve access to parks and other active recreation destinations.

Safety Benefits

Prioritizing development of bicycling and walking infrastructure can improve safety and comfort levels for all active users. Developing bicycling and walking facilities, improving crossings, and promoting education for safer travel can reduce potential conflicts among people walking, bicycling, and driving. Well-designed roadways and active transportation facilities can improve safety for all roadway users through increased predictability and increased separation from motor vehicles.

Quality of Life Benefits

Active transportation provides more options for how people get around, regardless of their reason for travel. Improved infrastructure that provides comfortable and safe routes of travel can encourage more people to use active modes and increase connections to educational, economic, and recreational opportunities.

Environmental Benefits

More people walking and biking supports environmental goals by reducing vehicle miles traveled (VMT), improving air quality, and reducing greenhouse gas emissions. This further supports increased quality of life, particularly for individuals vulnerable to respiratory conditions and other sensitive groups.

Chapter II | Goals, Objectives, and Policies

Folsom Active Transportation Goals, Objectives, and Policies

The ATP reflects community values and a vision for an active transportation network that supports biking, walking, and rolling for residents of all ages and abilities. The Goals, Objectives, and Policies presented below establish concrete procedures and priorities that will guide Folsom in achieving this vision.

The Goals, Objectives, and Policies of the ATP were informed by relevant local and regional plans, the results of the needs analysis, and public feedback. The framework reflects a vision consistent with previous active transportation planning efforts and local and regional plans, including the *Folsom General Plan*; and the *SACOG Bicycle, Pedestrian, and Trails Master Plan*.

The Goals, Objectives, and Policies informed project and program recommendations, project prioritization, and implementation strategies. As the city grows, implements projects, and changes over time, these Goals, Objectives, and Policies should be used to guide future actions.

GOAL 1: SAFETY & COMFORT

Folsom will be a safe and comfortable place for people of all ages and abilities to walk, bike, and roll.

Objective 1.1: Reduce the number of severe injuries and fatalities involving people walking, bicycling, and rolling.

- *Policy 1.1.1:* Evaluate local design standards for bikeways, pedestrian facilities, and paths. Revise as applicable for consistency with best practices and state and federal standards.
- *Policy 1.1.2:* Prioritize low-stress facilities, such as separated bikeways, and improve safety for people walking and bicycling at intersections and street crossings.
- *Policy 1.1.3:* Establish and implement a comprehensive Vision Zero program to advance safety for all users.
- *Policy 1.1.4:* Monitor bicycle- and pedestrian-involved collisions annually and adjust infrastructure and program approaches as needed to achieve a reduction in bicycle- and pedestrian-involved collisions.

Objective 1.2: Advance and expand the safety and comfort of Class I facilities in Folsom.

- *Policy 1.2.1:* Improve the safety and comfort for people utilizing Class I facilities at intersections and street crossings.
- *Policy 1.2.2:* Prioritize grade-separated crossings at intersection of Class I facilities and major arterial streets.
- *Policy 1.2.3:* Utilize best practices design standards and guidelines to accommodate all path user groups. Consider wider paths, separated spaces for travel, and other design interventions to improve safety and comfort along Class I facilities.

Objective 1.3: Streets and paths should be safe and accessible to people with limited mobility and other disabilities.

- *Policy 1.3.1:* Evaluate and revise design guidelines as needed to provide for accessible facilities. New and reconstructed facilities shall meet the requirements of the Americans with Disabilities Act (ADA).
- *Policy 1.3.2:* Implement the *City of Folsom ADA Self-Evaluation & Transition Plan* (2009)

Objective 1.4: Create a comfortable and sustainable environment for people walking, biking, and rolling.

- *Policy 1.4.1:* Improve lighting along designated walking and biking routes, particularly near local destinations such as schools, parks, transit stops, and commercial areas
- *Policy 1.4.2:* Incorporate green infrastructure, when possible, into bicycle and pedestrian facilities. Green infrastructure describes sustainable stormwater management practices and infrastructure such as biofiltration planters, bioretention swales, trees, and permeable pavement surfaces.
- *Policy 1.4.3:* Adopt a Complete Streets Ordinance to ensure that Folsom streets consider the needs of all users, including bicyclists, public transit users, children, seniors, persons with disabilities, pedestrians, motorists, and movers of commercial goods.
- *Policy 1.4.4:* Prioritize incorporating cooling infrastructure to reduce extreme heat along bicycle and pedestrian facilities, including shade structures, cool paving areas, and extended planting areas.

GOAL 2: CONNECTIVITY & ACCESS

A connected network of bicycle and pedestrian facilities will provide Folsom residents access to destinations within neighborhoods, across the city, and in neighboring jurisdictions.

Objective 2.1: Develop a continuous, interconnected system of paths, bikeways, and pedestrian facilities.

- *Policy 2.1.1:* Identify and fill sidewalk gaps in the pedestrian network to provide for a complete and connected network.
- *Policy 2.1.2:* Require sidewalks along all new arterial, collector, and local roads.
- *Policy 2.1.3:* Identify and complete gaps in the bicycle network. Prioritize low-stress facilities, including Class I Paths, Class IV Separated Bikeways, and Class IIIB Bicycle Boulevards.
- *Policy 2.1.4:* Improve connections between low-stress facilities to provide for a complete and connected multimodal network.
- *Policy 2.1.5:* Encourage the use of natural and manmade corridors such as creeks, powerline corridors, railroad corridors, and other corridors for future bike path alignments. This includes the Southern Pacific Rail right-of-way.

Objective 2.2: Improve and expand bicycle and pedestrian access to local and regional destinations, to other modes of transportation, and across physical barriers.

- *Policy 2.2.1:* Improve and provide connections across physical barriers such as creeks, highways, and major arterials. This includes overcrossings in areas with limited connectivity.
- *Policy 2.2.2:* Provide connections between modes, including bicycle and pedestrian connections to local and regional transportation options, including transit, buses that can accommodate bicycles, and park-and-ride lots.
- *Policy 2.2.3:* Improve bicycle and pedestrian access from residential areas to schools, transit, commercial areas, and employment centers.
- *Policy 2.2.4:* Require the continuation of the street network between adjacent development projects to enhance active transportation and allow easier access for emergency vehicles.
- *Policy 2.2.5:* Connect the city's bikeways with state parks, Lake Natoma, and Folsom Lake paths.
- *Policy 2.2.6:* Connect bicycle and pedestrian facilities in Folsom to surrounding jurisdictions.
- *Policy 2.2.7:* Provide connections between residential neighborhoods, where appropriate, to encourage pedestrian and bicycle travel.

Objective 2.3: Provide navigation support for people walking and biking.

- *Policy 2.3.1:* Develop and implement a comprehensive wayfinding program that is unified, legible, and supports people walking, biking, or using the path system.
- *Policy 2.3.2:* Develop supporting navigational material, including city-wide path and bicycle maps. These materials should be made widely available both in print and online.

GOAL 3: MAINTENANCE & SUPPORTIVE INFRASTRUCTURE

The active transportation network will remain in a state of good repair and incorporate support facilities that work toward improving the quality of life for all residents.

Objective 3.1: Actively maintain bicycle and pedestrian facilities.

- *Policy 3.1.1:* Maintain active transportation facilities, including bikeways, sidewalks, crossings, and paths, to provide for safe travel for all users.
- *Policy 3.1.2:* Regularly sweep streets and clear bicycle and pedestrian facilities of debris, with priority given to those with higher pedestrian and bicycle traffic and low-stress bicycle facilities.
- *Policy 3.1.3:* Trim overhanging and encroaching vegetation to maintain a clear travel path along Class I Paths in Folsom.
- *Policy 3.1.4:* Provide alternate routes for people who walk and bike during construction activities.
- *Policy 3.1.5:* Develop funding strategies to provide ongoing path maintenance.

Objective 3.2: Supplement the bicycle and pedestrian networks with high quality support facilities such as bike corrals, lockers, bike parking, showers, bike storage, repair stations, and water fountains.

- *Policy 3.2.1:* Develop a coordinated strategy to develop and implement support facilities in Folsom.
- *Policy 3.2.2:* Review and revise city bicycle parking requirements for all land uses, including commercial areas, parks and open space, at trailheads, and in connection with transit. Require adequate short- and long-term bicycle parking.
- *Policy 3.2.4:* Coordinate with local businesses and organizations to locate and implement support facilities.
- *Policy 3.2.5:* Work with local and regional transit agencies to install secure bike parking and to maintain bike racks on buses.
- *Policy 3.2.6:* Work with local and regional transit agencies to incorporate shade trees, bus shelters, and other cooling infrastructure at transit stops.
- *Policy 3.2.7:* Provide bike repair stations at convenient locations.

GOAL 4: EDUCATION & ENCOURAGEMENT

Folsom will support walking, bicycling, and rolling through new and expanded education, encouragement, and awareness programs.

Objective 4.1: Promote Safe Routes to School

- *Policy 4.1.1:* Coordinate and collaborate with all local school districts to create a citywide Safe Routes to School Program.
- *Policy 4.1.2:* Support school travel safety assessments at Folsom schools to identify needs and opportunities and pursue grant funding for implementation.

Objective 4.2: Encourage people to walk and bike through education and awareness efforts.

- *Policy 4.2.1:* Participate in regional planning activities and awareness programs.
- *Policy 4.2.2:* Promote public education of bicycle and pedestrian safety and traffic laws.
- *Policy 4.2.3:* Develop a citywide Transportation Demand Management Program, which provides a menu of strategies and programs for developers and employers to reduce single-occupant vehicle travel in the city.


Folsom Parks & Recreation
BIKE MONTH
MAY
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GOAL 5: FUNDING & IMPLEMENTATION

Folsom will implement recommended infrastructure projects and programs that are funded through a variety of sources, including grants, repaving programs, and coordinating with other development projects or partner agencies.

Objective 5.1: Provide sufficient funding to construct, maintain, and operate transportation facilities and services needed to achieve the city's active transportation goals.

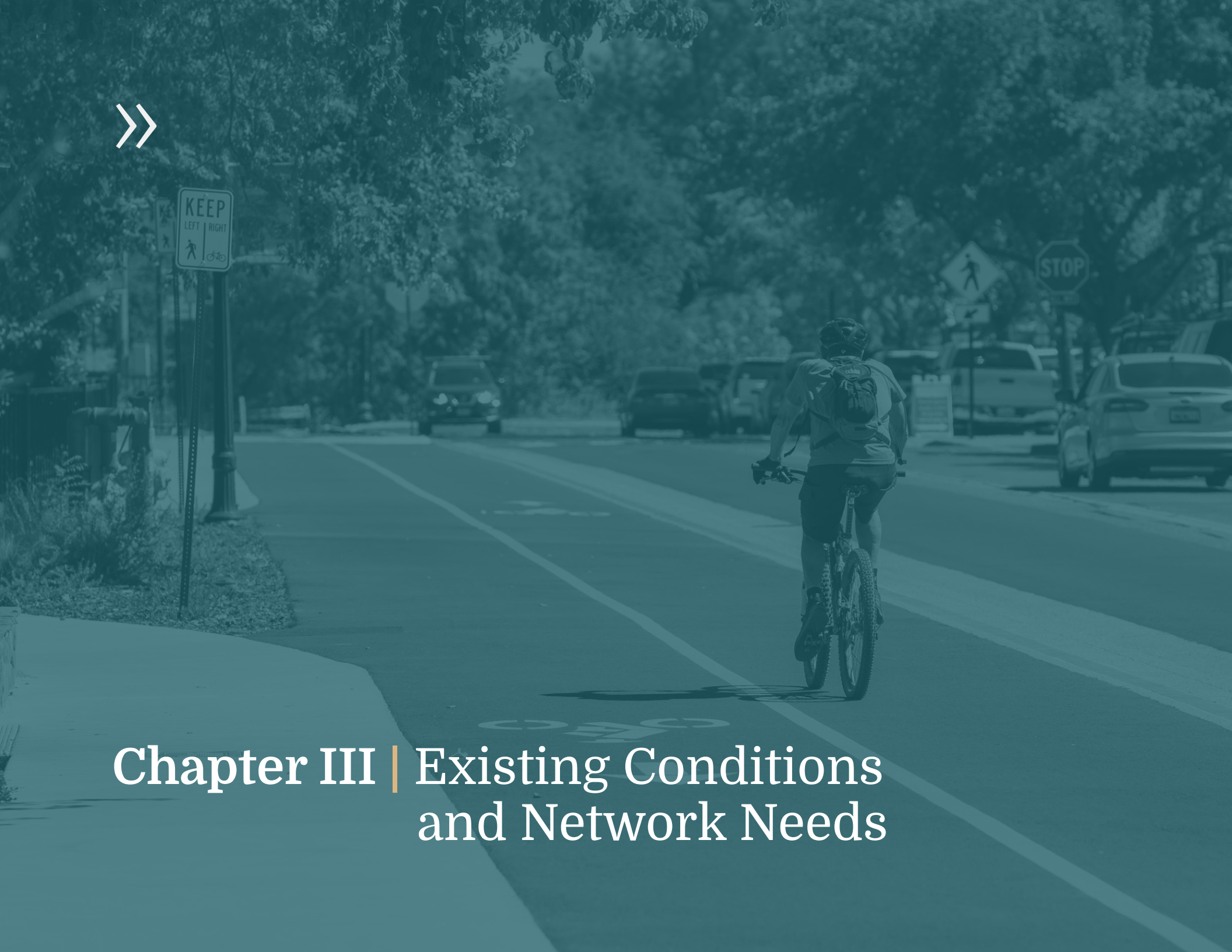
- *Policy 5.1.1:* Identify regional, state, and federal funding programs and attempt to secure as much funding as possible for pedestrian and bicycle facilities and programs.

Objective 5.2: Utilize private development to implement improvements to the bicycle and pedestrian network.

- *Policy 5.2.1:* Require all new development to provide a system of sidewalks, paths, and bikeways that link all land uses, provide accessibility to parks and schools, and connect to all existing or planned external street and path facilities.
- *Policy 5.2.2:* Require all new development to dedicate rights-of-way, construct facilities, or pay its fair share for needed transportation infrastructure improvements that support all travel modes, including pedestrian, bicycle, and transit facilities, roadway improvements, and ITS and transportation demand management (TDM) programs and services.

Objective 5.3: Prioritize recommended infrastructure projects and programs.

- *Policy 5.3.1:* Develop a comprehensive active transportation plan, including a list of prioritized, practical, and publicly-supported infrastructure projects and programs. Incorporate priority projects into the city's Capital Improvement Plan.



Chapter III | Existing Conditions and Network Needs

Context and Demographics

PROJECT SETTING

The City of Folsom prides itself in being an active city with a small-town feel and a high quality of life. Located at the base of the foothills of the Sierra Nevada along the American River and adjacent to the Folsom Lake State Recreation Area, the city's proximity to regional multi-use paths and parks makes it a popular destination for active recreation. Building upon Folsom's extensive bikeway network, the city is an ideal place to focus on improving the bicycle and pedestrian network for everyday transportation.

DEMOGRAPHICS

Folsom is located in the northeast corner of Sacramento County, approximately 18 miles northeast of the City of Sacramento. The city covers approximately 28 square miles and is home to nearly 81,000 residents.[1] Since 2010, the population of Folsom has increased by 13%[2] and is projected to continue growing each year.[3]

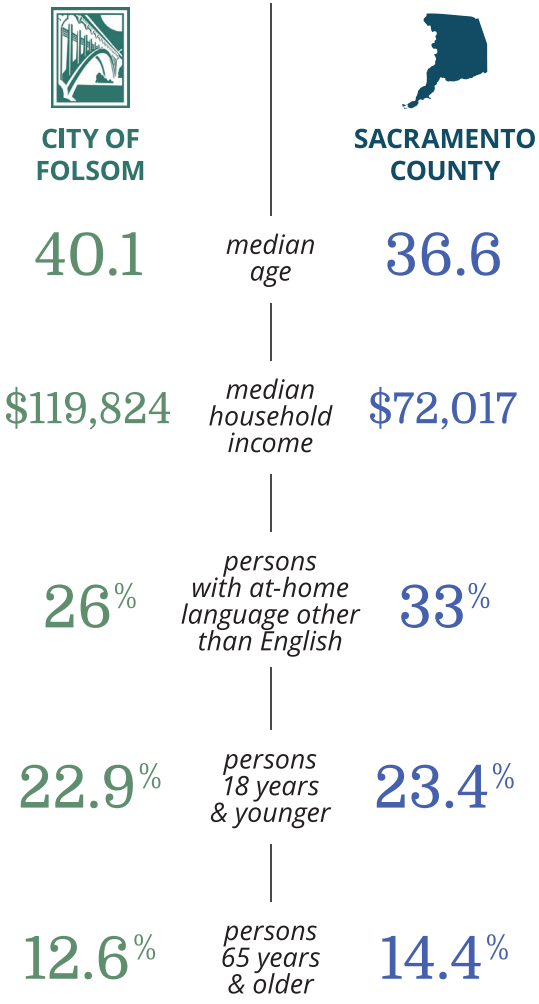
Nearly one-quarter of Folsom residents are under 18 years of age, while 13% are age 65 or older. Although this represents less than 50% of the population, residents in these age groups are often the most vulnerable road users, and opportunities to provide safer routes to access schools, services, and other destinations should be a priority.

1 US Census, American Community Survey 2019

2 U.S. Census Bureau, 2010 Census of Population and Housing

3 Folsom General Plan, Housing Element 2021

Figure 1 Demographic Characteristics[1]



1 U.S. Census, American Community Survey 2019

Land Use & Development

Folsom's land use is primarily residential, with a suburban character. Residential areas are comprised of primarily single-family homes, which account for approximately 75% of all housing units. Neighborhoods include a series of winding roadways and cul-de-sacs in residential areas that limit connectivity within and among neighborhoods. These areas are also distinct from commercial areas, often separated by major arterials that limit connections between areas. Commercial areas are focused in two main areas: the Folsom Historic District and along East Bidwell Street from Coloma Street to Highway 50. Other commercial areas extend along streets such as Iron Point Road and Blue Ravine Road.

Folsom has both neighborhood-focused destinations, such as parks and schools, in addition to citywide and regional destinations, including Folsom Lake College, shopping centers, and employment centers. Many neighborhood destinations are located within or near residential areas, making these relatively short trips good candidates for active transportation instead of driving. Citywide and regional serving destinations likely require travel on or across an arterial or collector road. These high-volume and high-speed roadways typically serve as barriers to walking and biking.

The Folsom Historic District, adjacent to Lake Natoma, is distinct from other areas in Folsom. This area has a grid-based street network that provides residents with direct connections to destinations within the district. The arterials and collector streets radiate from the Historic District, deviating from the grid and following a more suburban development pattern. The majority of Folsom's residential areas are connected to the Folsom Historic District by these major arterials, serving as a barrier for people walking and biking. Identified through public input and as a guiding principle of the Folsom General Plan, the Folsom Historic District is a major attraction for shopping, dining, recreation, and culture. Improved biking and walking connections to and from the district, especially along arterials, will be important in maintaining the vibrancy of the area.

The Folsom Plan Area, which includes 3,520 acres south of Highway 50, is a rapidly developing community that, once implemented, will include a mix of uses and housing types with a focus on parks, walkability, transit connectivity, and paths. Currently, however, Highway 50 serves as a barrier to access the Folsom Plan Area. Improving biking and walking connections across Highway 50 will be crucial to integrating this new community with the rest of the city.

Transportation Overview

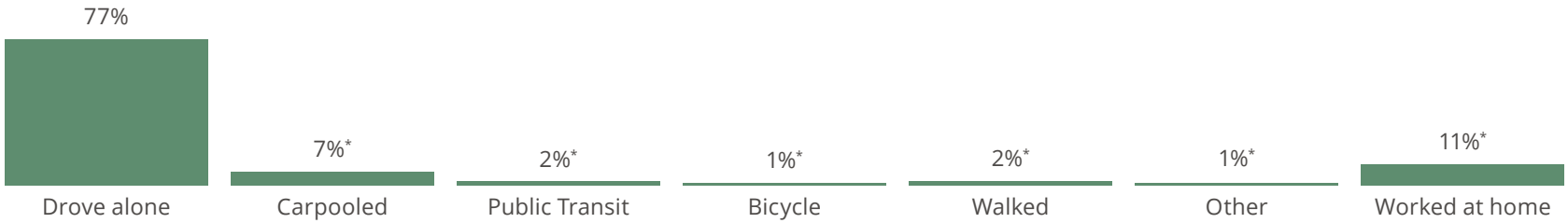
In addition to the city's robust network of paths and roadways, existing on-street bikeways, sidewalks, and transit support travel in and around the city. Light rail stations, as part of the Sacramento Regional Transit (SacRT) Gold Line, are located along Folsom Boulevard in the western area of the city and connect to Downtown Sacramento. These include the Iron Point, Glenn, and Historic Folsom stations. Local bus service is also run by SacRT on the Folsom Stage Line and El Dorado Transit operates regional bus service through Folsom on the 50 Express.

Despite these travel options, most Folsom workers drive to work alone (77%), while a significantly smaller percentage walk (1.8%), take transit (1.6%), or bike to work (0.6%). Nearly 80% of workers living in Folsom leave the city each day, with the majority traveling to employment locations in Sacramento.[5] Similarly, more than 35,000 workers enter Folsom each day for work, while a similar number of people enter the city each day.[6] Given the commute patterns of workers in Folsom, the active transportation network should consider opportunities to improve access to and from regional transportation options such as regional bus routes, light rail stations, and the regional bikeway network.

Commute patterns, however, do not reflect trips made for other reasons, such as travel to school, nor do they account for recreational use of shared use paths, on-street facilities, and supporting facilities. COVID-19 has also shifted travel patterns and the necessity of office work for some professions. These shifts may have medium- to long-term effects on commute-related transportation. The total percentage of residents that walk and bicycle for recreation and to meet their daily needs, therefore, is likely higher than what the census data shows.

Figure 2 *Commute Mode Share*

Means of transportation to work



*Universe: Workers 16 and over: ACS 2019 5-year data

5. Folsom General Plan, City of Folsom Housing Element Background Report 2021
6. Data reflect 2019 American Community Survey estimates. This data does not reflect changes to commute patterns due to the COVID-19 pandemic.

Bicycle Facility Types

CLASS I SHARED USE PATH (PATH)

Shared use paths are bicycle facilities that are completely separated from the street. They allow two-way travel by people bicycling and walking, as well as other non-motorized or e-powered users like skateboards or scooters. Class I facilities are among the most comfortable facilities for children and inexperienced riders as there are few potential conflicts between people bicycling and people driving.

CLASS II BICYCLE LANE

Bicycle lanes are striped preferential lanes on the roadway for one-way bicycle travel. Some bicycle lanes include a striped buffer on one or both sides to increase separation from the traffic lane or from parked cars. When this striped buffer is included in the design, the facility is known as a Class IIB Buffered Bicycle Lane.

CLASS III BICYCLE ROUTE

Bicycle routes are signed where people bicycling share a travel lane with people driving. Because they are shared facilities, bicycle routes are most appropriate for low-speed and low-volume streets. Some Class III Bicycle Routes include shared lane markings or “sharrows” that recommend proper bicycle positioning in the center of the travel lane and alert drivers that people biking may be present.

CLASS IIIB BICYCLE BOULEVARD

Bicycle boulevards are low-traffic, local streets where people biking have priority but share roadway space with motor vehicles. Shared roadway bicycle markings on the pavement as well as traffic calming features such as speed humps and traffic diverters keep these streets more comfortable for bicyclists.

CLASS IV SEPARATED BIKEWAY

Separated bikeways are on-street bicycle facilities that are physically separated from motor vehicle traffic by a vertical element or barrier, such as a curb, bollards, or vehicle parking aisle. They can allow for one-or two-way travel on one or both sides of the roadway.

Existing Bicycle Network

Today, Folsom has more than 100 miles of designated bikeways. This includes more than 50 miles of existing Class I Shared Use Paths and more than 50 miles of Class II Bicycle Lanes (Table 1).

The on-street bicycle network consists mainly of Class II Bicycle Lanes, most of which are along major arterials with high travel speeds and traffic volumes. Despite providing limited separation from motor vehicles, the existing bicycle lane network is comprehensive, covering more than 80% of major roads within the city.

In recent years, the city has started investing in facilities that provide more separation from motor vehicles. This includes both Class IIB Buffered Bicycle Lanes, which provide additional visual separation from general purpose travel lanes, and Class IV Separated Bikeways, which include physical separation. The short segments of Class IV Separated Bikeways exist along Blue Ravine Road—connecting the Oak Parkway Trail at Arrowsmith Drive to the path at Manseau Drive—and along Leidesdorff Street in the Historic District. While these facilities improve separation and comfort for people biking, they currently are limited to short segments throughout the city and do not always connect to other low-stress bike facilities.

Local roads provide lower-stress routes for travel within neighborhoods. Lower posted speeds, fewer motor vehicles, and narrow rights-of-way contribute to more comfortable bicycling conditions. These routes also provide connections to neighborhood destinations, such as schools and parks. However, limited connectivity of low-stress routes across major roadways limits the utility of these routes and reduces the number of connections to destinations beyond the local area.

In addition to the on-street network, Folsom also has a comprehensive off-street shared use path network. Many of these paths follow creeks (Humbug-Willow Creek Trail), railroad corridors, and Lake Natoma/American River (American River Bike Trail). This network forms the core of the bicycle network and connects residents both locally and regionally, providing low-stress routes for all trip types.

Table 1 *Existing Bikeways in Folsom*

Facility Type	Existing Mileage
Class I Shared Use Path (Path)	50.3
Class II Bicycle Lane	59.8
Class IIB Buffered Bicycle Lane	3.6
Class III Shared Bikeway	0.9
Class IV Separated Bikeway	0.5

However, this network is not complete, with gaps in locations across the network, and is limited in its connections to commercial areas.

A description of bikeway types is included on page 17, and the existing bikeways are shown in Figure 3.

Figure 3 *Existing Bikeways*

Project Area

FOLSOM ATP

Existing Bikeways

- Class I Shared Use Path
- Class II Bicycle Lane
- Class IIB Buffered Bicycle Lane
- Class III Bicycle Route
- Class IV Separated Bikeway

Destinations + Boundaries

- City Hall
- Community Center
- School
- Light Rail Station
- City Boundary
- Park

Data provided by the City of Folsom, SACOG

Existing Pedestrian Network

A comprehensive pedestrian network includes the many elements that support travel to places people want to go. This includes sidewalks and paths that pedestrians travel along, as well as the features that support travel across a street, such as curb ramps, crosswalks, traffic signals, and pedestrian signal heads. Each of these elements are a vital piece of helping pedestrians of all ages and abilities connect to schools, parks, employment, transit, and more.

While many major roadways in Folsom have a sidewalk on at least one side of the roadway, there are many areas that have incomplete sidewalk networks or do not have any sidewalks. Data depicting existing sidewalks along arterials and within the Folsom Historic District was collected as part of this plan. This is shown in Figure 4. Key findings of this data review include:

- Most residential streets in the Folsom Historic District lack sidewalks.
- Some of the major arterials such as Folsom Boulevard, Folsom-Auburn Road, Greenback Lane, and large sections of Oak Ave Parkway, E Natoma Street, and Broadstone Parkway lack sidewalks either on both sides or one side of the street.
- The majority of Folsom north of Lake Natoma and the Folsom Historic District, such as the American River Canyon and Valley Pines neighborhoods, do not have any sidewalks.

In addition to the sidewalk network, Folsom's shared use paths provide low-stress connections for people walking. However, entrances may be difficult to access for pedestrians, due to lack of crosswalks and pedestrian signals across major roadways; limited sidewalk connections leading to the path; and the trailhead requires significant out of direction travel, limiting the utility of the path as an alternate route.

While there is not comprehensive data representing sidewalk locations within neighborhoods, most residential areas include sidewalks, with the exception of residential streets north of Lake Natoma, such as the American River Canyon and Valley Pines neighborhoods. Neighborhoods generally support low-stress routes, however the lack of sidewalks in some areas can limit the utility of these routes for children, people who use assisted mobility devices, etc.

Figure 4 *Existing Sidewalks and Pedestrian Barriers*

Pedestrian Barriers

FOLSOM ATP

Existing Pedestrian Barriers

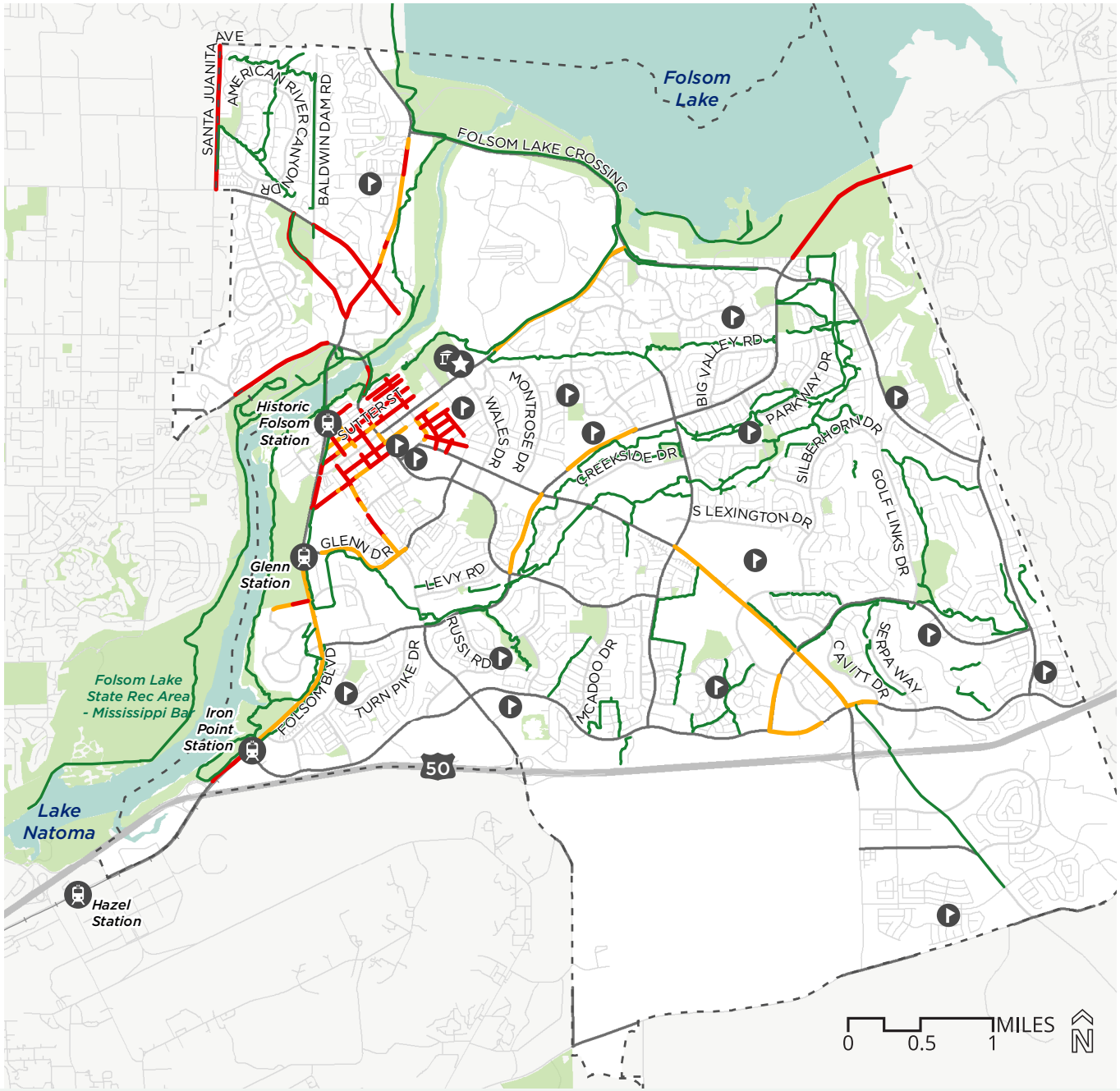
- Sidewalk Missing (Both sides)
- Sidewalk Missing (One side)
- Arterial Roadway

Existing Pedestrian Network

- Path (paved)
- Full Sidewalk

Destinations + Boundaries

- City Hall
- Community Center
- School
- Light Rail Station
- City Boundary
- Park



Data provided by the City of Folsom, SACOG

Network Comfort

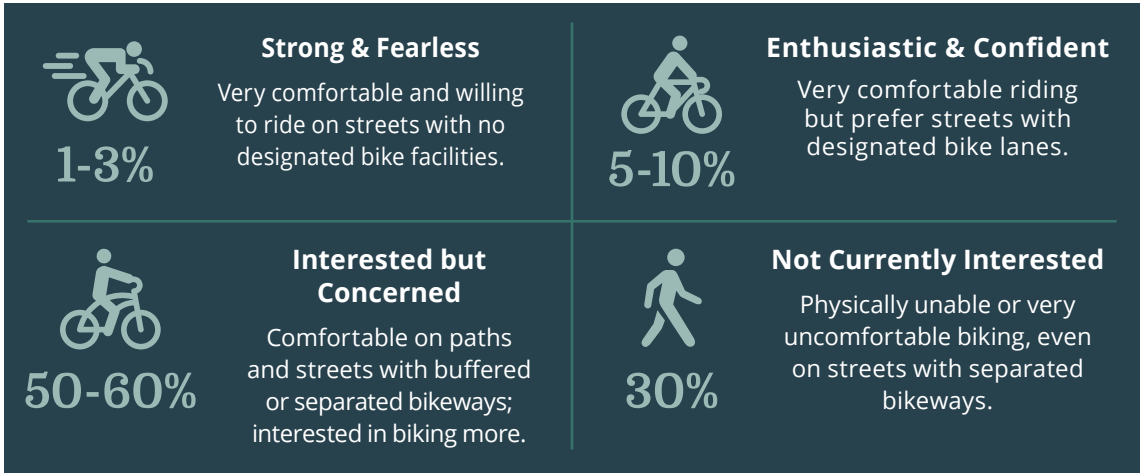
The Existing Conditions review provides insight into how complete the active transportation network is today. However, evaluation of network comfort through the Level of Traffic Stress (LTS) provides greater insight into opportunities to develop an all ages and abilities network. The LTS analysis refers to the perceived comfort level of a roadway based on factors such as vehicle travel speed on the roadway, the width of the roadway, and provision of space for bicycles.[7] A roadway with fewer lanes for motor vehicles, lower posted speeds, and greater separation from motor vehicles is considered most comfortable, while high speeds and mixed traffic conditions are least comfortable. Generally, LTS 1 and LTS 2 are considered low stress, while LTS 3 and LTS 4 are high-stress roadways.

These scores guide understanding of who might bike along a roadway. The Four Types of Cyclists, shown in Figure 5, consider one's interest and comfort bicycling. The majority of the population—those who are interested but concerned—are most likely to be comfortable biking only on low stress (LTS 1 and LTS 2) roadways.

A bicycle LTS analysis was conducted to provide insight into network gaps or focus areas for improving the bicycle network. The main findings from the LTS analysis, as shown in Figure 6, include:

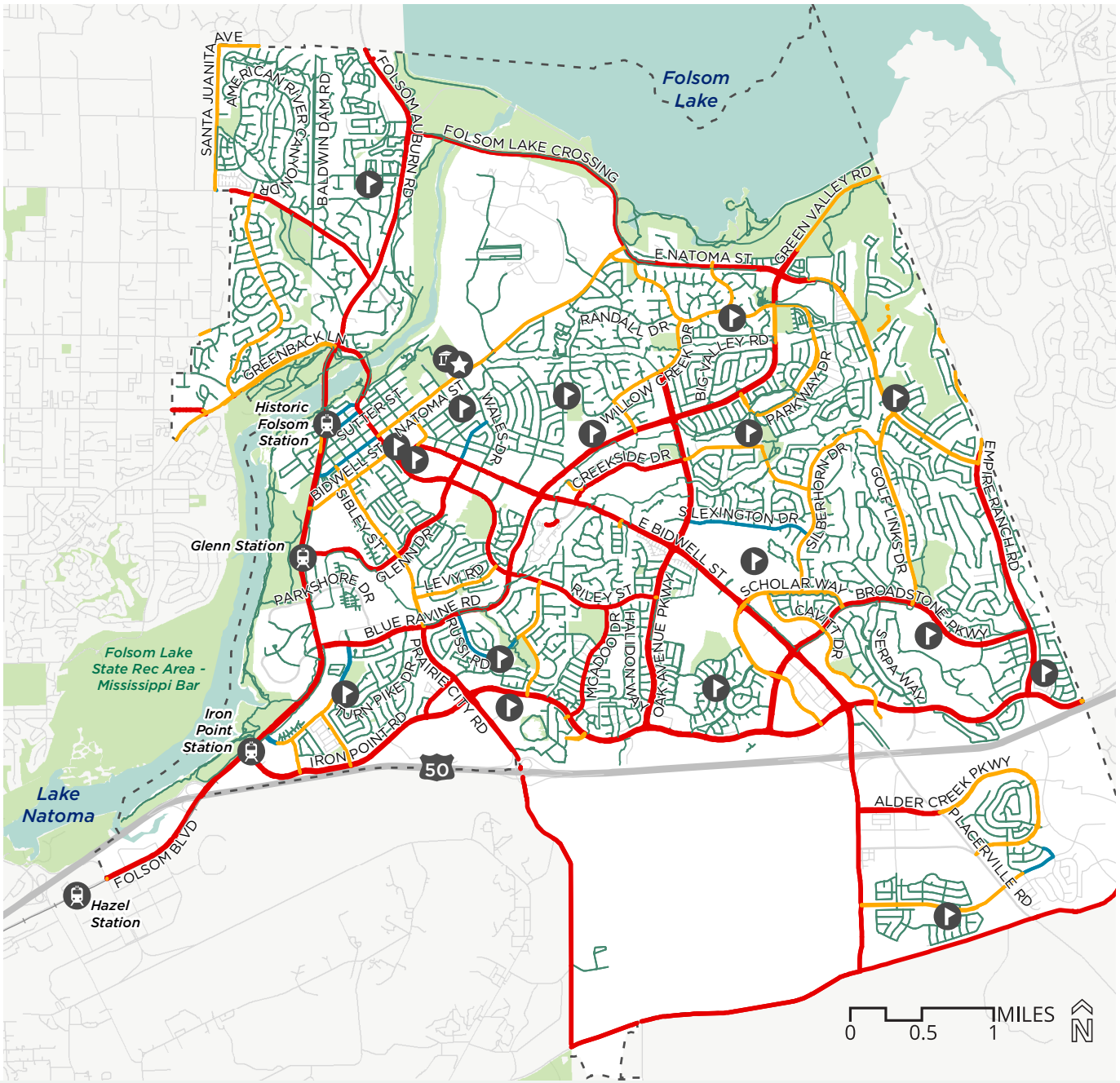
- Neighborhood roadways are typically low stress.
- Many minor collectors are high stress, with an LTS score of 3. Examples include two lane roadways such as Willow Creek Drive, Sibley Street, and Silberhorn Drive.
- Major arterials are high stress. While many major arterials include designated Class II Bicycle Lanes, factors such as high motor vehicle speeds and number of lanes result in high-stress routes for bicyclists. Examples include East Bidwell Street, Blue Ravine Road, Oak Avenue Parkway, Iron Point Road, and Folsom-Auburn Road.

Figure 5 *The Four Types of Cyclists*



7. While the LTS analysis is specifically intended for bicycle networks, many of the same factors also influence perceived comfort and stress for pedestrians. In addition to existing sidewalk data, recommendations for the pedestrian network will consider the impact of high stress routes and barriers as shown in the LTS analysis results covered in this section.

Figure 6 *Bicycle Level of Traffic Stress*



Data provided by the City of Folsom, SACOG

Low Stress Bicycle Network and Barrier Roadways

The results of the LTS analysis clearly identify the barrier that major roadways present for travel within Folsom. These roadways, typically scoring as high stress (LTS 4), disrupt travel along lower stress routes, and limit connections between neighborhoods and to destinations. This can be seen in Figure 6, where high-stress roadways are shown in red (LTS 4) and yellow (LTS 3). This map shows that destinations within neighborhoods, such as smaller neighborhood parks and schools, are accessible via low-stress local streets. Destinations that require travel outside of a particular neighborhood are difficult to access because distances are far and require travel along or across high-stress arterials.

Low-stress travel—either along local residential streets or paths—is possible across some high-stress roadways where there are protected crossings. Protected crossings are places where dedicated signals exist or where the crossing is separated from the roadway. Examples include:

- Crossing Riley Street at Sutter Street Folsom Historic District
- Humbug Willow Creek Trail overcrossing of East Bidwell Street (south of Blue Ravine Road)
- Humbug Willow Creek Trail undercrossing of East Bidwell Street (south of Creekside Drive)
- Folsom Parkway Rail Trail signalized crossing of Parkshore Drive

More typically, however, low stress travel is not possible across high-stress roadways because of unprotected crossings where no dedicated signals or separated crossings exist. Examples include:

- The crossing of Folsom-Auburn Road connecting Berry Creek Drive to Jedediah Smith Memorial Trail
- The path along Natomas Ditch at Iron Point Road
- The crossing of American River Canyon Drive at Crow Canyon Drive
- Path crossing of Oak Avenue Parkway (just south of Blue Ravine Road)
- The crossing of Blue Ravine Road at Big Valley Road

An additional barrier is crossing Highway 50. Crossings of Highway 50 at Prairie City Road and East Bidwell Street are currently high stress. As the area south of Highway 50 continues to grow, as outlined in the Folsom Plan Area, it has become critically important to provide low stress travel for residents across Highway 50 in order to access the rest of Folsom. Plan recommendations consider opportunities to improve travel along and across the major, high-stress roadways in Folsom in order to expand low stress travel to schools, light rail, shopping, and other destinations.

Safety

In addition to identifying high-stress corridors, it's also important to understand where safety concerns are greatest on Folsom's roadways. A review of the reported collisions between 2015 and 2019 in Folsom provides insight into locations with high frequencies of collisions involving people walking or biking, as well as where the most severe collisions are occurring in the city. This analysis only includes data on reported collisions. It is important to note that bicycle and pedestrian collisions summarized here only reflect those that are reported; this analysis does not consider near-misses or unreported collisions.

While people walking and biking were involved in only 4.8% (144 out of 2,948) of all collisions, they accounted for 10% of all injury collisions and 26% (25 out of 96) of collisions resulting in the victim being killed or severely injured (KSI).

COLLISIONS CHARACTERISTICS AND TRENDS

Severity

There were a total of 2,948 reported collisions between 2015 and 2019 in Folsom, including 144 collisions involving someone walking (52) or biking (92).

Generally, crashes involving people bicycling (92) occurred at nearly twice the frequency of those involving people walking (52). However, pedestrians were involved more often in KSI collisions than bicyclists (15 and 10 respectively).

Collision Location

Pedestrian- and bicycle-involved collisions during this time period occurred most often at intersections. In fact, more than 75% of these collisions occurred at an intersection (110), as opposed to along a roadway (34). Collisions that occurred along a roadway, however, were generally more severe, with a slightly higher percentage (20.5% or 7 out of 34) of collisions along a roadway resulting in serious injury or fatalities compared to those that occurred at an intersection (16% or 18 out of 110).

Time of Collision

Bicycle- and pedestrian-involved collisions occurred more often during the day (111) than at night (33). However, collisions occurring at night were more severe, particularly for pedestrians. For example, 43% (9 out of 21) of collisions occurring at night and involving a pedestrian resulted in serious injury or fatality, compared to 13% (14 out of 111) of pedestrian collisions occurring during the day.

Cause of Collision

Contributing factors refer to potential causes of the collision and are recorded by the reporting officer. They do not describe blame or fault but do reflect aspects of the built environment, environmental conditions, or human behavior that contributed to the collision. Within Folsom, the most common contributing factors include:

- Driver failing to yield right-of-way to a pedestrian in a legal crosswalk
- People walking not yielding right-of-way to vehicles outside of a crosswalk
- People biking against the direction of traffic

8. Statewide Integrated Traffic Records System (SWITRS)

While not as common, improper turning movements were also noted often, particularly in connection with unsignalized intersections. Understanding these factors is important in identifying possible solutions—or countermeasures—to improve roadway safety. Provision of more crossing opportunities with marked crosswalks and provision of a complete and connected bicycle network should be considered in plan recommendations and implementation strategies.

Presence of Bicycle Facilities

More than 78% (72 out of 92) of bicycle-involved collisions occurred on corridors with bicycle lanes, including 80% (8 out of 10) of KSI collisions involving people biking.

Collisions Near Schools

The number and severity of collisions involving school-aged people walking or biking were investigated within one-quarter mile of each elementary, middle, and high school in Folsom. While Folsom Cordova K-8 Community Charter and Folsom Lake High School had the greatest number of bicycle- and pedestrian-involved collisions, Natoma Station Elementary, Empire Oaks Elementary, and Folsom High School had collisions with the greatest severity.

COLLISION FOCUS AREAS

Figure 7 and Figure 8 that follow show areas for further focus based on both collision frequency and severity for each mode. Areas shown in red depict these focus areas and include:

Pedestrian Collision Focus Areas

- Folsom Boulevard from Natoma Street to Greenback Lane
- Natoma Street from Reading Street to Wales Drive
- East Bidwell Street from Coloma Street to Blue Ravine Road

Bicycle Collision Focus Areas

- Greenback Lane from Main Street (city limits) to American River Canyon Drive
- Folsom-Auburn Road from Greenback Lane to Folsom Lake Crossing
- Riley Street from Sutter Street to Wales Drive
- East Bidwell Street from Market Street to Harrington Way
- Iron Point Road from Williard Drive to Buckingham Way

As shown in the following figures, the collision focus areas for both bicycle- and pedestrian-involved collisions are located on major roadways—all of which are high stress according to the LTS analysis on page 21. Consistent with the collision trends highlighted in the previous section, the majority of bicycle collision focus areas are located on roadways with existing bicycle lanes; the remaining corridors do not have any existing bicycle infrastructure.

In addition to the focus areas, the map also identifies other locations where either KSI collisions occurred or a high frequency of collisions occurred.

Figure 7 *Pedestrian Collision Focus Areas*

Pedestrian-Involved Collisions

FOLSOM ATP

- Fatality
- Pedestrian-Involved Collision
- Collision Focus Area

Existing Bikeways

- Class I Paved Shared Use Path

Destinations + Boundaries

- City Hall
- Community Center
- School
- Light Rail Station
- City Boundary
- Park

Data provided by the City of Folsom, SACOG

Figure 8 *Bicycle Collision Focus Areas*

Bicycle-Involved Collisions

FOLSOM ATP

- Fatality
- Bicycle-Involved Collision
- Collision Focus Area

Existing Bikeways

- Class I Paved Shared Use Path
- Class II Bicycle Lane
- Class IIB Buffered Bicycle Lane
- Class III Bicycle Route
- Class IV Separated Bikeway

Destinations + Boundaries

- City Hall
- Community Center
- School
- Light Rail Station
- City Boundary
- Park

Data provided by the City of Folsom, SACOG

Summary of Challenges and Opportunities

The Existing Conditions analysis outlined in this chapter identifies several key opportunities and challenges for the bicycle and pedestrian network in Folsom. In summary, these include the following:

Opportunities

- Enhance the already extensive shared use path network to be complete, with connections to destinations such as commercial centers, schools, parks, and transit.
- Develop an on-street bikeway network that is low stress, with particular focus on upgrading Class II Bicycle Lanes on high-stress roadways and improving connections to shared use paths.
- Improve connections to and from the three Sacramento Regional Transit Gold Line Light Rail stations.
- Build upon the existing active recreational community by enhancing the shared use path network and improving bicycle and pedestrian connections to parks and shared use paths.

Challenges

- Arterials are high-stress roadways.
- Intersections and crossings, particularly along major arterials, are challenging for people walking and biking.
- Many existing standard Class II Bicycle Lanes are located on high-stress roadways.
- Sidewalk gaps limit connections to commercial centers, jobs, and the Historic District.
- The active community is focused more heavily on recreation instead of biking and walking for everyday transportation.
- The street network—with cul-de-sacs, winding roadways, and high-stress roadways—has limited connectivity between destinations.

These opportunities and challenges inform the plan recommendations in Chapter 5.

Chapter IV | Community Engagement

Process Overview

Throughout the ATP process, Folsom residents and visitors were invited to share their experiences with and vision for the city's active transportation network. Through in-person events and online forums, members of the public provided input at every phase of the plan. This chapter provides an overview of engagement opportunities and a summary of key trends of feedback received.

Engagement occurred in two primary phases:

Phase 1: During this phase, project staff provided information about the plan, gathered input on key questions, and answered questions about the process. Staff also asked how people travel today, including community-specific needs and challenges.

Phase 2: During this phase, community members were encouraged to review draft plan goals and proposed location-specific project recommendations, and to indicate anything missing and their highest priority projects.

The engagement strategy included both in-person and virtual events to provide multiple opportunities to participate while adhering to public health guidance. Each event considered the city's active transportation system comprehensively; at each event or input opportunity, questions sought feedback on the bicycle, pedestrian, and path networks simultaneously to better understand how the networks work together. Participants provided more than 2,500 comments through digital tools. In-person and virtual events were promoted through city channels, including the city website, social media pages, and city's newsletters. The four main methods for collecting community feedback included:

POP-UP EVENTS

Events were held to share information and receive comments and feedback. Pop-events included two path pop-up events at Humbug Willow Creek Trail and two pop-up events at the Folsom Farmers Market. These pop-up events took place at existing community gatherings and aimed to reach as many residents as possible by meeting community members where they are.

PUBLIC WORKSHOPS

The Public Workshop provided a more traditional opportunity for public engagement. These events include a brief presentation followed by unstructured time to review project materials, ask questions about the planning process, and provide feedback. The Phase 1 workshop was held in-person at City Lion's Park in Folsom. The Phase 2 workshop was conducted online.

STAKEHOLDER GROUP

The Stakeholder Group guided the planning process. Including Folsom residents and active transportation advocates in the community, this group of nearly 40 people helped shape the vision and goals, engagement methods, and recommendations. Stakeholder Group meetings took place during the two outreach phases.

ONLINE ENGAGEMENT

In addition to pop-up events, workshops, and stakeholder group meetings, Folsom community members had the opportunity to share feedback through an online tool during both engagement phases. This tool introduced the plan purpose and timeline; it also featured an interactive map for participants to share feedback about specific locations across the city. During Phase 1 of outreach, community members were asked to draw routes, identify barriers to walking and biking on an online interactive map, and share other comments about what they would like to see. During Phase 2 of outreach, Folsom community members provided feedback on draft plan goals and proposed recommendations.

Nearly 500 comments were shared during both phases of engagement. Further, the online tool encouraged additional interaction among participants, providing the opportunity to comment, "like," or "dislike" input shared by others. In total, more than 2,500 points of interaction occurred using these tools.

PHASE 1

Goals

- Confirm understanding of the existing network, including pedestrian facilities, on-street bikeways, and paths.
- Develop a more comprehensive understanding of where residents would like to walk, bike, or roll.
- Gain insight into current network challenges, such as network connectivity or safety concerns.
- Learn which facility types and types of improvements are preferred by the public.
- Inform plan goals and project recommendations.

Table 2 *Phase 1 Public Outreach Events*

Event Type	Event Location	Event Date
Interactive Web Map	folsomatp.altaplanning.cloud/#/	April, 15, 2021 through July 31, 2021
Pop-up Event #1	Folsom Farmers Market	May 1, 2021
Pop-up Event #2	Humbug Willow Creek Trail	June 5, 2021
Stakeholder Meeting #1	Virtual Meeting through Zoom	June 17, 2021
Public Workshop #1	Lions Park	June 26, 2021

What We Heard

Throughout the ATP process, Folsom community members shared a range of feedback, concerns, and support of the plan goals and project recommendations. There were consistent themes throughout the outreach process, including the following:

- Safety was a common concern, particularly along major roadways and locations with high motor vehicle travel speeds.
- Similarly, many community members indicated the need for more crossings and improved safety at crossings.
- Community members were interested in improved sidewalk network connectivity to popular destinations. Respondents shared that current conditions do not allow for seamless connections to areas that community members travel to most.
- Overall, community members were interested in improving access to paths including improving existing crossings, new mid-block crossings, and improved pedestrian and bicycle connections to paths.
- Community members shared their concerns around safety when riding their bicycles around Folsom. Some of their insights included lack of dedicated crossings for bikes, the need for designated bike facilities, and greater protection for on street facilities.

PHASE 2

Goals

- Gather feedback on proposed plan goals and draft project recommendations.
- Gain further insight into the challenges and opportunities associated with plan implementation.
- Learn which project recommendations are priorities for the public.
- Inform the public and gather feedback on specific types of potential improvements including: intersection, connectivity, and crossing improvements for bicyclists and pedestrians; program recommendations; and bicycle facility types.

What We Heard

- **Project Cost and Implementation:** Throughout Phase 2 of outreach, the majority of community members were interested in learning how projects will be funded. They were also interested in how the ATP project costs fits within the larger city budget.

Table 3 *Phase 2 Public Outreach Events*

Event Type	Event Location	Event Date
Interactive Web Map	folsomatp.altaplanning.cloud/#/	November 12, 2021 through January 3, 2022
Pop-up Event #3	Humbug Willow Creek Trail	November 13, 2021
Pop-up Event #4	Folsom Farmers Market	November 13, 2021
Stakeholder Meeting #2	Virtual Meeting through Zoom	December 8, 2021
Public Workshop #2	Virtual meeting, via Zoom	December 16, 2021

- **Spot Improvements:** Community members are interested in project recommendations that connect them to different active transportation destinations throughout the city. The most popular proposed spot improvement is on Folsom-Auburn Road and connects community members to Folsom Lake Paths.
- **Sidewalk Improvements:** Community members are interested in improved network connectivity to popular destinations. The most popular pedestrian sidewalk proposed projects are located on East Natoma Street, Green Valley Road, Oak Avenue Parkway, and Greenback Lane.
- **Shared Use Path Improvements:** Community members were interested in improving the access, width and condition of shared use paths, as well as improving the conflicts between path users.

These key themes and other results from the community engagement process not only helped inform the ATP's goals and objectives, but also informed project recommendations and prioritization.


PROPOSED WALKING NETWORK IMPROVEMENTS
FOLSOM ATP
Proposed Pedestrian Improvements
Fill in Sidewalk Gaps (North Sides)
Fill in Sidewalk Gaps (One-side)
Proposed Trails
Class I Shared-Use Path
Existing Trails
Class I Shared-Use Path
Destinations + Boundaries
City Hall
Community Center
School
Light Rail Station
City Boundary
Park
alta
cle Facility Types

Chapter V | Recommendations

The recommended active transportation system in Folsom seeks to improve safety and comfort for all users through network improvements (physical infrastructure) and programs and policies (non-infrastructure). These recommendations are developed based on previous plans, results of the existing conditions analysis, and the public input.

The sections that follow outline the recommended infrastructure and non-infrastructure components of the active transportation network that aim to make biking and walking an integral part of everyday life for people who live, work, and visit Folsom.

Network Improvements: Capital projects that are identified along the street and path network (linear recommendations) and at specific locations (spot recommendations). Network improvements include the following:

- Linear bicycle recommendations: On-street bikeways and paths
- Linear pedestrian recommendations: New and enhanced sidewalks
- Spot recommendations (bicycle and pedestrian): Specific intersections, path connections, or mid-block locations for improvement; may include new or improved crossings, improved access to destinations, or specific safety improvements

Programs and Policies: Initiatives that support a well-functioning active transportation system and improve outcomes for each capital investment.

Programs can provide education about how to get around by bike or by foot, including route options, safety tips, and how to connect with other modes, like transit. Programs also provide encouragement, whether it's helping connect people through walking or bicycling groups, incentives for trying out other ways to get around, or supporting the choice to walk or bike more generally. Policies address issues such as the longevity of the city's investment in the active transportation network, access and use of the network, the design standards for the network, and evaluation of the active transportation network.

Bicycle and Shared Use Path Network Improvements

Recommended improvements to the bicycle network, shown in Figure 9, seek to improve network connectivity, increase low-stress network connections, and support safer and more comfortable travel for people bicycling. The proposed network includes a combination of on-street improvements, enhanced paths, and new off-street shared use paths.

The recommended network builds on the backbone of existing paved shared use paths and expands connections to the path system through low-stress on-street connections. Paths located along creeks, rail corridors, and roadways support more direct routes and improved recreational opportunities. Low-stress on-street facilities, such as Class IIIB Bicycle Boulevards and Class IV Separated Bikeways, support connections to the path network.

A network of Class IV Separated Bikeways provides greater separation for travel along major roadways, connecting to the path network and other destinations such as transit, shopping centers, office parks, and the Folsom Historic District. Where a separated bikeway may not be desired or feasible, other facilities such as Class IIB Buffered Bicycle Lanes, Class II Bicycle Lanes, and Class III Bicycle Routes supplement the low-stress bicycle network.

The proposed bicycle network, including the specific bicycle facility types, was informed by public input, the existing conditions (needs) analysis, typical roadway conditions, plan goals, and best practices in bikeway design. While low stress facilities and greater levels of protection are desirable across the city, development patterns, available right-of-way, and other constraints may require different bikeway treatments. Further, some locations may require further analysis of on-street parking needs to better allocate available pavement for the movement of residents and visitors. For more information, reference the Design Guide in Appendix A.

This Plan recommends 145 miles of new or upgraded bicycle facilities across Folsom. This includes 37 miles of improved (upgraded) facilities where bikeways exist today and 108 miles of new bikeways. Table 4 provides an overview of the proposed bicycle network broken down by bikeway class. When fully built out, Folsom will have nearly 200 miles of dedicated bicycle facilities, comprised of existing, upgraded, and new bikeways, that form a connected network.

Table 4 *Bicycle Facility Miles by Classification*

Facility Type	Existing Mileage	Proposed Mileage	Upgraded Mileage*	Full Buildout Mileage
Class I Shared Use Path (Path)	50.3	39.9	0.0	90.2
Class II Bicycle Lane	59.8	2.3	35.5	26.6
Class IIB Buffered Bicycle Lane	3.6	3.7	1.5	5.8
Class III Shared Bikeway	0.9	0.6	0.0	1.5
Class IIIB Bicycle Boulevard	0.0	24.8	0.0	24.8
Class IV Separated Bikeway	0.5	36.7	0.0	37.2
Total	115.1	108	37	186.1

*Upgraded mileage refers to corridors that presently have an existing facility but are identified for upgrade to a more comfortable facility type. For example, Class II upgraded mileage refers to corridors with an existing bicycle lane but are recommended for Class IIB or Class IV facilities. This may result in a full buildout mileage that is less than the existing mileage.

BICYCLE BOULEVARDS

Bicycle boulevards provide an all ages and abilities route along neighborhood roadways. With lower travel speeds and fewer cars, these routes are designed to prioritize bicycle travel.

Bicycle Boulevards include three main components:

- **Speed Management and Traffic Calming**, including reduced speed limits, speed tables (1), chicanes (2), and more to increase route comfort and safety
- **Volume Management**, to discourage cut-through traffic and limit non-local trips
- **Bicycle and Pedestrian Priority at Intersections**, including improved crossing infrastructure (3) to support safe crossings at major roadways

In combination with wayfinding, bicycle boulevards not only support connections to neighborhood destinations but also provide on-street connections to shared use paths to create a complete, connected bicycle network. For more information on the components of a bicycle boulevard, see Appendix A.

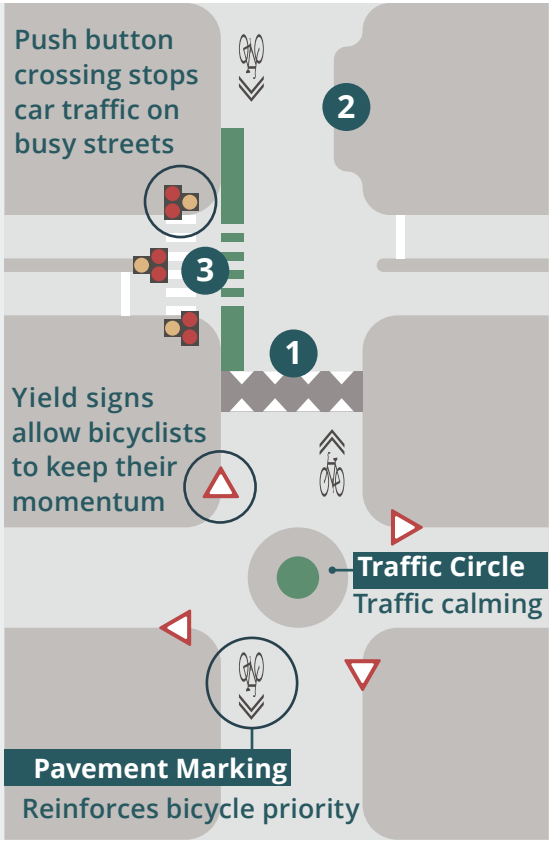


Figure 9 *Proposed Bikeways*

Proposed Bikeways

FOLSOM ATP

Proposed Bikeways

- Class I Shared Use Path
- Class II Bicycle Lane
- Class IIB Buffered Bicycle Lane
- Class III Bicycle Route
- Class IIIB Bicycle Boulevard
- Class IV Separated Bikeway
- Widen Existing Path

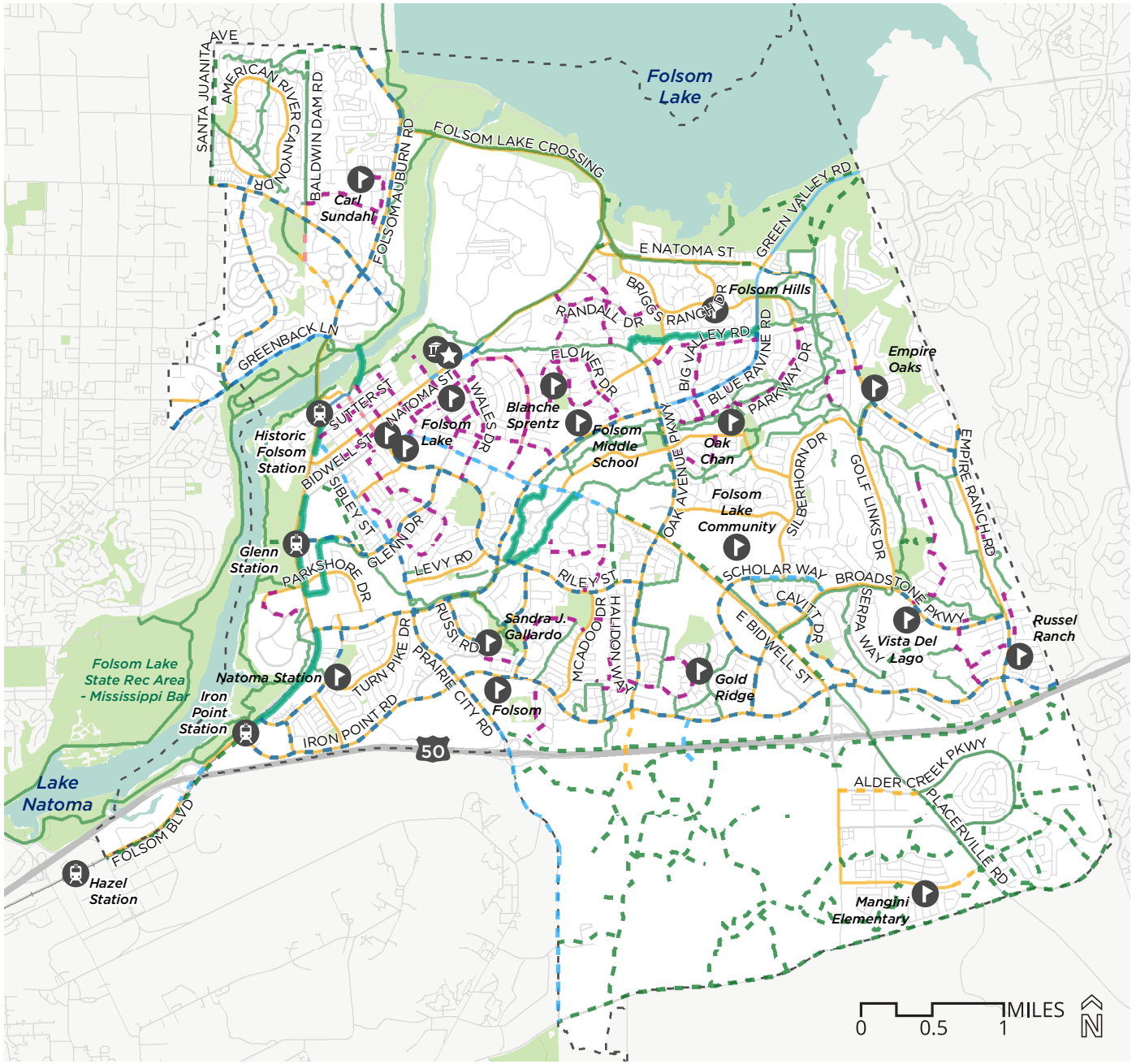
Existing Bikeways

- Class I Shared Use Path
- Class II Bicycle Lane
- Class IIB Buffered Bicycle Lane
- Class III Bicycle Route
- Class IV Separated Bikeway

Destinations + Boundaries

- City Hall
- Community Center
- School
- Light Rail Station
- City Boundary
- Park

Data provided by the City of Folsom, SACOG



Shared Used Path Enhancements

Shared use paths form the backbone of the low-stress active transportation network in Folsom. In addition to nearly 40 miles of proposed new shared use paths, the plan also recommends enhancements to existing corridors, as shown in Figure 9. Locations of enhanced shared use path segments include along the Humbug-Willow Creek Trail, Folsom Rail Trail, and Oak Parkway Trail.

Shared use path enhancements not only improve the quality of existing paths but also seek to improve the safety and comfort for all user groups.

Shared use paths with a high volume and variety of users are good candidates for enhancements. Unlike on-street bikeways or sidewalks, shared use paths include people walking, biking, and rolling. A popular shared use path, for example, can create tension and discomfort among users, especially when there is limited space and users are traveling at a wide range of speeds. Path enhancements can include a variety of measures such as increasing the path width, adding a shoulder, centerline striping, and separating users. Shared use path enhancements can also include wayfinding and/or policy changes to improve user experience. Wayfinding improvements can include directional pavement markings and other types of signage to guide users, while policy and related promotional campaigns can encourage users to share the path. For more information, see the Policy and Programs section.

In addition to the enhancements mentioned above, shared use paths also provide an opportunity to integrate green stormwater infrastructure into the path design. Green infrastructure is a catchall term that describes sustainable stormwater management practices and infrastructure. Through strategies including biofiltration planters, bioretention swales, trees, native landscaping, and permeable pavement surfaces, more water can return to the ground and natural systems while reducing strain on existing water systems.

Some of the benefits of green infrastructure include:

- Reduces the surface temperature of the street/path and the surrounding area.
- Improves water quality, air quality, and reduces energy use by capturing stormwater runoff.
- Provides habitat for a variety of insects and birds and improves habitat in local watersheds.
- Improves mental and physical health through better air quality, shade and cooler temperatures, beautification, and contact with nature.

Centerline striping along a shared use path in Folsom helps to communicate that users should expect travel in both directions and encourages users to travel on the right and pass on the left.

Delineating separate spaces for pedestrians and bicyclists can help alleviate conflict among modes in high use areas. This can be completed through pavement markings or use of different materials to clearly designate space.

A soft-surface shoulder alongside a shared use path provides additional space for path users, particularly runners or others who prefer natural surface paths.

Pavement signage further emphasizes that the path is bi-directional and shared among a variety of users. While this does not create additional space, it provides reminders of path etiquette along the length of the path.

Pedestrian Network

Sidewalks form the foundation of the pedestrian network, connecting residents to destinations such as schools, transit, parks, and shopping. Pedestrian Network recommendations build on the sidewalk inventory completed during the existing conditions phase of this plan and identify opportunities to complete the sidewalk network along the corridors inventoried.

Recommendations shown in Figure 10 include completion of the sidewalk network on both sides of the roadway to provide a complete and connected pedestrian network and enhanced connections to and from the path network. This includes completing sidewalks along most residential streets in the Folsom Historic District and sections of major arterials both north and south of the Historic District such as Folsom Boulevard, Folsom-Auburn Road, Greenback Lane, and large sections of Oak Ave Parkway, East Natoma Street, and Broadstone Parkway.

This Plan recommends 21.5 miles of new or upgraded sidewalks across Folsom, which includes 11.7 miles of filling sidewalk gaps on both sides of the street and 9.8 miles of filling sidewalk gaps on one side of the street.

Corridor sidewalk recommendations should be considered in coordination with spot recommendations (outlined in the next section) to further facilitate a connected network in Folsom and improve access to the city's path system.

Figure 10 *Proposed Sidewalks*

Proposed Walking Network Improvements

FOLSOM ATP

Proposed Pedestrian Improvements

- Fill in Sidewalk Gaps (Both Sides)
- Fill in Sidewalk Gaps (One Side)

Proposed Shared Use Paths

- Class I Shared Use Path

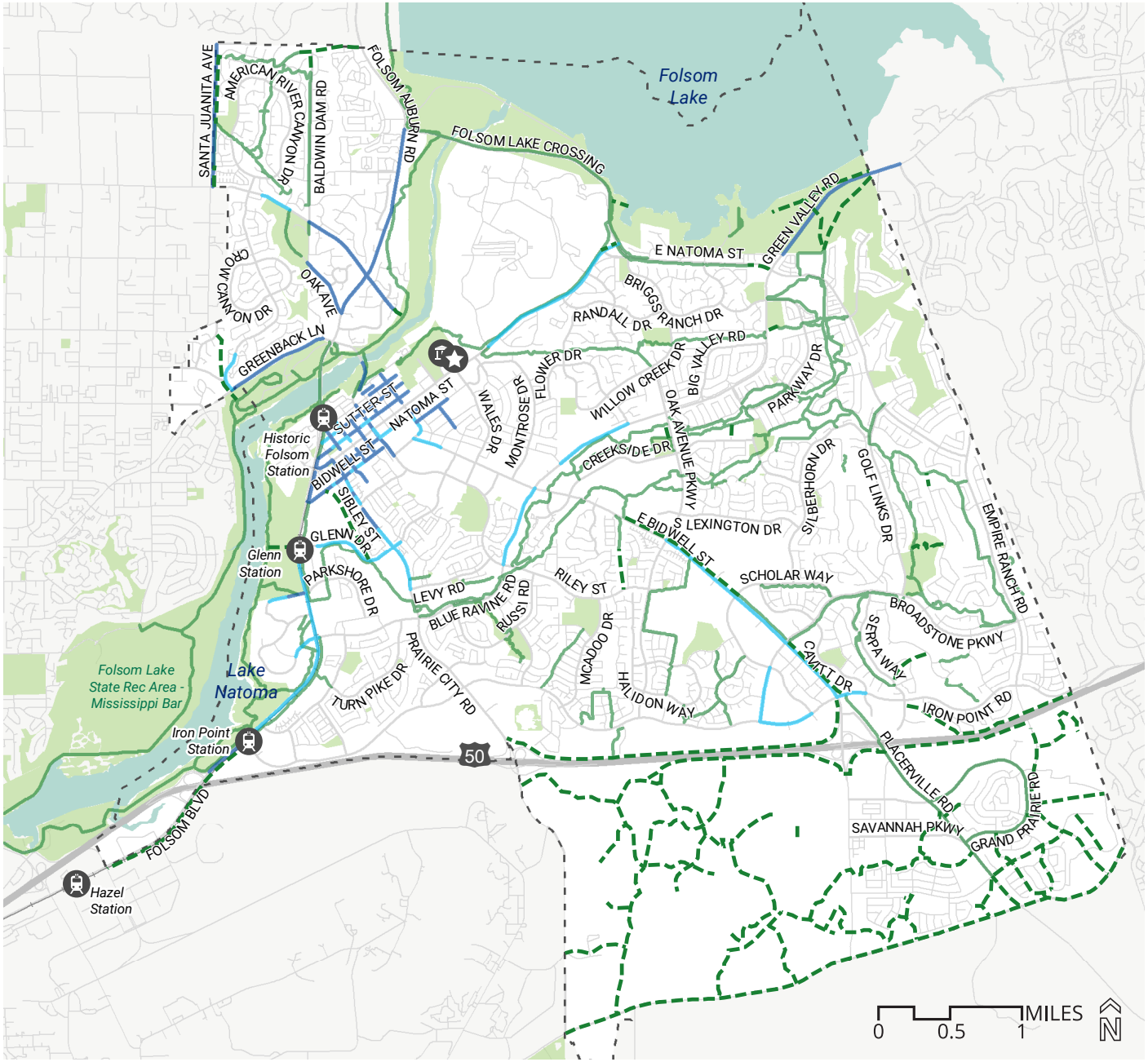
Existing Shared Use Paths

- Class I Shared Use Path

Destinations + Boundaries

- City Hall
- Community Center
- School
- Light Rail Station
- City Boundary
- Park

Data provided by the City of Folsom, SACOG



Intersection and Crossing Improvements

Intersection and crossing improvements are crucial to a complete and connected active transportation network. This includes upgrading existing crosswalks to provide safer crossing opportunities, installing new crosswalks at high-demand locations, and facilitating access to the shared use path network along major roadways. The recommendations identified seek to improve the comfort and safety of intersections; enhance network connectivity; and provide access to destinations.

In addition to supporting a complete and connected low-stress network, intersection improvements were also one of the most commonly-requested improvements during the public engagement phase of this plan.

The resulting recommendations (Figure 11) locate specific intersections, path connections, or mid-block locations for improvement and are intended to improve conditions for both people walking and people biking. Spot locations were identified based upon factors such as a history of collisions, high stress crossings, access to key destinations, identification in previous planning efforts, and connections to and from linear recommendations such as paths, sidewalks, and bikeways.

Intersection and Crossing Improvements are categorized based on the type of roadway, whether or not there is a traffic signal, if there is existing infrastructure to support crossings, and if it provides direct access to shared use paths. Overcrossings or undercrossings are also identified at locations that cross a major barrier such as a highway, and therefore could benefit from a crossing that is completely separated from motor vehicle traffic.

The following tables identify the recommended improvements associated with each category. Each location should be further analyzed as the project advances through design to determine the specific infrastructure needs. More information about crossing treatments can be found in Appendix A.

The following tables break down the different types of spot recommendations and potential design improvements.

Path Spot Recommendations

These locations represent locations where a path intersects with a roadway. It considers existing conditions of this crossing, including existing traffic signal locations, existing stop control and crossing infrastructure, and roadway functional classification.

Table 5 Path Spot Recommendations

Type	Description of Improvements
Existing Traffic Signal	• Establish a dedicated bike crossing to reduce conflict with pedestrians. • Remove slip lanes and reduce curb radius to slow turning speeds • Signal improvements, including pedestrian countdown signal, APS buttons, lengthening pedestrian crossing times and/or Leading Pedestrian Interval, No Right on Red, and dedicated left turn phase where applicable • Implement high visibility crosswalks and upgrade curb ramps to comply with ADA standards as needed • Improve visibility through lighting and improved sight lines
Unsignalized, No Existing Crossing Infrastructure	• Implement high visibility crosswalks and upgrade curb ramps to comply with ADA standards as needed • Evaluate opportunity for rectangular rapid flashing beacon (RRFB) or pedestrian hybrid beacon (PHB) • Shorten crossing distances through pedestrian refuge islands, curb extensions, and other traffic calming • Improve visibility through lighting and improved sight lines
Unsignalized, with Existing Stop Control, Crosswalk(s)	• Implement high visibility crosswalks and upgrade curb ramps to comply with ADA standards as needed • Evaluate pedestrian hybrid beacon or rectangular rapid flashing beacon installation • Shorten crossing distances through pedestrian refuge islands, curb extensions, and other traffic calming • Improve visibility through lighting and improved sight lines
Unsignalized - Existing High Visibility Crosswalk and Refuge Island	• Evaluate pedestrian hybrid beacon or rectangular rapid flashing beacon installation • Install ADA compliant curb ramps • Improve visibility through lighting and improved sight lines
Minor Road	• Implement high visibility crosswalks and upgrade curb ramps to comply with ADA standards as needed • In-Street Pedestrian Crossing Sign • Reduce crossing distances through curb extensions and other traffic calming • Improve visibility through lighting and improved sight lines

Major Roadway Spot Recommendations

These locations represent crossing improvements involving a major roadways, including arterials. The locations may intersect with existing or proposed bicycle and pedestrian infrastructure and should integrate accordingly. For locations with adjoining bicycle facilities, additional improvements may be considered, such as bike signals, bike crossings, and bike boxes.

Table 6 Major Roadway Spot Recommendations

Type	Description of Improvements
Existing Traffic Signal	• Signal improvements, including pedestrian countdown signal, lengthening pedestrian crossing times and/or Leading Pedestrian Interval, No Right on Red, and dedicated left turn phase where applicable • Implement high visibility crosswalks and upgrade curb ramps to comply with ADA standards as needed • Improve visibility through lighting and improved sight lines • Provide pedestrian refuge island • Consider bike boxes and dashed green pavement markings through intersection for bikes when appropriate • Install advanced yield/stop bars
Unsignalized	• Implement high visibility crosswalks and upgrade curb ramps to comply with ADA standards as needed. Raised crosswalks may be considered. • Improve visibility through lighting and improved sight lines • Shorten crossing distances through pedestrian refuge island • Evaluate pedestrian hybrid beacon or rectangular rapid flashing beacon installation • Install advanced yield/stop bars

Minor Roadway Spot Recommendations

These locations represent crossing improvements involving minor roadways, including local roads. They are typically surrounded by residential land uses, are not located along major commercial corridors, and have limited existing crossing infrastructure. These locations may intersect with existing or proposed bicycle and pedestrian infrastructure and should integrate accordingly. For locations with adjoining bicycle facilities, additional improvements may be considered, such as bike signals, bike crossings, and bike boxes.

Table 7 Minor Roadway Spot Recommendations

Type	Description of Improvements
Unsignalized	• Implement high visibility crosswalks and upgrade curb ramps to comply with ADA standards as needed • Reduce crossing distances through curb extensions and other traffic calming • Coordinate improvements with Class IIIB as applicable

Systemwide Improvements

While spot recommendations identify areas of specific concern, the Folsom ATP also recommends the city explore system-wide improvements to crossings, such as the implementation of Leading Pedestrian Intervals and No Right on Red restrictions in locations with high pedestrian demand. These areas may include commercial centers, transit stations, schools, paths, and parks. Leading Pedestrian Intervals, for example, give pedestrians a head-start crossing the street at signalized intersections by activating the walking signal a few seconds before cars are permitted to go. This can dramatically improve visibility and predictability between vehicles and pedestrians, particularly for motor vehicle turning movements. Systemwide improvements are explored further as part of the Design Guide in Appendix A and are not reflected on the spot recommendation maps or project tables.

Figure 11 *Proposed Intersection Improvements*

Proposed Spot Improvements

FOLSOM ATP

Proposed Spot Improvements

- Path / Major Road Signalized
- Path / Major Road Unsignalized
- Path / Minor Road
- Major Road Signalized
- Major Road Unsignalized
- Minor Road Unsignalized
- Overcrossing / Undercrossing

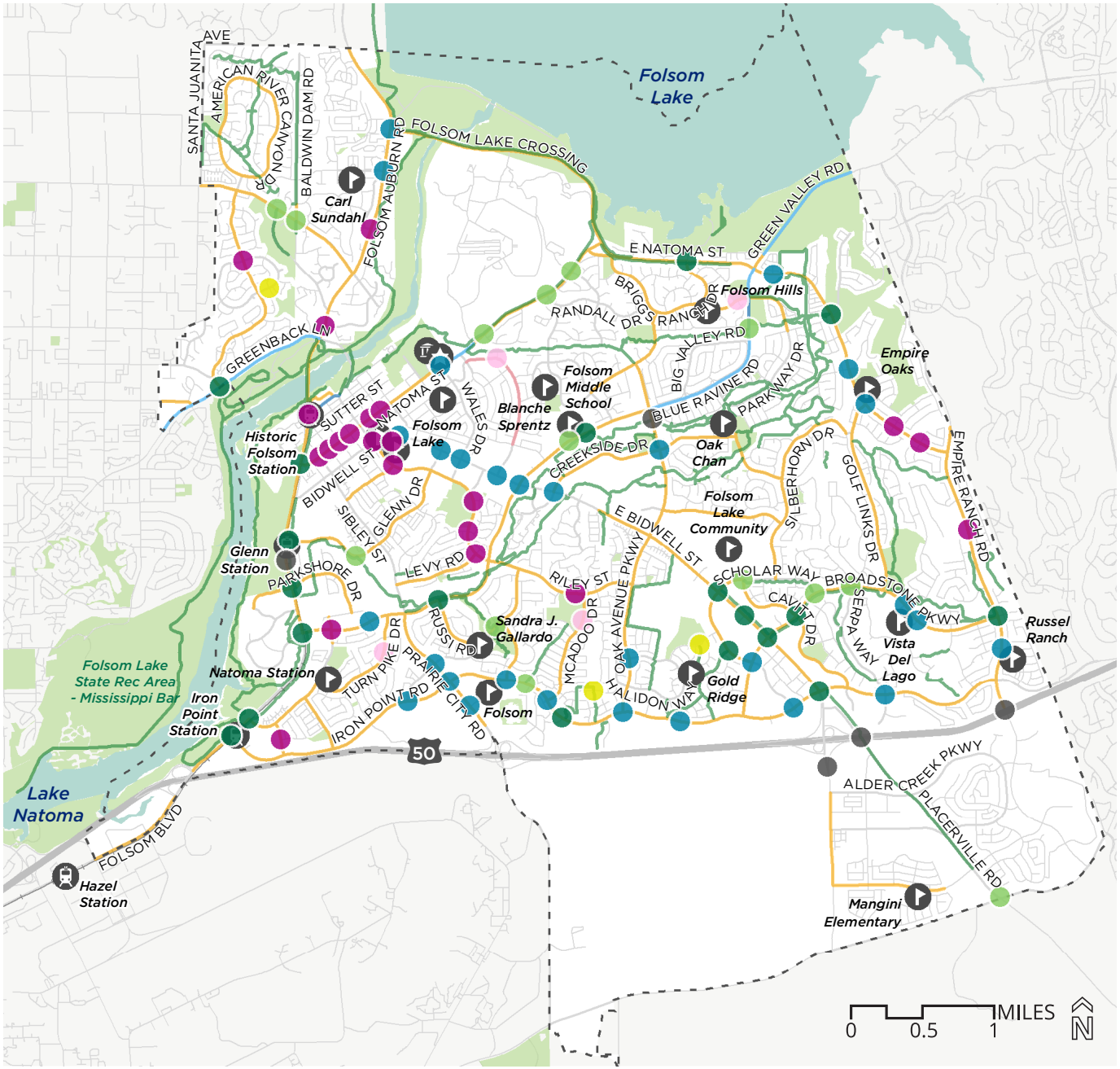
Existing Bikeways

- Class I Shared Use Path
- Class II Bicycle Lane
- Class IIB Buffered Bicycle Lane
- Class III Bicycle Route
- Class IV Separated Bikeway

Destinations + Boundaries

- City Hall
- Community Center
- School
- Light Rail Station
- City Boundary
- Park

Data provided by the City of Folsom, SACOG



Programs + Policies

PROGRAMS

Programs refer to non-infrastructure efforts that support walking, bicycling, and other mobility options in the city. Programs supplement infrastructure improvements by helping connect residents and visitors to these new ways to get around.

The ATP recommends the programs outlined in the sections that follow.. Successful implementation of programs may require additional investment in city staff, including increasing the number of staff dedicated to bicycle and pedestrian issues. Dedicated staff are crucial to ensuring the success and longevity of these programs. Partnering with local organizations and other agencies is also an essential strategy to creating a sustainable program.

Safe Routes to School (SRTS)

SRTS initiatives provide education and encouragement to students, family, and school communities seeking to increase the use of active and shared modes of travel. This program can include a wide range of activities and events and may be accompanied through local street improvements focused on improving the safety of students traveling to and from school.

Currently, the Sacramento Area Council of Governments (SACOG) and Civic Thread (previously known as WalkSacramento) promote and support SRTS programs and projects throughout the Sacramento region. SACOG adopted a SRTS policy in 2012 and Civic Thread partners with communities throughout the region to implement and establish SRTS programming. Additionally, the 50 Corridor Transportation Management Association (TMA) works with schools in the region, including the Folsom-Cordova Unified School District, through a Smart Routes to School Program.

The City of Folsom should implement a comprehensive SRTS program in coordination with the Folsom-Cordova Unified School District and other schools operating in the city. This is consistent with the goals of the ATP and supports the mobility component of the Folsom General Plan. Coordination with SACOG, Civic Thread, and/or the 50 Corridor TMA can help connect the city with existing resources, funding opportunities, and the formation of a SRTS program.

Potential Safe Routes to School program offerings to schools include educational resources to promote active travel to school; regular events to celebrate walking and biking; a crossing guard program to promote safe pedestrian and driver behavior at school crossings; data collection to understand existing mode share and family perception of active travel to school; walking school buses and bike trains to support travel to school; and suggested route maps to help families identify the best route to school.

Bicycling Classes for Adults

The city should partner with other organizations, such as Friends of Folsom Parkways or Cycle Folsom, to provide a regular education program that connects adults in the community with information about bicycling. Identified in the previous Bicycle Master Plan, the Mobility component of the Folsom General Plan, and as a point for improvement in the 2016 Bicycle Friendly Community Report Card, an adult bicycle education program would connect adults in Folsom with information they need to integrate bicycling into their transportation options.

Courses for bicycle safety are based on a curriculum from the League of American Bicyclists that focuses on how bicyclists should behave to be safer, more predictable, and more confident riding on streets both with and without dedicated bicycle facilities. The classes can also incorporate photos and video clips of local roads to help students understand how various scenarios apply to Folsom locations. The city can provide additional support by advertising the courses and providing meeting space.

Path Ambassador Program

The City should expand upon the City's Citizens Assisting Public Safety (CAPS) Volunteer program to include a Path Ambassador program. Similar to the existing American River Bike Patrol, the program would consist of volunteers who assist with education around path etiquette, provide safety and equipment advice, and directional advice on the City's path network.

Traffic Safety/Marketing/ Promotional Campaigns

The city should expand upon the recommendations from the previous Pedestrian Master Plan and Bikeway Master Plan to implement a holistic traffic safety campaign that provides community education about safe driving, bicycling, and walking behavior. This can be further expanded to include information on how to safely share the path and encourage path etiquette along Folsom's shared use paths.

Campaign messages should respond to common issues in Folsom and address community safety priorities. This may include not texting while driving or walking, how to securely lock your bicycle, the importance of being seen at night as a pedestrian or bicyclist, helping drivers understand where to anticipate bicyclists, and increasing awareness of California's Three-Foot Passing law.

Local students could create artwork for the updated campaign as part of a Traffic Safety Poster Contest. The posters can highlight and share information about newly completed projects, such as green transition areas and new separated bikeways. Funding could be provided by a grant from the California Office of Traffic Safety. The city can develop messaging and choose graphics with involvement from local stakeholders, law enforcement, schools, business owners, civic leaders, and community advocates to maximize engagement and effectiveness.

"STREETSMARTS" CAMPAIGN

Folsom can join other California cities in implementing "StreetSmarts" media campaigns. StreetSmarts uses print media, radio, and television to educate the community about safe driving, bicycling, skateboarding, and walking behavior.

Transportation Demand Management Campaign

Consistent with the Mobility component of the Folsom General Plan (M 1.1.9), develop a citywide Transportation Demand Management (TDM) Program to reduce single occupancy vehicle trips. This effort will build on the City's existing involvement with the 50 Corridor Transportation Management Association (TMA), a public-private partnership that seeks to reduce single-occupancy vehicle trips along the Highway 50 corridor. The proposed program will provide a menu of strategies and programs that can support developers and employers in promoting more active and shared travel for commutes. Some examples of TDM strategies include employer-based ridesharing programs, subsidized travel for nonmotorized commutes, and requiring developers to minimize available parking and contribute funding for nonmotorized forms of transportation. Explore opportunities to expand partnership with the City of Sacramento due to the commute patterns between the two cities.

Bike Parking Program

Bicycle parking and related trip end facilities complete the bicycle network. A convenient and secure location to store a bicycle while at a destination is necessary for trips made by bike, especially when connecting to transit. While bicycle parking is available in many locations around Folsom, requests for more parking options was one of the most frequent comments provided during public engagement activities. This includes requests for both increased quantity of parking options as well as greater distribution across the city.

Bike parking can be either short-term or secure and long-term. Short-term parking is meant to accommodate bicyclists who park for up to two hours and is common along Sutter Street in the Historic District, for example, but less common in other areas of the city, such as at shopping destinations, parks, and community centers. Long-term parking, such as bike lockers, is intended for riders who park over two hours, e.g., employees, students, and residents. BikeLink—secure and enclosed bike lockers—at the light rail stations in Folsom are one example. More information bike parking types can be found in Appendix A.

Consistent with the Mobility component of the Folsom General Plan, the city should coordinate with local businesses, property owners, and open space agencies to install secure bicycle parking near major destinations across Folsom. Bike parking options should include locations that accommodate bikes of differing sizes or supporting e-bikes and charging locations, particularly within secure parking areas. Folsom should also review and update its development standards to encourage greater provision for bicycle parking in new developments.

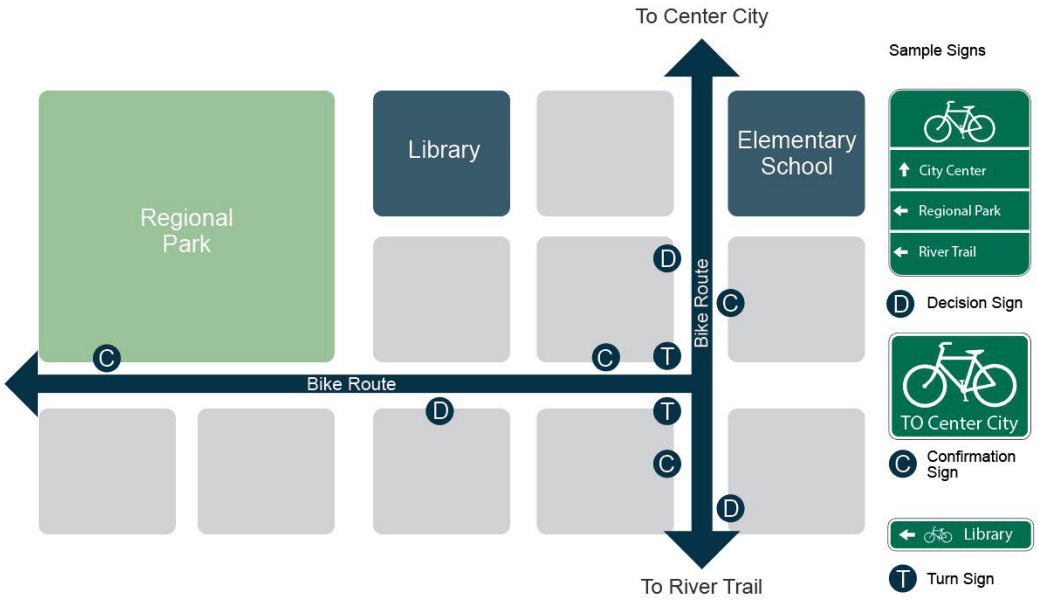
Citywide Wayfinding

A comprehensive wayfinding program will support active transportation users across the city. Through a series of signs, kiosks, and pavement medallions, a wayfinding system will direct people walking and biking to their destinations, encourage greater exploration of the city, and help people feel more comfortable traveling across on-street and off-street networks.

Throughout the public engagement for the ATP, participants frequently noted a lack of navigation support, especially for preferred routes of travel and access to the shared use path network. The City of Folsom currently has minimal wayfinding throughout the bicycle, path, and pedestrian network; elements that are in place are not part of a comprehensive system that is easy to recognize and understand.

As part of the implementation of the ATP, the city should establish a consistent wayfinding system for its bicycle, path, and pedestrian networks that leverages the city's visual brand; supports connections to transit, paths, parks, and schools; and celebrates the active transportation opportunities across the city.

Figure 12 Typical Locations for Wayfinding Signage



Some of the common components of a wayfinding system are described below, including the types of common signs, the required standards and guidelines, and other optional elements.

Navigational Elements

The types of signs that provide bicyclists and pedestrians with navigational information consist of decision, confirmation, and turn signs (described in Table 8). Figure 12 provides typical locations of signs. These signs are featured at specific points along a route that users can rely on throughout their trip. For example, decision signs (D) are located before an intersection of two routes; turn signs (T) are found before turns; and confirmation signs (C) are located after the turning movement and periodically along routes to confirm that the user is on the right path. The predictability of sign locations can help users feel more comfortable and confident navigating the city, whether walking or bicycling.

Signage Technical Guidance

A variety of standards and guidelines influence both the design and placement of wayfinding elements in Folsom. The

Manual of Traffic Control Devices (MUTCD) provides standards and guidelines for the design, size, and content of wayfinding signs. However, many jurisdictions have implemented unique signs to enhance visibility while reinforcing local identity.

Bicycle Guide Signs

Both on-street and off-street bicycle facilities are required to follow the standards within the MUTCD. The State of California has adopted specific state standards for all traffic control devices called the CA MUTCD, which supersedes the MUTCD:

- D11-1: Bicycle Route Guide Sign
- D1-1b: Destination Supplemental Sign
- M7-1 through M7-7 Directional Arrow Supplemental Sign

The combination of standard signs with modifications allows for consistent signage throughout Folsom while branding the network.

Table 8 Wayfinding Sign Types

Decision Sign (D)	Confirmation Sign (C)	Turn Sign (T)
Clarify route options when more than one is available Typically include a system brand Up to 3 destinations Distance in time or miles (based on 10 mph or 6 minutes per mile) FHWA standard size for 3 destinations is 18" H x 30" W Municipalities can modify, often 24" W x 30" or 36" H, and place a bicycle symbol at the top Generally, 6" of vertical space per destination Sign width not standardized by the CA MUTCD	Placed after turn movement or intersection to reassure that they are on the correct route Standard D11-1 series signs, system brand mark, and route or pathway name may be included The minimum size of 24" W x 18" H should be used for bike route signs, both on and off-street	Clarify a specific route at changes in direction Used when only one route option is available Standard D1-1 series sign: system brand mark, route or pathway name, and/or a directional arrow may be included A minimum of 6" should be used for arrow plaque, the width may vary with destination length Standard turn arrows (M5 and M6 series) may be used to clarify movements

Community Wayfinding

Community wayfinding signs allow for an expression of community identity, reflect local values and character, and provide more information. California has not yet adopted MUTCD community wayfinding standards, but many communities use these.

Other Wayfinding Elements

In addition to the core elements, several other wayfinding elements should be considered:

- Distance and time: Adding distance in familiar units can be a helpful encouragement tool for bicycling and walking. Some cities include travel time.
- Street name sign blades and sign toppers: Some cities have enhanced street name sign blades to recognize bikeways and major pedestrian routes.
- Pavement markings: Directional pavement markings indicate confirmation of bicycle or pedestrian presence on a designated route and indicate turn locations. Pavement markings can often be more visible and can help supplement or reinforce signage.

POLICIES

As biking, walking, and rolling in Folsom grows, it is important to identify opportunities within city policy and practice to better support development of the active transportation network. The following policy recommendations consider issues such as the longevity of the city's investment in the active transportation network, access and use of the network, and evaluation of the active transportation network.

Facility Standards

The city should review and update all relevant policy and design standards regarding bikeway, path, and sidewalk design, materials, and supporting amenities to be consistent with best practices and state and federal standards. Evaluate and revise facility standards as needed to provide for accessible facilities. New and reconstructed facilities shall meet the requirements of the Americans with Disabilities Act.

For Class I Shared Use Paths, utilize best practices design standards and guidelines to accommodate all path user groups. Consider wider paths, separated spaces for travel, and other design interventions to improve safety and comfort along Class I facilities.

Maintenance

Routine maintenance can prolong the life of surface materials, increase the utility of the system, and encourage greater use of the network. This includes maintaining bike lanes, protected facilities, and sidewalks by keeping them clear of debris, surfaces free from obstructions, and crossings well-marked. For shared use path, maintaining access points, path surface, and crosswalks are important components to a well-functioning and effective system that supports trips of all types.

It is recommended that the city expand upon the maintenance recommendations outlined in the Folsom Bikeway Master Plan (Policy 7.5.2) to develop a routine maintenance schedule and track maintenance over time. These activities should include all components of the bicycle, pedestrian, and path networks.

In addition to routine maintenance, the city should track more significant maintenance needs and integrate these improvements into annual budgeting. This should include a mechanism for public reporting of issues along the network. This information should be tracked in a manner consistent with the system inventory recommended as part of this plan.

Data Management/Collection

Data regarding all active transportation facilities and activity should be collected regularly. Three primary areas for data collection that should be explored and expanded include:

- **Safety**: To better understand crash patterns and who is affected, opportunities to record additional information on crash types and parties should be explored.
- **User Counts:** Implement an annual counts program to track use of existing facilities and identify areas for future facility implementation. Counts programs can rely on permanent automatic counters, temporary counters, or manual counts completed in coordination with local volunteers.

Counts should be collected annually, utilizing consistent locations and methodology. The National Bicycle and Pedestrian Documentation project provides information on how to get started.

- **Infrastructure Inventory**: Project implementation and maintenance is best supported when location and quality of assets is known. To better track implementation progress and identify locations for new crosswalks, maintenance needs, or other project opportunities, the City should develop a comprehensive database that documents existing infrastructure, such as: signal locations; crosswalk locations and quality; sidewalk and bikeway location, quality, and width; pedestrian-scale lighting location; traffic calming locations; bicycle parking location, type, and capacity; and similar. The data plan should include considerations for regular updates to the data set and protocols for integrating new projects

Annual Report Card

An annual report card assesses the city's progress toward goals and objectives outlined in the ATP, its projects and programs, and shifting mode share for active transportation. Annual report cards can also incorporate a review of project effectiveness to evaluate the costs and benefits of various efforts and adjust investments to maximize results.

The ATP recommends the City to develop an annual report card that tracks progress toward implementing this plan. The report card should incorporate annual collision data, safe routes to school program and participation data (once implemented), walking and bicycling counts, and other relevant information to highlight successes and challenges of improving walking and bicycling each year.

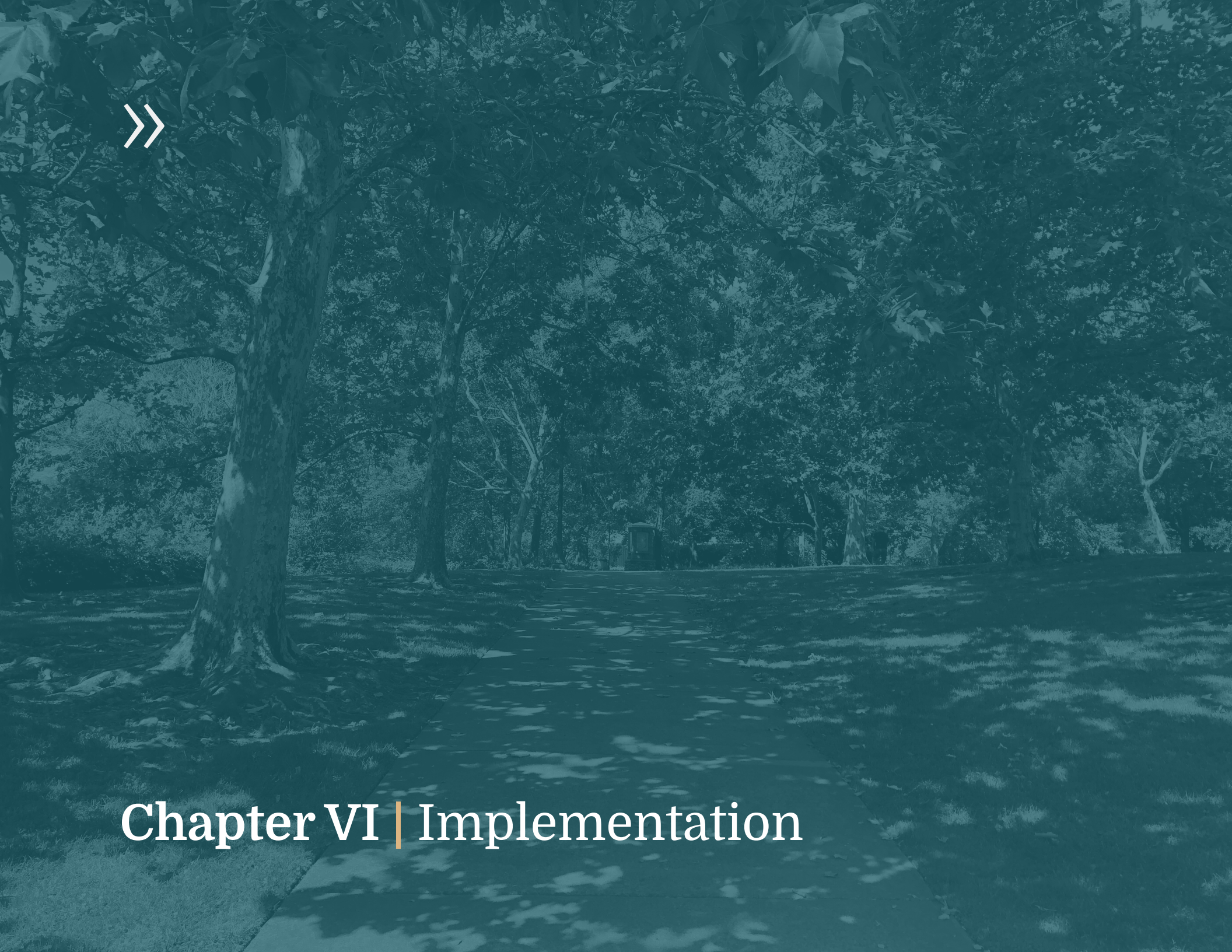
Vision Zero

The City should consider the adoption of a Vision Zero policy and program that seeks to eliminate all traffic fatalities and severe injuries. The strategy also includes a focus on creating safe, healthy, and equitable mobility for all. Adoption of a Vision Zero strategy includes data collection and analysis, community engagement and education, engineering approaches, and a clear timeline for action. This effort should build on the findings of the City of Folsom Local Road Safety Plan (2021), which further analyzed collision characteristics within the city for all modes.

Path Management

The path system supports both recreational and transportation trips in Folsom. With an increasing number of personal e-bikes and e-scooters—as well as the potential for a future shared mobility program—the City should develop clear policy regarding the use of shared use paths by these modes. This guidance should be consistent with county, regional, and state guidance. Information regarding this policy should be made available through educational and encouragement materials, including at trailheads and other key access points. This information can also provide guidance to users about path etiquette and help reduce potential conflicts along the pathway.


SHOP MV
Eat.
Drink.
Be Merry
And Shop!
ONE WAY
MILLVALLEY
MUSIC
STOP



Chapter VI | Implementation

Project Prioritization

While the ATP recommends a series of projects that support a complete and connected low-stress network, limited resources require an action plan that identifies which projects may have the greatest impact. This section presents the prioritization strategy for evaluating projects recommended in the City of Folsom Active Transportation Plan. The factors included in this strategy are based on plan goals to advance the community vision for active transportation.

Table 11 summarizes the prioritization criteria as well as the scoring applied for each. Projects are evaluated against only those within the same category of improvements (e.g., sidewalk improvements are evaluated only against other sidewalk improvements). Maps displaying the results for each type of improvement and the resulting project tables are shown in the pages that follow.

Projects are sorted into Short-Term, Mid-Term, and Long-Term improvements. Short-term improvements received a high prioritization score and are expected to have the greatest impact on the network; these improvements should be considered in the near-term based on funding availability. Conversely, long-term improvements received lower prioritization scores and are expected to have less impact on the network. However, the following project lists are not intended to restrict the order of implementation. Projects may be implemented to reflect current city funding priorities and as opportunities become available—such as funding availability, projects that are already in process, and coordination with other projects or development.

Table 9 *Prioritization Framework*

Prioritization Factor	Definition	Proposed Scoring
Network Completeness	Project closes an existing gap in the network	• **10 Points:** Segment connects on both ends to fill a gap in the existing network • **5 Points:** Segment connects to an existing facility on only one end
Network Connectivity	Project improves connections to destinations, including schools, parks, transit, paths, and employment centers	• If project is located within ¼ mile of a destination, it receives **2 points (up to 10 points total)**
Network Comfort	Project improves an existing high stress route or crossing.	• **10 Points:** Project improves an existing LTS 3 or LTS 4 route; for spot improvements, project improves crossing of LTS 3 of LTS 4 route
Network Safety	Collision occurred at the project intersection or along the identified project segment.	• **10 Points:** A severe injury or fatal collision occurred along the project segment and/or within 500 feet of the project location (if spot improvement) • **5 Points:** A collision occurred along project segment and/or within 500 feet of the project location (if spot improvement)
Equity	Project improves active transportation networks in areas with a high proportion of low-income workers.	• **10 points:** Project is located within a census tract where low-income workers either work or live (Top 10%)
Community Support	Project reflects needs or barriers identified through Folsom ATP community input.	• **10 points:** Project/Corridor was identified and supported through public comments
Previous Plan	Project is in alignment with previous planning efforts.	• **10 points:** Project or corridor was identified in a previous planning effort

Figure 13 *High Priority Bikeways*

High Priority Bikeways

FOLSOM ATP

Proposed Bikeways

- Class I Shared Use Path
- Class IIB Buffered Bicycle Lane
- Class III Bicycle Route
- Class IIIB Bicycle Boulevard
- Class IV Separated Bikeway
- Widen Existing Path

Existing Bikeways

- Class I Shared Use Path
- Class II Bicycle Lane
- Class IIB Buffered Bicycle Lane
- Class III Bicycle Route
- Class IV Separated Bikeway

Destinations + Boundaries

- City Hall
- Community Center
- School
- Light Rail Station
- City Boundary
- Park

Data provided by the City of Folsom, SACOG

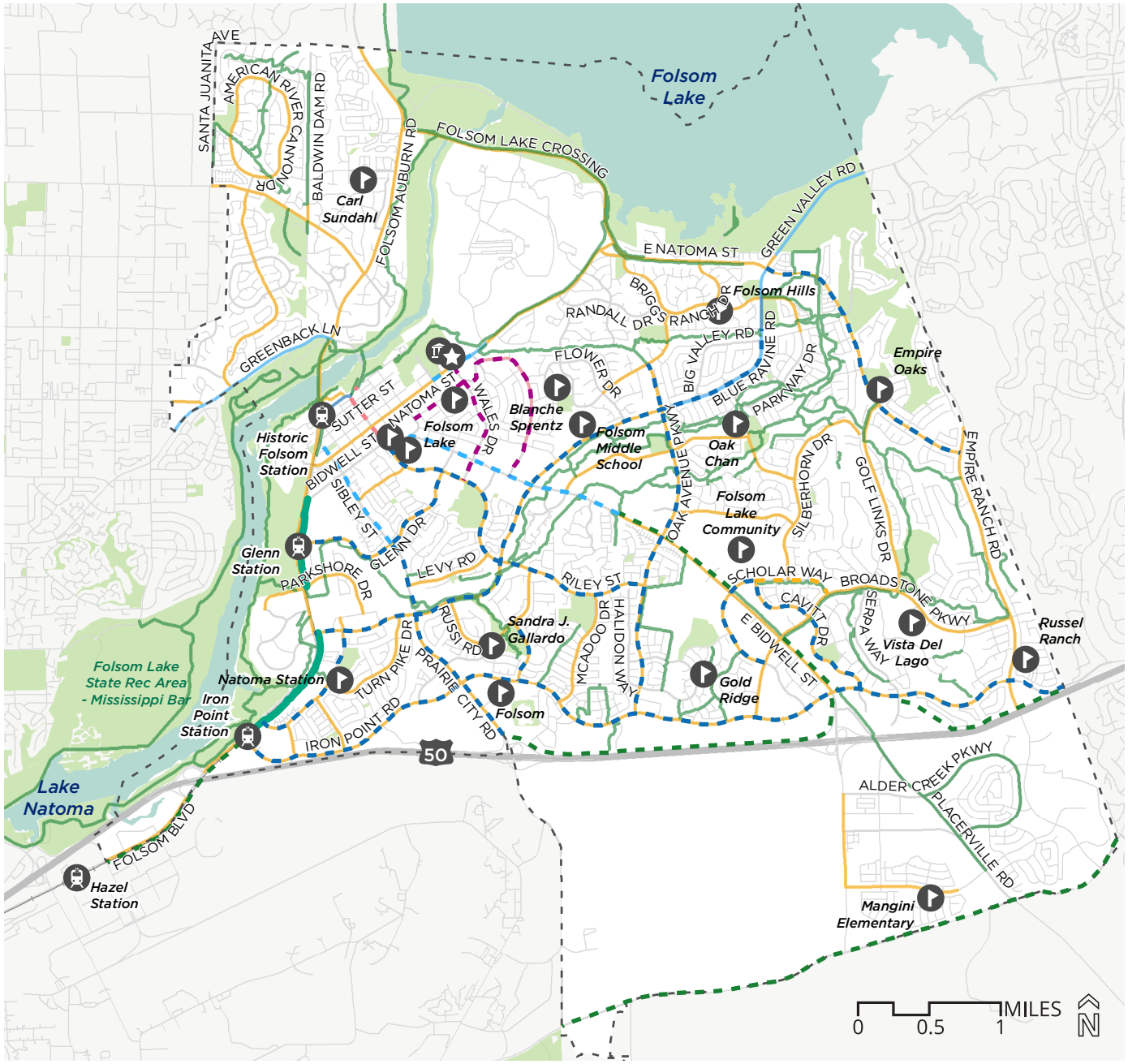


Figure 14 *Medium Priority Bikeways*

Medium Priority Bikeways

FOLSOM ATP

Proposed Bikeways

- Class I Shared Use Path
- Class IIIB Bicycle Boulevard
- Class IV Separated Bikeway
- Widen Existing Path

Existing Bikeways

- Class I Shared Use Path
- Class II Bicycle Lane
- Class IIB Buffered Bicycle Lane
- Class III Bicycle Route
- Class IV Separated Bikeway

Destinations + Boundaries

- City Hall
- Community Center
- School
- Light Rail Station
- City Boundary
- Park

Data provided by the City of Folsom, SACOG

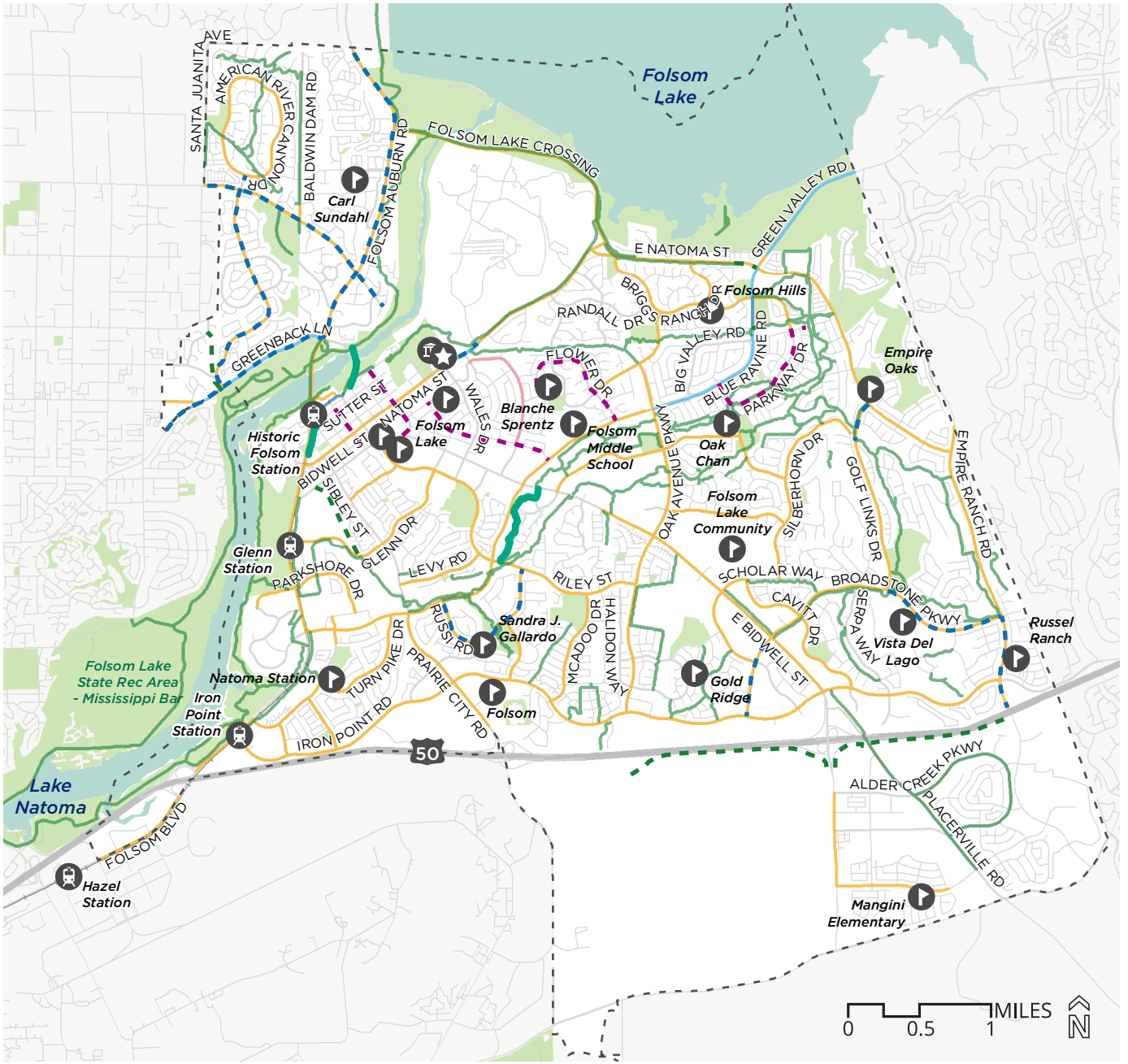


Figure 15 *Low Priority Bikeways*

Low Priority Bikeways

FOLSOM ATP

Proposed Bikeways

- Class I Shared Use Path
- Class II Bicycle Lane
- Class IIB Buffered Bicycle Lane
- Class III Bicycle Route
- Class IIIB Bicycle Boulevard
- Class IV Separated Bikeway
- Widen Existing Path

Existing Bikeways

- Class I Shared Use Path
- Class II Bicycle Lane
- Class IIB Buffered Bicycle Lane
- Class III Bicycle Route
- Class IV Separated Bikeway

Destinations + Boundaries

- City Hall
- Community Center
- School
- Light Rail Station
- City Boundary
- Park

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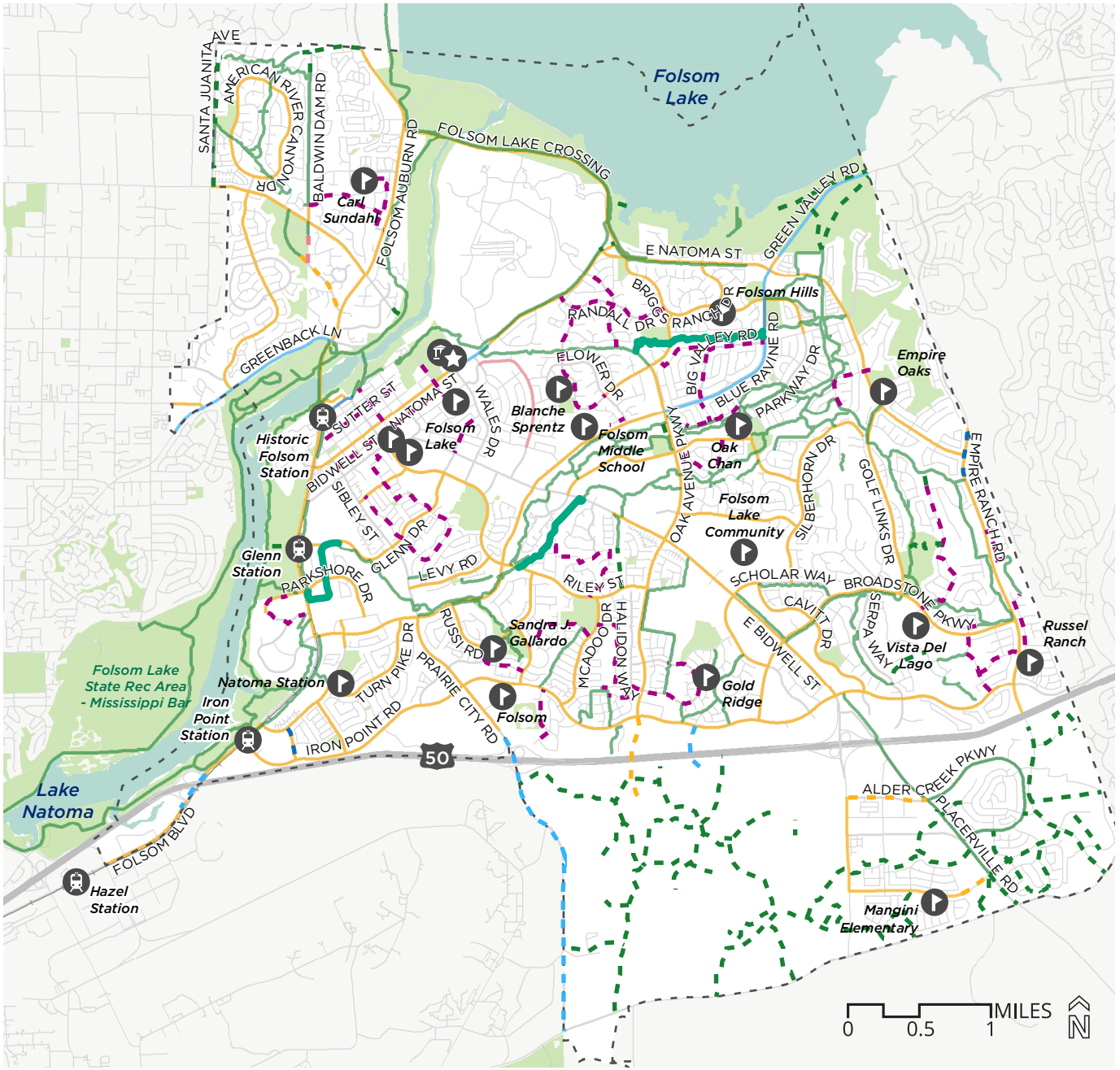


Table 10 *Priority Bikeways Projects*

Location	Start	End	Proposed Bikeway	Length (Miles)	Priority Category	Planning Level Cost Estimate
Folsom Placerville Rail Trail	Willow Creek Trail	Iron Point Rd	Class I Shared-Use Path	0.97	High	$1,891,950
New Path (Parallel to Hwy 50)	Serpa Ct	City Boundary	Class I Shared-Use Path	1.26	High	$2,470,750
New Path (Parallel to Hwy 50)	Prairie City Rd	Iron Point Rd / E Bidwell St	Class I Shared-Use Path	2.54	High	$4,971,445
Folsom Blvd	Aerojet Rd (City Boundary)	Iron Point Rd	Class I Shared-Use Path	1.41	High	$2,747,750
Glenn Dr	Folsom Blvd	Riley St	Class IV Separated Bikeway	1.40	High	$2,879,830
Riley St	Persifer St	Oak Avenue Pkwy	Class IV Separated Bikeway	2.50	High	$5,153,710
Prairie City Rd/Sibley St	Hwy 50	Glenn Dr	Class IV Separated Bikeway	1.58	High	$3,262,955
Grover Rd	Russi Rd	Iron Point Rd	Class IV Separated Bikeway	0.46	High	$943,585
Natoma Station Dr	Folsom Blvd	Blue Ravine Rd	Class IV Separated Bikeway	0.99	High	$2,037,210
Iron Point Rd	Folsom Blvd	City Boundary	Class IV Separated Bikeway	6.25	High	$12,861,795
Blue Ravine Rd / Green Valley Rd	Folsom Blvd	Arrowsmith Dr	Class IV Separated Bikeway	4.13	High	$8,514,755
Oak Avenue Pkwy	Iron Point Rd	Willow Creek Dr	Class IV Separated Bikeway	2.52	High	$5,183,305
E Bidwell St	Riley St	Frazer Ct (Path)	Class IIB Buffered Bicycle Lane	1.72	High	$272,351
Clarksville Rd	E Bidwell St	Broadstone Pkwy	Class IV Separated Bikeway	0.64	High	$1,309,225
Scholar Way / Cavitt Dr	E Bidwell St	Iron Point Rd	Class IV Separated Bikeway	1.44	High	$2,955,135
E Natoma St	Blue Ravine Rd	Empire Ranch Rd	Class IV Separated Bikeway	2.03	High	$4,180,140
Wales Dr	Riley St	Natoma St	Class IIIB Bicycle Boulevard	0.89	High	$258,760
Dean Way / Montrose Dr	Coloma St	E Bidwell St	Class IIIB Bicycle Boulevard	1.76	High	$511,970
Riley St	Persifer St	Scott St	Class III Bicycle Route	0.40	High	$21,345

Table 10 *Priority Bikeway Projects, continued*

Location	Start	End	Proposed Bikeway	Length (Miles)	Priority Category	Planning Level Cost Estimate
SIbley St	Glenn Dr	Figueroa St	Class IIB Buffered Bicycle Lane	0.86	High	$137,005
White Rock Rd	Prairie City Rd	City Boundary (eastern)	Class I Shared-Use Path	4.18	High	$8,167,785
Natoma St	Stafford St	Fargo Way	Class IIB Buffered Bicycle Lane	0.35	High	$54,730
Folsom Rail Trail	Iron Point Station	Blue Ravine Rd	Shared-Use Path Enhancement	0.86	High	$316,295
Folsom Rail Trail	Parkshore Dr	Glenn Dr	Shared-Use Path Enhancement	0.32	High	$117,395
Folsom Rail Trail	Glenn Dr	Bidwell St	Shared-Use Path Enhancement	0.29	High	$108,185
Scholar Way	Cavitt Dr	Broadstone Pkwy	Class IIB Buffered Bicycle Lane	0.54	High	$85,535
New Path	Greenback Ln	Placer Mine Rd	Class I Shared-Use Path	0.42	Medium	$830,060
New Path	Jedediah Smith Memorial Trail	Greenback Ln	Class I Shared-Use Path	0.08	Medium	$150,980
E Natoma St	Existing E Natoma Path	Blue Ravine Rd	Class I Shared-Use Path	0.16	Medium	$322,260
New Path - Econome Family Park	Blue Ravine Rd	Oak Pkwy Trail	Class I Shared-Use Path	0.08	Medium	$157,665
New Path	Bidwell St	Glenn Dr	Class I Shared-Use Path	0.57	Medium	$1,116,460
Greenback Ln	City Boundary	Folsom Blvd	Class IV Separated Bikeway	1.30	Medium	$2,669,490
Folsom-Auburn Rd	Folsom Blvd	City Boundary	Class IV Separated Bikeway	2.22	Medium	$4,562,390
Oak Ave	Santa Juanita Ave	Lew Howard Park Path	Class IV Separated Bikeway	1.57	Medium	$3,222,770

Table 10 *Priority Bikeway Projects, continued*

Location	Start	End	Proposed Bikeway	Length (Miles)	Priority Category	Planning Level Cost Estimate
American River Canyon Dr	Greenback Ln	American River Canyon Dr (north of Oak Ave)	Class IV Separated Bikeway	1.71	Medium	$3,518,315
Russi Rd	Blue Ravine Rd	Riley St	Class IV Separated Bikeway	1.08	Medium	$2,217,140
Broadstone Pkwy	Iron Point Rd	E Bidwell St	Class IV Separated Bikeway	0.59	Medium	$1,213,010
Broadstone Pkwy	Golf Links Dr	Empire Ranch Rd	Class IV Separated Bikeway	0.91	Medium	$1,881,875
Empire Ranch Rd	Hwy 50	Broadstone Pkwy	Class IV Separated Bikeway	0.65	Medium	$1,336,925
Golf Links Dr	Path (just south of Silberhorn Dr)	<Null>	Class IV Separated Bikeway	0.28	Medium	$581,665
Natoma St /E Natoma St	Wales Dr	Prison Rd	Class IV Separated Bikeway	0.22	Medium	$450,185
Coloma St	Leidesdorff St	E Bidwell St	Class IIIB Bicycle Boulevard	0.57	Medium	$164,700
Wool St	Leidesdorff St	Bidwell St	Class IIIB Bicycle Boulevard	0.42	Medium	$121,485
Flower Dr / Briarcliff Dr	Frankwood Dr	Blue Ravine Rd	Class IIIB Bicycle Boulevard	1.08	Medium	$312,345
School St	Dean Way	Blue Ravine Rd	Class IIIB Bicycle Boulevard	0.98	Medium	$285,735
Parkway Dr / Morganite Ct	Blue Ravine Rd	Souza Way	Class IIIB Bicycle Boulevard	1.02	Medium	$296,900
New Folsom Area Plan Path - Parellel to Hwy 50	New Folsom Area Plan Path	New Roadway	Class I Shared-Use Path	2.90	Medium	$5,663,890
Folsom Rail Trail	Mormon St	Reading St	Shared-Use Path Enhancement	0.20	Medium	$74,920
Historic Powerhouse Canal Trail	Scott St	American River Bike Trail	Shared-Use Path Enhancement	0.28	Medium	$103,605
Humbug Creek Trail	Riley St	E Bidwell St	Shared-Use Path Enhancement	0.68	Medium	$251,875
Santa Juanita Ave	Oak Avenue Pkwy	Canyon Falls Dr	Class I Shared-Use Path	0.15	Low	$283,320

Table 10 *Priority Bikeway Projects, continued*

Location	Start	End	Proposed Bikeway	Length (Miles)	Priority Category	Planning Level Cost Estimate
Santa Juanita Ave	Davis Park	Alabaster Point Way	Class I Shared-Use Path	0.49	Low	$950,790
New Path	Temperence River Ct / Baldwin Dam Rd	Folsom-Auburn Rd	Class I Shared-Use Path	0.57	Low	$1,122,530
New Path	Folsom Lake Crossing	Folsom Lake Path	Class I Shared-Use Path	0.12	Low	$235,940
New Path	Folsom Lake Path	City Boundary	Class I Shared-Use Path	0.73	Low	$1,420,865
New Path	Humbug Willow Creek Trail	City Boundary	Class I Shared-Use Path	0.61	Low	$1,197,440
New Path	Humbug Willow Creek Trail	Folsom Lake Path (Proposed)	Class I Shared-Use Path	0.40	Low	$774,340
E Natoma St	Johnny Cash Trail	E Natoma St / Folsom Lake Crossing	Class I Shared-Use Path	0.12	Low	$230,730
New Path	Willow Creek Trail	Riley St	Class I Shared-Use Path	0.28	Low	$555,980
New Path	Serpa Way	Caversham Way	Class I Shared-Use Path	0.35	Low	$683,515
Ingersoll Way	Natoma Station Dr	Iron Point Rd	Class IV Separated Bikeway	0.23	Low	$473,455
Empire Ranch Rd	Empire Ranch Trail	City Boundary	Class IV Separated Bikeway	0.35	Low	$723,845
Oak Ave	Lew Howard Park	Folsom-Auburn Rd	Class II Bicycle Lane	0.49	Low	$362,205
Baldwin Dam Rd	Oak Ave	Baldwin Dam Rd Path	Class III Bicycle Route	0.20	Low	$10,665
Valley Pines Dr	Baldwin Dam Rd	Berry Creek Dr	Class IIIB Bicycle Boulevard	0.56	Low	$163,805

Table 10 *Priority Bikeway Projects, continued*

Location	Start	End	Proposed Bikeway	Length (Miles)	Priority Category	Planning Level Cost Estimate
Berry Creek Dr / Fithian Way / Van Winkle Ct	Folsom-Auburn Rd	Inwood Rd	Class IIIB Bicycle Boulevard	0.54	Low	$157,535
Figueroa St	Folsom Parkway Rail Trail	Coloma St	Class IIIB Bicycle Boulevard	0.60	Low	$174,865
Stafford St	Johnny Cash Trail	Dean Way	Class IIIB Bicycle Boulevard	0.35	Low	$100,205
Scott St	Johnny Cash Trail	Persifer St	Class IIIB Bicycle Boulevard	0.35	Low	$101,515
Diggins / Oxburough / Vierra / Cobble Ridge Dr	Lembi Dr	Bidwell St	Class IIIB Bicycle Boulevard	1.78	Low	$517,985
Persifer St	Sibley St	Stafford St	Class IIIB Bicycle Boulevard	0.88	Low	$256,625
Randall Dr	E Natoma St	Briggs Ranch Dr	Class IIIB Bicycle Boulevard	0.80	Low	$233,625
Hancock Dr	E Natoma St	Oak Pkwy Trail	Class IIIB Bicycle Boulevard	0.62	Low	$179,820
Willow Creek Dr	Randall Dr	Flower Dr	Class IIIB Bicycle Boulevard	0.98	Low	$283,570
Stanton Ct	Folsom Middle School	Flower Dr	Class IIIB Bicycle Boulevard	0.11	Low	$32,020
Hildebrand Cir	Empire Ranch Rd	Path	Class IIIB Bicycle Boulevard	0.30	Low	$88,225
Acorn Ridge Ct / Porter Ct	Path	Owl Meadow St	Class IIIB Bicycle Boulevard	0.44	Low	$127,780
Carpenter Hill Rd	Path	Iron Point Rd	Class IIIB Bicycle Boulevard	0.59	Low	$169,895
Blough Way	Halidon Way	Walden Dr	Class IIIB Bicycle Boulevard	0.12	Low	$33,995
Halidon Way / Densmore Way	Path	Knopfler Cir	Class IIIB Bicycle Boulevard	1.10	Low	$318,655
Marsh Hawk Dr	McAdoo Dr	Path	Class IIIB Bicycle Boulevard	0.65	Low	$188,515
Barnhill Dr / Blossom Rock Ln	Path	Iron Point Rd	Class IIIB Bicycle Boulevard	0.46	Low	$133,325
Carter St	Grover Rd	McAdoo Dr	Class IIIB Bicycle Boulevard	0.53	Low	$153,205
Stewart St	Russi Rd	Grover Rd	Class IIIB Bicycle Boulevard	0.38	Low	$111,045
Parkshore Dr / Woodmere Rd	Willow Creek Trail	Jedediah Smith Memorial Trail	Class IIIB Bicycle Boulevard	0.53	Low	$154,150

Table 10 *Priority Bikeway Projects, continued*

Location	Start	End	Proposed Bikeway	Length (Miles)	Priority Category	Planning Level Cost Estimate
Glenn Dr	E Bidwell St	Wales Dr	Class IIIB Bicycle Boulevard	0.33	Low	$95,025
Placerville Rd	Mangini Pkwy	White Rock Rd	Class I Shared-Use Path	0.29	Low	$556,895
Empire Ranch Rd	New Path (south of Hwy 50)	White Rock Rd	Class I Shared-Use Path	1.26	Low	$2,460,550
New Folsom Area Plan Path	Grand Prairie Rd	New Road	Class I Shared-Use Path	0.09	Low	$3,050,180
Mangini Pkwy	Placerville Rd	Rock Springs Ranch Dr	Class I Shared-Use Path	0.59	Low	$175,085
Rock Springs Ranch Dr	Mangini Pkwy	Gold Rush Dr	Class I Shared-Use Path	0.32	Low	$1,154,390
Sycamore Creek Way	Grand Prairie Rd	White Rock Rd	Class I Shared-Use Path	0.52	Low	$633,835
Sycamore Creek Way	Sycamore Creek Way	Rock Springs Ranch Dr	Class I Shared-Use Path	0.14	Low	$1,015,065
New Folsom Area Plan Path	Sycamore Creek Way	White Rock Dr	Class I Shared-Use Path	0.04	Low	$264,045
New Folsom Area Plan Path	Concelly Cir	White Rock Dr	Class I Shared-Use Path	0.16	Low	$85,815
New Folsom Area Plan Path	Conelly Cir	Placerville Rd	Class I Shared-Use Path	0.22	Low	$312,875
New Folsom Area Plan Path	New Roadway	New Roadway	Class I Shared-Use Path	0.32	Low	$430,525
New Folsom Area Plan Path	New Roadway	New Roadway	Class I Shared-Use Path	0.49	Low	$633,900
Mangini Pkwy	Exising Class II (1000ft west of Placerville Rd)	Placerville Rd	Class II Bicycle Lane	0.24	Low	$964,510
Alder Creek Pkwy	E Bidwell St	Placerville Rd	Class II Bicycle Lane	0.56	Low	$412,140
Empire Ranch Connector	Empire Ranch Trail	Sundahl Dr	Class I Shared-Use Path	0.09	Low	$178,095
Russell Dr / Sundahl Dr	Broadstone Pkwy	Path	Class IIIB Bicycle Boulevard	1.08	Low	$312,985

Table 10 *Priority Bikeway Projects, continued*

Location	Start	End	Proposed Bikeway	Length (Miles)	Priority Category	Planning Level Cost Estimate
New Path - Nisenan Community Park	Empire Ranch Trail	Sundahl Dr	Class I Shared-Use Path	0.31	Low	$607,345
Humbug Creek Trail Connector	Charlemont Pl	Humbug Willow Creek Trail	Class I Shared-Use Path	0.08	Low	$162,190
Aldworth Way / Chadwick Way	Humbug Willow Creek Trail	N Lexington Dr	Class IIIB Bicycle Boulevard	0.22	Low	$63,675
Ainsworth Way / Keller Cir / Bloomfield Way	N Lexington Dr	Humbug Willow Creek Trail	Class IIIB Bicycle Boulevard	0.28	Low	$81,995
Harvest Loop / Bowen Dr	Humbug Willow Creek Trail	Hazel McFarland Park	Class IIIB Bicycle Boulevard	0.50	Low	$146,210
Big Valley Rd	Blue Ravine Rd	Bittercreek Dr	Class IIIB Bicycle Boulevard	0.36	Low	$104,175
Bittercreek Dr / Big Valley Rd	Willow Creek Dr	Blue Ravine Rd	Class IIIB Bicycle Boulevard	0.81	Low	$235,020
Elderberry Cir	Blue Ravine Rd	Humbug Creek Dr	Class IIIB Bicycle Boulevard	0.14	Low	$41,795
Humbug Creek Dr	Humbug Creek Ct	Parkway Dr	Class IIIB Bicycle Boulevard	0.42	Low	$121,865
Chaffin Ct - Brown Duvall Ln - Teceira Way	Humbug Willow Creek Trail	Riley St	Class IIIB Bicycle Boulevard	0.94	Low	$272,280
Glenn Station Connector Path	American River Trail	Folsom Blvd	Class I Shared-Use Path	0.23	Low	$443,710
Prairie City Rd	Hwy 50 Off Ramp	White Rock Rd	Class IIB Buffered Bicycle Lane	2.16	Low	$342,555
Oak Avenue Pkwy	Iron Point Rd	New Development	Class II Bicycle Lane	0.63	Low	$463,870
Rowberry Dr	Iron Point Rd	New Development	Class IIB Buffered Bicycle Lane	0.37	Low	$107,960
Wildland Way	Placerville Rd	Amber Grove Ct	Class I Shared-Use Path	0.17	Low	$336,470

Table 10 *Priority Bikeway Projects, continued*

Location	Start	End	Proposed Bikeway	Length (Miles)	Priority Category	Planning Level Cost Estimate
New Folsom Area Plan Path	Placerville Rd (north)	Placerville Rd (south)	Class I Shared-Use Path	0.78	Low	$1,517,760
New Folsom Area Plan Path	New Folsom Area Plan Path	New Folsom Area Plan Path	Class I Shared-Use Path	1.14	Low	$2,222,435
New Folsom Area Plan Path	New Folsom Area Plan Path	New Folsom Area Plan Path	Class I Shared-Use Path	0.41	Low	$792,460
New Folsom Area Plan Path	New Folsom Area Plan Path	White Rock Rd	Class I Shared-Use Path	1.19	Low	$2,333,560
New Folsom Area Plan Path	Sparrow Dr	Hummingbird Cir	Class I Shared-Use Path	0.22	Low	$430,505
New Folsom Area Plan Path	White Rock Rd	New Folsom Area Plan Path	Class I Shared-Use Path	0.48	Low	$937,665
New Folsom Area Plan Path	New Folsom Area Plan Path	White Rock Rd	Class I Shared-Use Path	0.82	Low	$1,604,705
New Folsom Area Plan Path	New Folsom Area Plan Path	New Folsom Area Plan Path	Class I Shared-Use Path	1.42	Low	$2,765,745
New Folsom Area Plan Path	New Folsom Area Plan Path	New Folsom Area Plan Path	Class I Shared-Use Path	0.11	Low	$208,770
New Folsom Area Plan Path	New Folsom Area Plan Path	New Folsom Area Plan Path	Class I Shared-Use Path	0.52	Low	$1,015,335
New Folsom Area Plan Path	New Folsom Area Plan Path	New Folsom Area Plan Path	Class I Shared-Use Path	0.76	Low	$1,481,120
New Folsom Area Plan Path	New Folsom Area Plan Path	New Folsom Area Plan Path	Class I Shared-Use Path	1.21	Low	$2,362,025
New Folsom Area Plan Path	New Folsom Area Plan Path	New Folsom Area Plan Path	Class I Shared-Use Path	0.65	Low	$1,262,360
New Folsom Area Plan Path	New Folsom Area Plan Path	New Folsom Area Plan Path	Class I Shared-Use Path	0.40	Low	$784,465

Table 10 *Priority Bikeway Projects, continued*

Location	Start	End	Proposed Bikeway	Length (Miles)	Priority Category	Planning Level Cost Estimate
New Folsom Area Plan Path	Prairie City Rd	New Folsom Area Plan Path	Class I Shared-Use Path	0.92	Low	$1,797,155
New Folsom Area Plan Path	New Folsom Area Plan Path	New Folsom Area Plan Path	Class I Shared-Use Path	0.67	Low	$1,317,550
New Folsom Area Plan Path	New Folsom Area Plan Path	White Rock Rd	Class I Shared-Use Path	1.09	Low	$2,128,090
New Folsom Area Plan Path	Prairie City Rd	New Folsom Area Plan Path	Class I Shared-Use Path	0.44	Low	$864,665
New Folsom Area Plan Path	New Folsom Area Plan Path	New Folsom Area Plan Path	Class I Shared-Use Path	0.18	Low	$342,870
New Folsom Area Plan Path	New Folsom Area Plan Path	New Folsom Area Plan Path	Class I Shared-Use Path	0.58	Low	$1,131,190
Folsom Blvd	South of Hwy 50	North of Hwy 50	Class IIB Buffered Bicycle Lane	0.29	Low	$46,475
Oak Ave	Santa Juanita Ave	Lew Howard Park Trail	Class I Shared-Use Path	0.09	Low	$167,420
Owl Meadow Rd	Carpenter Hill Rd	Porter Rd	Class IIIB Bicycle Boulevard	0.37	Low	$108,230
Oak Parkway Trail	Willow Creek Dr	Blue Ravine Rd	Shared-Use Path Enhancement	0.72	Low	$265,340
Willow Creek Trail	Riley St	E Bidwell St	Shared-Use Path Enhancement	0.72	Low	$266,105
Willow Creek Trail	Parkshore Dr	Near Glenn Dr	Shared-Use Path Enhancement	0.66	Low	$244,195
Oak Parkway Trail	Oak Parkway Trail	Willow Creek Dr	Shared-Use Path Enhancement	0.36	Low	$131,755
Oak Ave Pkwy (west)	Path south of Blue Ravine Rd	Cummings Family Park	Class I Shared-Use Path	0.11	Low	$218,665

Figure 16 *High Priority Sidewalks*

Hight Priority Walking Network Improvements

FOLSOM ATP

Pedestrian Improvements

- Fill in Sidewalk Gaps (Both Sides)
- Fill in Sidewalk Gaps (One-side)

Proposed Shared use paths

- Class I Shared Use Path

Existing Bikeways

- Class I Paved Shared Use Path

Destinations + Boundaries

- City Hall
- Community Center
- School
- Light Rail Station
- City Boundary
- Park

Data provided by the City of Folsom, SACOG

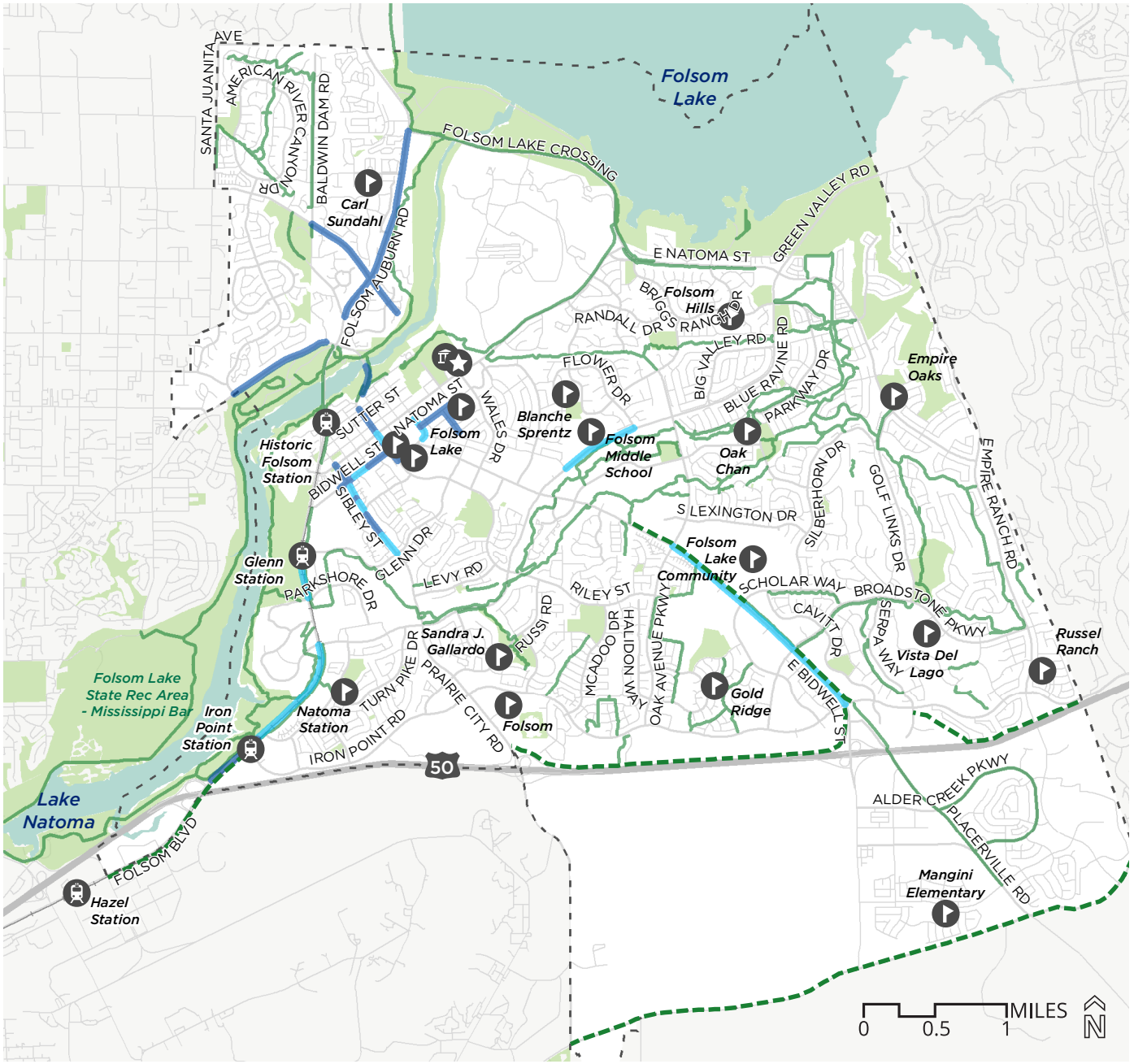


Figure 17 *Medium Priority Sidewalks*

Medium Priority Walking Network Improvements

FOLSOM ATP

Pedestrian Improvements

- Fill in Sidewalk Gaps (Both Sides)
- Fill in Sidewalk Gaps (One-side)

Proposed Shared use paths

- Class I Shared Use Path

Existing Bikeways

- Class I Paved Shared Use Path

Destinations + Boundaries

- City Hall
- Community Center
- School
- Light Rail Station
- City Boundary
- Park

Data provided by the City of Folsom, SACOG

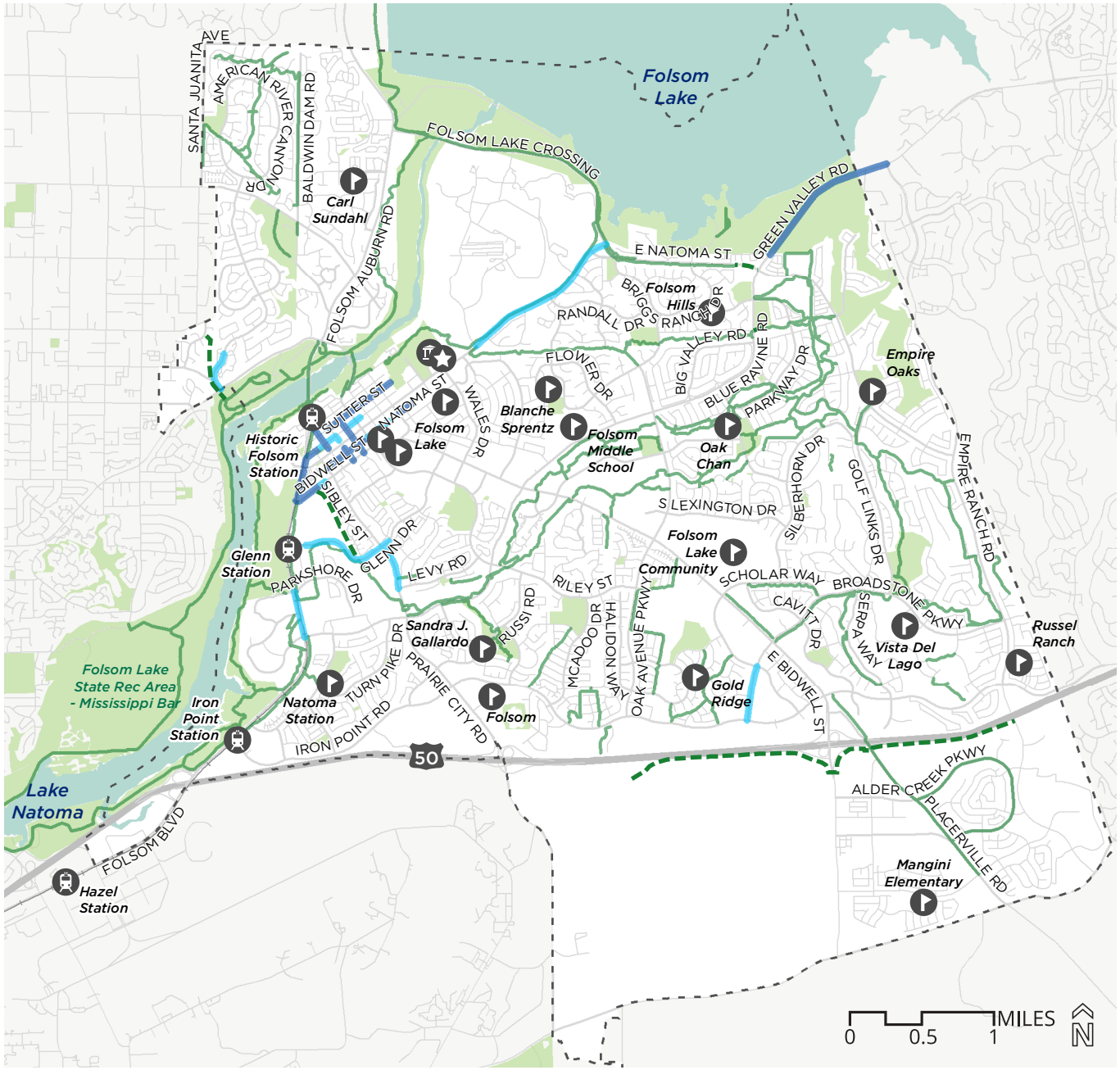


Figure 18 *Low Priority Sidewalks*

Low Priority Walking Network Improvements

FOLSOM ATP

Pedestrian Improvements

- Fill in Sidewalk Gaps (Both Sides)
- Fill in Sidewalk Gaps (One-side)

Proposed Shared use paths

- Class I Shared Use Path

Existing Bikeways

- Class I Paved Shared Use Path

Destinations + Boundaries

- City Hall
- Community Center
- School
- Light Rail Station
- City Boundary
- Park

Data provided by the City of Folsom, SACOG

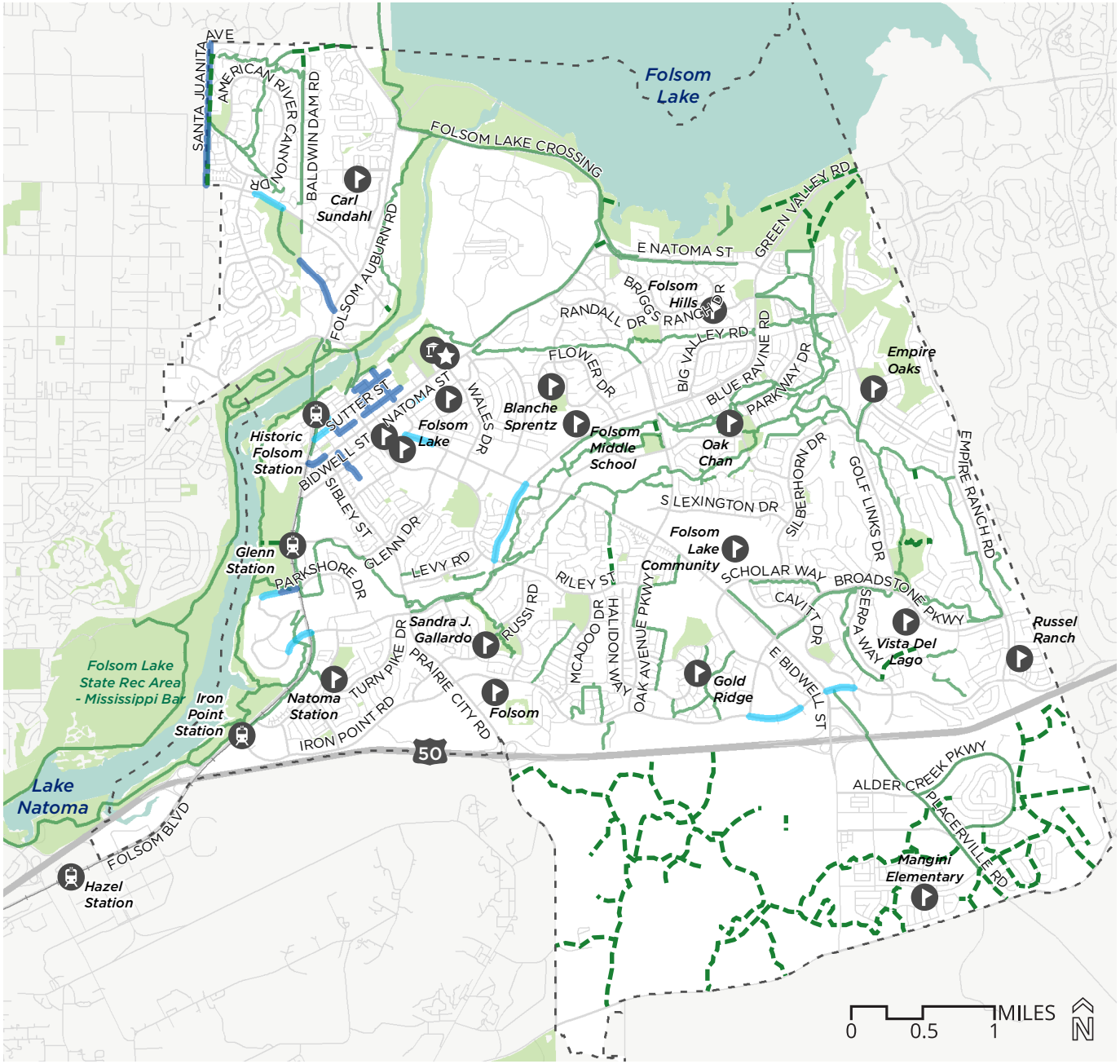


Table 11 *Priority Pedestrian Network Projects*

Project Name	Side of Street	Length (Miles)	Priority Category	Planning Level Cost Estimate	
				Sidewalk (6 ft)	Sidewalk (10 ft)
Greenback Ln from Historic Truss Bridge to Scott St	Both	0.19	High	$286,615	$348,030
Greenback Ln from American River Canyon Dr to Folsom-Auburn Rd	Both	0.72	High	$1,068,570	$1,297,545
Riley St from Sutter St to E Bidwell St	Both	0.44	High	$646,235	$784,715
Riley St from Natoma St to Persifer St	One	0.07	High	$51,160	$62,125
Folsom Blvd from West of Iron Point Station to Blue Ravine Rd	One	0.82	High	$604,300	$733,795
Folsom Blvd from Highway 50 to West of Iron Point Station	Both	0.42	High	$620,450	$753,405
Folsom Blvd from Parkshore Dr to Glenn Dr	One	0.33	High	$245,135	$297,665
Blue Ravine Rd from School St to Flower Dr	One	0.54	High	$401,015	$486,945
Bidwell St from Orange Grove Way to Kelly Way	Both	0.13	High	$187,585	$227,780
Bidwell St from Kelly Way to Decatur St	One	0.12	High	$85,720	$104,090
Bidwell St fom Decatur St to West of Riley St	Both	0.15	High	$222,985	$270,765
E Bidwell St from Oak Ave Pkwy to Iron Point Rd	One	1.60	High	$1,185,075	$1,439,020
Sibley St from Natoma St to North of Kelly Way	Both	0.18	High	$263,660	$320,160
Sibley St from North of Kelly Way to South of Martin Ct	One	0.09	High	$65,830	$79,935
Sibley St from South of Martin Ct to North of Holley Ct	Both	0.03	High	$47,815	$58,065
Sibley St from North of Holley Ct to Lembi Dr	One	0.06	High	$40,760	$49,495
Sibley St from South of Lembi Dr to Brilliance Pl	Both	0.17	High	$256,460	$311,415
Sibley St from Brilliance Pl to Glenn Dr	One	0.16	High	$117,850	$143,105
Coloma St from Persifer St to Duchow Way - E Bidwell St Alley	One	0.17	High	$124,050	$150,635
Oak Avenue Pkwy from Baldwin Dam Rd to Grant Ln	Both	0.85	High	$1,251,805	$1,520,045
Dean Way from Coloma St to Stafford St	Both	0.26	High	$390,630	$474,340
Folsom-Auburn Rd from Oak Ave to Folsom Lake Crossing	Both	1.36	High	2014545	$2,446,235
School St from Dean Way to Market St	Both	0.19	High	274325	$333,110

Table 11 *Priority Pedestrian Network Projects, continued*

Project Name	Side of Street	Length (Miles)	Priority Category	Planning Level Cost Estimate	
				Sidewalk (6 ft)	Sidewalk (10 ft)
E Natoma St from Prison Rd to Folsom Lake Crossing	One	1.16	Medium	$860,295	$1,044,645
Folsom Blvd from Blue Ravine Rd to Parkshore Dr	One	0.32	Medium	$238,110	$289,130
Green Valley Rd from Cummings Way to Sophia Pkwy	Both	1.06	Medium	$1,561,140	$1,895,670
Glenn Dr from 330’ east of Coolidge Dr to 950’ west of Sibley St	One	0.67	Medium	$496,570	$602,975
Bidwell St from Folsom Blvd to West of Orange Grove Way	Both	0.22	Medium	$320,585	$389,280
Bidwell St from West of Orange Grove Way to Orange Grove Way	One	0.03	Medium	$21,610	$26,240
Broadstone Pkwy from Iron Point Rd to Clarksville Rd	One	0.38	Medium	$283,500	$344,250
Leidesdorff St from Folsom Blvd to Gold Lake Dr	Both	0.20	Medium	$291,505	$353,970
Oakdale St from Bidwell St to South of Natoma St	Both	0.20	Medium	$301,900	$366,590
Oakdale St/Mormon St from Natoma St to Sibley St	Both	0.13	Medium	$193,130	$234,520
Mormon St from Sibley St to West of Reading St	Both	0.06	Medium	$82,815	$100,565
Mormon St from West of Reading St to Decatur St	One	0.12	Medium	$89,250	$108,375
Mormon St from East of Wool St to East of Riley St	One	0.09	Medium	$65,295	$79,290
Figueroa St from Decatur St to the East End	Both	0.52	Medium	$775,540	$941,730
Wool St from Figueroa St to Bidwell St	Both	0.28	Medium	$409,230	$496,925
Decatur St from Mormon St to Mormon Street Natoma St Alley	One	0.03	Medium	$24,875	$30,205
Decatur St from Natoma Street Persifer St Alley to Bidwell St	Both	0.10	Medium	$153,900	$186,875
Reading St from North End to Mormon Street Natoma St Alley	Both	0.17	Medium	$253,605	$307,950
Persifer St from Sibley St to Riley St	Both	0.35	Medium	$524,080	$636,385
Persifer St from Riley St to Bridge St	One	0.18	Medium	$130,385	$158,325
Persifer St from Coloma St to 300' East of Rumsey Way	Both	0.10	Medium	$152,610	$185,315
Sibley St from Glen Dr to Levy Rd	One	0.33	Medium	$242,830	$294,860
American River Canyon Rd from Greenback Ln to Morning Dove Ln	One	0.27	Medium	$202,625	$246,045

Table 11 *Priority Pedestrian Network Projects, continued*

Project Name	Side of Street	Length (Miles)	Priority Category	Planning Level Cost Estimate	
				Sidewalk (6 ft)	Sidewalk (10 ft)
Blue Ravine Rd from Riley St to E Bidwell St	One	0.58	Low	$429,210	$521,185
Iron Point Rd from Broadstone Pkwy to Palladio Pkwy	One	0.37	Low	$271,710	$320,160
Iron Point Rd from E Bidwell St to Cavitt Dr	One	0.19	Low	$142,800	$173,395
Canal St from Scott St to Bridge St	Both	0.26	Low	$379,890	$461,295
Sutter St from East of Scott St to West End	Both	0.23	Low	$333,245	$404,650
Mormon St from Decatur St to East of Wool St	Both	0.13	Low	$185,150	$224,825
Mormon St from East of Riley St to the East End	Both	0.31	Low	$461,305	$560,155
Figueroa St from West End to Decatur St	One	0.16	Low	$118,985	$144,480
Decatur St from Sutter St to Figueroa St	One	0.07	Low	$52,035	$63,185
Decatur St from Figueroa St to Mormon St	Both	0.07	Low	$102,475	$124,430
Reading St from Natoma Street Persifer St Alley to South End	Both	0.23	Low	$336,640	$408,775
Scott St from Peddlers Ln to Mormon St	Both	0.10	Low	$153,885	$186,860
Parkshore Dr from 1300' West of Folsom Blvd to ExtraSpaceStorage Entrance	One	0.14	Low	$101,670	$123,455
Parkshore Dr from ExtraSpaceStorage Entrance to Folsom Blvd	Both	0.10	Low	$154,935	$188,135
Coloma St from Leidessdorff St to Mormon Street Natoma St Alley	Both	0.24	Low	$358,190	$434,945
Persifer St from 300' East of Rumsey Way to Rumsey Way Stafford St Alley	One	0.07	Low	$49,940	$60,640
Santa Juanita Ave from Oak Avenue Pkwy to Northwest City Boundary	Both	1.00	Low	$1,477,050	$1,793,560
Oak Ave from Baldwin Dam Rd to Folsom Auburn Rd	Both	0.43	Low	$632,180	$767,645
Oak Avenue Pkwy from Katarina Ln to Lew Howard Park	One	0.22	Low	$159,360	$193,510
E Bidwell St from Coloma St to Market St	One	0.20	Low	$145,255	$176,380
Natoma St from Folsom Blvd to Sibley St	Both	0.13	Low	$194,215	$235,830
Blue Ravine Rd from Lake Forest Way to Folsom Blvd	One	0.21	Low	$158,270	$192,185

Figure 19 *High Priority Spot Improvements*

High Priority Spot Improvements

FOLSOM ATP

Spot Improvements

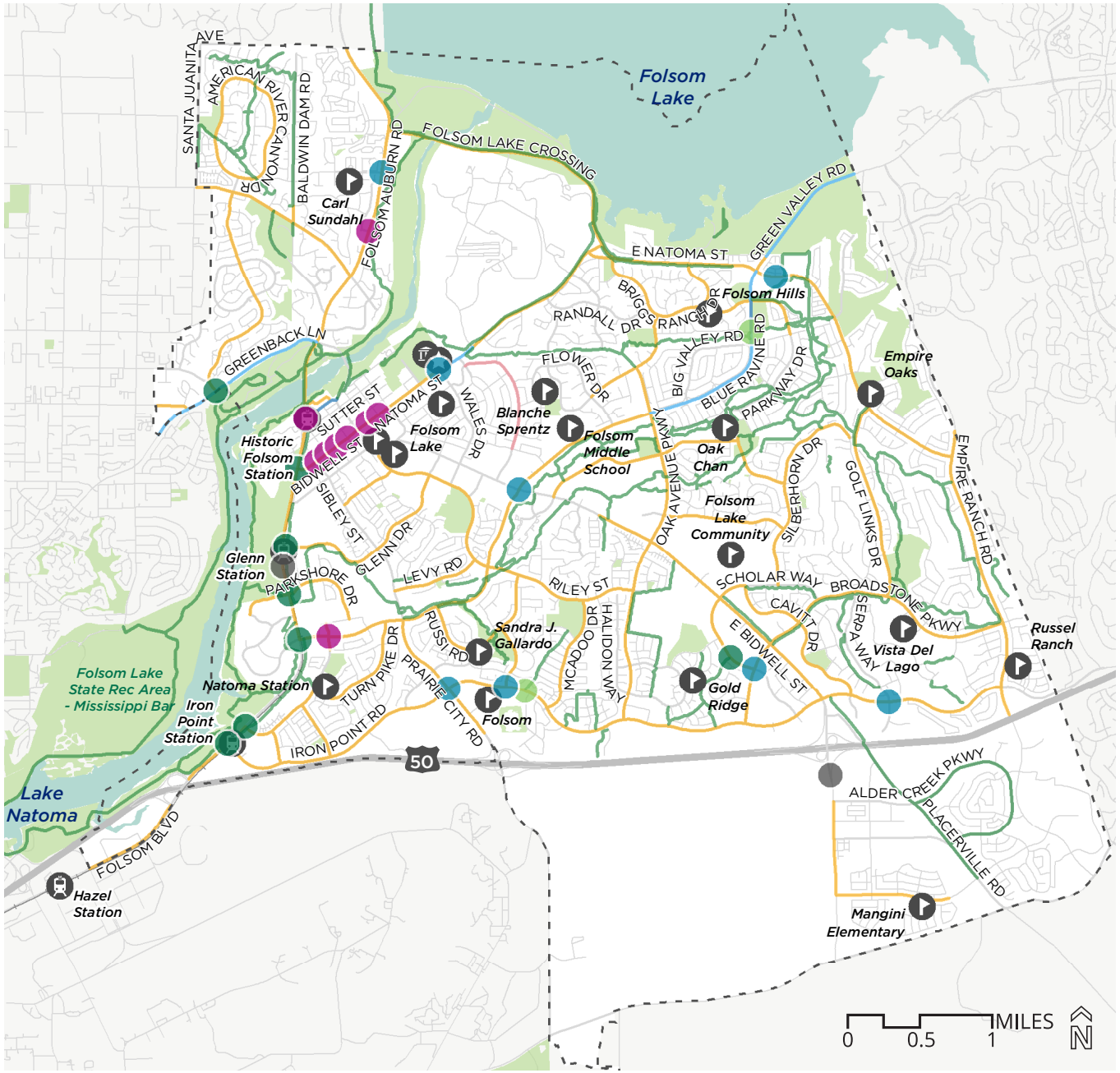
- Path / Major Road Signalized
- Path / Major Road Unsignalized
- Major Road Signalized
- Major Road Unsignalized
- Overcrossing / Undercrossing

Existing Bikeways

- Class I Shared Use Path
- Class II Bicycle Lane
- Class IIB Buffered Bicycle Lane
- Class III Bicycle Route
- Class IV Separated Bikeway

Destinations + Boundaries

- City Hall
- Community Center
- School
- Light Rail Station
- City Boundary
- Park



Data provided by the City of Folsom, SACOG

Figure 20 *Medium Priority Spot Improvements*

Medium Priority Spot Improvements

FOLSOM ATP

Spot Improvements

- Path / Major Road Signalized
- Path / Major Road Unsignalized
- Major Road Signalized
- Major Road Unsignalized
- Minor Road Unsignalized
- Overcrossing / Undercrossing

Existing Bikeways

- Class I Shared Use Path
- Class II Bicycle Lane
- Class IIB Buffered Bicycle Lane
- Class III Bicycle Route
- Class IV Separated Bikeway

Destinations + Boundaries

- City Hall
- Community Center
- School
- Light Rail Station
- City Boundary
- Park

Data provided by the City of Folsom, SACOG

Figure 21 *Low Priority Spot Improvements*

Low Priority Spot Improvements

FOLSOM ATP

Spot Improvements

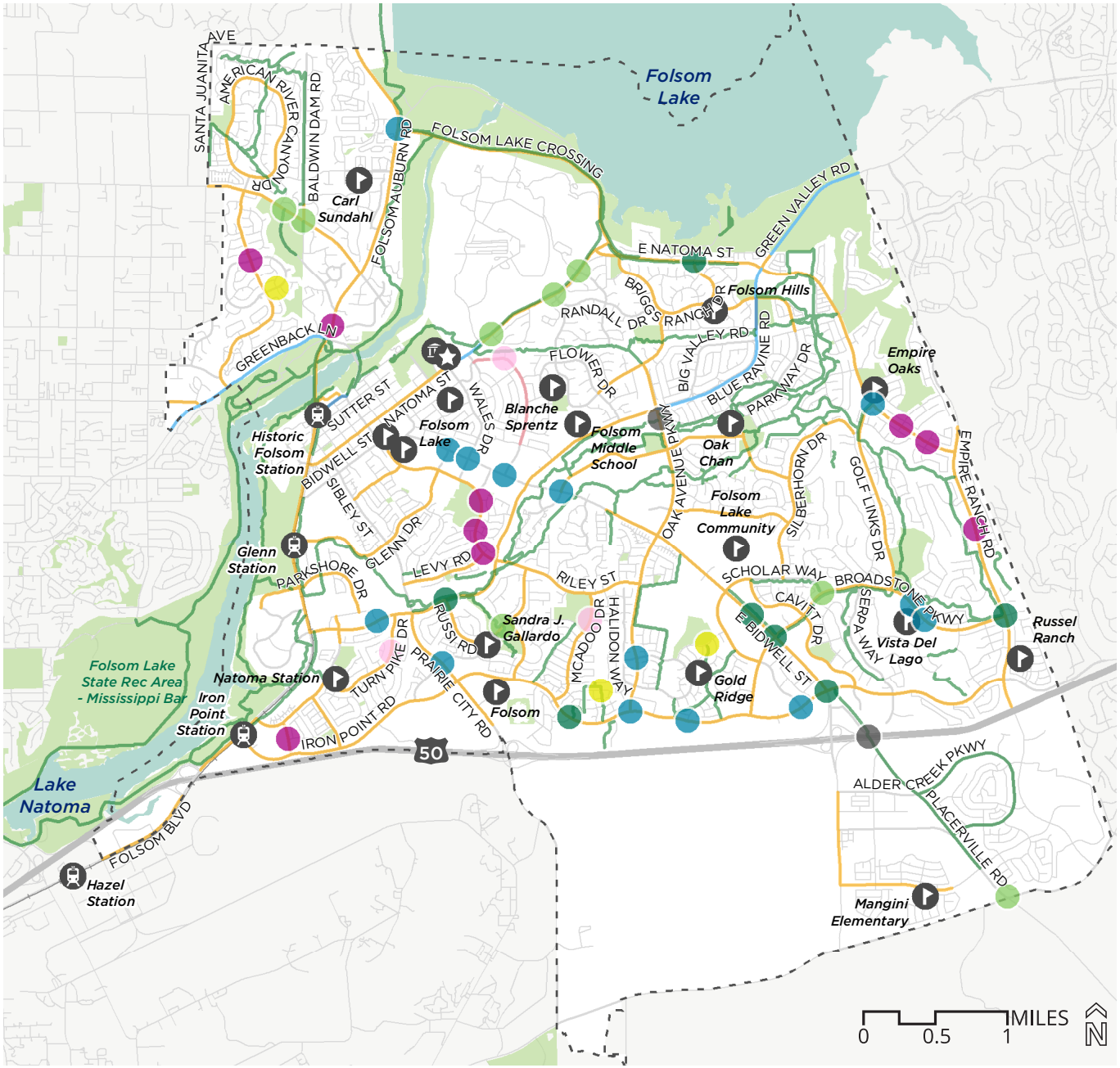
- Path / Major Road Signalized
- Path / Major Road Unsignalized
- Major Road Signalized
- Major Road Unsignalized
- Minor Road Unsignalized
- Overcrossing / Undercrossing

Existing Bikeways

- Class I Shared Use Path
- Class II Bicycle Lane
- Class IIB Buffered Bicycle Lane
- Class III Bicycle Route
- Class IV Separated Bikeway

Destinations + Boundaries

- City Hall
- Community Center
- School
- Light Rail Station
- City Boundary
- Park



Data provided by the City of Folsom, SACOG

Table 12 *Priority Spot Improvement Projects*

Cross Street A	Cross Street B	Improvement Type	Priority Category	Planning Level Cost Estimate
Iron Point Rd	Prairie City Rd	Major Road Signalized	High	$105,625
Folsom Blvd	Natoma Station Dr	Path / Major Road Signalized	High	$136,230
Folsom Blvd	Iron Point Rd	Path / Major Road Signalized	High	$136,230
Folsom Blvd	Glenn Dr	Overcrossing / Undercrossing	High	Further study required
Iron Point Rd	Serpa Way	Major Road Signalized	High	$105,625
Natoma St	Wales Dr	Major Road Signalized	High	$105,625
Folsom-Auburn Rd	Berry Creek Dr	Major Road Unsignalized	High	$442,370
Iron Point Rd	Grover Rd	Major Road Signalized	High	$105,625
Glenn Dr	Folsom Rail Trail	Path / Major Road Signalized	High	$413,850
Reading St	Leidesdorf St	Major Road Unsignalized	High	$442,370
Folsom Blvd	Natoma St	Path / Major Road Signalized	High	$136,230
E Bidwell St	South of Hwy 50	Overcrossing / Undercrossing	High	$3,500,000
Blue Ravine Rd	Arrowsmith Dr	Path / Major Road Unsignalized	High	$413,850
Blue Ravine Rd	E Bidwell St	Major Road Signalized	High	$105,625
Blue Ravine Rd	Natoma Station Dr	Major Road Unsignalized	High	$442,370
Clarksville Rd	Walden Dr	Path / Major Road Signalized	High	$136,230
Clarksville Rd	Broadstone Pkwy	Major Road Signalized	High	$105,625
E Natoma St	Ballou Cir	Major Road Signalized	High	$105,625
Folsom Blvd	Blue Ravine Rd	Path / Major Road Signalized	High	$136,230
Folsom Blvd	Parkshore Dr	Path / Major Road Signalized	High	$136,230
Folsom-Auburn Rd	Inwood Rd	Major Road Signalized	High	$105,625
Iron Point Rd	Natomas Ditch Patj	Path / Major Road Unsignalized	High	$413,850
Greenback Ln	American River Canyon Dr	Path / Major Road Signalized	High	$136,230
Natoma St	Sibley St	Major Road Signalized	High	$105,625
Natoma St	Reading St	Major Road Signalized	High	$105,625

Table 12 *Priority Spot Improvement Projects, continued*

Cross Street A	Cross Street B	Improvement Type	Priority Category	Planning Level Cost Estimate
Natoma St	Decatur St	Major Road Signalized	High	$105,625
Natoma St	Wool St	Major Road Signalized	High	$105,625
Natoma St	Scott St	Major Road Signalized	High	$105,625
Natoma St	Bridge St	Major Road Signalized	High	$105,625
Glenn Dr	Humbug Willow Creek Trail	Path / Major Road Unsignalized	Medium	$413,850
Hwy 50	Empire Ranch Rd (future)	Overcrossing / Undercrossing	Medium	Further study required
Iron Point Rd	Willard Dr	Major Road Signalized	Medium	$105,625
E Bidwell St	Coloma St	Major Road Signalized	Medium	$105,625
E Bidwell St	Mid-block	Major Road Unsignalized	Medium	$442,370
E Natoma St	Bowen Dr	Major Road Signalized	Medium	$105,625
Riley St	E Bidwell St	Major Road Unsignalized	Medium	$442,370
Broadstone Pkwy	Cavitt Dr	Path / Major Road Signalized	Medium	$136,230
E Bidwell St	Scholar Way	Path / Major Road Signalized	Medium	$136,230
Iron Point Rd	McAdoo Dr	Major Road Signalized	Medium	$105,625
Oak Ave Pkwy	Creekside Dr	Major Road Signalized	Medium	$105,625
Riley St	Lembi Dr	Major Road Unsignalized	Medium	$442,370
Broadstone Pkwy	Serpa Way	Path / Major Road Unsignalized	Medium	$327,050
E Natoma St	Haddington Dr	Path / Major Road Signalized	Medium	$136,230
Riley St	Teceira Way	Major Road Unsignalized	Medium	$442,370
Blue Ravine Rd	Folsom Middle School	Path / Major Road Signalized	Medium	$136,230
Blue Ravine Rd	Folsom Middle School	Path / Major Road Unsignalized	Medium	$413,850
Empire Ranch Rd	Owl Meadow St	Major Road Signalized	Medium	$105,625
Manseau Dr	Arrowsmith Dr	Minor Road Unsignalized	Medium	$100,130
Prairie City Rd	American Aggregate Rd	Major Road Signalized	Medium	$105,625
Scholar Way	Cavitt Dr	Path / Major Road Unsignalized	Medium	$327,050

Table 12 *Priority Spot Improvement Projects, continued*

Cross Street A	Cross Street B	Improvement Type	Priority Category	Planning Level Cost Estimate
Blue Ravine Rd	Russi Rd	Path / Major Road Signalized	Low	$136,230
Blue Ravine Rd	Plaza Dr	Major Road Signalized	Low	$105,625
Broadstone Pkwy	E Bidwell St	Path / Major Road Signalized	Low	$136,230
Broadstone Pkwy	Scholar Way	Path / Major Road Unsignalized	Low	$327,050
Broadstone Pkwy	Russell Dr	Major Road Signalized	Low	$105,625
Broadstone Pkwy	Stockman Cir	Major Road Signalized	Low	$105,625
Densmore Way	Path	Path / Minor Road	Low	$69,750
E Bidwell St	Creekside Dr	Major Road Signalized	Low	$105,625
E Bidwell St	Iron Point Rd	Path / Major Road Signalized	Low	$136,230
E Bidwell St	Glenn Dr	Major Road Signalized	Low	$105,625
E Bidwell St	Wales Dr	Major Road Signalized	Low	$105,625
E Bidwell St	Power Center Dr	Path / Major Road Signalized	Low	$136,230
E Natoma St	Cimmaron Cir	Path / Major Road Unsignalized	Low	$43,090
Ingersoll Way	Parker Dr	Major Road Unsignalized	Low	$442,370
Iron Point Rd	Oak Ave Pkwy	Major Road Signalized	Low	$105,625
Placerville Rd	Hwy 50	Overcrossing / Undercrossing	Low	Further study required
Riley St	Timson Dr	Major Road Unsignalized	Low	$442,370
Riley St	Levy Rd	Major Road Unsignalized	Low	$442,370
Rilley St	Hazelmere Dr	Major Road Unsignalized	Low	$442,370
Russi Rd	Amos P. Catlin Path	Path / Major Road Unsignalized	Low	$413,850
E Natoma St	Briggs Ranch Rd	Path / Major Road Signalized	Low	$136,230
E Natoma St	Cameron Dr	Major Road Unsignalized	Low	$442,370
E Natoma St	Randall Dr	Path / Major Road Unsignalized	Low	$43,090
Empire Ranch Rd	Broadstone Pkwy	Path / Major Road Signalized	Low	$136,230
Iron Point Rd	Palladio Pkwy	Major Road Signalized	Low	$105,625

Table 12 *Priority Spot Improvement Projects, continued*

Cross Street A	Cross Street B	Improvement Type	Priority Category	Planning Level Cost Estimate
Iron Point Rd	Oak Ave Pkwy	Major Road Signalized	Low	$105,625
Iron Point Rd	Outcropping Way	Path / Major Road Signalized	Low	$136,230
McAdoo Dr	Marsh Hawk Dr	Minor Road Unsignalized	Low	$100,130
Oak Ave	Path (Lew Howard Park)	Path / Major Road Unsignalized	Low	$413,850
Oak Ave Pkwy	Haverhill Dr	Major Road Signalized	Low	$105,625
Prairie City Rd	Willard Dr	Major Road Signalized	Low	$105,625
Folsom-Auburn Rd	Hillswood Dr	Major Road Unsignalized	Low	$442,370
E Bidwell St	Montrose Dr	Major Road Signalized	Low	$105,625
Folsom-Auburn Rd	Folsom Lake Crossing	Major Road Signalized	Low	$105,625
Montrose Dr	Marchant Dr	Minor Road Unsignalized	Low	$100,130
Oak Ave Pkwy	Baldwin Dam Rd	Path / Major Road Unsignalized	Low	$327,050
Bundrick Dr	Rundgren Way	Path / Minor Road	Low	$69,750
E Natoma St	Golf Links Dr	Major Road Signalized	Low	$105,625
Turn Pike Dr	Hopfield Dr	Minor Road Unsignalized	Low	$100,130
American River Canyon Dr	Crow Canyon Dr	Major Road Unsignalized	Low	$442,370
E Natoma St	Wesley Dr	Major Road Unsignalized	Low	$442,370
E Natoma St	Hancock Dr	Path / Major Road Unsignalized	Low	$413,850
Empire Ranch Rd	Woodhead St	Major Road Unsignalized	Low	$442,370
Placerville Rd	White Rock Rd	Path / Major Road Unsignalized	Low	$327,050
Canyon Rim Dr	Blue Canyon Way	Path / Minor Road	Low	$69,750
Oak Ave Pkwy	Blue Ravine Rd	Overcrossing / Undercrossing	Low	$2,500,000

Where Do We Start?

The City of Folsom Active Transportation Plan includes more than 300 projects that will advance the safety and function of the active transportation network, with about 65 projects identified as high priority. Based on planning-level cost estimates, it is expected to cost more than $88,000,000 to implement the high priority projects outlined in the Plan.

While this is a significant investment in the City's future, the City can build momentum by advancing projects that not only demonstrate the benefit of active transportation but also leverage existing projects, available funding sources, and more.

Building on the prioritized project list presented in the previous section, the following projects are recommended for the first phase of ATP implementation. These projects are included in the first phase for a range of reasons, including active project grant applications, alignment with ongoing development, and more.

Additional strategies for project implementation can be found beginning on page 91 and should be considered not only for the projects listed here but also for future project phases to advance the ATP.

Table 13 Phase One Bikeway Projects

Location	Start	End	Proposed Bikeway	Length (miles)	Planning Level Cost Estimate
Folsom Placerville Rail Trail	Willow Creek Trail	Iron Point Rd	Class I Shared-Use Path	0.97	$1,891,950
New Trail (Parallel to Hwy 50)	Serpa Ct	City Boundary	Class I Shared-Use Path	1.26	$2,470,750
New Trail (Parallel to Hwy 50)	Prairie City Rd	Iron Point Rd / E Bidwell St	Class I Shared-Use Path	2.54	$4,971,445
Iron Point Rd	Folsom Blvd	City Boundary	Class IV Separated Bikeway	6.25	$12,861,795
Oak Avenue Pkwy	Iron Point Rd	Willow Creek Dr	Class IV Separated Bikeway	2.52	$5,183,305
SIbley St	Glenn Dr	Figueroa St	Class IIB Buffered Bicycle Lane	0.86	$137,005

Table 14 Phase One Pedestrian Network Projects

Project Name	Side of Street	Length (Miles)	Planning Level Cost Estimate	
			Sidewalk (6 ft)	Sidewalk (10 ft)
Riley St from Sutter St to E Bidwell St	Both	0.44	$646,235	$784,715
Riley St from Natoma St to Persifer St	One	0.07	$51,160	$62,125
Oak Avenue Pkwy from Baldwin Dam Rd to Grant Ln	Both	0.85	$1,251,805	$1,520,045
Dean Way from Coloma St to Stafford St	Both	0.26	$390,630	$474,340
Folsom-Auburn Rd from Oak Ave to Folsom Lake Crossing	Both	1.36	$2,014,545	$2,446,235
School St from Dean Way to Market St	Both	0.19	$274,325	$333,110
Natoma St from Prison Rd to Folsom Lake Crossing	One	1.16	$860,295	$1,044,645
Oak Ave from Baldwin Dam Rd to Folsom Auburn Rd	Both	0.43	$632,180	$767,645
E Bidwell St from Coloma St to Market St	One	0.20	$145,255	$176,380

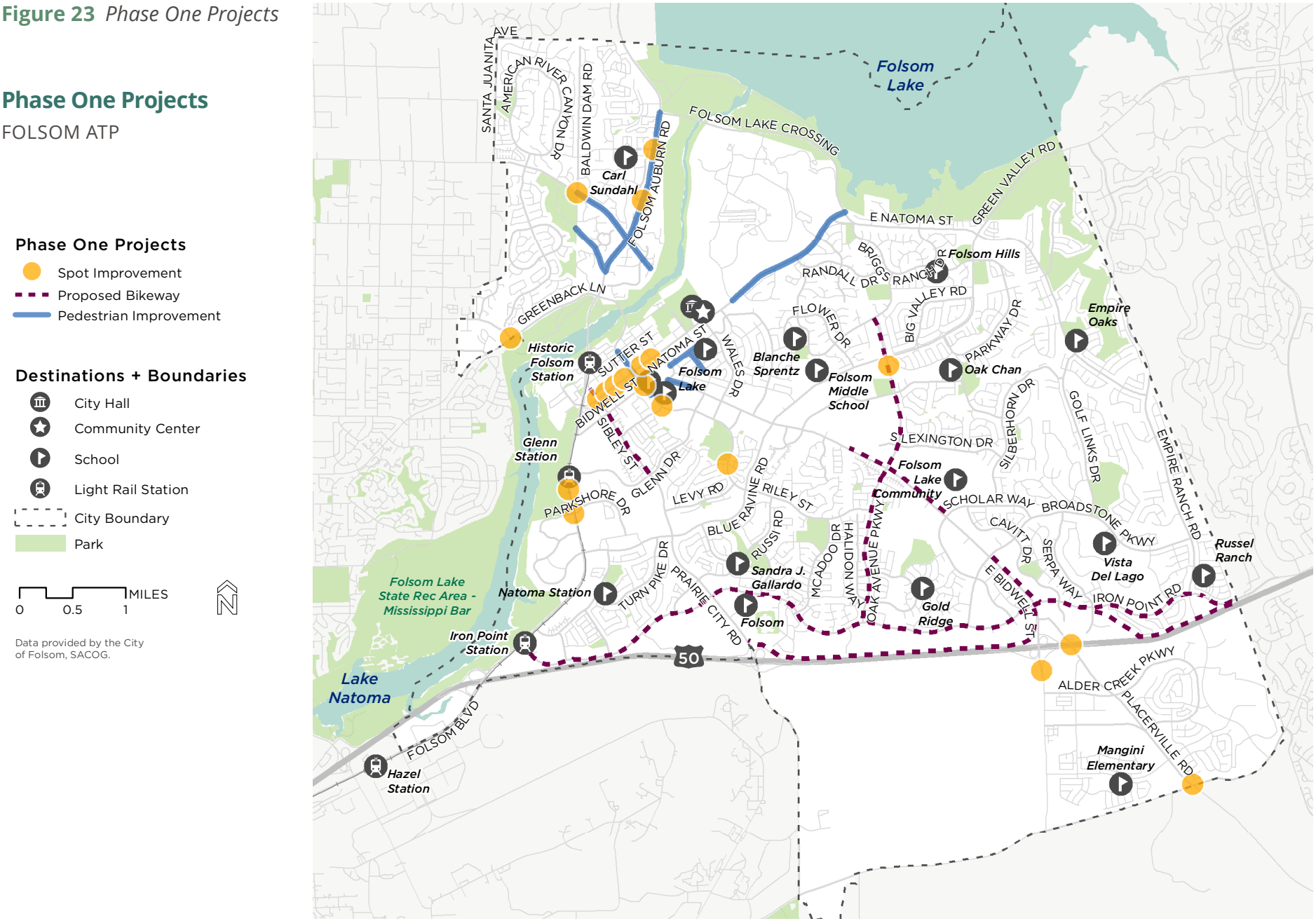
Table 15 Phase One Spot Improvement Projects

Cross Street A	Cross Street B	Improvement Type	Planning Level Cost Estimate
Folsom Blvd	Glenn Dr	Overcrossing / Undercrossing	Further study required
Folsom-Auburn Rd	Berry Creek Dr	Major Road Unsignalized	$442,370
E Bidwell St	South of Hwy 50	Overcrossing / Undercrossing	$3,500,000
Folsom Blvd	Parkshore Dr	Trail / Major Road Signalized	$136,230
Folsom-Auburn Rd	Inwood Rd	Major Road Signalized	$105,625
Greenback Ln	American River Canyon Dr	Trail / Major Road Signalized	$136,230
Natoma St	Sibley St	Major Road Signalized	$105,625
Natoma St	Reading St	Major Road Signalized	$105,625
Natoma St	Decatur St	Major Road Signalized	$105,625
Natoma St	Wool St	Major Road Signalized	$105,625
Natoma St	Scott St	Major Road Signalized	$105,625
Natoma St	Bridge St	Major Road Signalized	$105,625
Riley St	E Bidwell St	Major Road Unsignalized	$442,370
Riley St	Lembi Dr	Major Road Unsignalized	$442,370
Placerville Rd	Hwy 50	Overcrossing / Undercrossing	Further study required
Riley St	Timson Dr	Major Road Unsignalized	$442,370
Oak Ave Pkwy	Baldwin Dam Rd	Trail / Major Road Unsignalized	$327,050
Placerville Rd	White Rock Rd	Trail / Major Road Unsignalized	$327,050
Oak Ave Pkwy	Blue Ravine Rd	Overcrossing / Undercrossing	$2,500,000

Figure 23 *Phase One Projects*

Phase One Projects

FOLSOM ATP



Implementation Strategy

Project implementation requires a deliberate strategy and exploration of innovative approaches. With limited resources and high demand for improvements, the city should coordinate with relevant departments and partners to identify opportunities for project delivery. The strategies explored below are opportunities for the city to support the implementation of the ATP's programs, recommended project improvements, and goals and policies over time.

CAPITAL PROJECTS

Include the projects and priorities of the ATP in the annual Capital Improvement Plan (CIP). Identify additional opportunities for coordination among projects in the CIP that both advance the ATP and the city's Public Works and Parks and Recreation Departments' CIP goals.

IDENTIFY QUICK BUILD PROJECTS

Quick build refers to projects that are implemented using relatively low-cost materials compared to long-term capital projects. Quick build projects are not only faster and less costly to implement, they also create an opportunity to pilot a project design or treatment for community feedback and observation. Where feasible, the City of Folsom should identify specific network improvements or packaged improvements that can advance on an accelerated timeline through quick build implementation. The ATP project list provides the blueprint for a more balanced transportation network but also includes a large price tag for system-wide implementation. Quick build tactics can advance basic design elements of a project to provide immediate relief from a safety, comfort, or access issue. The city can demonstrate visible "early wins" and build support for increased investments in projects proposed in this Plan. Quick build projects also allow the city to be more responsive to communities including the workforce population that may have faced historic disinvestment and often face the greatest risk when traveling. This approach helps address the urgency around needed improvements while also providing a mechanism to gather feedback from the community impacted by the improvement.

FLEXIBLE PROJECT DELIVERY

The City of Folsom will need to work internally and across city departments to find flexibility within any existing processes and how projects are implemented. Remaining flexible will help reduce hurdles typically faced in project delivery and streamline decision-making.

The city will need to continue to develop flexible approaches to project delivery and not exactly how projects are prioritized in the Plan. Recommended ATP projects will require ongoing evaluation and pivoting within an annual work plan and project development.

CROSS DEPARTMENT OPPORTUNITIES

Interdepartmental city staff coordination is key to the success of the ATP project implementation. Aligning with existing or future projects across city departments will ensure that there is a shared understanding that ATP project delivery is a priority across the city. Aligning across city departments is also an opportunity to share the need for the proposed improvements and how all the city's networks interact.

FUNDING STRATEGY

It is crucial for the city to identify and secure funding for programs and infrastructure projects to advance the goals established in this Plan. A variety of sources exist to fund bicycle and pedestrian infrastructure programs, projects, and studies. These sources include local, regional, state, and federal funding opportunities.

ENGAGING WITH THE ACTIVE TRANSPORTATION PLAN AS A LIVING DOCUMENT

The ATP describes the many ways that the City of Folsom and its mobility context are changing over time. Many factors influence both where people live and work as well as how they move around Folsom, and the projects outlined in this Plan reflect what we know about these conditions today. As conditions change, the city should review projects periodically, considering new needs, the impact of implemented projects, and available funding. The city should evaluate the ATP project list every five years and update as needed. Further, it is recommended that the city develop a public input tool and process for residents to submit project ideas. In all cases, revisions to the project list should further the ATP's goals and objectives.

Funding Sources

The following section highlights the various funding sources that can be used to implement the city's bicycle and pedestrian infrastructure projects, programs, and studies. The funding opportunities include competitive grants, impact fee/assessment district strategies, and formula-based funding methods.

LOCAL AND REGIONAL FUNDING

Sacramento Transportation Authority (STA) Measure A

This funding source is derived from a half-cent sales tax imposed in Sacramento County, administered by STA, and distributed to incorporated cities and unincorporated Sacramento County to fund specific transportation maintenance and projects. Measure A included three ongoing programs: Traffic Safety, Bicycle/ Pedestrian Safety, and Maintenance funds. Additionally, there is a capital component to help fund large capital improvement projects identified in the Countywide Transportation Expenditure Plan.

Funds are programmed by STA.

Sacramento Area Council of Government (SACOG) Regional Program

SACOG's Regional Program funds cost-effective transportation projects that advance the goals established in SACOG's Metropolitan Transportation Plan/ Sustainable Communities Strategy (MTP/ SCS). These goals include decreasing vehicle miles traveled, increasing the number of bicycle and pedestrian trips, and reducing greenhouse gas emissions, among others. The Regional program will fund projects identified explicitly in the MTP/SCS or lump-sum category projects, such as "Bike/Ped" or "Capacity" projects. The program seeks to promote effective and efficient use of limited state and federal resources to develop and maintain the regional transportation network.

Funds are programmed by SACOG.

Transportation Development Act (TDA) Article 3

TDA is administered locally by the Sacramento Area Council of Governments (SACOG). This act allocated federal funding toward transit and transportation projects, including bicycle and pedestrian facilities. 2% of the funding allocated to Sacramento County is designated for bicycle and pedestrian projects under the TDA Local Transportation Fund (LTF).

Funds are programmed by SACOG.

Sustainable Transportation Equity Project (STEP)

The Sustainable Transportation Equity Project (STEP) is a grant program that will provide safe, environmentally sustainable, accessible, and affordable transportation options to low-income communities and communities of color. STEP applicants can either apply for either a Planning and Capacity Building grant or an Implementation Grant. The Implementation grant program will help fund the construction of new pedestrian, bicycle, and complete streets facilities.

Funds are programmed by the California Air Resources Board (CARB).

New Development or Redevelopment/Rehabilitation

Future new development and redevelopment projects including new road construction, resurfacing, and construction projects, are one method of providing pedestrian improvements and bike facilities. To ensure that pedestrian and bicycle improvements are included in these projects, the review process must include an individual (designated active transportation coordinator) or group (bicycle and pedestrian advisory committee) to monitor the process.

Funds are programmed by Sacramento County.

Assessment Districts

Different types of assessment districts can be used to fund the construction and maintenance of bikeway facilities. Examples include Mello-Roos Community Facility Districts, Infrastructure Financing Districts (SB 308), Open Space Districts, or Lighting and Landscape Districts. These types of districts have specific requirements relating to the establishment and use of funds.

Funds are programmed by Sacramento County.

IMPACT FEES

The Sacramento County Transportation Development Fee/Transportation Impact Fee Program (SCTDF/TIF) funds the construction of roadway and transit improvements needed to accommodate traffic and transit ridership generated by new land development allowed by the County General Plan and land use zoning through development impact fees. Assessing such fees is also a condition of receiving Measure "A" Transportation Sales Tax allocations. The County should ensure that planning policies consider bicycle and pedestrian planning, design, and construction costs to be an eligible use of these fees.

Funds are programmed by Sacramento County.

SACOG Active Transportation Program

SACOG's Active Transportation Program (ATP) funds infrastructure and programmatic projects that support the program goals of shifting trips to walking and bicycling, reducing greenhouse gas emissions, and improving public health. Competitive application cycles occur every one to two years, typically in the spring or early summer. Eligible projects include the construction of bicycling and walking facilities, safe routes to school projects, new or expanded programmatic activities, or projects that include a combination of infrastructure and non-infrastructure components. Projects not funded through the state program (described in the next section) are eligible for regional consideration.

Funds are programmed by SACOG.

SACOG Community Design Funding Program

The Community Design Funding Program provides funding to local jurisdictions to build placemaking projects. Projects that implement any of the seven SACOG Blueprint Principles are eligible for funding: 1) housing options 2) transportation options; 3) infill development; 4) mixed land uses; 5) compact development; 6) preservation of natural resources, and 7) quality design.

Funds are programmed by SACOG.

SACOG Transportation Demand Management (TDM) Program

SACOG's TDM Program aims to reduce vehicle trips and vehicle miles traveled using a variety of programs, services, infrastructure projects, travel strategies, and policies to change travel behavior. SACOG periodically offers TDM-focused grant opportunities to fund infrastructure and program projects that work towards TDM program goals. These include traditional grants, mini-grants, and innovations grants.

Funds are programmed by SACOG

ACOG Innovative Mobility Program

The Innovative Mobility Program designs and launches projects and programs that increase transportation options and reduce vehicle miles traveled (VMT) to make options like biking, walking, and taking transit the easy choice for all types of trips. The program has four goals: 1) reduce VMT and vehicle emissions, 2) leverage new technologies and partnerships, 3) increase access to existing transit and micromobility services, 4) inform the Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS), and 5) support policies that increase access and benefit underserved communities.

Funds are programmed by SACOG

STATE AND FEDERAL FUNDING

CA Federal Land Access Program (FLAP)

The Federal Land Access Program offers funding for transportation projects, including bicycle and pedestrian infrastructure, that improve access to, from, and within Federal Lands.

Funds are programmed by Caltrans, the FHWA, and a representative from a state political subdivision.

California Active Transportation Program

California's Active Transportation Program (ATP) funds infrastructure and programmatic projects that support the program goals of shifting trips to walking and bicycling, reducing greenhouse gas emissions, and improving public health. Competitive application cycles occur every one to two years, typically in the spring or early summer. Eligible projects include the construction of bicycling and walking facilities, safe routes to school projects, new or expanded programmatic activities, or projects that include a combination of infrastructure and non-infrastructure components. Typically, no local match is required for statewide funding, though extra points are awarded to applicants who identify matching funds.

Funds are programmed by the California Transportation Commission (CTC).

Sustainable Transportation Planning Grants

Caltrans Sustainable Transportation Planning Grants are available to communities for planning, study, and design work to identify and evaluate projects, including conducting outreach or implementing pilot projects. Communities are typically required to provide an 11.47% local match, but staff time or in-kind donations are eligible to be used for the match provided the required documentation is submitted.

Funds are programmed by Caltrans.

Highway Safety Improvement Program

Caltrans offers Highway Safety Improvement Program (HSIP) grants every one to two years. Projects on any publicly owned road or active transportation facility are eligible, including bicycle and pedestrian improvements. HSIP focuses on projects that explicitly address documented safety challenges through proven countermeasures, are implementation-ready, and demonstrate cost-effectiveness.

Funds are programmed by Caltrans.

Solutions for Congested Corridors Program

Funded by SB1, the Congested Corridors Program strives to reduce congestion in highly-traveled and congested roads through performance improvements that balance transportation improvements, community impacts, and environmental benefits. This program can fund a wide array of enhancements, including bicycle facilities and pedestrian facilities. Eligible projects must be detailed in an approved corridor-focused planning document. These projects must include aspects that benefit all modes of transportation using an array of strategies that can change travel behavior, dedicate right-of-way for bikes and transit, and reduce vehicle miles traveled.

Funds are programmed by the CTC.

Safe Streets And Roads for All (SS4A) Program

Funded by the Bipartisan Infrastructure Law (BIL), the Safe Streets and Roads for All program provides discretionary funding over the next five years to local, regional, and Tribal initiatives to prevent roadway deaths and serious injuries. Funding can be used to develop or update a Comprehensive Safety Action Plan (ex: Vision Zero Plan); conduct planning, design, and development activities in support of the Action Plan; and to carry out projects to implement the Action Plan.

Funds are programmed by the U.S. Department of Transportation.

Office of Traffic Safety

Under the Fixing America's Surface Transportation (FAST) Act, five percent of Section 405 funds address non-motorized safety. These funds may be used for law enforcement training related to pedestrian and bicycle safety, enforcement campaigns, and public education and awareness campaigns.

Funds are programmed by the California Office of Traffic Safety

Recreational Trails Program

The Recreational Trails Program helps provide recreational paths for both motorized and non-motorized path use. Eligible products include path maintenance and restoration, pathside and trailhead facilities, equipment for maintenance, new path construction, and more.

Funds are programmed by the California Department of Parks and Recreation.

Affordable Housing and Sustainable Communities Program

The Affordable Housing and Sustainable Communities Program (AHSC) funds land-use, housing, transportation, and land preservation projects that support infill and compact development that reduces greenhouse gas (GHG) emissions. Projects must fall within three project area types: transit-oriented development, integrated connectivity project, or rural innovation project areas. Fundable activities include affordable housing developments, sustainable transportation infrastructure, transportation-related amenities, and program costs.

Funds are programmed by the Strategic Growth Council and implemented by the Department of Housing and Community Development.

Urban Greening Grants

Urban Greening Grants support the development of green infrastructure projects that reduce GHG emissions and provide multiple benefits. Projects must include one of three criteria, most relevantly: reduce commute vehicle miles traveled by constructing bicycle paths, bicycle lanes, or pedestrian facilities that provide safe routes for travel between residences, workplaces, commercial centers, and schools. Eligible projects include green streets and alleyways and non-motorized urban paths that provide safe routes for travel between homes, workplaces, commercial centers, and schools.

Funds are programmed by the California Natural Resources Agency

Habitat Conservation Fund

The Habitat Conservation Fund Program supports projects that bring urban residents into park and wildlife areas, protect plant and animal species, and acquire and develop wildlife corridors and paths.

Funds are programmed by the California Department of Parks and Recreation.

Statewide Park Program (SPP)

The Statewide Park Program solicits competitive grants to fund new parks and recreation opportunities in critically underserved communities across California. Funds can be used to create and expand/renovate existing parks. All projects must include at least one “recreation feature,” which includes non-motorized paths. No match is required.

Funds are programmed by the California Department of Parks and Recreation.

Table 16 *Funding Summary Table*

Funding Source	Planning/ Design/ Construction	On-Street Bikeways & Sidewalks	Paths	Safe Routes to School	Safe Routes to Transit	Crossings/ Intersections	Programs	Studies
Local and Regional Programs								
Measure A (STA)	P/D/C	•	•	•	•	•	•	•
SACOG Regional Program (SACOG)	D/C	•	•	•	•	•	•	•
SACOG Active Transportation Program	P/D/C	•	•	•	•	•	•	•
Sustainable Transportation Equity Project (CARB)	P/D/C	•	•	•	•	•		
Transportation Development Act Article 3 (SACOG)	D/C	•	•	•	•	•		
New Developments/Resurfacing Projects (Sacra-mento County)	D/C	•	•					
Assessment District (Sacramento County)	P/D/C	•	•	•	•	•	•	•
Impact Fees (Sacramento County)	P/D/C	•	•	•	•	•	•	•
SACOG Community Design Funding Program	D/C	•	•	•	•	•		
SACOG Transportation Demand Management (TDM) Program	P/D/C	•	•		•	•	•	•
SACOG Innovative Mobility Program	P/D/C	•	•	•	•	•	•	•
Statewide and Federal Grants								
Active Transportation Program (CTC)	P/D/C	•	•	•	•	•	•	•
Sustainable Transportation Planning Grants (Cal-trans)	P							•
Highway Safety Improvement Program (Caltrans)	D/C	•		•	•	•		

Funding Source	Planning/ Design/ Construction	On-Street Bikeways & Sidewalks	Paths	Safe Routes to School	Safe Routes to Transit	Crossings/ Intersections	Programs	Studies
Solutions for Congested Corridors (CTC)	C	•	•			•		
Safe Streets And Roads for All (SS4A) Program	P/D/C	•	•	•	•	•	•	•
Office of Traffic Safety (CA OTS)	-						•	
Recreational Trails Program (CA DPR)	C		•					
Affordable Housing & Sustainable Communities (CA HCD)	C	•			•		•	
Urban Greening Grants (CA NRA)	C	•	•	•	•			
Statewide Park Program (CA DPR)	C		•					
Trade Corridor Enhancement Program (CTC)	C	•	•					
USHUD Community Development Block Grant Program	P/D/C	•	•	•	•	•	•	•
USHUD Community Development Block Grant Program	P/D/C	•	•	•	•	•	•	•
Local Partnership Program (CTC)	C	•		•	•	•		
Road Maintenance and Rehabilitation Program (Controller's Office)	D/C	•		•	•			
Other State Funds								
Local Partnership Program (CTC)	C	•		•	•	•		
Road Maintenance and Rehabilitation Program (Controller's Office)	D/C	•		•	•			

CITY OF
FOLSOM
DISTINCTIVE BY NATURE

Appendix A

Active Transportation Plan: Design Guide

Folsom, California | Spring 2022

CITY OF FOLSOM
DISTINCTIVE BY NATURE

Table of Contents

Chapter I | Introduction

CONTEXT

This Design Toolbox has been developed to assist the City of Folsom in the selection and design of facilities. The designs featured in this Toolbox work to promote pedestrian and bicycle comfort, particularly among children. The chapter presents current planning, engineering, and design resources and approaches to implement bicycle and pedestrian enhancements.

What, Why, Where, When and How?

Future roadway planning, engineering, design and construction will continue to strive for a balanced transportation system that includes a seamless, accessible bicycle and pedestrian network and encourages bicycle and pedestrian travel wherever possible.

There are many reasons to integrate bicycle and pedestrian facilities into typical roadway development policy. The goal of a transportation system is to better meet the needs of people - whether in vehicles, bicyclists or pedestrians - and to provide access to goods, services, and activities.

Supporting active modes gives users important transportation choices, whether it is to make trips entirely by walking or bicycling, or to access public transit. Often in urban or suburban areas, walking and cycling are the fastest and most efficient ways to perform short trips.

Convenient non-motorized travel provides many benefits, including reduced traffic congestion, user savings, road and parking facility savings, economic development, and a healthier environment.

Compatible design does more than help those who already walk or bicycle. It encourages greater use of non-motorized transportation and makes the street safer for everyone.

The design recommendations in this document are for use on Folsom roadways. Projects must not only be planned for their physical aspects as facilities serving specific transportation objectives; they must also consider effects on the aesthetic, social, economic and environmental values, needs, constraints and opportunities in a larger community setting. This is commonly known as Context Sensitive Design, and should be employed when determining which standard is applicable in each scenario.

Pedestrian and bikeway design guidelines in this document meet or exceed the minimums set by the Americans with Disabilities Act.

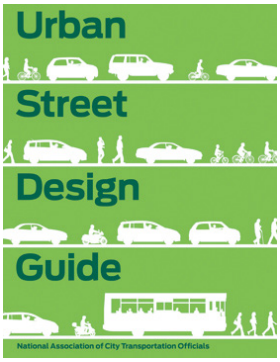
Traffic control devices, signs, pavement markings used and identified in this document must conform to the latest edition of the California's Manual on Uniform Traffic Control Devices (CA MUTCD).

Whenever possible and appropriate, the National Association of City Transportation Officials (NACTO)'s guidance is recommended where applicable.

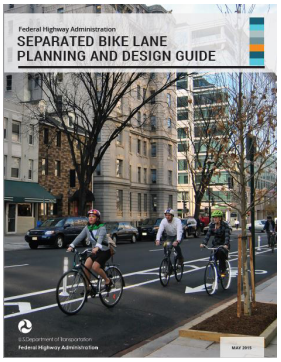
GUIDANCE BASIS

The sections that follow serve as an inventory of pedestrian and bicycle design treatments and provide guidelines for their development. These treatments and design guidelines are important because they represent the tools for creating a pedestrian- and bicycle-friendly, accessible community. The design guidance offered here are reflected in the following national and state sources.

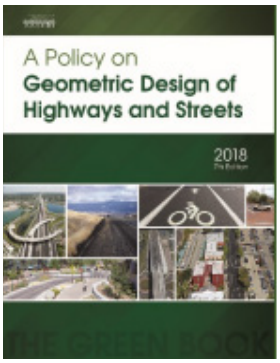
National Guidance



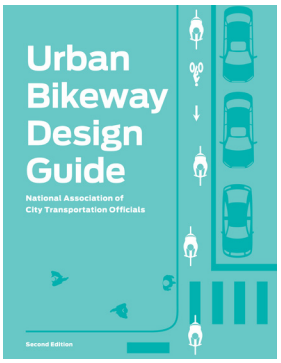
The National Association of City Transportation Officials' **(NACTO) Urban Bikeway Design Guide (2012) and Urban Street Design Guide (2013)** *are collections of nationally recognized street design standards, and offers guidance on the current state of the practice designs.*



Separated Bike Lane Planning and Design Guide (2015) *is the latest national guidance on the planning and design of separated bike lane facilities released by the Federal Highway Administration (FHWA). The resource documents best practices as demonstrated around the U.S., and offers ideas on future areas of research, evaluation and design flexibility.*



A Policy on Geometric Design of Highways and Streets (2018) *provides national guidance onthe design of highways and streets. The 7th edition of the "The Green Book" offers an updated framework for geometric design that is more flexible, multimodal, and performance based than in previous editions.*



The National Association of City Transportation Officials' (NACTO) **Urban Bikeway Design Guide (2012)** *provides cities with state-of-the-practice solutions that can help create complete streets that are safe and enjoyable for bicyclists. The designs were developed by cities for cities, since unique urban streets require innovative solutions. In August 2013, the Federal Highway Administration issued a memorandum officially supporting use of the document.*

California Guidance

The **California Manual on Uniform Traffic Control Devices (CAMUTCD) (2014)** *is an amended version of the FHWA MUTCD 2009 edition modified for use in California. While standards presented in the CA MUTCD substantially conform to the FHWA MUTCD, the state of California follows local practices, laws and requirements with regards to signing, striping and other traffic control devices.*

Main Street, California: A Guide for Improving Community and Transportation Vitality (2013) *reflects California's current manuals and policies that improve multimodal access, livability and sustainability within the transportation system. The guide recognizes the overlapping and sometimes competing needs of main streets.*


HIGHWAY DESIGN MANUAL

FOREWORD

Purpose

This manual was prepared for the California Department of Transportation (Department) by the Division of Design for use on the California State highway system. This manual establishes uniform policies and procedures to carry out the State highway design functions of the Department. It is neither intended as, nor does it establish, a legal standard for these functions.

The standards, procedures, and requirements established and discussed herein are for the information and guidance of the officers and employees of the Department.

Many of the instructions given herein are subject to amendment as conditions and experience warrant. Special situations may call for deviation from policies and procedures, subject to Division of Design approval, or such other approval as may be specifically provided for in the text of this manual.

It is not intended that any standard of conduct or duty toward the public shall be created or imposed by the publication of this manual. Statements as to the duties and responsibilities of any given classification of officers or employees mentioned herein refer solely to duties or responsibilities owed by these to such classification to their superiors. However, in their official contacts, each employee should recognize the necessity for good relations with the public.

Scope

This manual is not a textbook or a substitute for engineering knowledge, experience, or judgment. It includes techniques as well as guides and tables not ordinarily found in textbooks. These are intended as aids in the quick solutions of field and office problems. Except for new developments, no attempt is made to detail basic engineering techniques; for these, standard textbooks should be used.

Form

The loose leaf form was chosen because it facilitates change and expansion. New instructions or updates will be issued as sheets in the format of this manual and made available on-line on the Department Design website: http://www.dot.ca.gov/hq/oppd/hdm/hdmtoc.htm. The new instructions or updates may consist of additional sheets or new sheets to be substituted for those superseded. Users of this manual are encouraged to utilize the most recent version available on-line on the Department Design website.

Organization of the Manual

A decimal numbering system is used which permits identification by chapter, topic, and index, each of which is a subdivision of the preceding classification. For example:

Chapter 40 Federal-Aid

Topic 42 Federal-Aid System

Index 42.2 Interstate

The upper corner of each page shows the page number and the date of issue.

Use the Table of Contents

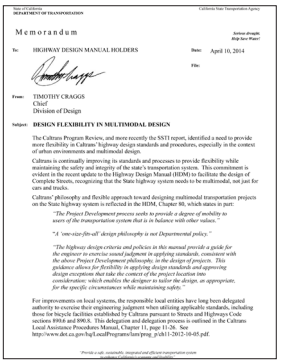
The Table of Contents gives the index number and page number for each textual paragraph together with corresponding dates of issue. If the holder of the manual chooses to maintain a paper copy, the holder is responsible for keeping the paper copy up to date and current. Revised Table of Contents will be issued on the Department Design website as the need arises.

Use of the English and Metric Editions of the Highway Design Manual

This Sixth Edition of the Highway Design Manual is in U.S. Customary (English) units. Departmental policy established by Director's Policy 17-RI and Deputy Directive Number D-RI, both effective October 2006, state that the Department has adopted the use of the U.S. Customary (English) units as its preferred system of units and measures. All projects designed and constructed in English units shall follow the standards in this manual.

The Metric standards contained in the Fifth Edition of the Highway Design Manual, and related publications, are to continue to be used if the specific project was granted an exception to

The **California Highway Design Manual (HDM) (Updated 2015)** *establishes uniform policies and procedures to carry out highway design functions for the California Department of Transportation. Policies in this manual relating to on-and-off street bikeways are binding on all local agencies.*


Memorandum

To: HIGHWAY DESIGN MANUAL HOLDERS

Date: April 10, 2014

File:

From: TIMOTHY CRAGGS
Chief
Division of Design

Subject: **DESIGN FLEXIBILITY IN MULTIMODAL DESIGN**

The Caltrans Program Review, and more recently the SSTI report, identified a need to provide more flexibility in Caltrans' highway design standards and procedures, especially in the context of urban environments and multimodal design.

Caltrans is continually improving its standards and processes to provide flexibility while maintaining the safety and integrity of the state's transportation system. This commitment is evident in the recent update to the Highway Design Manual (HDM) to facilitate the design of Complete Streets, recognizing that the State highway system needs to be multimodal, not just for cars and trucks.

Caltrans' philosophy and flexible approach toward designing multimodal transportation projects on the State highway system is reflected in the HDM, Chapter 80, which states in part:

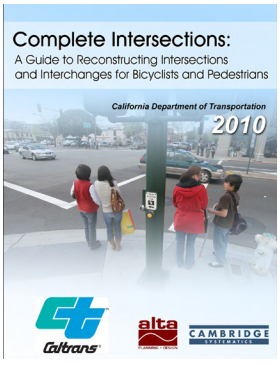
"The Project Development process seeks to provide a degree of mobility to users of the transportation system that is in balance with other values."

"A 'one-size-fits-all' design philosophy is not Departmental policy."

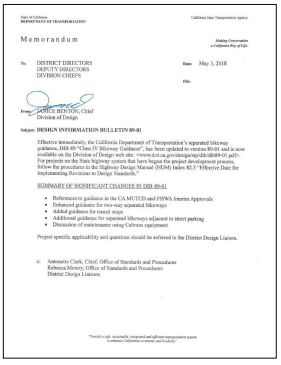
"The highway design criteria and policies in this manual provide a guide for the engineer to exercise sound judgment in applying standards, consistent with the above Project Development philosophy, in the design of projects. This guidance allows for flexibility in applying design standards and approving design exceptions that take into account the context of the project location into consideration; which enables the designer to tailor the design, as appropriate, for the specific circumstances while maintaining safety."

For improvements on local systems, the responsible local entities have long been delegated authority to exercise their engineering judgment when utilizing applicable standards, including those for bicycle facilities established by Caltrans pursuant to Streets and Highways Code sections 890.6 and 890.8. This delegation and allocation process is outlined in the Caltrans Local Assistance Procedures Manual, Chapter 11, page 11-28. See http://www.dot.ca.gov/hq/LocalPrograms/lam/prog_pr/ch11-2012-10-05.pdf.

The Caltrans Memo: **Design Flexibility in Multimodal Design (2014)** *encourages flexibility in highway design. The memo stated that "Publications such as the National Association of City Transportation Officials (NACTO) "Urban Street Design Guide" and "Urban Bikeway Design Guide," ... are resources that Caltrans and local entities can reference when making planning and design decisions on the State highway system and local streets and roads."*



Complete Intersections: A Guide to Reconstructing Intersections and Interchanges for Bicyclists and Pedestrians (2010) *is a reference guide presents information and concepts related to improving conditions for bicyclists and pedestrians at major intersections and interchanges. The guide can be used to inform minor signage and striping changes to intersections, as well as major changes and designs for new intersections.*


Memorandum

To: DISTRICT DIRECTORS
DEPUTY DIRECTORS
DIVISION CHIEFS

Date: May 3, 2010

File:

From: JAMES HOUTEN, Chief
Division of Design

Subject: **DESIGN INFORMATION BULLETIN 89-01**

Effective immediately, the California Department of Transportation's separated bikeway guidance, DIB 89 "Class IV Bikeway Guidance", has been updated to version 89-01 and is now available on the Division of Design web site: <www.dot.ca.gov/design/ep/dib/dib89-01.pdf>. For projects on the State highway system that have begun the project development process, follow the procedures in the Highway Design Manual (HDM) Index 82.3 " Effective Date for Implementing Revisions to Design Standards."

SUMMARY OF SIGNIFICANT CHANGES IN DIB 89-01

- References to guidance in the CA MUTCD and FHWA Interim Approvals
- Enhanced guidance for two-way separated bikeways
- Added guidance for transit stops
- Additional guidance for separated bikeways adjacent to street parking
- Discussion of maintenance using Caltrans equipment

Project specific applicability and questions should be referred to the District Design Liaison.

cc: Antonette Clerk, Chief, Office of Standards and Procedures
Rebecca Mowery, Office of Standards and Procedures
District Design Liaisons

Caltrans Design Information Bulletin 89-01 *provides enhanced guidance for two-way separated bikeways, with added information on transit stops and separated bikeways adjacent to street parking. It also provides a discussion of maintenance using Caltrans equipment.* **Caltrans Design Information Bulletin 82-06** *provides more explanation and graphics of the DIB, limited use of the California Building Code, and added Reach Ranges and Clear Spaces in state public rights-of way.*

DESIGN NEEDS OF PEDESTRIANS

The CA MUTCD recommends a normal walking speed of 3.5 ft per second when calculating the pedestrian clearance interval at traffic signals. The walking speed can drop to 3 ft per second for areas with older populations and persons with mobility impairments. While the type and degree of mobility impairment varies greatly across the population, the transportation system should accommodate these users to the greatest reasonable extent.

Types of Pedestrians

Pedestrians have a variety of characteristics and the transportation network should accommodate a variety of needs, abilities, and possible impairments. Age is one major factor that affects pedestrians' physical characteristics, walking speed, and environmental perception. Children have low eye height and walk at slower speeds than adults. They also perceive the environment differently at various stages of their cognitive development. Older adults walk more slowly and may require assistive devices for walking stability, sight, and hearing.

Disabled Pedestrian Design Considerations

The table below summarizes common physical and cognitive impairments, how they affect personal mobility, and recommendations for improved pedestrian-friendly design.

Table 1 Impairments + Solutions

IMPAIRMENT		DESIGN SOLUTION
Physical Impairment Necessitating Wheelchair and Scooter Use	Difficulty propelling over uneven or soft surfaces.	Firm, stable surfaces and structures, including ramps or beveled edges.
	Cross-slopes cause wheelchairs to veer downhill or tip sideways.	Cross-slopes of less than two percent.
	Require wider path of travel.	Sufficient width and maneuvering space.
Physical Impairment Necessitating Walking Aid Use	Difficulty negotiating steep grades and cross slopes; decreased stability and tripping hazard.	Cross-slopes of less than two percent. Smooth, non-slippery travel surface.
	Slower walking speed and reduced endurance; reduced ability to react.	Longer pedestrian signal cycles, shorter crossing distances, median refuges, and street furniture.
Hearing Impairment	Less able to detect oncoming hazards at locations with limited sight lines (e.g. driveways, angled intersections, channelized right turn lanes) and complex intersections.	Longer pedestrian signal cycles, clear sight distances, highly visible pedestrian signals and markings.
Vision Impairment	Limited perception of path ahead and obstacles; reliance on memory; reliance on non-visual indicators (e.g. sound and texture).	Accessible text (larger print and raised text), accessible pedestrian signals (APS), guide strips and detectable warning surfaces, safety barriers, and lighting.
Cognitive Impairment	Varies greatly. Can affect ability to perceive, recognize, understand, interpret, and respond to information.	Signs with pictures, universal symbols, and colors, rather than text.

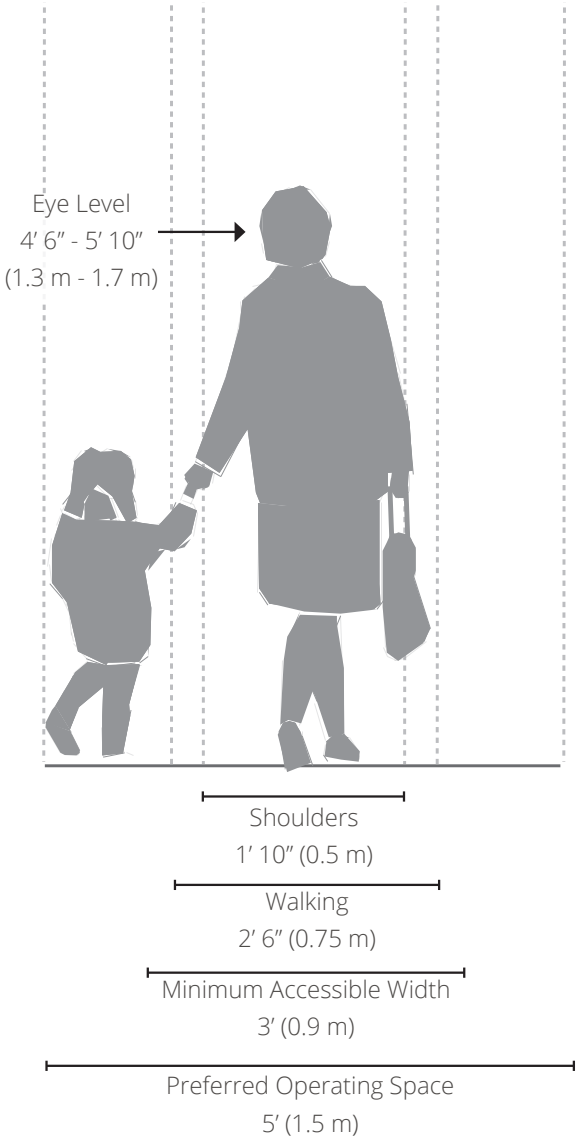


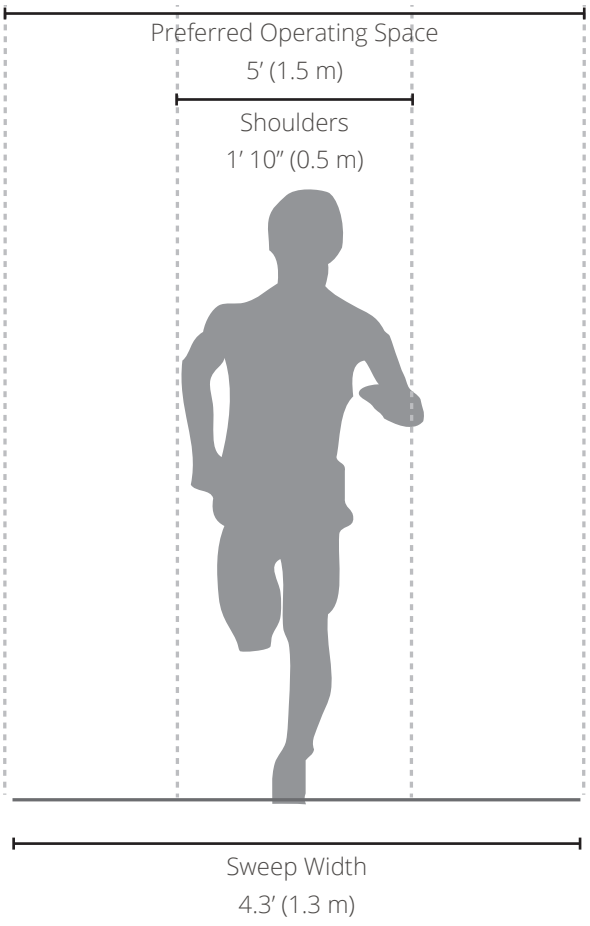
Table 2 Pedestrian Characteristics By Age

AGE	CHARACTERISTICS
0-4	Learning to walk Requires constant adult supervision Developing peripheral vision and depth perception
5-8	Increasing independence, but still requires supervision Poor depth perception
9-13	Susceptible to "darting out" in roadways Insufficient judgement Sense of invulnerability
14-18	Improved awareness of traffic environment Insufficient judgement
19-20	Active, aware of traffic environment
41-65	Slowing of reflexes
65+	Difficulty crossing street Vision loss Difficulty hearing vehicles approaching from behind

Source: AASHTO. Guide for the Planning, Design, and Operation of Pedestrian Facilities, Exhibit 2-1. 2004.

Design Needs of Runners

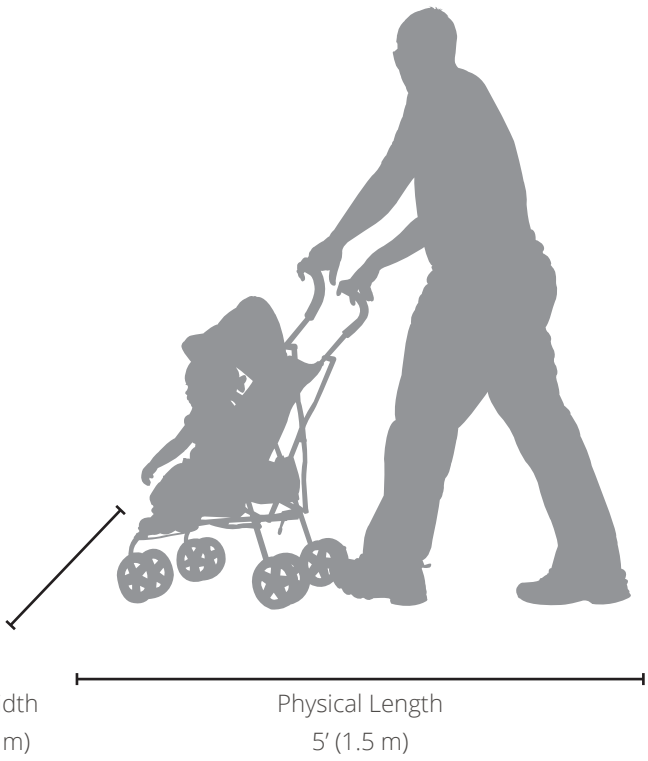
Running is an important recreation and fitness activity commonly performed on shared use paths. Many runners prefer softer surfaces (such as rubber, bare earth or crushed rock) to reduce impact. Runners can change their speed and direction frequently. If high volumes are expected, controlled interaction or separation of different types of users should be considered.



Design Needs of Strollers

Strollers are wheeled devices pushed by pedestrians to transport babies or small children. Stroller models vary greatly in their design and capacity. Some strollers are designed to accommodate a single child, others can carry 3 or more. Design needs of strollers depend on the wheel size, geometry and ability of the adult who is pushing the stroller.

Strollers commonly have small pivoting front wheels for easy maneuverability, but these wheels may limit their use on unpaved surfaces or rough pavement. Curb ramps are valuable to these users. Lateral overturning is one main safety concern for stroller users.



Design Needs of Wheelchair Users

As the American population ages, the age demographics in Folsom may also shift, and the number of people using mobility assistive devices (such as manual wheelchairs, powered wheelchairs) will increase.

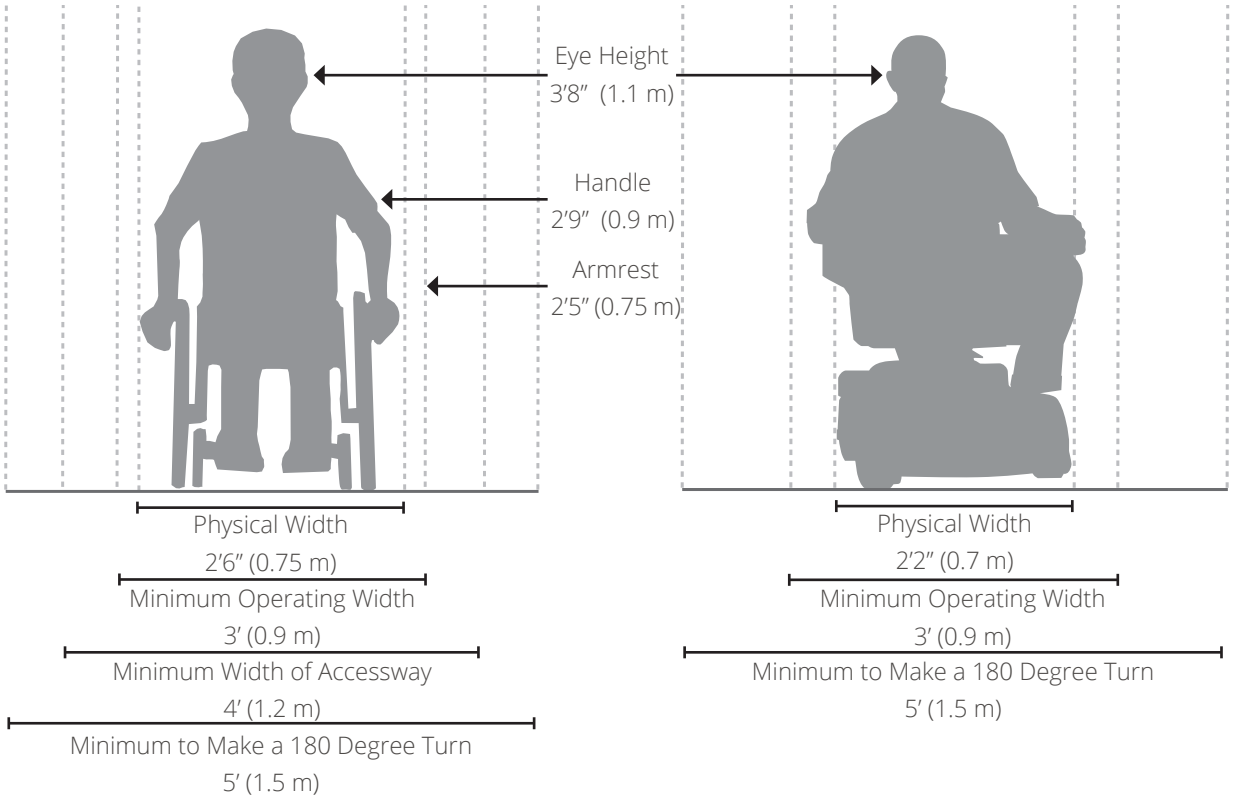
Manual wheelchairs are self-propelled devices. Users propel themselves using push rims attached to the rear wheels. Braking is done through resisting wheel movement with the hands or arm. Alternatively, a second individual can control the wheelchair using handles attached to the back of the chair.

Power wheelchairs use battery power to move the wheelchair. The size and weight of power wheelchairs limit their ability to negotiate obstacles without a ramp. Various control units are available that enable users to control the wheelchair movement, based on their ability (e.g., joystick control, breath controlled, etc).

Maneuvering around a turn requires additional space for wheelchair devices. Providing adequate space for 180 degree turns at appropriate locations is an important element of accessible design.

Table 3 Wheelchair User Design Considerations

EFFECT ON MOBILITY	DESIGN SOLUTION
Difficulty propelling over uneven or soft surfaces.	Firm, stable surfaces and structures, including ramps or beveled edges.
Cross-slopes cause wheelchairs to veer downhill.	Cross-slopes of less than two percent.
Require wider path of travel.	Sufficient width and maneuvering space.



DESIGN NEEDS OF BICYCLISTS

The facility designer must have an understanding of how bicyclists operate and how their bicycle influences that operation. Bicyclists, by nature, are much more affected by poor facility design, construction and maintenance practices than motor vehicle drivers. By understanding the unique characteristics and needs of bicyclists, a facility designer can provide quality facilities and minimize user risk.

Bicycle as a Design Vehicle

Similar to motor vehicles, bicyclists and their bicycles exist in a variety of sizes and configurations. These variations occur in the types of vehicle (such as a conventional bicycle, a recumbent bicycle or a tricycle), and behavioral characteristics (such as the comfort level of the bicyclist). The design of a bikeway should consider reasonably expected bicycle types on the facility and utilize the appropriate dimensions.

The Bicycle Rider figure illustrates the operating space and physical dimensions of a typical adult bicyclist, which are the basis for typical facility design. Bicyclists require clear space to operate within a facility. This is why the minimum operating width is greater than the physical dimensions of the bicyclist. Bicyclists prefer five feet or more operating width, although four feet may be minimally acceptable.

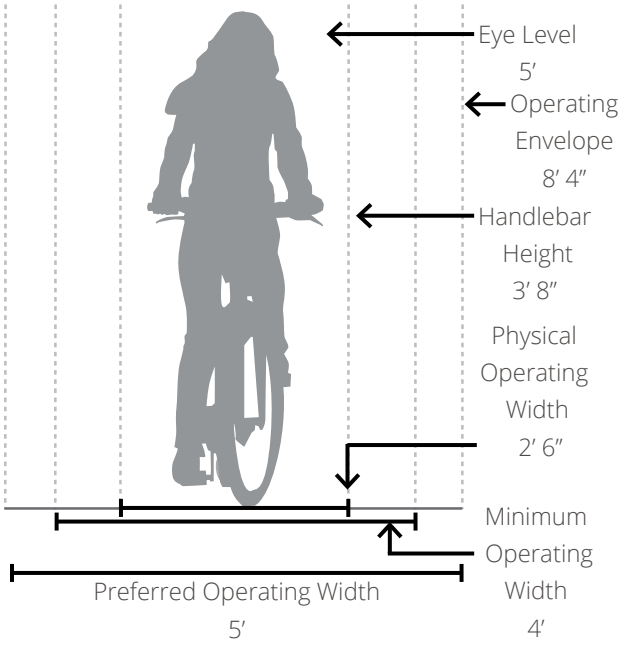
In addition to the design dimensions of a typical bicycle, there are many other commonly used pedal-driven cycles and accessories to consider when planning and designing bicycle facilities. The most common types include tandem bicycles, recumbent bicycles, and trailer accessories.

Table 4 Bicycle As Design Vehicle - Design Speed Expectation

BICYCLE TYPE	FEATURE	TYPICAL SPEED
Upright Adult Bicyclist	Paved level surfacing	8-12 mph*
	Crossing Intersections	10 mph
	Downhill	+20 mph
	Uphill	5-12 mph
Recumbent Bicyclist	Paved Level Surfacing	18 mph

** Typical speed for causal riders per AASHTO 2013.*

Bicycle Rider - Typical Dimensions



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Chapter II | Pedestrian Toolbox

Introduction

The Pedestrian Toolbox includes pedestrian-oriented infrastructure elements that create a more comfortable and safe pedestrian experience. This toolbox is important because it contains tools for creating a system that meets the needs of the community.

This toolbox will be helpful to city staff in addressing the pedestrian needs and opportunities throughout Folsom. It should be noted that the tools contained in this guide are not exhaustive and should be referenced along with NACTO's Urban Street Design Guide, as well as local guidance of The City of Folsom and The State of California.

All pedestrian design guidelines in this toolbox meet or exceed the minimums set by the Americans with Disabilities Act Accessible Design Guidelines (ADAAG) and the Public Right of Way Accessibility Guidelines (PROWAG).

Sidewalks

SIDEWALK ZONES AND WIDTHS

Sidewalks are the most fundamental element of the walking network, as they provide an area for pedestrian travel separated from vehicle traffic. Providing adequate and accessible facilities can lead to increased numbers of people walking, improved accessibility, and the creation of social space.

ENHANCEMENT	FURNISHING ZONE	PEDESTRIAN THROUGH ZONE	FRONTAGE ZONE
The **enhancement zone** can provide additional value to pedestrians by acting as additional buffer space through the provision of a bike lane or parking lane. It can also provide more direct benefit when configured with amenities such as curb extensions, parklets, transit stop amenities and/or bicycle parking. In the **enhancement zone** there should be a 6 inch wide curb.	The **buffer zone**, also called the furnishing or landscaping zone, buffers pedestrians from the adjacent roadway, and is also the area where elements such as street trees, signal poles, signs, and other street furniture are properly located.	The **pedestrian through zone** is the clear area intended for pedestrian travel. This zone should be entirely free of permanent and temporary objects. Wide through zones are needed in downtown areas or where pedestrian flows are high.	The frontage zone allows pedestrians a comfortable "shy" distance from the building fronts. It provides opportunities for window shopping, to place signs, planters, or chairs.

STREET CLASSIFICATION	ENHANCEMENT ZONE/ PARKING LANE	BUFFER ZONE	PEDESTRIAN THROUGH ZONE	FRONTAGE ZONE
Local Streets	Varies	4-6 ft	6 ft	N/A
Downtown and Pedestrian Priority Areas	Varies	4-6 ft	12 ft	2.5 - 10 ft
Arterials and Collectors	Varies	4-6 ft	6-8 ft	2.5 - 5 ft

Typical Uses

- Wider sidewalks should be installed near schools, at transit stops, in downtown areas, or anywhere high concentrations of pedestrians exist.
- At transit stops, an 8 ft by 5 ft clear space is required for accessible passenger boarding/alighting at the front door location per ADA requirements.
- Sidewalks should be continuous on both sides of urban commercial streets, and should be required in areas of moderate residential density (1-4 dwelling units per acre).
- When retrofitting gaps in the sidewalk network, locations near transit stops, schools, parks, public buildings, and other areas with high concentrations of pedestrians should be the highest priority.

Materials and Maintenance

Sidewalks are typically constructed out of concrete and are separated from the roadway by a curb or gutter and sometimes a landscaped boulevard. Less expensive walkways constructed of asphalt, crushed stone, or other stabilized surfaces may be appropriate. Ensure accessibility and properly maintain all surfaces regularly. Surfaces must be firm, stable, and slip resistant. Colored, patterned, or stamped concrete can add distinctive visual appeal.

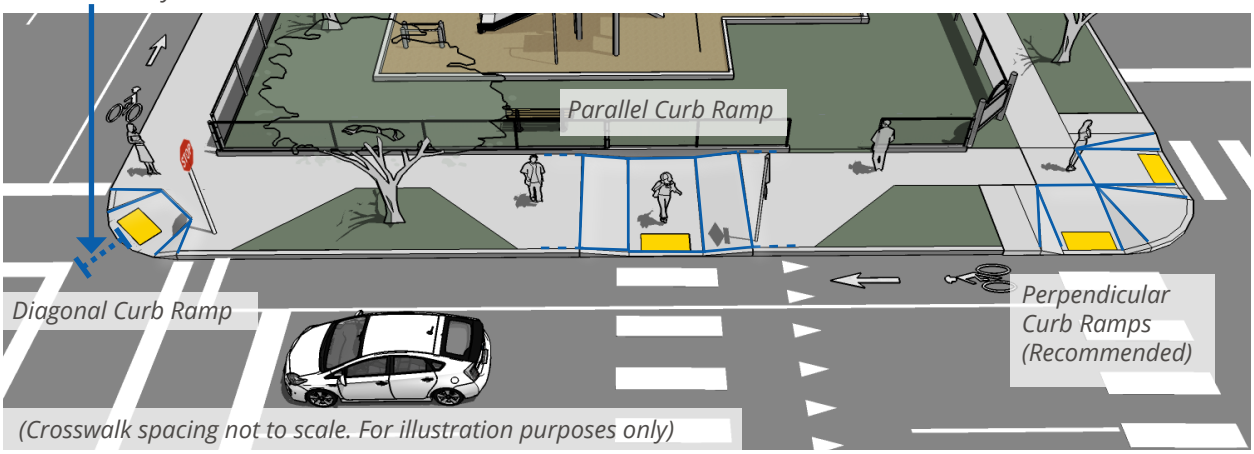
Planting shade trees, installing biofiltration planters or bioretention swales, and providing cool pavement and permeable pavement should be considered during the design of bicycle and pedestrian infrastructure projects.

CURB RAMPS

Curb ramps are the design elements that allow all users to make the transition from the street to the sidewalk. A sidewalk without a curb ramp can be useless to someone in a wheelchair, forcing them back to a driveway and out into the street for access. There are a number of factors to be considered in the design and placement of curb ramps.

Diagonal ramps shall include a clear space of at least 48" within the crosswalk for user maneuverability

Curb ramps shall be located so that they do not project into vehicular traffic lanes, parking spaces, or parking access aisles. Three configurations are illustrated below.



(Crosswalk spacing not to scale. For illustration purposes only)

Typical Use

Curb ramps must be installed at all intersections and midblock locations where pedestrian crossings exist, as mandated by federal legislation (1973 Rehabilitation Act and ADA 1990). All newly constructed and altered roadway projects must include curb ramps. In addition, existing facilities must be upgraded to current standards when appropriate.

The edge of an ADA compliant curb ramp shall be marked with a detectable warning (also known as truncated domes) to alert people with visual impairments to the edge of the vehicle lane. These devices are most effective when adjacent to smooth pavement so the difference is easily detected.

Design Features

- The level landing at the top of a ramp shall be at least 4 feet long and at least the same width as the ramp itself. The slope of the ramp shall be compliant to current standards.
- If the ramp runs directly into a crosswalk, the landing will be at the same grade as the roadway.
- If the top landing is within the sidewalk or corner area where someone in a wheelchair may have to change direction, the landing must be a minimum of 5'-0" long (in the direction of the ramp run) and at least as wide as the ramp, although a width of 5'-0" is preferred.

Further Considerations

The curb ramp (excluding any flared sides) or blended transition shall be contained wholly within the width of the pedestrian street crossing served. However, in alterations where existing physical constraints prevent this, a single diagonal curb ramp shall be permitted to serve both pedestrian street crossings. Although diagonal curb ramps might save money, they orient pedestrians directly into the traffic zone, which can be challenging for wheelchair users and pedestrians with visual impairment. Diagonal curb ramp configurations are not recommended.

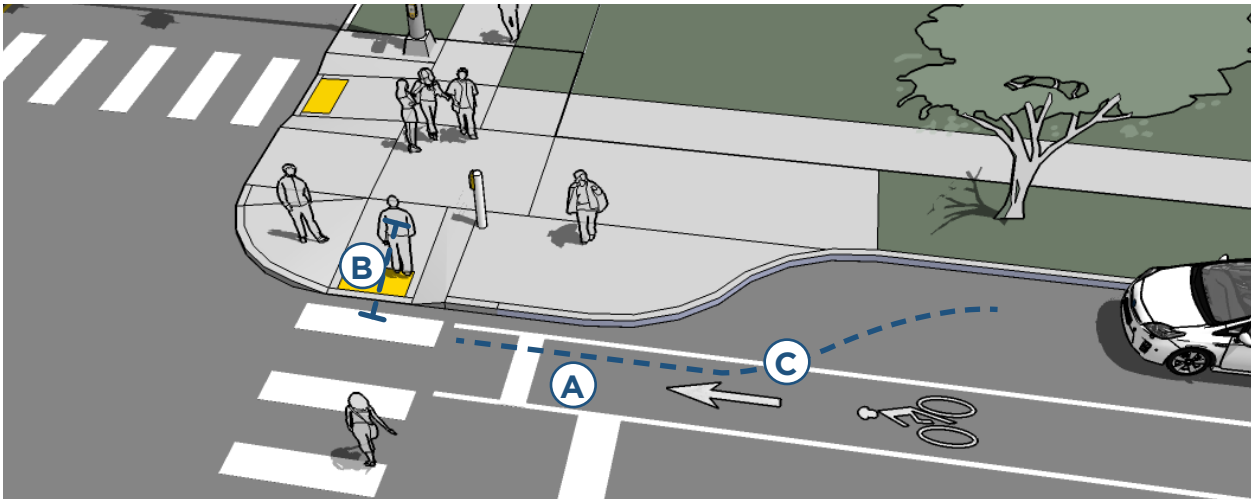
Curb return radii meed to be considered when designing directional ramps. While curb ramps are needed for use on all types of streets, the highest priority locations are in downtown areas and on streets near transit stops, schools, parks, medical facilities, shopping areas.

Materials and Maintenance

It is critical that the interface between a curb ramp and the street be maintained adequately. Asphalt street sections can develop potholes at the foot of the ramp, which can catch the front wheels of a wheelchair.

CURB EXTENSIONS

Curb extensions, also called curb bulbouts and neckdowns, minimize pedestrian exposure during crossing by shortening the crossing distance and giving pedestrians a better chance to see and be seen before beginning to cross. Curb extensions are appropriate for any crosswalk where it is desirable to shorten the crossing distance and there is a parking lane adjacent to the curb.



Typical Application

- For purposes of efficient street sweeping, the minimum radius for the reverse curves of the transition is 10 ft and the two radii should be balanced to be nearly equal.
- The curb extension width should terminate one foot short of the parking lane to maximize bicyclist safety.

Design Features

(A) Where a bike lane runs adjacent to the curb extension, design with a 1' buffer from edge of parking lane (preferred).

(B) Crossing distance is shortened by approximately 6-8 feet with a parallel parking lane or 15 feet or more with an angled parking lane.

(C) Curb extension length can be adjusted to accommodate bus stops or street furniture.

Further Considerations

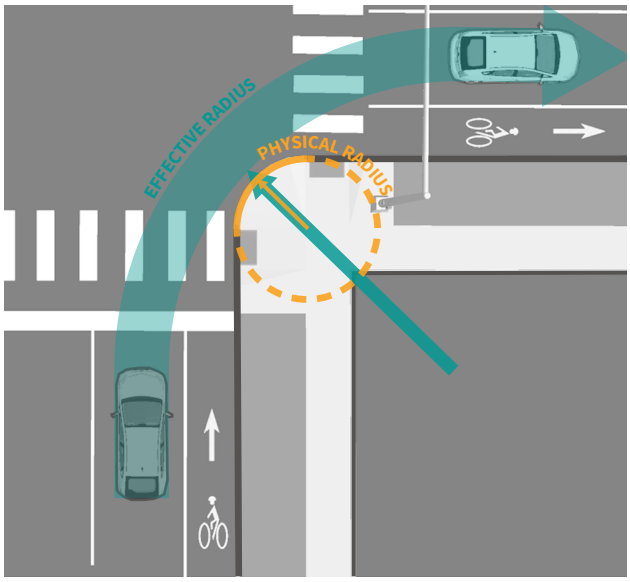
If there is no parking lane, adding curb extensions across a roadway shoulder may be a problem for bicycle travel and truck or bus turning movements.

Materials and Maintenance

Planted curb extensions may be designed as a bioswale, a vegetated system for stormwater management. To maintain proper stormwater drainage, curb extensions can be constructed as refuge islands offset by a drainage channel or feature a covered trench drain.

CORNER RADII

The size of a curb's radius can have a significant impact on pedestrian comfort and safety. A smaller curb radius provides more pedestrian area at the corner, allows more flexibility in the placement of curb ramps, results in a shorter crossing distance and requires vehicles to slow more on the intersection approach. During the design phase, the chosen radius should be the smallest possible for the circumstances and consider the effective radius in any design vehicle turning calculations.



Recommended: Bidirectional curb ramps for crossing in both directions.

Typical Application

The curb radius may be as small as 3 ft where there are no turning movements, or 5 ft where there are turning movements and adequate street width. On-street parking and bike lanes create a larger effective turning radius and can therefore allow a smaller curb radius.

Design Features

Corners have two critical dimensions which must be considered together.

- The physical radius controls the pedestrian experience.
- The effective radius is the widest turning arc that a vehicle can take through the corner and is larger than the physical radius.

Further Considerations

Several factors govern the choice of curb radius in any given location. These include the desired pedestrian area of the corner, traffic turning movements, street classifications, design vehicle turning radius, intersection geometry, and whether there is on-street parking or a bike lane (or both) between the travel lane and the curb.

Chapter III | Bicycle Toolbox

Introduction

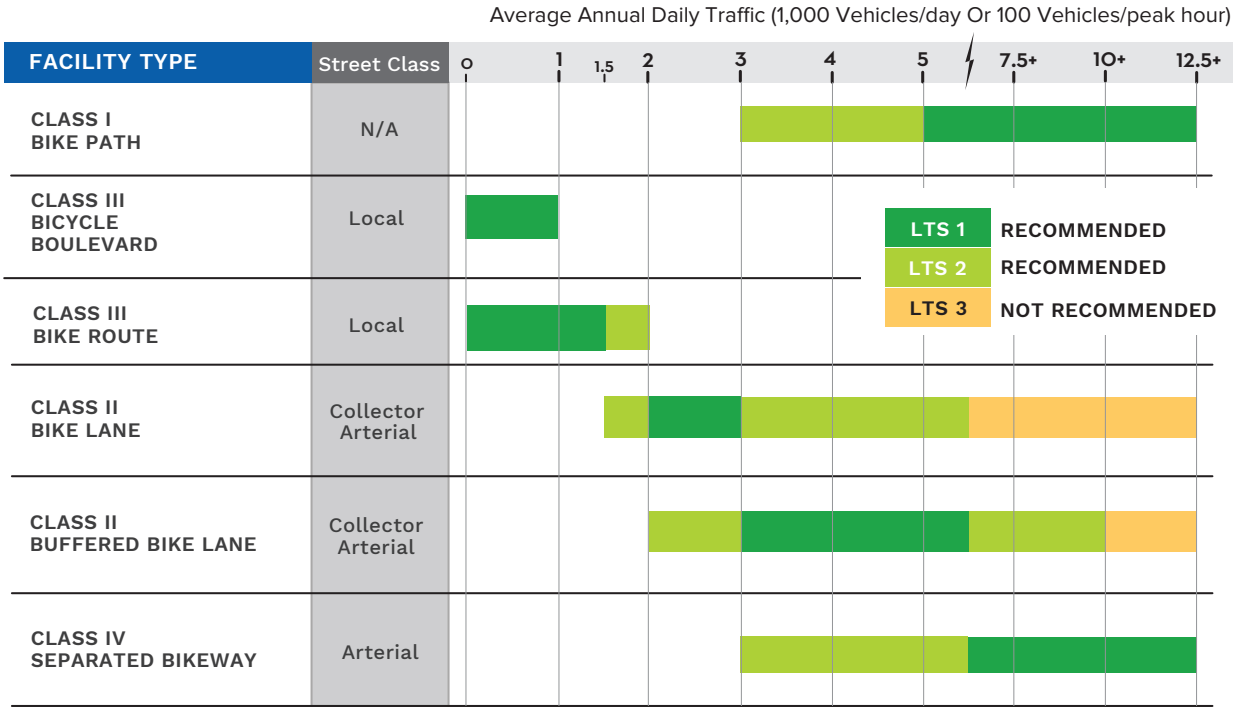
FACILITY SELECTION: BIKEWAYS

Selecting the best bikeway facility type for a given roadway can be challenging, due to the range of factors that influence bicycle users' comfort and safety. There is a significant impact on cycling comfort when the speed differential between bicyclists and motor vehicle traffic is high and motor vehicle traffic volumes are high. This page can help determine when a Class IV Bikeway is most appropriate relative to other facility types.

Facility Selection Table

As a starting point to identify a preferred facility, the chart below can be used to determine the recommended type of bikeway in particular volume situations. To use this chart, identify the appropriate daily traffic volume on the existing or proposed roadway, and locate the facility types indicated by those key variables.

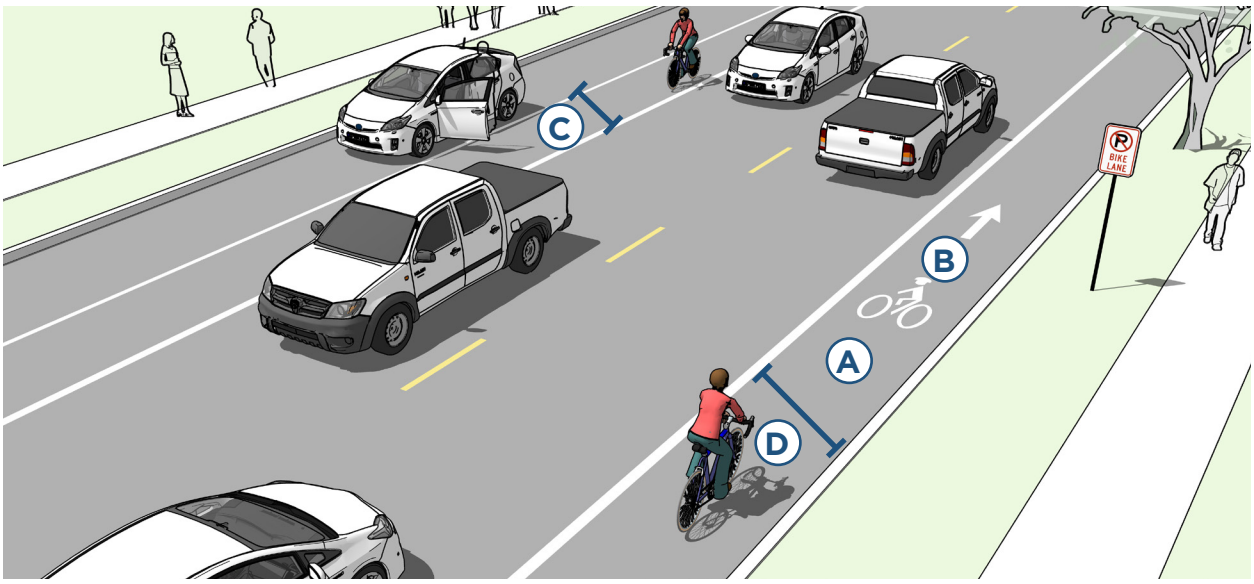
Other factors beyond volume which affect facility selection include traffic speed, traffic mix of automobiles and heavy vehicles, the presence of on-street parking, intersection density, surrounding land use, and roadway sight distance. These factors are not included in the facility selection chart below, but should always be considered in the facility selection and design process.



(Average Daily Vehicles, per 1,000)

CLASS II STANDARD BIKE LANES

On-street bike lanes (Class II Bikeways) designate an exclusive space for bicyclists through the use of pavement markings and signs. The bike lane is located directly adjacent to motor vehicle travel lanes and is used in the same direction as motor vehicle traffic. Bike lanes are typically on the right side of the street, between the adjacent travel lane and curb, road edge or parking lane.



Typical Use

- Bike lanes may be used on any street with adequate space, but are most effective on streets with moderate traffic volumes ≤ 6,000 ADT (≤ 3,000 preferred).
- Bike lanes are most appropriate on streets with lower to moderate speeds ≤ 25 mph.
- Appropriate for skilled adult riders on most streets.
- May be appropriate for children when configured as 6+ ft wide lanes on lower-speed, lower-volume streets with one lane in each direction.

Design Features

(A) Mark inside line with 6" stripe. **(CA MUTCD 9C.04)** Mark 4" parking lane line or "Ts".[1]

(B) Include a bicycle lane marking **(CA MUTCD Figure 9C-3)** at the beginning of blocks and at regular intervals along the route. **(CA MUTCD 9C.04)**

(C) 6 foot width preferred adjacent to on-street parking, (5 foot min.)

(D) 5–6 foot preferred adjacent to curb and gutter (4 foot min.) or 4 feet more than the gutter pan width.

- The R81 sign is required at the beginning of all bike lanes, and at major changes in direction.

1 Studies have shown that marking the parking lane encourages people to park closer to the curb. FHWA. Bicycle Countermeasure Selection System. 2006.

Further Considerations

On high speed streets (≥ 40 mph) the minimum bike lane should be 6 feet. **(HDM 301.2)**

It may be desirable to reduce the width of general purpose travel lanes in order to add or widen bicycle lanes. **(HDM 301.2 3)**

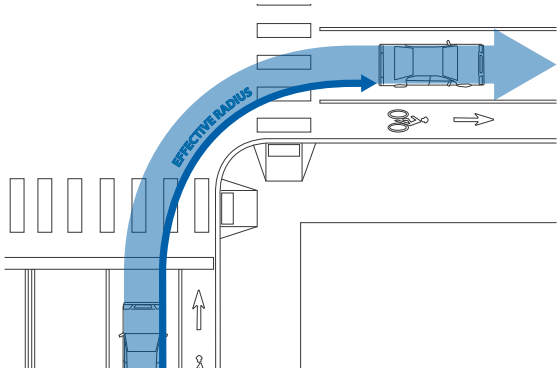
On multi-lane streets, the most appropriate bicycle facility to provide for user comfort may be buffered bicycle lanes or physically separated bicycle lanes.

Manhole Covers and Grates:

- Manhole surfaces should be manufactured with a shallow surface texture in the form of a tight, nonlinear pattern.
- If manholes or other utility access boxes are to be located in bike lanes within 50 ft. of intersections or within 20 ft. of driveways or other bicycle access points, special manufactured permanent nonstick surfaces are required to ensure a controlled travel surface for bicyclists breaking or turning.
- Manholes, drainage grates, or other obstacles should be set flush with the paved roadway. Roadway surface inconsistencies pose a threat to safe riding conditions for bicyclists. Construction of manholes, access panels or other drainage elements should be constructed with no variation in the surface. The maximum allowable tolerance in vertical roadway surface will be 1/4 of an inch.

Standard Class II Bike Lane

Place Bike Lane Symbols to Reduce Wear



Bike lane word, symbol, and/or arrow markings (CAMUTCD Figure 9C-3) shall be placed outside of the motor vehicle tread path in order to minimize wear from the motor vehicle path. (NACTO 2012)

Materials and Maintenance

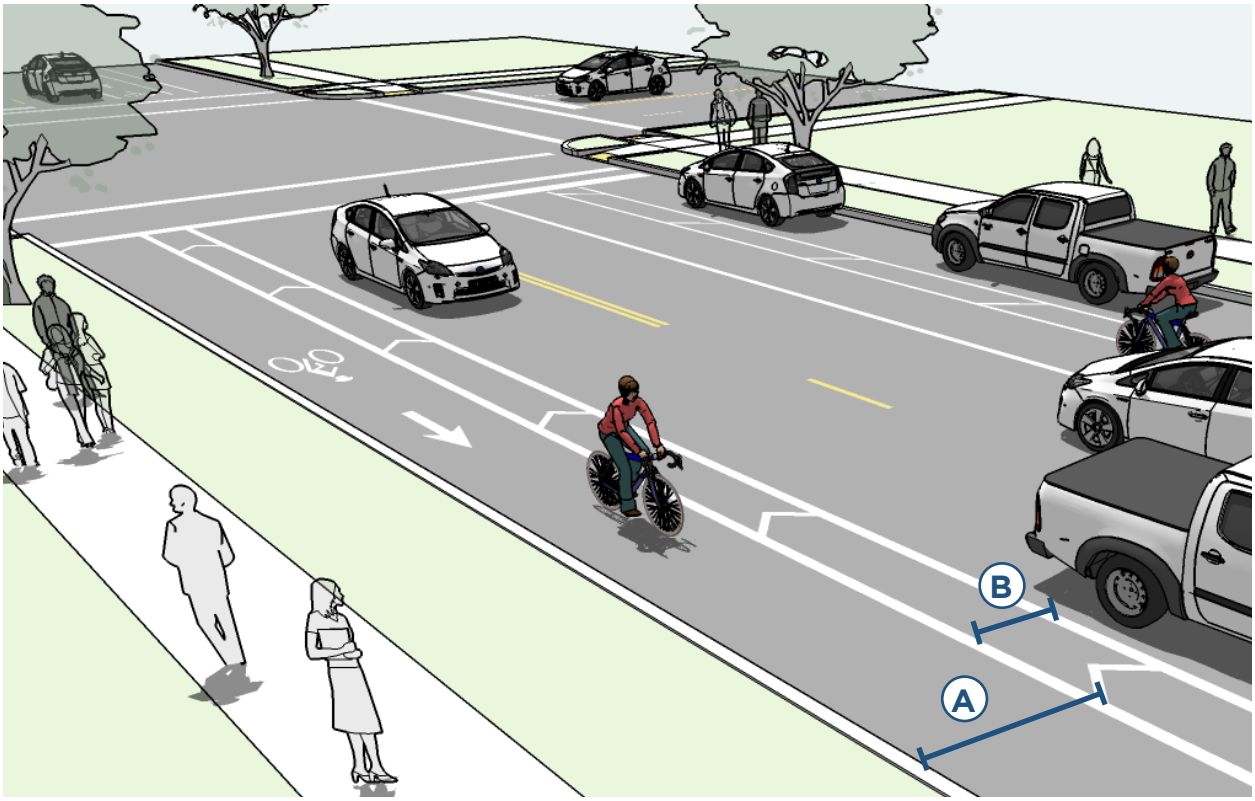
Bike lane striping and markings will require higher maintenance where vehicles frequently traverse over them at intersections, driveways, parking lanes, and along curved or constrained segments of roadway.

The use of cool pavement materials reduces localized temperatures for bicyclists and some applications (i.e., white topping, micro surfacing with high albedo materials) may extend the life of the pavement.

Bike lanes should also be maintained so that there are no pot holes, cracks, uneven surfaces or debris.

CLASS II BUFFERED BIKE LANES

Buffered bike lanes are conventional bicycle lanes paired with a striped buffer space, separating the bicycle lane from the adjacent motor vehicle travel lane and/or parking lane.



Typical Use

- Anywhere a conventional bike lane is being considered.
- While conventional bike lanes are most appropriate on streets with lower to moderate speeds (≥ 25 mph), buffered bike lanes are appropriate on streets with higher speeds (+25mph) and high volumes or high truck volumes (up to 6,000 ADT).
- On streets with extra lanes or lane width.
- Appropriate for skilled adult riders on most streets.

Design Features

(A) The minimum bicycle travel area (not including buffer) is 5 feet wide. Where a gutter pan exists, a minimum of 3 feet paved surface width beyond the gutter is needed for the bike lane.

(B) Buffers should be at least 2 feet wide. If buffer area is 4 feet or wider, white chevron or diagonal markings should be used. **(CA MUTCD 9C-104)**

- For clarity at driveways or minor street crossings, consider a dotted line.
- There is no standard for whether the buffer is configured on the parking side, the travel side, or a combination of both.

Buffered bike lane transitions into dotted green and white lane markings to indicate conflict point

The use of pavement markings delineates space for bicyclists to ride in a comfortable facility.

Further Considerations

- Color may be used within the lane to discourage motorists from entering the buffered lane.
- A study of buffered bicycle lanes found that, in order to make the facilities successful, there needs to also be driver education, improved signage and proper pavement markings.[1]
- On multi-lane streets with high vehicles speeds, the most appropriate bicycle facility to provide for user comfort may be Class IV separated bike lanes.
- NCHRP Report #766 recommends, when space in limited, installing a buffer space between the parking lane and bicycle lane where on-street parking is permitted rather than between the bicycle lane and vehicle travel lane.[2]

1 Monsere, C.; McNeil, N.; and Dill, J., "Evaluation of Innovative Bicycle Facilities: SW Broadway Cycle Track and SW Stark/Oak Street Buffered Bike Lanes. Final Report" (2011).Urban Studies and Planning Faculty Publications and Presentations.

2 National Cooperative Highway Research Program. Report #766: Recommended Bicycle Lane Widths for Various Roadway Characteristics.

Materials and Maintenance

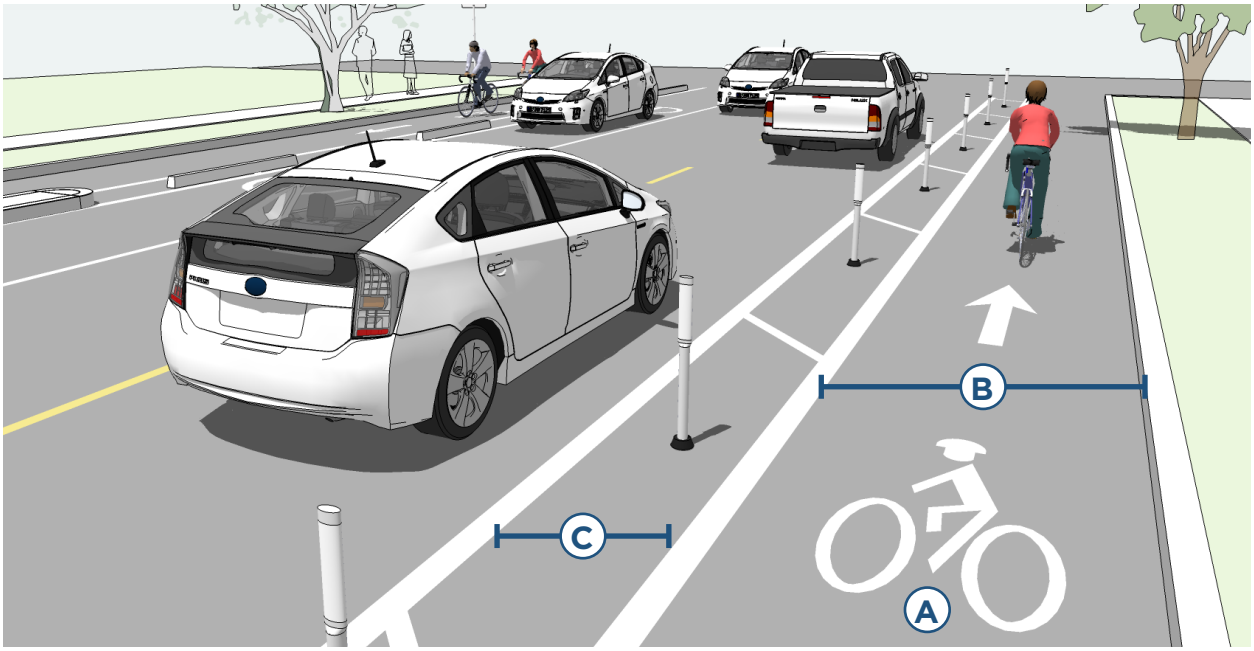
Bike lane striping and markings will require higher maintenance where vehicles frequently traverse over them at intersections, driveways, parking lanes, and along curved or constrained segments of roadway.

The use of cool pavement materials reduces localized temperatures for bicyclists and some applications (i.e., white topping, micro surfacing with high albedo materials) may extend the life of the pavement.

Bike lanes should be maintained so that there are no pot holes, cracks, uneven surfaces or debris.

CLASS IV SEPARATED BIKEWAYS - ONE WAY

One-way separated bikeways, also known as protected bikeways or cycle tracks, are on-street bikeway facilities that are separated from vehicle traffic. Physical separation is provided by a barrier between the bikeway and the vehicular travel lane. These barriers can include flexible posts, bollards, parking, planter strips, extruded curbs, or on-street parking. Separated bikeways using these barrier elements typically share the same elevation as adjacent travel lanes, but the bikeway could also be raised above street level, either below or equivalent to sidewalk level.



Typical Use

- Along streets on which conventional bicycle lanes would cause many bicyclists to feel stress because of factors such as multiple lanes, high bicycle volumes, high motor traffic volumes (9,000-30,000 ADT), higher traffic speeds (25+ mph), high incidence of double parking, higher truck traffic (10% of total ADT) and high parking turnover.
- Along streets for which conflicts at intersections can be effectively mitigated using parking lane setbacks, bicycle markings through the intersection, and other signalized intersection treatments.

Design Features

(A) Pavement markings, symbols and/or arrow markings must be placed at the beginning of the separated bikeway and at intervals along the facility based on engineering judgment to define the bike direction. **(CA MUTCD 9C.04)**

(B) 7 foot width preferred in areas with high bicycle volumes or uphill sections to facilitate safe passing behavior (5 foot minimum). **(HDM 1003.1(1))**

(C) 3 foot minimum buffer width adjacent to parking lines (2 foot minimum when adjacent to travel lanes), marked with 2 solid white **(DIB 89, 2015).**

Parked cars serve as a barrier between bicyclists and the vehicle lane. Barriers could also include flexible posts, bollards, planters, or other design elements Source: Bike East Bay.

Further Considerations

Separated bikeway buffers and barriers are covered in the CAMUTCD as preferential lane markings **(section 3D.01)** and channelizing devices **(section 3H.01).** If the buffer area is 4 feet or wider, white chevron or diagonal markings should be used **(section 9C.04).** Curbs may be used as a channeling device, see the section on islands **(section 3I.01).** Grade-separation provides an enhanced level of separation in addition to buffers and other barrier types.

- Where possible, physical barriers such as removable curbs should be oriented towards the inside edge of the buffer to provide as much extra width as possible for bicycle use.
- A retrofit separated bikeway has a relatively low implementation cost compared to road reconstruction by making use of existing pavement and drainage and using a parking lane as a barrier.
- Gutters, drainage outlets and utility covers should be designed and configured as not to impact bicycle travel.
- Avoiding conflicts at intersections requires careful consideration along Class IV bikeways. Providing increased physical and temporal separation for people on bikes (and walking) can be achieved with "Protected Intersections" which feature raised corner islands and increased crossing setbacks, among other intersection enhancements. See the Caltrans Intersection Toolbox and Complete Streets Guide for more information.

For clarity at major or minor street crossings, consider a dotted line **(CA MUTCD Detail 39A - Bike Lane Intersection Line)** for the buffer boundary where cars are expected to cross.

- Special consideration should be given at transit stops to manage bicycle and pedestrian interactions. For design guidance, refer to VTA's Bus Stop Boarding Islands Memo (November 2020).

Materials and Maintenance

Bikeway striping and markings will require higher maintenance where vehicles frequently traverse over them at intersections, driveways, parking lanes, and along curved or constrained segments of roadway. Green conflict striping (if used) will also generally require higher maintenance due to vehicle wear.

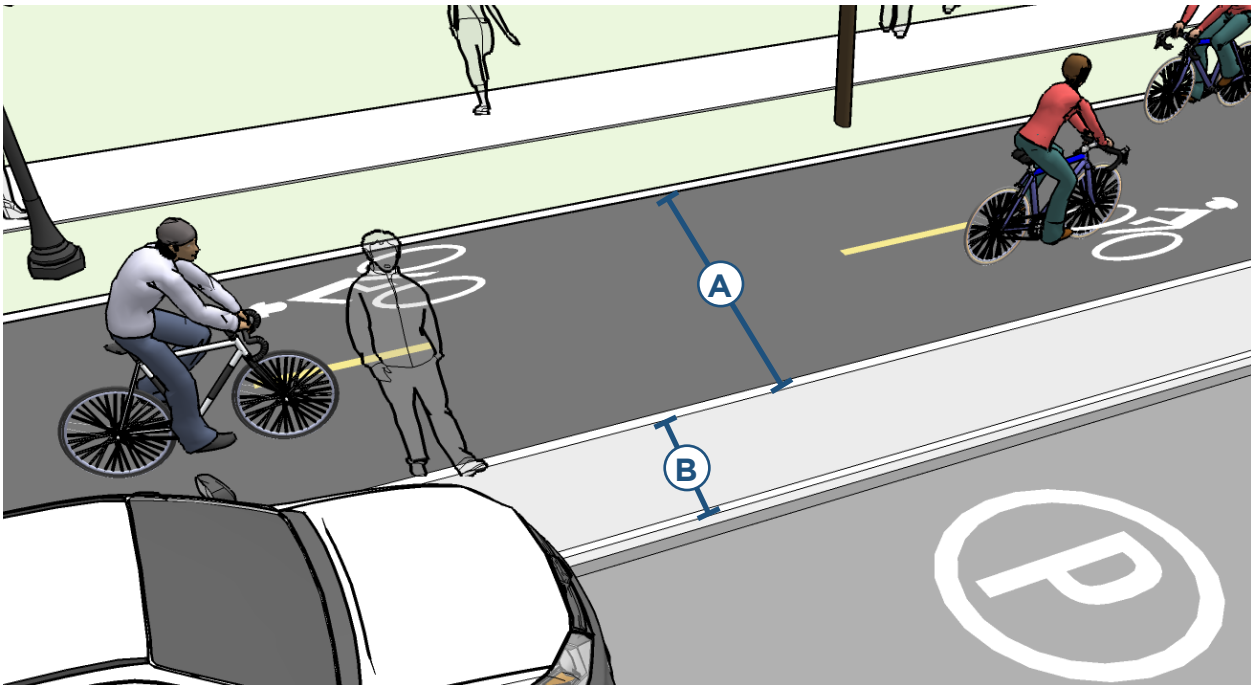
The use of cool pavement materials reduces localized temperatures for bicyclists and some applications (i.e., white topping, micro surfacing with high albedo materials) may extend the life of the pavement.

Bikeways should be maintained so that there are no pot holes, cracks, uneven surfaces or debris.

Access points along the facility should be provided for street sweeper vehicles to enter/exit the separated bikeway.

CLASS IV SEPARATED BIKEWAYS - TWO WAY

Two-Way Separated Bikeways are bicycle facilities that allow bicycle movement in both directions on one side of the road. Two-way separated bikeways share some of the same design characteristics as one-way separated bikeways, but often require additional considerations at driveway and side-street crossings, and intersections with other bikeways.



Typical Use

- Works best on the left side of one-way streets.
- Streets with high motor vehicle volumes and/or speeds
- Streets with high bicycle volumes.
- One-way streets with a high incidence of wrong-way bicycle riding.
- Streets with few conflicts such as driveways or cross-streets on one side of the street.
- Streets that connect to Class I shared use paths.

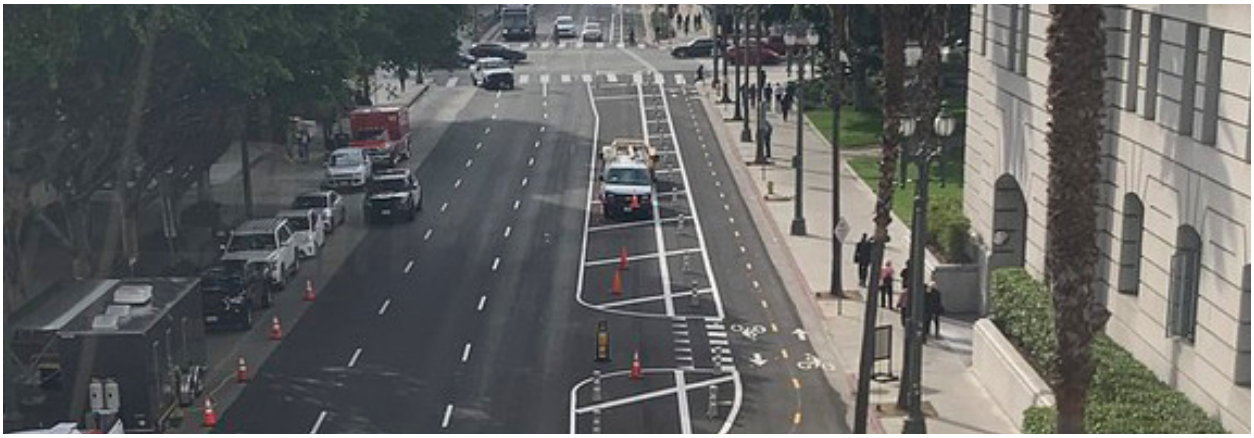
Design Features

(A) 12 foot operating width preferred (10 ft minimum) width for two-way facility.

(B) In constrained locations an 8 foot minimum operating width may be considered **(HDM 1003.1(1)).**

- Adjacent to on-street parking a 3 foot minimum width channelized buffer or island shall be provided to accommodate opening doors **(NACTO, 2012) (CA MUTCD 3H.01, 3I.01).**
- A separation narrower than 5 feet may be permitted if a physical barrier is present. **(AASHTO, 2013)**
- Additional signalization and signs may be necessary to manage conflicts.

Two-Way Separated Bikeway



A two-way facility can accommodate bicyclists in two directions of travel.

Further Considerations

- On-street bikeway buffers and barriers are covered in the CA MUTCD as preferential lane markings **(section 3D.01)** and channelizing devices, including flexible delineators **(section 3H.01)**. Curbs may be used as a channeling device, see the section on islands **(section 3I.01)**.
- A two-way separated bikeway may be configured at street level or as a raised separated bikeway with vertical separation from the adjacent travel lane.
- Two-way separated bikeways should ideally be placed along streets with long blocks and few driveways or mid-block access points for motor vehicles.
- See Caltrans Design Information Bulletin No. 89 for more details.
- Special consideration should be given at transit stops to manage bicycle and pedestrian interactions. For design guidance, refer to VTA's Bus Stop Boarding Islands Memo (November 2020).
- Avoiding conflicts at intersections requires careful consideration along Class IV bikeways. Providing increased physical and temporal separation for people on bikes (and walking) can be achieved with "Protected Intersections" which feature raised corner islands and increased crossing setbacks, among other intersection enhancements. See the Caltrans Intersection Toolbox and Complete Streets Guide for more information.

Materials and Maintenance

Bikeway striping and markings will require higher maintenance where vehicles frequently traverse over them at intersections, driveways, parking lanes, and along curved or constrained segments of roadway. Green conflict striping (if used) will also generally require higher maintenance due to vehicle wear.

The use of cool pavement materials reduces localized temperatures for bicyclists and some applications (i.e., white topping, micro surfacing with high albedo materials) may extend the life of the pavement.

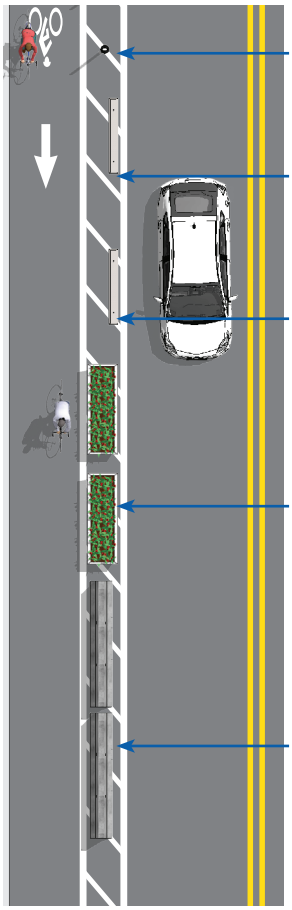
Bikeways should be maintained so that there are no pot holes, cracks, uneven surfaces or debris.

Access points along the facility should be provided for street sweeper vehicles to enter/exit the separated bikeway.

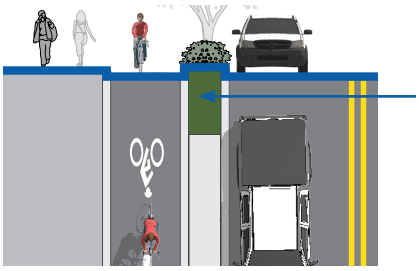
CLASS IV SEPARATED BIKEWAY BARRIERS

Separated bikeways may use a variety of vertical elements to physically separate the bikeway from adjacent travel lanes. Barriers may be robust constructed elements such as curbs, or may be more interim in nature, such as flexible delineator posts.

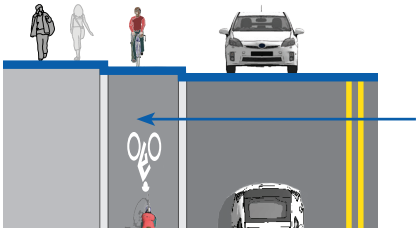
Barrier Separation



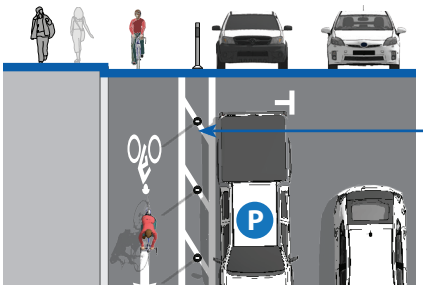
Media Separation



Grade Separation



Parking Separation



Typical Use

Appropriate barriers for retrofit projects:

- Parked Cars
- Flexible delineators
- Bollards
- Planters
- Parking stops

Appropriate barriers for reconstruction projects:

- Curb separation
- Medians
- Landscaped Medians
- Raised separated bike lane with vertical or mountable curb
- Pedestrian Refuge Islands

Raised separated bikeway configurations around driveways and transit stops

Design Features

- Maximize effective operating space by placing curbs or delineator posts as far from the through bikeway space as practicable.
- Allow for adequate shy distance of 1 to 2 feet from vertical elements to maximize useful space.
- When next to parking allow for 3 feet of space in the buffer space to allow for opening doors and passenger unloading.
- Parking should be prohibited within 30 feet of the intersection and driveways to improve visibility.

Materials and Maintenance

Separated bikeways protected by concrete islands or other permanent physical separation, can be swept by smaller street sweeper vehicles.

Access points along the facility should be provided for street sweeper vehicles to enter/exit the separated bikeway.

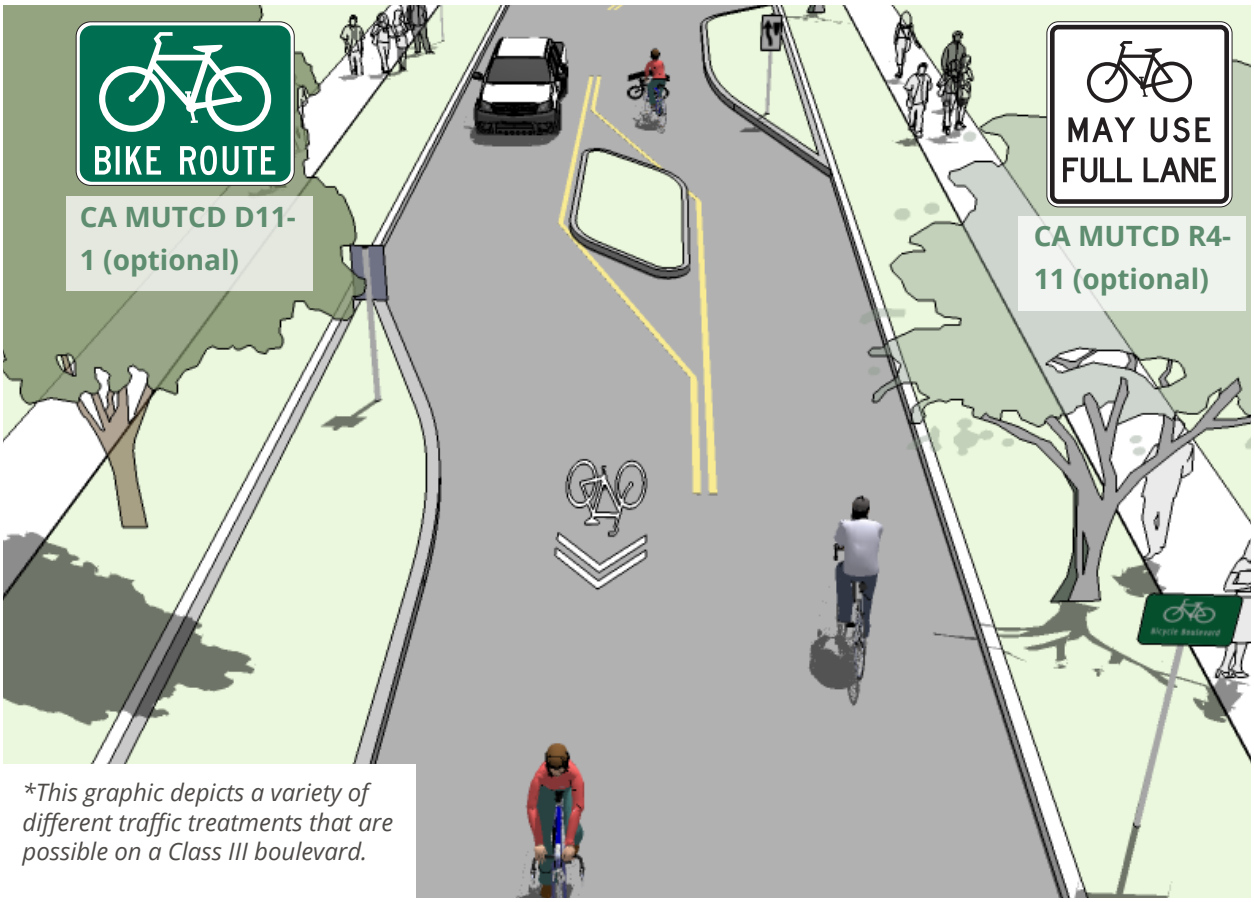
The use of cool pavement materials reduces localized temperatures for bicyclists and some applications (i.e., white topping, micro surfacing with high albedo materials) may extend the life of the pavement.

Further Considerations

- Separated bikeway buffers and barriers are covered in the CA MUTCD as preferential lane markings **(section 3D.01)** and channelizing devices **(section 3H.01)**. Curbs may be used as a channeling device, see the section on islands **(section 3I.01)**.
- With new roadway construction a raised separated bikeway can be less expensive to construct than a wide or buffered bicycle lane because of shallower trenching and sub base requirements.
- The presences of landscaping in medians, planters and safety islands increases comfort for users and enhances the streetscape environment.

CLASS III BIKE BOULEVARD

A Bicycle Boulevard is a low-speed, low-volume roadway that has been modified, as needed, to enhance comfort and convenience for people bicycling. It provides better conditions for bicycling while maintaining the neighborhood character and neighborhood and emergency vehicle access. Bicycle Boulevards are intended to serve as the primary low-stress bikeway network, providing direct, and convenient routes across Folsom. Key elements of Bicycle Boulevards are unique signage and pavement markings, traffic calming and diversion features to maintain low vehicle volumes, and convenient major street crossings.



**This graphic depicts a variety of different traffic treatments that are possible on a Class III boulevard.*

Typical Use

- Parallel with, and in close proximity to major thoroughfares (1/4 mile or less) on low-volume, low-speed streets.
- Follow a desire line for bicycle travel that is ideally long and relatively continuous (2-5 miles).
- Avoid alignments with excessive zigzag or circuitous routing. The bikeway should have less than 10% out of direction travel compared to shortest path of primary corridor.
- Local streets with traffic volumes of fewer than 1,500 vehicles per day. Utilize traffic calming to maintain or establish low volumes and discourage vehicle cut through / speeding.

Humboldt Street Bike Boulevard

Design Features

- Signs and pavement markings are the minimum treatments necessary to designate a street as a bicycle boulevard.
- Implement volume control treatments based on the context of the bicycle boulevard, using engineering judgment. Motor vehicle volumes should not exceed 1,500 vehicles per day.
- Intersection crossings should be designed to enhance comfort and minimize delay for bicyclists, following crossing treatment progression to achieve Level of Traffic Stress 1 or 2.

Further Considerations

- Bicycle boulevards are established on streets that improve connectivity to key destinations and provide a direct, low-stress route for bicyclists, with low motorized traffic volumes and speeds, designated and designed to give bicycle travel priority over other modes.
- Bicycle boulevard retrofits to local streets are typically located on streets without existing signalized accommodation at crossings of collector and arterial roadways. Without treatments for bicyclists, these intersections can become major barriers along the bicycle boulevard.
- Traffic calming can deter motorists from driving on a street. Anticipate and monitor vehicle volumes on adjacent streets to determine whether traffic calming results in inappropriate volumes. Traffic calming can be implemented on a trial basis.

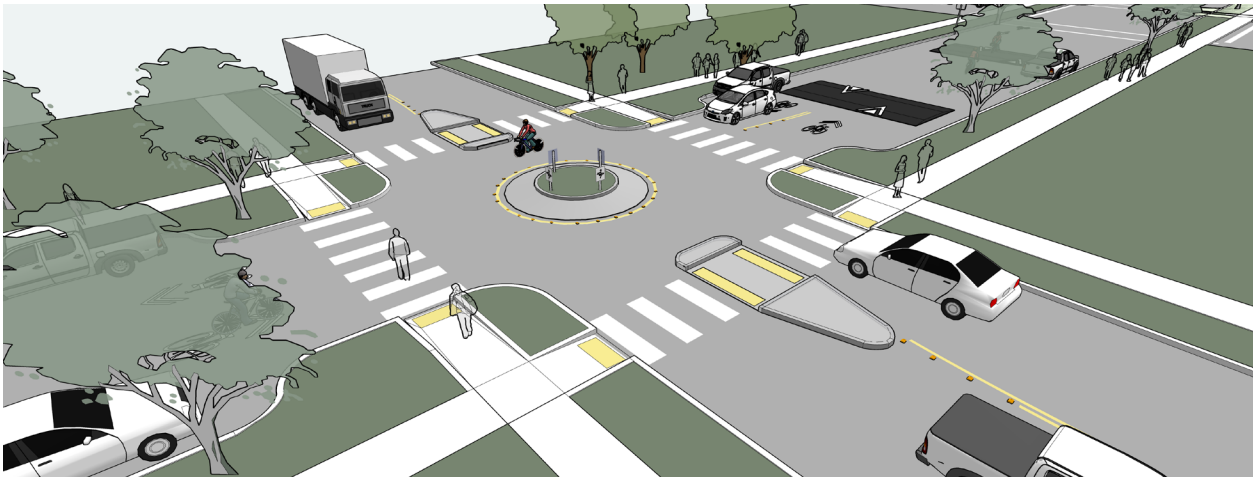
Materials and Maintenance

Bicycle boulevards require few additional maintenance requirements to local roadways. Signage, signals, and other traffic calming elements should be inspected and maintained according to local standards.

The use of cool pavement materials reduces localized temperatures for bicyclists and some applications (i.e., white topping, micro surfacing with high albedo materials) may extend the life of the pavement.

TRAFFIC CALMING

Traffic calming devices cause drivers to slow down by constricting the roadway space or by requiring careful maneuvering. Such measures may reduce the design speed of a street, and can be used in conjunction with reduced speed limits to reinforce the expectation of lowered speeds.



Application

- Neighborhood bikeways should have a maximum posted speed of 25 mph. Use traffic calming to maintain an 85th percentile speed below 22 mph.
- Maintain a minimum clear width of 14 feet with a constricted length of at least 20 feet in the direction of travel.
- Horizontal speed control measures should not infringe on bicycle space. Where possible, provide a bicycle route outside of the element so bicyclists can avoid having to merge into traffic at a narrow pinch point.
- Horizontal traffic calming devices cause drivers to slow down by constricting the roadway space or by requiring careful maneuvering. Such measures may reduce the design speed of a street, and can be used in conjunction with reduced speed limits to reinforce the expectation of lowered speeds.

Design Features

Vertical Traffic Calming

- Speed humps are raised areas usually placed in a series across both travel lanes. A 14' long hump reduces impacts to emergency vehicles. Speed humps can be challenging for bicyclists, gaps can be provided in the center or by the curb for bicyclists and to improve drainage. Speed humps can also be offset to accommodate emergency vehicles.
- Speed lumps or cushions have gaps to accommodate the wheel tracks of emergency vehicles. Speed cushions can also be configured to allow unimpeded bicycle traffic.
- Speed tables are longer than speed humps and flat-topped. Raised crosswalks are speed tables that are marked and signed for a pedestrian crossing.

Speed hump with traffic circle sign.

- For all vertical traffic calming, slopes should not exceed 1:10 or be less steep than 1:25. Tapers should be no greater than 1:6 to reduce the risk of bicyclists losing their balance. The vertical lip should be no more than a 1/4" high.

Horizontal Traffic Calming

- Maintain a minimum clear width of 20 feet (or 28 feet with parking on both sides), with a constricted length of at least 20 feet in the direction of travel.
- Chicanes are a series of raised or delineated curb extensions, edge islands, or parking bays on alternating sides of a street forming an "S"-shaped curb, which reduce vehicle speeds by requiring motorists to shift laterally through narrowed travel lanes.
- Pinchponts are curb extensions placed on both sides of the street, narrowing the travel lane and encouraging all road users to slow down. When placed at intersections, pinchpoints are known as chokers or neckdowns. They reduce curb radii and further lower motor vehicle speeds.
- Traffic circles are raised or delineated islands placed at intersections that reduce vehicle speeds by narrowing turning radii and the travel lane. Traffic circles can also include a paved apron to accommodate the turning radii of larger vehicles like fire trucks or school buses.

Further Consideration

- Benefits of speed management include:
- Improves conditions for bicyclists, pedestrians, and residents along the neighborhood bikeway.
- Reduced travel speeds decrease the number of passing events between bicyclists and motor vehicles, reducing exposure risks.
- Reduced travel speeds result in reduced injury severity in the event of a collision.
- Emergency vehicle response times should be considered where vertical deflection is used. Because emergency vehicles have a wider wheel base than passenger cars, speed lumps/cushions allow them to pass unimpeded while slowing most other traffic.

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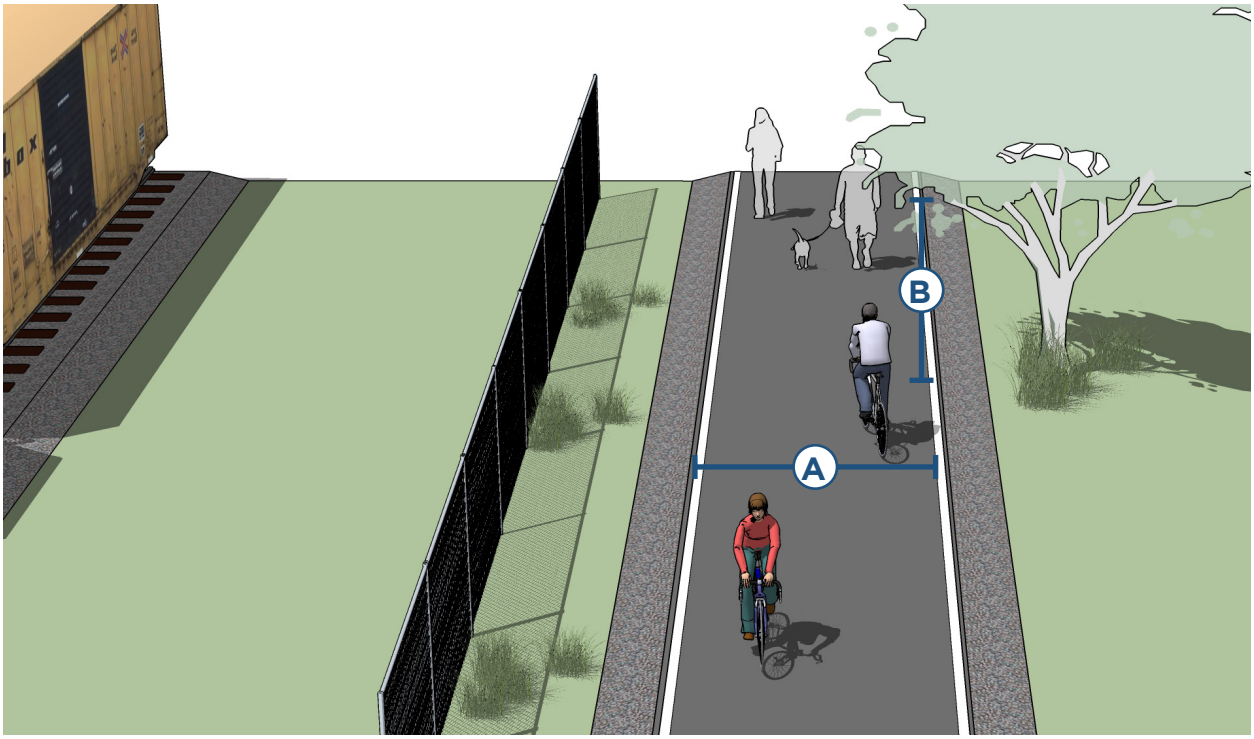
Chapter IV | Class I Shared Use Path

CLASS I BIKEWAY: SHARED USE PATH

A shared use path provides a travel area separate from motorized traffic for bicyclists, pedestrians, skaters, wheelchair users, joggers, and other users. Shared use paths are desirable for bicyclists of all skill levels preferring separation from traffic. Bicycle paths should generally provide directional travel opportunities not provided by existing roadways. Most shared use paths are designed for two-way travel.



Typical Use

- In waterway corridors, such as along canals, drainage ditches, rivers, and creeks.
- In abandoned rail corridors (commonly referred to as Rails-to-Trails or Rail-Trails.
- In active rail corridors, trails can be built adjacent to active railroads (referred to as Rails-with-Trails.
- In utility corridors, such as powerline and sewer corridors.
- Along roadways.

Design Features

(A) 12 ft is recommended for heavy use situations with high concentrations of multiple users. A separate track (5' minimum) can be provided for pedestrian use.

- 10 ft is recommended in most situations and will be adequate for moderate to heavy use.
- 8 ft is the minimum width (with 2' ft shoulders) allowed for a two-way bicycle path and is only recommended for low traffic situations. (Caltrans Design Manual)

Lateral Clearance

- A 2 ft or greater shoulder on both sides of the path should be provided. An additional ft of lateral clearance (total of 3') is required by the CAMUTCD for the installation of signage or other furnishings.

Overhead Clearance

- Clearance to overhead obstructions should be 8 ft minimum, with 10 ft recommended.

Striping

(B) When striping is required, use a 4 inch dashed yellow centerline stripe with 4 inch solid white edge lines.

- Solid centerlines can be provided on tight or blind corners and transitions, and on the approaches to roadway crossings.

Further Considerations

Under most conditions, centerline markings are not necessary. Centerline markings should only be used if necessary for clarifying user positioning or preferred operating procedure: Solid line = No Passing; Dashed line = Lane placement

Paths with a high volume of bidirectional traffic should include a centerline. This can help communicate that users should expect traffic in both directions and encourage users to travel on the right and pass on the left.

Where there is a sharp blind curve, painting a solid yellow line with directional arrows reduces the risk of head-on collisions.

Small scale signs should be used in path environments (CAMUTCD 9B.02).

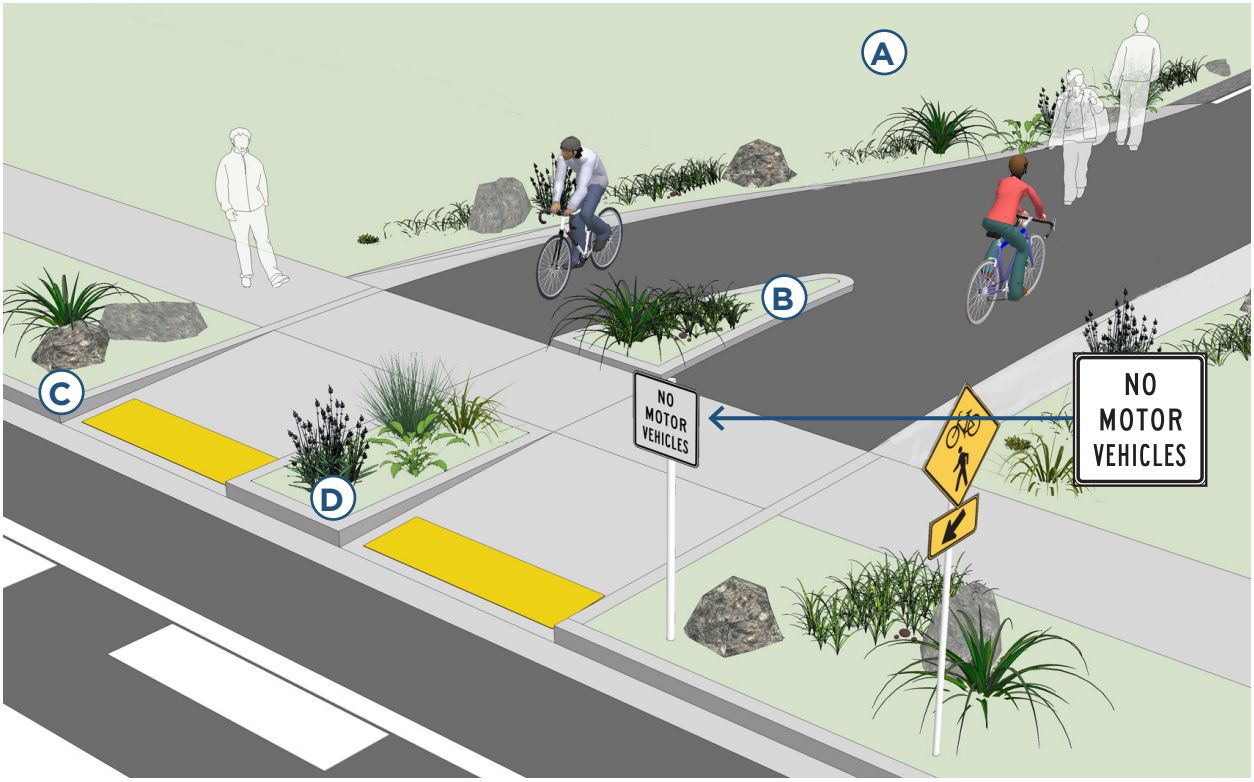
Terminate the path where it is easily accessible to and from the street system, preferably at a trailhead, controlled intersection or at the beginning of a dead-end street.

Use of bollards should be avoided when possible. If bollards are used at intersections and access points, they should be colored brightly and/or supplemented with reflective materials to be visible at night.

Planting shade trees, installing biofiltration planters or bioretention swales, and providing cool pavement and permeable pavement should be considered during the design of bicycle and pedestrian infrastructure projects.

BOLLARD ALTERNATIVES

Bollards are physical barriers designed to restrict motor vehicle access to the multi-use path. Unfortunately, physical barriers are often ineffective at preventing access, and create obstacles to legitimate trail users. Alternative design strategies use signage, landscaping and curb cut design to reduce the likelihood of motor vehicle access.



Typical Application

- Bollards or other barriers should not be used unless there is a documented history of unauthorized intrusion by motor vehicles.
- If unauthorized use persists, assess whether the problems posed by unauthorized access exceed the risks and issues posed by bollards and other barriers.

Design Features

(A) "No Motor Vehicles" signage (R5-3) may be used to reinforce access rules.

(B) At intersections, split the path tread into two sections separated by low landscaping.

(C) Vertical curb cuts should be used to discourage motor vehicle access.

(D) Low landscaping preserves visibility and emergency access.

SCREENING/BARRIER SEPARATION TYPES

Urban trails typically transverse through a range of channel configurations, path types, and adjacent land uses. As a result, a toolkit of options is required in order to apply appropriate edge conditions to the unique circumstances along the path. Edge conditions comprise the range of treatments used to transition from the path of travel to space adjacent to the path. Edge conditions include shoulder buffers, screening, barriers, railing, and other visual and tactile cues to indicate the path of travel.[1] These treatments keep users from venturing off the path, protect users from hazards, delineate the path of travel where users are separated by direction, mode or speed, and enhance the comfort and attractiveness of the pathway.

Design Features

Shoulders should be a minimum of 2 feet wide 3 feet preferred) and constructed of the same material as the path or another durable surface.2 Shoulders should be sloped at 2% to 5% away to reduce ponding and minimize debris on the path.2 Three feet minimum is required where signage or other furnishings will be installed.3 A shoulder of at least 1 foot should be provided between the path and any fencing or barrier. Where the shoulder serves as a pedestrian path, a maximum cross slope of 2% is required to remain compliant with ADA regulations.

Barriers and Railings

Fences, walls, and railings will likely be a recurring element along the path to provide separation between the path and the channel edge, rail lines, and private property. In some areas, railings and/ or security fences will be on both sides of the path. For overcrossing structures, barrier and fence types are prescribed by Caltrans (e.g. Type 26 and Type 732 barriers)2.

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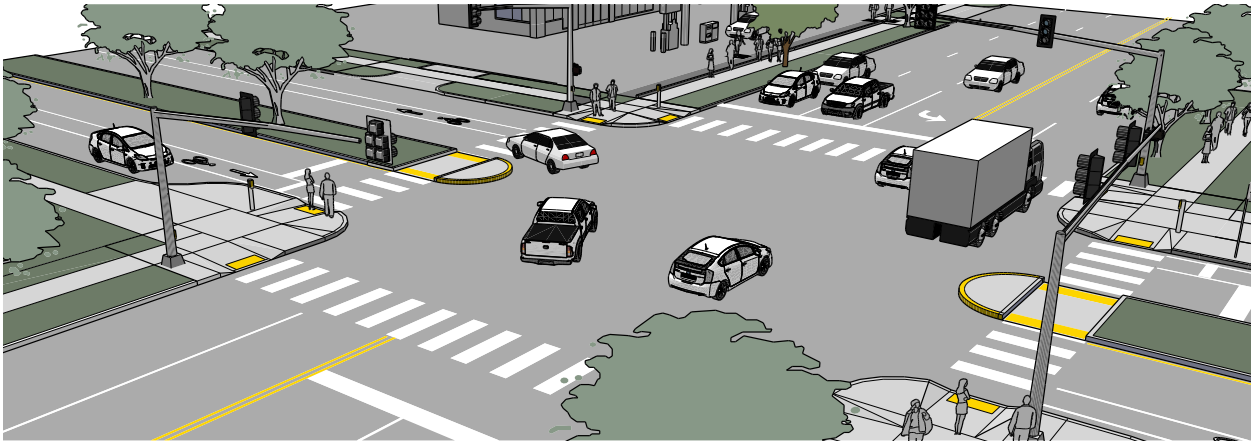
Chapter V | Enhanced Crossing Treatments

MARKED CROSSWALKS AT INTERSECTIONS

Marked crosswalks signal to motorists that they must stop for pedestrians and encourages pedestrians to cross at designated locations. Installing crosswalks alone will not necessarily make crossings safer, particularly on multi-lane roadways.

Marked crosswalks across the uncontrolled leg of unsignalized intersections should follow the design guidance of marked crosswalks at mid-block locations. See Marked Crosswalks at Mid-Block for more guidance.



Typical Application

At signalized intersections, all crosswalks should be marked. At unsignalized intersections, crosswalks may be marked under the following conditions:

- At an intersection within a school zone or on a walking route, trail crossings, and at parks, libraries, or community centers.
- At a complex intersection, to orient pedestrians in finding their way across.
- At an offset intersection, to show pedestrians the preferred route across traffic with the least exposure to vehicular traffic and traffic conflicts.
- At an intersection with visibility constraints, to position pedestrians where they can best be seen by oncoming traffic.

Design Features

- The crosswalk should be located to align as closely as possible with the through pedestrian zone of the sidewalk corridor.
- Transverse markings are the most basic crosswalk marking type, but may wear faster as every vehicle drives over the markings.
- Continental markings provide improved visibility and can be located outside of vehicle wheel paths.
- Local climate can present unique challenges for pavement markings due to extreme heat/ cold, snow plows, and de-icing techniques.

Further Considerations

Continental crosswalk markings should be used at crossings with high pedestrian use, particularly where the crossing is not controlled by signals or stop signs, such as a local street crossing of a multi-lane arterial. These type of markings should also be used where vulnerable pedestrians are expected, including crossings near schools. Continental crosswalk marking also requires less on-going maintenance and lasts longer than other marking techniques.

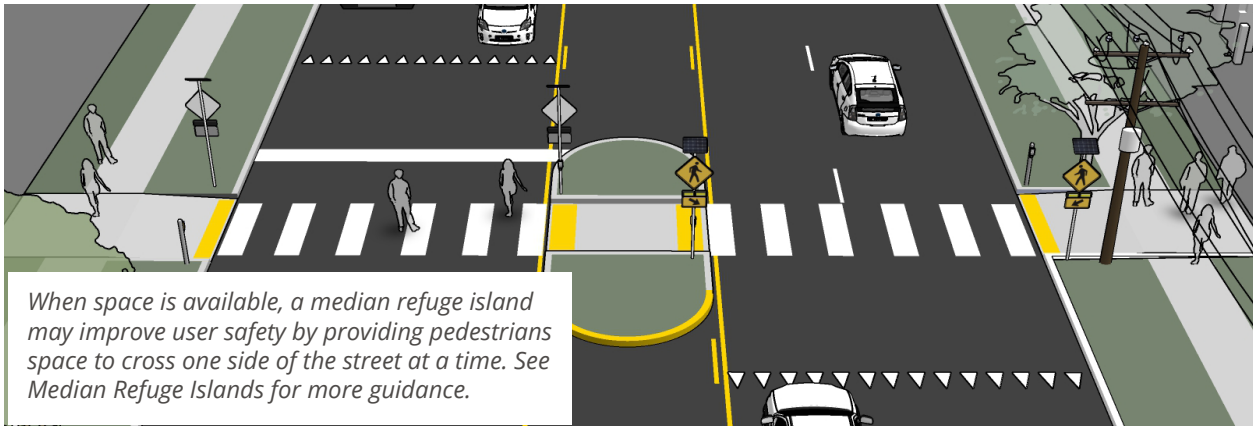
Materials and Maintenance

The effectiveness of marked crossings depends entirely on their visibility; maintaining marked crossings should be a high priority. Thermoplastic markings offer increased durability when compared to conventional paint.[1]

1 The appropriate marking material(s) should be determined on a project basis.

MARKED CROSSWALKS AT MID-BLOCK

An effective pedestrian crossing at an uncontrolled location consists of a marked crosswalk, appropriate pavement markings, warning signage, and other treatments to slow or stop traffic such as curb extensions, median refuges, beacons, hybrid beacons, and signals. Designing crossings at mid-block locations depends on an evaluation of motor vehicle traffic volumes, sight distance, pedestrian traffic volumes, land use patterns, vehicle speed, and road type and width.



When space is available, a median refuge island may improve user safety by providing pedestrians space to cross one side of the street at a time. See Median Refuge Islands for more guidance.

Typical Application

Locations where mid-block crossings should be considered include:

- Long blocks (longer than 600 ft.) with destinations on both sides of the street
- Locations with heavy pedestrian traffic, such as schools, shopping centers, and shared use path crossings
- At transit stops, where transit riders must cross the street on one leg of their journey

Design Features

- Detectable warning strips are required to help visually impaired pedestrians identify the edge of the street and are required through ADA
- Advance yield lines should be placed 20-50 feet in advance of multi-lane uncontrolled mid-block crossings
- Crosswalk markings legally establish mid-block pedestrian crossing
- Pedestrian and stop warning signage (W11-2 and R1-5C) should be installed at the crossing to alert drivers of the potential presence of pedestrians in the roadway

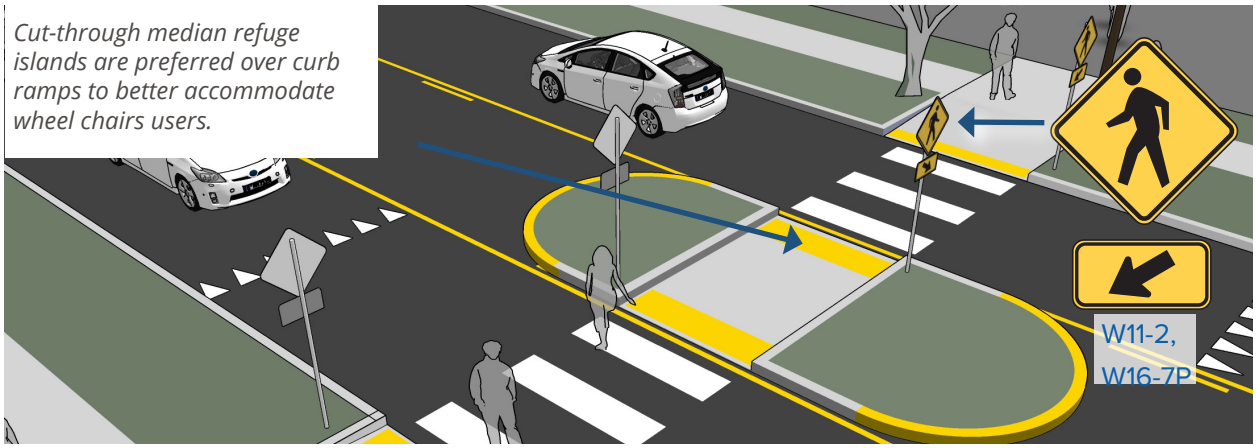
Further Considerations

Uncontrolled crossings of multi-lane roadways with over 15,000 ADT may be possible with features such as sufficient crossing gaps in vehicular traffic (more than 60 per hour), median refuges, or beacons, and good sight distance.

On roadways with low to moderate traffic volumes and posted speeds at or below 30 mph, a raised crosswalk may be the most appropriate crossing design to improve pedestrian visibility and safety.

MEDIAN REFUGE ISLANDS

Median refuge islands are located at the mid-point of a marked crossing and help improve pedestrian access by increasing pedestrian visibility and allowing pedestrians to cross one direction of traffic at a time. Refuge islands minimize pedestrian exposure at mid-block crossings by shortening the crossing distance and increasing the number of available gaps for crossing.



Cut-through median refuge islands are preferred over curb ramps to better accommodate wheel chairs users.

Typical Use

- Refuge islands an be applied on any roadway with a left turn center lane or median that is at least 6' wide (to accommodate wheelchair users) and at least 20' long (40' minimum preferred). Islands are appropriate at signalized or unsignalized crosswalks.
- The refuge island must be accessible, preferably with an at-grade passage through the island rather than ramps and landings.

Provide double centerline marking, reflectors, and "KEEP RIGHT" signage (CA MUTCD R4-7a) in the island on streets with posted speeds above 25 mph.

Design Features

- Median refuge islands can be installed on roadways with existing medians or on multi-lane roadways where adequate space exists
- Median Refuge Islands should always be paired with crosswalks, and should include advance pedestrian warning signage when installed at uncontrolled crossings.
- On multi-lane roadways, consider configuration with active warning beacons for improved yielding compliance.

Materials and Maintenance

Refuge islands may require frequent maintenance of road debris. Trees and plantings in a landscaped median must be maintained so as not to impair visibility, and should be no higher than 1 foot 6 inches.

Signals and Beacons

PEDESTRIAN SIGNALIZATION IMPROVEMENTS

Typical Application

Pedestrian signal heads indicate to pedestrians when to cross at a signalized crosswalk. Pedestrian signal indications are recommended at all traffic signals except where pedestrian crossing is prohibited by signage.

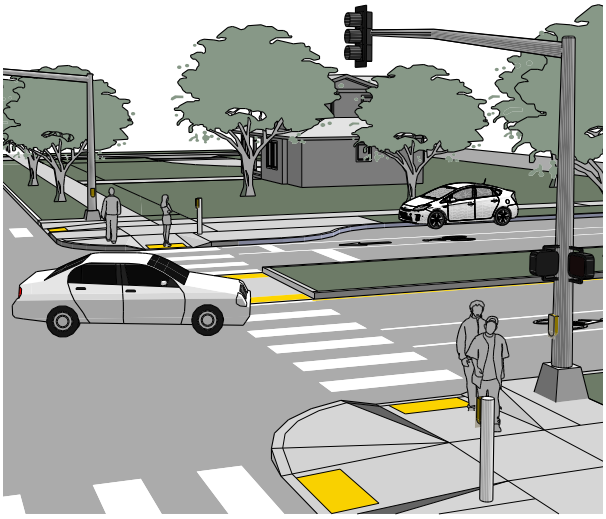
Countdown signals should be used at all new and rehabbed signalized intersections.

Design Features

Adequate pedestrian crossing time is a critical element of the walking environment at signalized intersections. The length of a signal phase with parallel pedestrian movements should provide sufficient time for a pedestrian to safely cross the adjacent street. The CA MUTCD recommends a walking speed of 3.5 ft per second.

At crossings where older pedestrians or pedestrians with disabilities are expected, crossing speeds as low as 3 ft per second should be assumed. Special pedestrian phases can be used to provide greater visibility or more crossing time for pedestrians at certain intersections (See *Pedestrian Traffic Signal Enhancements).*

Large pedestrian crossing distances can be broken up with medians and islands into multiple stages. If the crossing is multi-stage, pedestrian push buttons must be provided. This ensures that pedestrians are not stranded on the median, and is especially



applicable on large, multi-lane roadways with high vehicle volumes, where providing sufficient pedestrian crossing time for a single stage crossing may be an issue.

- Consider the use of a Leading Pedestrian Interval (LPI) to provide additional traffic-protected crossing time to pedestrians. See *Pedestrian Traffic Signal Enhancements* for additional detail.
- Accessible Pedestrian Signals (APS) provide crossing assistance to pedestrians with various types of disabilities at signalized intersections

Further Considerations

Pushbuttons should be located so that someone in a wheelchair can reach the button from a level area of the sidewalk without deviating significantly from the natural line of travel into the crosswalk. Pushbuttons should be marked (for example, with arrows) so that it is clear which signal is affected.

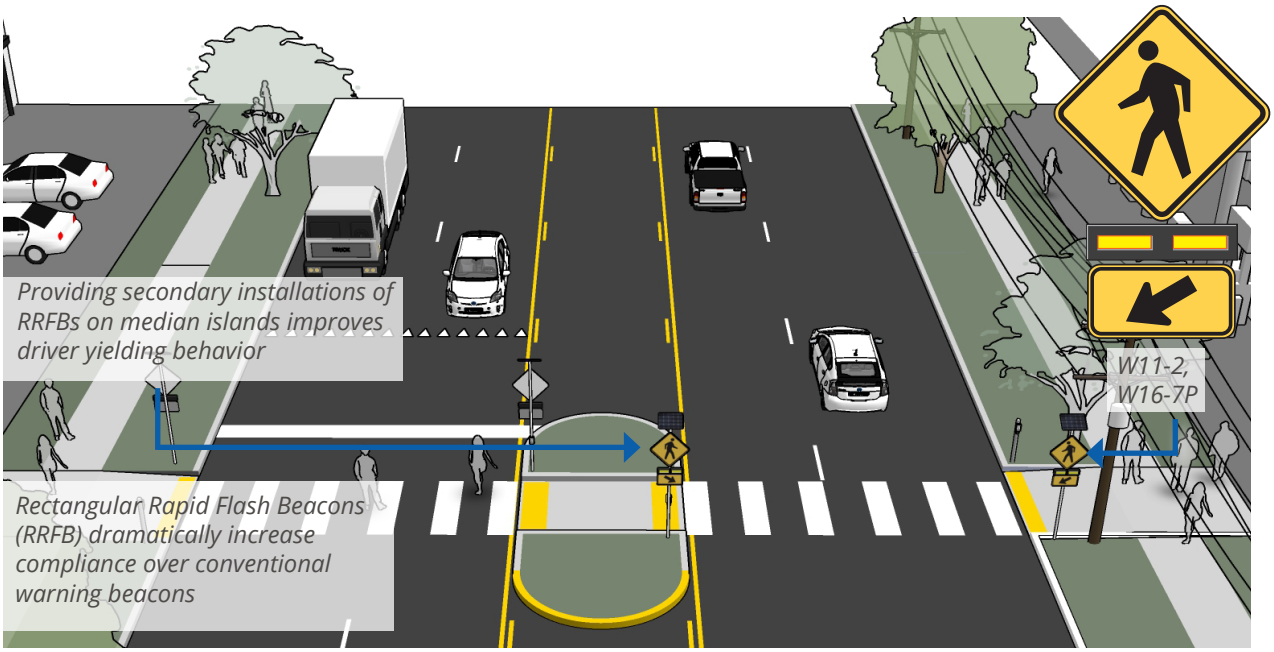
In areas with very heavy pedestrian traffic, consider an all-pedestrian signal phase to give pedestrians free passage in the intersection when all motor vehicle traffic movements are stopped. This may provide operational benefits as vehicle turning movements are then unimpeded.

Materials and Maintenance

It is important to perform ongoing maintenance of traffic control equipment. Consider semi-annual inspections of controller and signal equipment, intersection hardware, and detectors.

RECTANGULAR RAPID FLASHING BEACONS (RRFB)

Rectangular Rapid Flash Beacons (RRFB) are a type of active warning beacon used at unsignalized crossings. They are designed to increase motor vehicle yielding compliance on multi-lane or high-volume roadways. Guidance for marked/unsignalized crossings applies.



Typical Use

RRFBs are typically activated by pedestrians manually with a push button, or can be actuated automatically with passive detection systems.

RRFBs shall not be used at crosswalks controlled by YIELD signs, STOP signs, or traffic control signals.

RRFBs shall initiate operation based on user actuation and shall cease operation at a predetermined time after the user actuation or, with passive detection, after the user clears the crosswalk.

Design Features

Guidance for marked/unsignalized crossings applies.

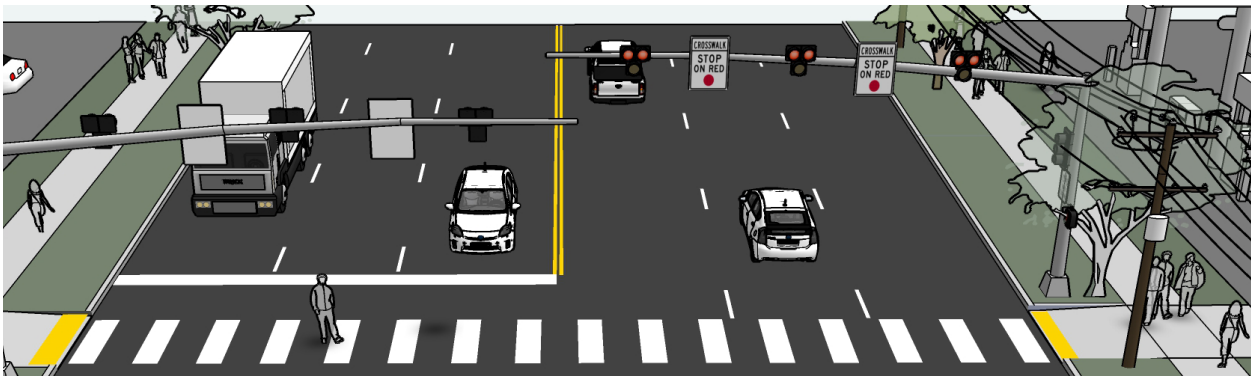
- A study of the effectiveness of going from a no-beacon arrangement to a two-beacon RRFB installation increased yielding from 18 percent to 81 percent. A four-beacon arrangement raised compliance to 88%. Additional studies of long term installations show little to no decrease in yielding behavior over time.
- See FHWA Interim Approval 21 (IA-21) for more information on device application standards.

Materials and Maintenance

RRFBs should be regularly maintained to ensure that all lights and detection hardware are functional.

PEDESTRIAN HYBRID BEACON (HAWK)

Pedestrian Hybrid Beacons (PHBs) also known as High-Intensity Activated Crosswalk (HAWK) are used to improve unsignalized intersections or midblock crossings of major streets. It consists of a signal head with two red lenses over a single yellow lens on the major street, and a pedestrian signal head for the crosswalk. The signal is only activated when a pedestrian and/or bicyclist is present, resulting in minimal delay for motor vehicle traffic.



Typical Use

PHBs are only used at marked mid-block crossings or unsignalized intersections. They are typically activated with a pedestrian pushbutton at each end. If a median refuge island is used at the crossing, another pedestrian pushbutton can be located on the island to create a two-stage crossing.

Design Features

- PHBs may be installed without meeting traffic signal control warrants if roadway speed and volumes are excessive for comfortable pedestrian crossings.
- If installed within a signal system, signal engineers should evaluate the need for the PHBs to be coordinated with other signals.

Parking and other sight obstructions should be prohibited for at least 100 feet in advance of and at least 20 feet beyond the marked crosswalk to provide adequate sight distance. **(CA MUTCD 4F).**

Further Considerations

PHBs may also be actuated by infrared, microwave, or video detectors.

Each crossing, regardless of traffic speed or volume, requires additional review by a registered engineer to identify sight lines, potential impacts on traffic progression, timing with adjacent signals, capacity, and safety.

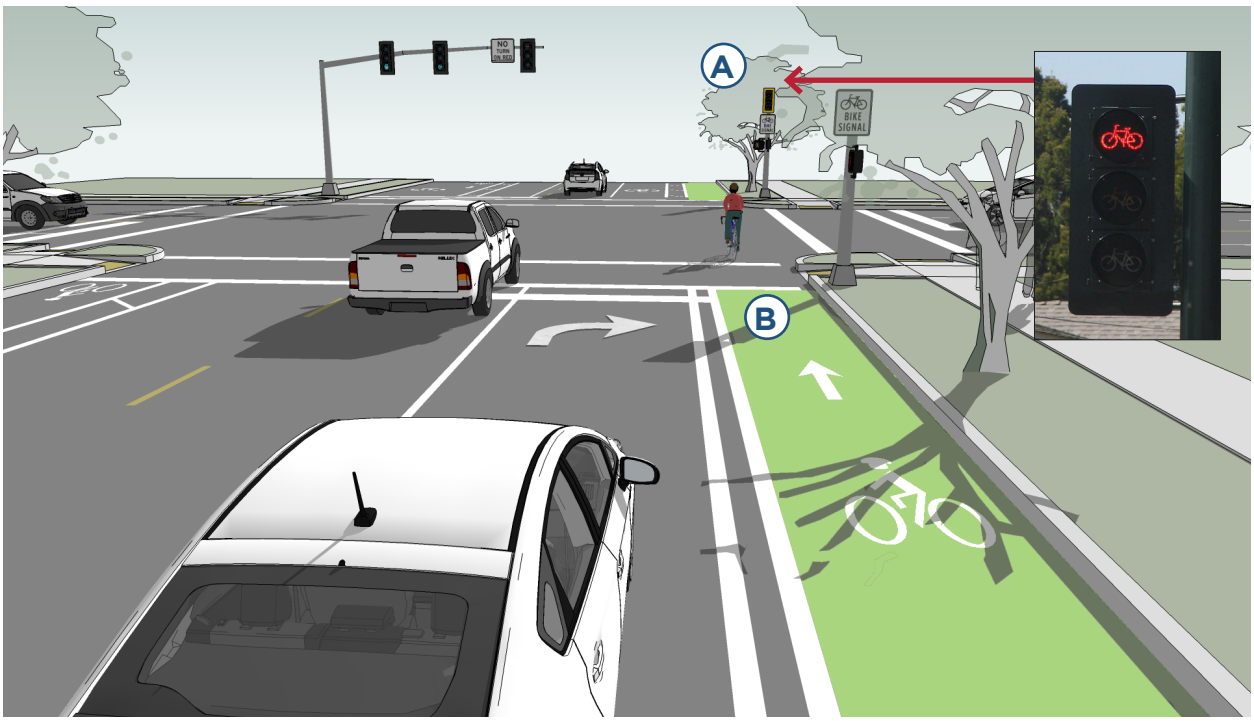
The installation of PHBs should also include public education and enforcement campaigns to ensure proper use and compliance.

Materials and Maintenance

PHBs are subject to the same maintenance needs and requirements as standard traffic signals. Signing and striping need to be maintained to help users understand any unfamiliar traffic control.

BIKE SIGNAL

Depending on configuration, bicycle crossings of some signalized intersections can be accomplished through the use of a bicycle signal phase which reduces conflicts with motor vehicles by separating bicycle movements from any conflicting motor vehicle movements. Bicycle signals are traditional three lens signal heads with green, yellow and red bicycle stenciled lenses.



Typical Use

- Two-way protected bikeways where contraflow bicycle movement or increased conflict points warrant protected operation.
- To separate through bicycle movements from heavy right turn vehicle movements.
- To cross bicyclists from one side of a street to the other.
- At intersections with unique geometry or configurations.
- To reduce clearance time required over use of a pedestrian signal if pedestrian crossings are not needed.

Design Features

(A) An additional "Bicycle Signal" sign should be installed below the bicycle signal head.

(B) Designs for bicycles at signalized crossings should allow bicyclists to trigger signals via pushbutton, loop detectors, or other passive detection, to navigate the crossing.

- On bikeways, signal timing and actuation shall be reviewed and adjusted to consider the needs of bicyclists. **(CA MUTCD 9D.02)**

A bicycle signal head at a signalized crossing creates a protected phase for bicyclists to safely navigate an intersection.

A bicycle detection system triggers a change in the traffic signal when a bicycle is detected.

Further Considerations

- A bicycle signal should be considered for use only when the volume/collision or volume/geometric warrants have been met. **(CA MUTCD 4C.102)**
- The Federal Highway Administration (FHWA) has approved bicycle signals for use, if they comply with requirements from Interim Approval 16 (I.A. 16). Bicycle Signals are not approved for use in conjunction with Pedestrian Hybrid Beacons.
- Bicyclists typically need more time to travel through an intersection than motor vehicles. Green light times should be determined using the bicycle crossing time for standing bicycles.
- Bicyclists moving on a green or yellow signal indication in a bicycle signal shall not be in conflict with any simultaneous motor vehicle movement at the signalized location
- Right (or left) turns on red should be prohibited in locations where such operation would conflict with a green bicycle signal indication.

Materials and Maintenance

Bicycle signal detection equipment should be inspected and maintained regularly, especially if detection relies on manual actuation. Pushbuttons and loop detectors will tend to have higher maintenance needs than other passive detection equipment.

BIKE DETECTION AND ACTUATION

Bicycle detection and actuation is used to alert the signal controller of bicycle crossing demand on a particular approach. Proper bicycle detection should meet two primary criteria: accurately detects bicyclists and provides clear guidance to bicyclists on how to actuate detection (e.g., what button to push, where to stand).

Typical Application

- At signalized intersections within bicycle lanes or general purpose travel Lanes
- At signalized intersections within left turn lanes used by bicyclists
- At signalized intersections within separated bike lanes.
- In conjunction with active warning beacons and pedestrian hybrid beacons.

Design Features

Push Button Actuation

- User-activated button mounted on a pole facing the street.
- The location of the device should not require bicyclists to dismount or be rerouted out of the way or onto the sidewalk to activate the phase. Signage should supplement the signal to alert bicyclists of the required activation to prompt the green phase.

Loop Detectors

- Loop detectors are bicycle-activated and installed within the roadway to allow the presence of a bicycle to trigger a change in the traffic signal. This allows the bicyclist to stay within the lane of travel without having to maneuver to the side of the road to trigger a push button.
- Loops should be sensitive enough to detect bicycles should be supplemented with pavement markings to instruct bicyclists how to trip them.
- The CAMUTCD provides guidance on stencil markings and signage related to signal detection.

Video Detection

- Video detection systems use digital image processing to detect a change in the image at a location. These systems can be calibrated to detect bicycle, although there may be detection issues during poor lighting and weather conditions.

Remote Traffic Microwave Sensor Detection (RTMS)

- RTMS is a system which uses frequency modulated continuous wave radio signals to detect objects in the roadway. This method marks the detected object with a time code to determine its distance from the sensor.
- The RTMS system is unaffected by temperature and lighting, which can affect standard video detection.

Further Considerations

- Bicycle loops and other detection mechanisms can also provide bicyclists with an extended green time before the light turns yellow so that bicyclists of all abilities can reach the far side of the intersection.

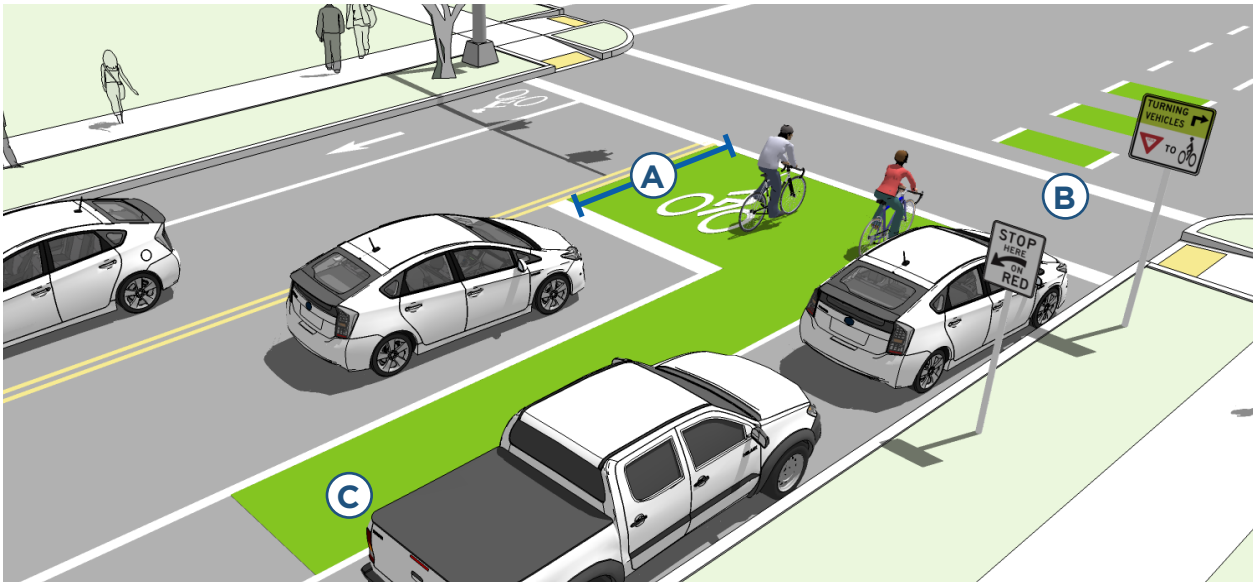
User-activated button mounted on a pole

Bicycle loop detection

- User comprehension of the bicycle detector Pavement markings is low, although some treatments show promise in increasing proper usage. Researchers at Portland State University found that 23.5% of bicyclists correctly positioned themselves over the stand-alone marking, use increased to 34.8% when the marking was paired with a R10-22 sign, and increased further to 48.4% when installed over a green background .

BIKE BOX

A bicycle box is an experimental treatment, designed to provide bicyclists with a safe and visible space to get in front of queuing traffic during the red signal phase. Motor vehicles must queue behind the white stop line at the rear of the bike box. On a green signal, all bicyclists can quickly clear the intersection. This treatment is currently under experiment, and has not been approved by Caltrans.



Typical Use

- At potential areas of conflict between bicyclists and turning vehicles, such as a right or left turn locations.
- At signalized intersections with high bicycle volumes.
- At signalized intersections with high vehicle volumes.
- Not to be used on downhill approaches to minimize the right hook threat potential during the stale green signal phase.
- Bicycle boxes are not the preferred treatment to facilitate left turns as bicyclists may not position in the box during the green signal indication.

Design Features

(A) 14 foot minimum depth from back of crosswalk to motor vehicle stop bar. **(NACTO, 2012)**

(B) A "No Turn on Red" **(CA MUTCD R10-11)** or "No Right Turn on Red" **(CA MUTCD R13A)** sign shall be installed overhead to prevent vehicles from entering the Bike Box. (Refer to CVC 22101 for the signage) A "Stop Here on Red" **(CA MUTCD R10-6)** sign should be post mounted at the stop line to reinforce observance of the stop line.

(C) A 50 foot ingress lane should be used to provide access to the box.

- Use of green colored pavement is recommended.

A bike box allows for bicyclists to wait in front of queuing traffic, providing high visibility and a head start over motor vehicle traffic.

Further Considerations

- This treatment positions bicycles together and on a green signal, all bicyclists can quickly clear the intersection, minimizing conflict and delay to transit or other traffic.
- Pedestrian also benefit from bike boxes, as they experience reduced vehicle encroachment into the crosswalk.
- Bike boxes are currently under experiment in California. Projects will be required to go through an official Request to Experiment process. This process is outlined in Section 1A.10 in the CAMUTCD, and jurisdictions must receive approval prior to implementation.

Materials and Maintenance

Bike boxes are subject to high vehicle wear, especially turning passenger vehicles, buses, and heavy trucks. As a result, bike boxes with green coloring will require more frequent replacement over time. The life of the green coloring will depend on vehicle volumes and turning movements, but Thermoplastic is generally a more durable material than paint.

TWO-STAGE TURN BOX

Two- stage turn boxes offer bicyclists a safe way to make turns at multi-lane signalized intersections from a physically separated or conventional bike lane.

On separated bike lanes, bicyclists are often unable to merge into traffic to turn due to physical separation, making the provision of two-stage turn boxes critical.

Typical Application

- Streets with high vehicle speeds and/or traffic volumes.
- At intersections of multi-lane roads with signalized intersections.
- At signalized intersections with a high number of bicyclists making a left turn from a right side facility.
- Preferred treatment to assist turning maneuvers on bike lanes, instead of requiring bicyclists to merge to make a vehicular left turn.
- Required for Class IV separated bikeways to assist left turns from a right side facility, or right turns from a left side facility.

Design Features

- The two-stage turn box shall be placed in a protected area. Typically this is within the shadow of an on-street parking lane or protected bike lane buffer area and should be placed in front of the crosswalk to avoid conflict with pedestrians.
- 8 foot x 6 foot preferred dimensions of bicycle storage area (6 foot x 3 foot minimum).
- Bicycle stencil and turn arrow pavement markings shall be used to indicate proper bicycle direction and positioning. (NACTO, 2012)

Further Considerations

- Consider providing a “No Turn on Red” (CAMUTCD R10-11) on the cross street to prevent motor vehicles from entering the turn box.
- This design formalizes a maneuver called a “box turn” or “pedestrian style turn.”
- Some two-stage turn box designs are considered experimental by FHWA and is not currently under experiment in California.
- Design guidance for two-stage turns apply to both bike lanes and separated bike lanes.
- Two-stage turn boxes reduce conflicts in multiple ways; from keeping bicyclists from queuing in a bike lane or crosswalk and by separating turning bicyclists from through bicyclists.
- Bicyclist capacity of a two-stage turn box is influenced by physical dimension (how many bicyclists it can contain) and signal phasing (how frequently the box clears.)

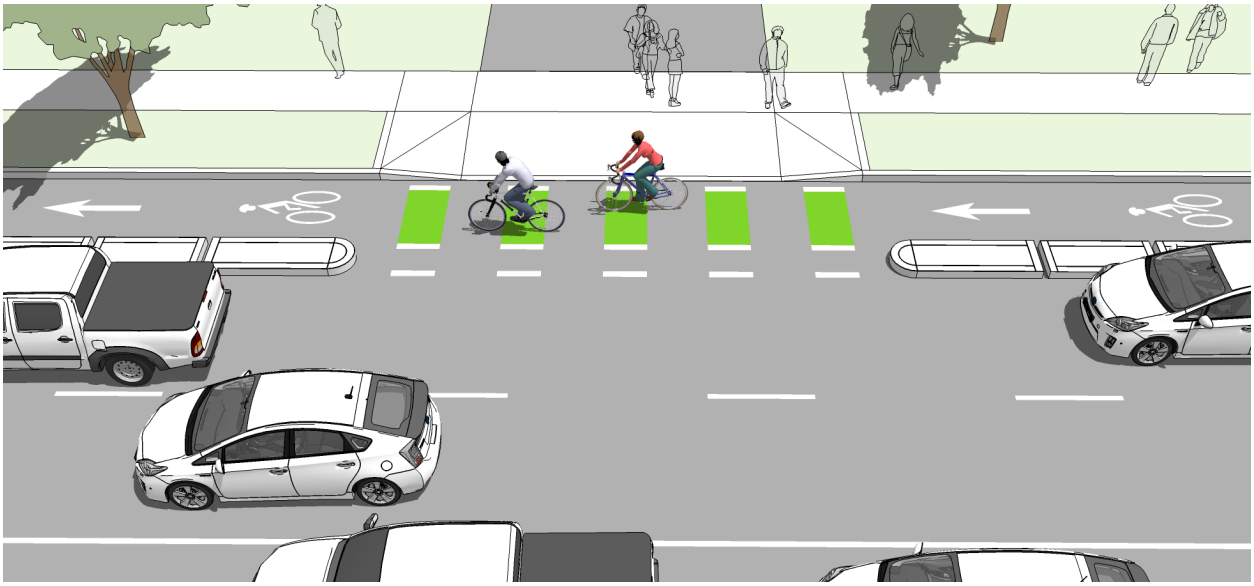
Materials and Maintenance

Turn boxes may subject to high vehicle wear, especially turning passenger vehicles, buses, and heavy trucks. As a result, bike boxes with green coloring will require more frequent replacement over time. The life of the green coloring will depend on vehicle volumes and turning movements, but Thermoplastic is generally a more durable material than paint.

DRIVEWAY AND MINOR STREET CROSSINGS

The added separation provided by separated bikeways creates additional considerations at intersections and driveways when compared to conventional bicycle lanes. Special design guidelines are necessary to preserve sightlines and denote potential conflict areas between modes, especially when motorists turning into or out of driveways may not be expecting bicycle travel opposite to the main flow of traffic.

At driveways and crossings of minor streets, bicyclists should not be expected to stop if the major street traffic does not stop.



Typical Use

- Along streets with separated bikeway where there are intersections and driveways.
- Higher frequency driveways or crossings may require additional treatment such as conflict markings and signs.

Design Features

- Remove parking to allow for the appropriate clear sight distance before driveways or intersections to improve visibility. The desirable no-parking area is at least 30 feet from each side of the crossing.
- Use colored pavement markings and/or shared line markings through conflict areas at intersections.
- If a raised bikeway is used, the height of the lane should be maintained through the crossing, requiring automobiles to cross over.
- Motor vehicle traffic crossing the bikeway should be constrained or channelized to make turns at sharp angles to reduce travel speed prior to the crossing.
- Driveway crossings may be configured as raised crossings to slow turning cars and assert physical priority of travelling bicyclists.
- Motor vehicle stop bar on cross-streets and driveways is setback from the intersection to ensure that drivers slow down and scan for pedestrians and bicyclists before turning.

Intersection crossing markings can be used at high volume driveway and minor street crossings, as illustrated above.

Further Considerations

- Treatments designed to constrain and slow turning motor vehicle traffic will slow drivers to bicycle-compatible travel speeds prior to crossing the separated bikeway.
- The green-colored fill between white dotted lane line extensions must be applied according to FHWA Interim Approval 14

Materials and Maintenance

Green conflict striping and markings, will require higher maintenance where vehicles frequently traverse over them at driveways and minor intersection. Green conflict striping (if used) will also generally require higher maintenance due to vehicle wear.

Chapter VI | Network Connections and Supporting Facilities

SHORT-TERM BICYCLE PARKING

People need a safe, convenient place to secure their bicycle when they reach their destination. This may be short-term parking of 2 hours or less, or long-term parking for employees, students, residents, and commuters.

Information on short- and long-term bike parking has been informed by the Association of Pedestrian and Bicycle Professionals (APBP) Bicycle Parking Guide, which is updated frequently and is available online at www.apbp.org.

Application

Bike Racks

- Bike racks provide short-term bicycle parking and are meant to accommodate visitors, customers, and others expected to depart within two hours. It should be an approved standard rack, appropriate location and placement.

Bike Corrals

- On-street bike corrals (also known as on-street bicycle parking) consist of bicycle racks grouped together in a common area within the street traditionally used for automobile parking.
- Bicycle corrals are reserved exclusively for bicycle parking and provide a relatively inexpensive solution to providing high-volume bicycle parking. Bicycle corrals can be implemented by converting one or two on-street motor vehicle parking spaces into on-street bicycle parking.
- Each motor vehicle parking space can be replaced with approximately 6-10 bicycle parking spaces.

Design Features

Bike Racks

- When placed on sidewalks, 2 feet minimum from the curb face to avoid 'dooring.'
- 4 feet between racks to provide maneuvering room.
- Locate close to destinations; 50 feet maximum distance from main building entrance.
- Minimum clear distance of 6 feet should be provided between the bicycle rack and the property line.
- While bike racks could be installed perpendicular or parallel to the curb, it is important to ensure there is sufficient room for pedestrian traffic, even when a bike is locked to the rack.

Bike Corrals

- Bicyclists should have an entrance width from the roadway of 5-6 feet.
- Can be used with parallel or angled parking.
- Parking stalls adjacent to curb extensions are good candidates for bicycle corrals since the concrete extension serves as delimitation on one side.

Further Considerations

- Where the placement of racks on sidewalks is not possible (due to narrow sidewalk width, sidewalk obstructions, street trees, etc.), bicycle parking can be provided in the street where on-street vehicle parking is allowed in the form of on-street bicycle corrals.
- Some types of bicycle racks may meet design criteria, but are discouraged except in limited situations. This includes undulating "wave" racks, schoolyard racks, and spiral racks. These discouraged racks are illustrated on the following page.
- Bike racks should be made of thick stainless steel to reduce the chance of thieves cutting through the racks to take bicycles. Square tubing can provide further protection from cutting, as well.
- If a bike rack is installed as surface mount, countersink bolts or expansion bolts should be used to keep the rack in place. Covering the bolts with putty or epoxy can provide additional protection.

Inverted-U racks provide two points of contact.

Racks with square tubing, good spacing, and a concrete base likewise offer two points of contact.

References

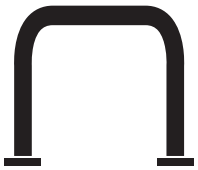
APBP Bicycle Parking Guide 2015.

Types of Bike Racks to Use

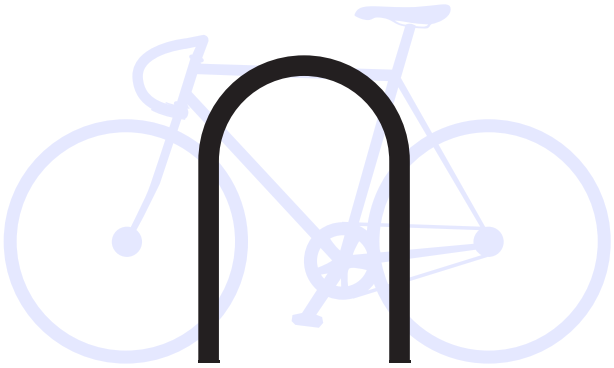
These racks provide two points of contact with the bicycle, accommodate varying styles of bike, allow for the frame of a bicycle and at least one wheel to be secured by most U-locks, and are intuitive to use.

POST & RING

WHEELWELL SECURE



INVERTED-U



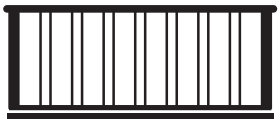
Communities may consider purchasing branded U-racks for installation on sidewalks.

Types of Bike Racks to Avoid

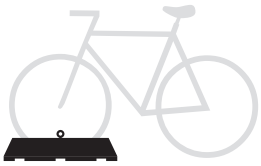
These racks do not provide support at two places on the bike, can damage the wheel, do not provide an opportunity for the user to lock the frame of their bicycle easily, and are not intuitive to use. Because of performance concerns, the APBP Essentials of Bike Parking Report recommends selecting other racks instead of these.

WAVE

SPIRAL



COMB



WHEELWELL

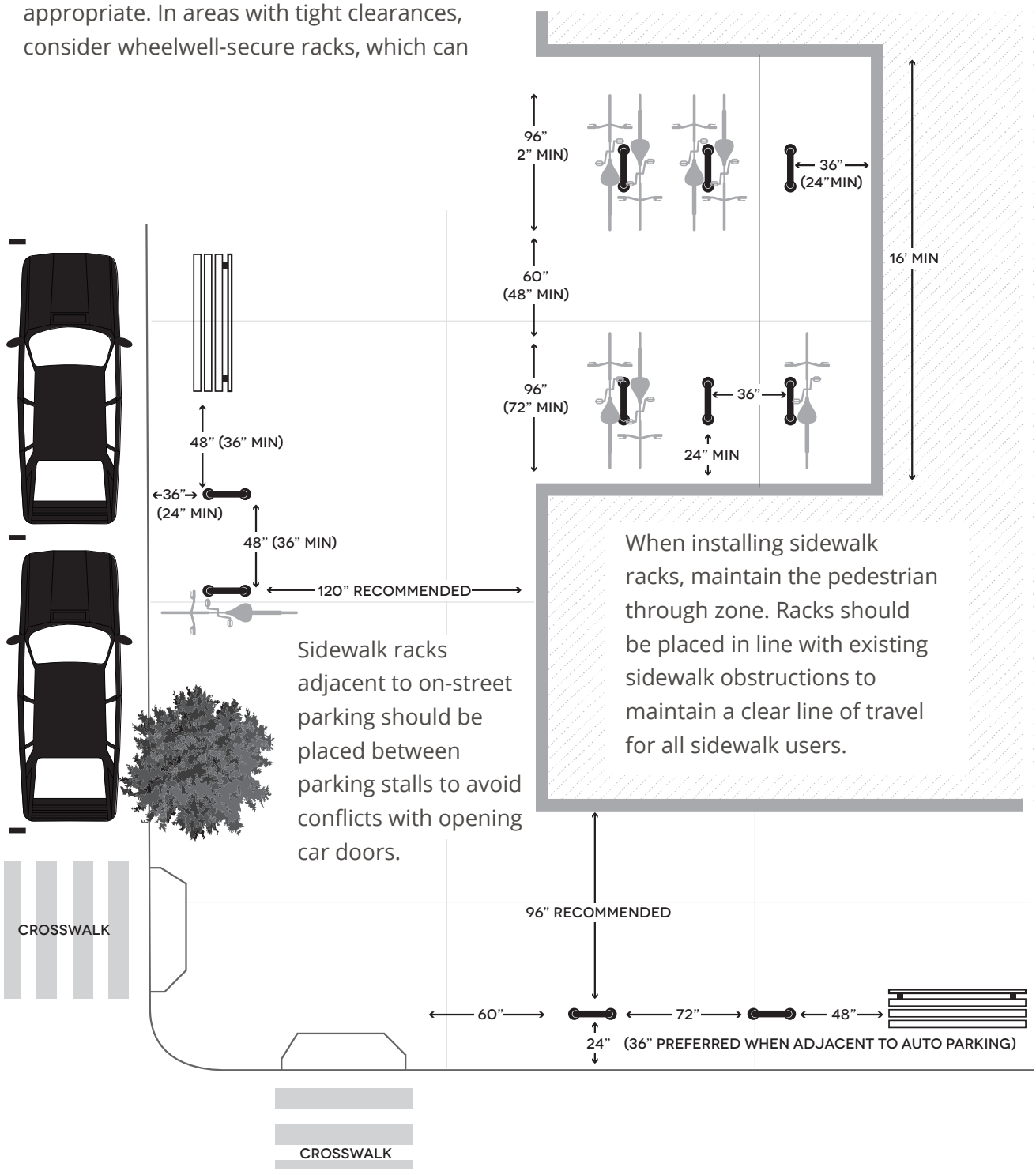
COATHANGER

BOLLARD

Graphics courtesy of Association of Pedestrian and Bicycle Professionals Essentials of Bike Parking report (2015).

Space Requirements

The following minimum spacing requirements apply to some common installations of fixtures like inverted U or post and ring racks that park one bicycle roughly centered on each side of the rack. Recommended clearances are given first, with minimums in parentheses where appropriate. In areas with tight clearances, consider wheelwell-secure racks, which can be placed closer to walls and constrain the bicycle footprint more reliably than inverted U and post and ring racks. The footprint of a typical bicycle is approximately 6' x2'. Cargo bikes and bikes with trailers can extend to 10' or longer.



LONG-TERM BICYCLE PARKING

Users of long-term parking generally place high value on security and weather protection. Long-term parking is designed to meet the needs of employees, residents, public transit users, and others with similar needs.

Information on short and long term bike parking has been obtained from the APBP Bicycle Parking Guide, which is updated frequently and is available online at www.apbp.org.

Application

- At transit stops, bike lockers or a sheltered secure enclosure may be appropriate long term solutions.
- On public or private property where secure, long-term bike parking is desired.
- Near routine destinations, such as workplaces, universities, hospitals, etc.

Design Features

Bike Lockers

- Minimum dimensions: width (opening) 2.5 feet; height 4 feet; depth 6 feet.
- 4 foot side clearance and 6 foot end clearance. 7 foot minimum distance between facing lockers.

Secure Parking Area

- Closed-circuit television monitoring or on-site staff with secure access for users.
- Double high racks & cargo bike spaces.
- Bike repair station with bench and bike tube and maintenance item vending machine.
- Bike lock "hitching post" – allows people to leave bike locks.

Further Considerations

- As the APBP Bike Parking Guide notes, increasing density of bike racks in a long-term facility without careful attention to user needs can exclude users with less-common types of bicycles which may be essential due to age, ability, or bicycle type.
- To accommodate trailers and long bikes, a portion of the racks should be on the ground and should have an additional 36" of in-line clearance.

References

APBP Bicycle Parking Guide 2015.

High Density Bike Racks

Racks may be used that increase bike parking density, like the ones below. While these types of racks provide more spaces, racks that require lifting should not be used exclusively. People with heavier bikes (i.e. cargo bikes) or people with disabilities or people who are simply small in stature may be unable to lift their bikes easily.

STAGGERED WHEELWELL-SECURE

VERTICAL

TWO-TIER

Bike Parking Rooms

Long term bike parking may be available in dedicated rooms in residential and commercial buildings. Bicycle parking can be accommodated in 15 square feet per space or less.

Bike lockers

Secured parking areas

Where should parking be located?

Well-located bike parking will be:

- Visible to the public.
- Near primary entrances/exits, as close to the entrance as the first motor vehicle parking spot not designated for people with disabilities when possible.
- Easily accessed without dismounting a bike.
- Clear of obstructions which might limit the circulation of users and their bikes.
- In areas that are well-lit.
- Installed on a hard, stable surface that is unaffected by weather.

How much parking should be provided?

APBP's Essentials of Bicycle Parking Recommendations

The Association of Pedestrian and Bicycle Professionals' (APBP) has published recommendations for bicycle parking locations and quantities. These guidelines and recommendations are based on industry best practices as well as APBP's Essentials of Bicycle Parking Recommendations, but can be adjusted to meet the context and needs of each community.

Table 5 Recommendations for Bicycle Parking Locations and Quantities

LAND USE OR LOCATION	PHYSICAL LOCATION	QUANTITY (MINIMUM)
Parks	Adjacent to restrooms, picnic areas, fields, and other attractions	8 bicycle parking spaces per acre
Schools	Near office and main entrance with good visibility	8 bicycle parking spaces per 40 students
Public Facilities (e.g., libraries, community centers)	Near main entrance with good visibility	8 bicycle parking spaces per location
Commercial, Retail, and Industrial Developments (over 10,000 square feet)	Near main entrance with good visibility	1 bicycle parking space per 15 employees or 8 bicycles per 10,000 square feet
Shopping Centers (over 10,000 square feet)	Near main entrance with good visibility	8 bicycle parking spaces per 10,000 square feet
Transit Stations	Near platform, security or ticket booth	1 bicycle parking space or locker per 30 automobile parking spaces
Multi-Family Residential	Near main entrance with good visibility	1 short-term bicycle parking space per 10 residential units and 1 long-term bicycle parking space per 2 residential units

ACCESS TO TRANSIT

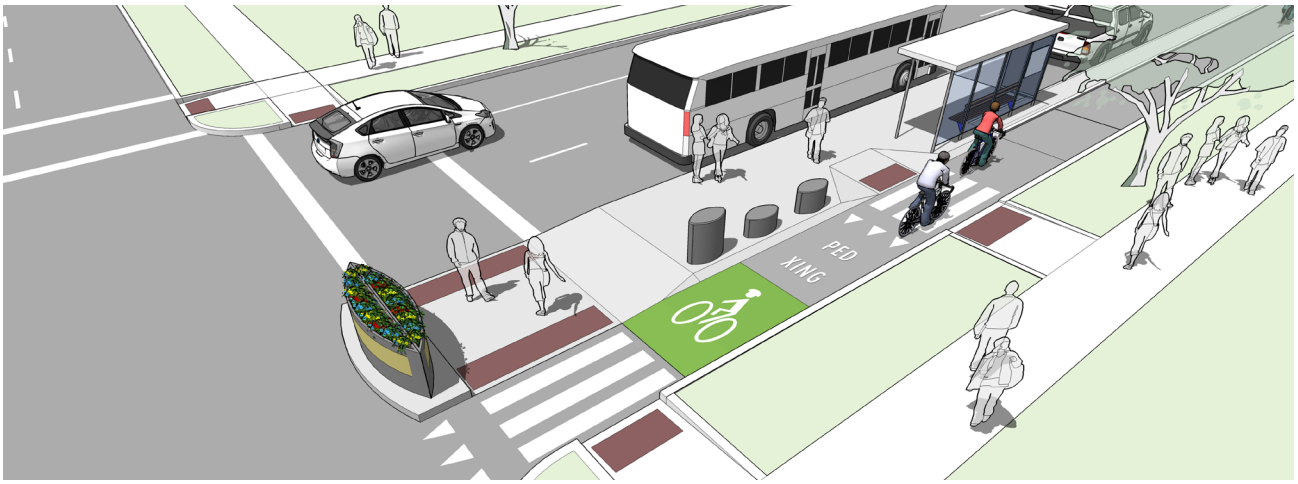
Access to transit is an essential element of a functioning transportation system, and is critical for people who do not have the ability or choice to always drive or rely on rides for all of their daily trips. Access to transit is important for both residents and visitors, in urban and suburban contexts. Because transit has the potential to move the most people, mitigate congestion, reduce emissions, and connect to other modes, it plays a crucial role in determining the social, environmental, and economic health of communities.

Typical Application

- Across the transit system, transit stations and stops need to be accessible by people walking and bicycling. This means stations and stops need to be spaced throughout the network so that people are within appropriate walking and bicycling distance of them; generally 0.25 mile and 0.5 mile, respectively.
- Stops locations should feature high quality sidewalks and comfortable, safe walking environments. Street crossings should provide marked crosswalks, shorter crossing distances, and may feature other crossing and signal enhancements to aid people of all ages and abilities.
- The bus platform and shelter environment must be accessible, well-lit, properly maintained, and provide protection from the elements.

Design Features

- Transit platform and stop design should be based on expected ridership demand, adjacent land uses, and anticipated connections. Platforms and stops need to be integrated into the streetscape, to reduce the potential for conflicts with other modes or uses.
- Sidewalks, stops and platforms need to be ADA compliant, free of visual and physical obstructions, and feature appropriate wayfinding and service information.
- Mid-block, near- or far-side stop locations should be determined on a location-by-location basis.
- Transit service needs to be reliable, frequent, affordable, and connect high demand origins and destinations. Routes should be along major thoroughfares with appropriate stop spacing.



TRANSIT STOP DESIGN

Bus platforms or waiting areas serve as the critical transition point for pedestrians as transit passengers. As such, bus platforms, shelters, and shelter amenities need to be designed to the benefit of people boarding, alighting, waiting, and passing through. Transit platforms and shelters should be designed to be comfortable and safe, accessible for people with disabilities, sized appropriately based on ridership and demand, use space efficiently, and to minimize delay and conflicts with other modes such as bicycles, and competing sidewalk uses.

Typical Application

- Bus stops can range from simple curbside stops with a pole and seating, to in-roadway platforms with shelters and other shelter amenities depending on demand, adjacent land use, and available right of way.
- Typically, bus stop shelters and amenities occupy an area of the sidewalk, either in the furnishing zone, or a reserved space in the frontage zone. They can also be located on transit islands which accommodates bicycle through traffic, or in medians for center running alignments.
- Shelters can face toward the roadway or away from the roadway. Shelters facing toward the roadway provide better sightlines, but may compete with other sidewalk uses and adjacent property access and circulation.

Design Features

- Bus shelters should be designed to minimize potential for conflicts between the bus, and people walking and bicycling through the area.
- Site visibility is a critical safety and security factor. The bus operator needs to be able to see waiting passengers, and waiting passengers need to be able to see approaching buses. The shelter, street trees, and other vertical elements must not obstruct visibility. The stop and shelter should be adequately illuminated at night for safety and security.
- The shelter should maximize use of materials that maximize visibility for waiting passengers, and minimize incentive for vandalism.
- The shelter canopy should be sized to provide sufficient coverage based on stop demand.

PATH TRANSITIONS

Transitions occur where the path meets a roadway or railway, where one path typology meets another, such as when an elevated path transitions into an at-grade path or where separated path segments transition into shared environments. Transitions may also include horizontal shifts to avoid physical obstacles such as utility towers or other structures.

Design Features

TYPOLOGY TRANSITIONS

Design elements used to alert path users include pavement markings such as optical speed bars, zebra stripe crosswalks with yield/stop markings, and “LOOK” legends and arrows. Other visual indications include bike and pedestrian directional markings, centerlane striping, and the use of colored pavement to visually narrow or indicate a change in environment.

Tactile indications include speed humps, tactile speed bars, and the use of multiple surface types, such as concrete, asphalt, and pavers.

Advisory, regulatory, and/or wayfinding signage are should be considered at transition points. Physical treatments to alert and guide path users include traffic calming measures such as vertical and horizontal deflection.

Path lllumination is an important design element that must be considered along the path, but is especially important in transition zones.

MIXING ZONES

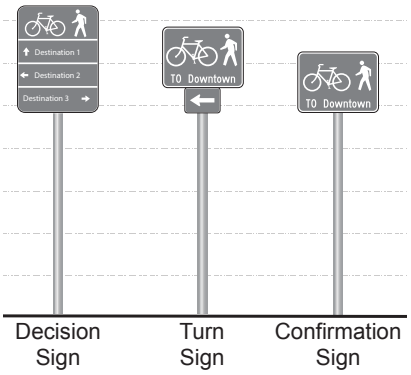
Mixing zones are necessary where physical space constraints do not allow for separated modes, or at locations along the path where a high level of cross-traffic is expected. Mixing zones need to provide clear indication to all users that a transition is occurring in advance of the change, so that path users can adjust their speeds and awareness appropriately to proceed carefully into the mixing zone (see Path Fundamentals: Sight Distances).

Advanced warning can be accomplished with advisory signage, pavement markings, and the use of contrasting surface treatments (e.g. pavers/inlays with contrasting tones/ textures, striping, or a combination of these treatments). These design elements help to guide path users safely through the mixing zone by alerting users to the change in conditions and thus reducing the speed differential.

WAYFINDING

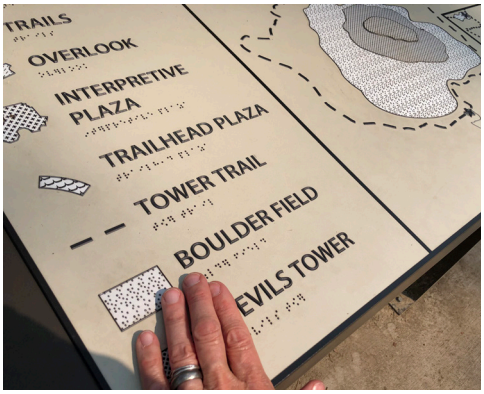
The ability to navigate across an urbanized area is informed by landmarks, natural features, and other visual cues. Signs throughout the city should indicate the direction of travel, the locations and travel time distances to those destinations. A pedestrian wayfinding system is similar to a transit, vehicular, or bike facility wayfinding system, in that it consists of comprehensive signing and/or pavement markings to guide pedestrians to their destination along routes that are safe, comfortable and attractive.

Sign types



Decision sign

Tactile navigation sign



Typical Application

- Wayfinding signs will increase users' comfort and accessibility to the pedestrian system in denser urbanized areas and connections to other destinations across the larger region.
- Signage can serve both wayfinding and safety purposes including:
  - Helping to familiarize users with the pedestrian network
  - Helping users identify the best routes to destinations within walking distance or connections to other modes.
  - Helping to address misperceptions about time and distance.
  - Helping overcome a "barrier to entry" for people who are not frequent walkers.

Design Features

- Confirmation signs indicate to pedestrians that they are on the right path to their destinations. They include destinations and distance/time, but not arrows
- Turn signs indicate where a route turns from one street onto another street.
- Decision signs indicate the junction of two or more pedestrian routes to access key destinations. These include destinations, arrows and distances. Travel times are optional but recommended.
- A regional wayfinding sign plan would identify sign locations, sign type, destinations, and approximate distance and travel time to destinations, and highlight connections between urban and non-urbanized areas.

Further Considerations

- Bicycle wayfinding signs also visually cue motorists that they are driving along a bicycle route and should use caution. Signs are typically placed at key locations leading to and along bicycle routes, including the intersection of multiple routes.
- Too many road signs tend to clutter the right-of-way, and it is recommended that these signs be posted at a level most visible to bicyclists rather than per vehicle signage standards.
- Green is the color used for directional guidance and is the most common color of bicycle wayfinding signage in the US, including those in the CAMUTCD.
- Check wayfinding signage along bikeways for signs of vandalism, graffiti, or normal wear and replace signage along the bikeway network as-needed.

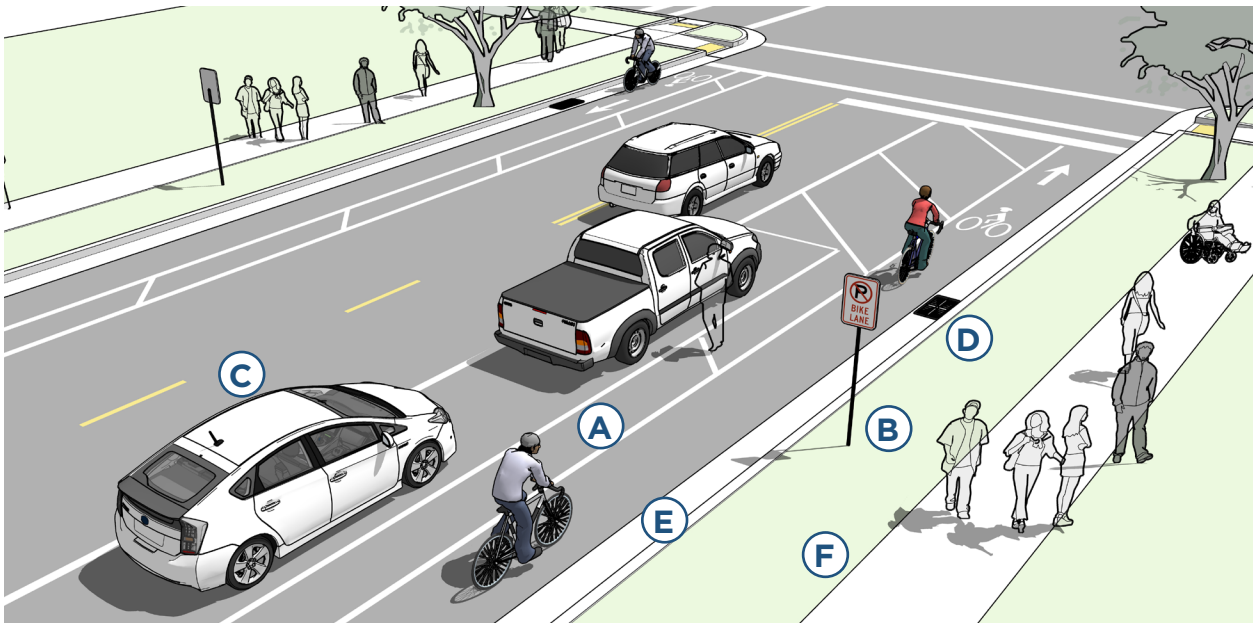
Chapter VII | Pedestrian-Bike Operations and Maintenance

SIDEWALK MAINTENANCE

The sidewalk is an essential space for people walking and using wheelchairs and other personal mobility devices, and it is also the location where many other important activities take place. Each of the zones described in 'Sidewalk Zones' needs to be maintained for the overall sidewalk space to function as intended.

Maintaining Sidewalk Zones

- The **Primary Pedestrian Zone** must remain free and clear of obstacles and impediments. This is the primary accessway for people traveling along streets and to and from adjacent properties, and must be maintained to ADA standards.
  - › Property owners are responsible for maintaining all sidewalk zones abutting their property, not just the Building Frontage Zone. The City shall enforce per City Ordinance/Policy.
  - › Maintaining a firm, stable, and slip resistant surfaces is necessary for people walking or rolling to traverse the Primary Pedestrian Zone without risk of tripping, slipping or otherwise uneven footing.
  - › Regular sweeping ensures the Primary Pedestrian Zone and other sidewalk zones are kept free of natural debris and litter.
  - › Routine maintenance of sidewalk damage due to tree roots, is the responsibility of abutting property owners.
- The **Amenity Zone** is where street furnishing are located, where people are picked up and dropped off, where mail is delivered, and where other loading/unloading happens. It's the space where trees and landscaping are planted, and where street lighting and other utilities are located. The Amenity Zone must be maintained properly to ensure access to curbside.
  - › Vegetation in the Amenity zone should be regularly maintained by the City so as not to encroach on the pedestrian travel zone. Maintainance should be prioritized by plant species, high demand areas, and/or narrow sidewalk corridors. When they're not maintained on schedule, pedestrian travel becomes constrained, creating bottlenecks, and/or forcing pedestrians into the street.
- The Building Frontage Zone is the area between the Primary Pedestrian Zone and the abutting property. Along commercial corridors this space may be utilized by businesses for outdoor cafe seating by permit, and in residential areas, this space may be occupied by landscaping or other natural screening.
  - › Outdoor seating shall not occupy the Primary Pedestrian Zone or inhibit travel along the sidewalk.
  - › Landscaping in the Building Frontage Zone should be maintained in a manner similar to landscaping in the Amenity Zone. Landscaping should be maintained by property owners so as not to encroach on the Primary Pedestrian Zone.
- The Enhancement Zone must be maintained for the following uses: bike facilities, vehicle parking, curb extensions, and bike parking.
  - › Street sweeping should be conducted per maintenance schedule and following significant weather events to help to ensure intended use of this space.



BIKE FACILITY MAINTENANCE

Regular bicycle facility maintenance includes sweeping, snow plowing, maintaining a smooth roadway, trimming encroaching vegetation, ensuring that the gutter-to-pavement transition remains relatively flush, and installing bicycle friendly grates. Pavement overlays are a good opportunity to improve bicycling facilities. The following recommendations provide a menu of options to consider to enhance a maintenance regimen.

(A) Sweeping

The City of Folsom Sweeping Operations Plan will identify debris management to ensure safe surface conditions in bikeways. Debris that is allowed to accumulate can become a hazard due to loss of control, inner tube blow outs, as well as service dog safety.

The following are recommended items to include in the City's Sweeping Operations Plan.

- Cover both on-road and off-road bikeways under the jurisdiction of the city. Can establish a seasonal sweeping schedule that allows for prioritization of routes. The schedule could prioritize facilities designated as major bikeways, before roadways designated as minor bikeways.
- Sweep bikeways periodically to minimize accumulation on the facility to maintain safe surface conditions.
- Identify winter traction material removal protocols to ensure traction materials are removed from bike ways in a timely manner.

(B) Signage

- Include bikeway regulatory and wayfinding signing as part of the roadway sign maintenance program, regularly checking for vandalism, graffiti, and wear. Schedule replacement/repair as needed.

C Roadway Surface

- Smooth pothole-free surfaces are especially critical for people on bikes.
- The finished surface on bikeways does not vary more than 1/4" for new roadway construction.
- Pavement should be maintained so ridge buildup does not occur at the gutter-to-pavement transition or adjacent to railway crossings.
- Ensure pavement inspections occur after trenching activities are completed and if excessive settlement has occurred to require mitigation prior to the expiration of the project's warranty period.
- To the extent possible, pavement markings and green-colored areas should be placed out of the vehicle path of travel to minimize wear. In general, striping, pavement markings, and green colored areas should be well maintained especially areas in the path of vehicle travel, and where high-turning movements occur.

D Drainage Grates

- New drainage grates should be bicycle-friendly. Grates should have horizontal slats on them so that bicycle tires and assistive devices do not fall through any vertical slats.
- Create a program to inventory all existing drainage grates, and replace hazardous grates as necessary - temporary modifications such as installing rebar horizontally across the grate should not be an acceptable alternative to replacement.

E Gutter-to-Pavement Transition

- Gutter-to-pavement transitions should have no more than a 1/4" vertical transition.
- Pavement transitions should be examined during every roadway project for new construction, maintenance activities, and construction project activities that occur in streets.

F Landscaping

- Vegetation on the edge of the roadway should not hang into or impede passage along bikeways.
- After storm events, remove fallen trees or other debris from bikeways as quickly as possible.

Coordination With Emergency Responders

- General roadway maintenance should be coordinated and prioritized on emergency response routes that overlap with major and minor bikeways.
- Provide fire, police, and EMS services with a map of major and minor bikeway routes.

Recommended Bikeway Maintenance Activities

The following table summarizes maintenance activities. The City should ensure that each of these activities is addressed in City requirements, various operations plans, or emergency response plans. The frequency of each activity is at the discretion of the City Engineer. However, the activity should be done in a timely enough manner to ensure bikeways are operated in a safe manner for all users.

PARKING, LOADING, AND GARBAGE ACCESS

Where Class IV bikeways are adjacent to on-street parking, drop-off locations, freight loading zones, or designated garbage pick-up areas, the design of the separation at those locations should provide an accessible aisle and adequate landing area to allow for travel from the vehicle to the curb ramp.

Colored pavement within a bicycle lane may be used to increase the visibility of the bicycle facility, raise awareness of the potential to encounter bicyclists, and reinforce priority of bicyclists in conflict areas.

Typical Application

- Streets with on-street parking and a separated bikeway along the same block face.
- Where ADA-accessible spaces are desired, either due to proximity to nearby building entrances, street grades, or other factors.
- Where loading and garbage pick-up zones are desired along the same side of the street as a separated bikeway due to adjacent commercial users such as retail or hotels, and cannot be relocated to adjacent block faces or alleys.

Colored Pavement Treatment

Within a weaving or conflict area to identify the potential for bicyclist and motorist interactions and assert bicyclist priority.

- Across intersections, driveways and Stop or Yield-controlled cross-streets.
- At bike boxes and two-stage turn boxes

Green colored conflict striping indicates the path of travel of people on bicycles, and alerts people intending to turn across the bike lane to yield when bicyclists are present.

A passenger loading zone allows pedestrians to cross the Class IV bike lane to access the loading island. These designs should also incorporate truncated domes to alert people walking with vision disabilities of the crossing.

Design Features

- Accessible spaces should be located adjacent to intersections to simplify access to curb ramps.
- Accessible spaces must comply with all ADA requirements.
- To connect between the sidewalk and parking spaces, a crosswalk across the separated bikeway and curb ramp (6' minimum width) must be provided.
- Place a YIELD HERE TO PEDESTRIANS **(MUTCD R1-5)** sign where the separated bikeway crosses the parking access route to clearly establish a right-of-way. Yield line pavement marking may be placed prior to the crosswalk.

(A) Typical white bike lane striping (solid or dotted 6" stripe) is used to outline the green colored pavement.

(B) In weaving or turning conflict areas, preferred striping is dashed, to match the bicycle lane line extensions.

- The colored surface should be skid resistant and retro-reflective (CAMUTCD Section 3G.01).
- In exclusive use areas, such as bike boxes, color application should be solid green.

Further Considerations

- Garbage pick-up, freight loading, and drop-off hours should be restricted to hours of the day when less bicycle traffic is expected, to minimize potential interactions.
- The City can provide guidance to both waste management operators and customers on desirable recycling/trash can and bin placement with respect to both walkways and bikeways to improve safety and use of these facilities.

Crash Reduction

- Removing obstructions and providing clear sight distance at crossings increases visibility of bicyclists.
- Driveway and intersection designs shall provide appropriate sight lines, radii, and other features that deliver a turning movement speed that provides the calculated time needed for turning motor vehicle drivers to see and react to bikeway users.

CITY OF
FOLSOM
DISTINCTIVE BY NATURE

Appendix B

Existing Conditions and Needs Analysis

Folsom, California | Spring 2022

CITY OF FOLSOM
DISTINCTIVE BY NATURE

MEMORANDUM

To: Brett Bollinger, City of Folsom

From: Alta Planning + Design

Date: December 7, 2021

Re: Task 2.6 Needs Analysis Memo

Needs Analysis Overview

This memorandum summarizes the results of our analysis of key opportunities, challenges, and barriers relative to Folsom's existing active transportation network. The needs analysis considers network safety, social equity, existing network conditions and gaps, level of comfort of existing facilities, and the results of the publicly accessible webmap. This information provides insight to the challenges and opportunities for active transportation and identifies network and safety needs across the city. The results of these assessments will inform project recommendations in conjunction with public input.

1. Collision Analysis

The safety analysis included collision data trends, spatial analysis of the collisions involving people walking or biking, and the identification of roadways and intersections showing a safety need associated with pedestrians and bicycles, better known as High Injury Network (HIN). The analysis presented in this study used the collision data through the Statewide Integrated Traffic Records System (SWITRS) from the year 2015 through 2019.

Analysis Approach

There are many methods of analyzing crash records to identify systemic trends and patterns as well as priority locations in need of improvements. One important metric to consider is which locations have the highest number of collisions, especially the ones that result in the victim being killed or severely injured (KSI). However, it is also important to look for systemic trends that may reveal physical, environmental, or behavioral characteristics that can lead to insights about where broader ranging policies or programs can be applied to reduce crash occurrences or severity.

This analysis reports on both the total number of collisions and KSI as well as making use of the Equivalent Property Damage Only (EPDO)[1] method which provides an average severity score across different categories, allowing for direct comparison of collision types without comprehensive traffic volume data. The severity score is based on

[1] 2010 Highway Safety Manual (HSM)

aggregating an EPDO factor that represents the societal and economic cost of different crash severities[2] with values shown in **Table 1**. These cost estimates include the monetary losses associated with medical care, emergency services, property damage, lost productivity, and the like, to society. When summarized across locations (hotspots), collision type, driver behavior, or roadway characteristics, time of day, or environmental conditions can help compare and contrast trends and identify high priority collision characteristics. Notably, the EPDO score for collisions involving people walking and biking was determined by the level of injury sustained by the pedestrian or bicyclist. For the other collisions, the EPDO was determined by the highest level of injury sustained by the involved vehicles' occupants.

Table 1: Collision Weighting Factor by Collision Severity

Collision Severity	EDPO Factor
Fatal and Severe Injury	
Signalized Intersection	120
Non-Signalized Intersection	190
Roadway	165
Injury (Other Visible)	11
Injury (Complaint of Pain)	6
PDO	1

Total Numbers

In total, 144 collisions involving someone walking or biking occurred in Folsom between January 1, 2015, and December 31, 2019. Of these collisions, 52 involved a vehicle colliding with someone walking, and 92 involved a collision between a vehicle and someone biking.

Of the 144 bicycle- and pedestrian-involved collisions, there were 25 that resulted in a severe injury or fatality (KSI)—15 pedestrian KSI and 10 bicycle KSI.

Key Trends

The following describes the overall trends for collisions involving people walking and/or biking:

- Crashes involving people biking occur twice as frequently as those involving people walking, however the crashes involving people walking consistently result in more severe injuries.

[2] Caltrans Local Roadway Safety Manual, Appendix D, April 2020

- The proportion of all injury crashes that involve people walking or biking is much higher (11x) than the proportion of commute trips that involve people walking or biking.[3]
- Three times as many collisions that involve people walking and biking occur at intersections (110 occurred at intersections and 34 occurred along segments), however, collisions occurring along roadway segments are more severe both for people walking and biking (20% KSI along segments vs. 16% KSI at intersections)
- Violating pedestrian right-of-way (driver failing to yield right of way to a pedestrian at a legal crosswalk) was the most frequent cause of collisions involving people walking (17 out of 52 or 33%) regardless of the collision location
- The majority of collisions involving people biking, 78%, occurred on a road with a Class II bike lane. Of the bicyclist-involved collisions that resulted in a fatality or severe injury, 80% occurred on a road with a Class II bike lane.

Bicycle and Pedestrian Collision Focus Areas

Using the EPDO score (which considers both frequency and severity of collisions) heatmaps, segregated by the involved victim, i.e., pedestrian or bicycle, were created to help with identifying the Bicycle and Pedestrian Collision Focus Areas. These heatmaps are presented in **Figure 1 and Figure 2** below. Color bands in these figures show the identified focus areas. The following corridors, referred to here as the Collision Focus Areas, are where bicyclist and pedestrian-involved collisions occurred most frequently and/or were the most severe. Colors of the heatmap correspond to the following EPDO scores as listed in **Table 2**. For example, a red location corresponding to an EPDO of 160 or greater could either be one fatality or multiple injury collisions whose severity score, as defined in **Table 1**, adds to 160.

Table 2: EPDO scores corresponding to Heatmap colors

Color	EDPO
Red	>160
Orange	120-160
Yellow	80-120
Light Green	40 - 80
Dark Green	<40

Pedestrian Collisions

- Folsom Blvd. from American River to Natoma Street
- Natoma St from Reading Street to Wales Drive
- East Bidwell Street from Coloma Street to Blue Ravine Road

Bicycle Collisions

- Greenback Lane from American River Canyon Dr to City limits
- Folsom-Auburn Rd from Folsom Lake Crossing to Greenback Lane
- Riley Street from Sutter Street to Wales Drive
- East Bidwell Street from Market Street to Harrington Way
- Iron Point Road from Williard Drive to Buckingham Way

[3] 2018 Five-Year American Community Survey (ACS), https://data.census.gov/

For the pedestrian collision focus areas, all of the intersections have pedestrian crossings. For the bicyclist collision focus areas, all of the corridors have Class II bicycle facilities. As shown in **Figure 1** below, most of the collision focus areas for pedestrian collisions took place within the Folsom Historic District grid (Natoma St) and leading into and out of Folsom Historic District (Folsom-Auburn Road and Bidwell St). The collision focus areas for bicyclists, shown in **Figure 2**, are more spread out with two north of Folsom Historic District across Lake Natoma (Greenback Lane and Folsom-Auburn Road), two in Folsom Historic District and leading into and out of Folsom Historic District (Riley St and E Bidwell St), and one corridor in the southern portion of the city along Iron Point Road.

This analysis of collision locations and collision severity confirms the previous components of this needs analysis: the major arterials are barriers for people walking and biking and are uncomfortable. All of the identified collision focus areas are high stress arterials (see the LTS analysis results on pages 17-20). These arterials are high stress for people biking even though almost all of them have Class II bike lanes and many of the intersections have pedestrian crossings.

As previously mentioned, the majority of collisions involving people biking, 78%, occurred on a road with a Class II bike lane. Of the bicyclist-involved collisions that resulted in a fatality or severe injury, 80% occurred on a road with a Class II bike lane.

Figure 1: Pedestrian Collisions and Pedestrian Collision Focus Areas (represented by the red color bands)

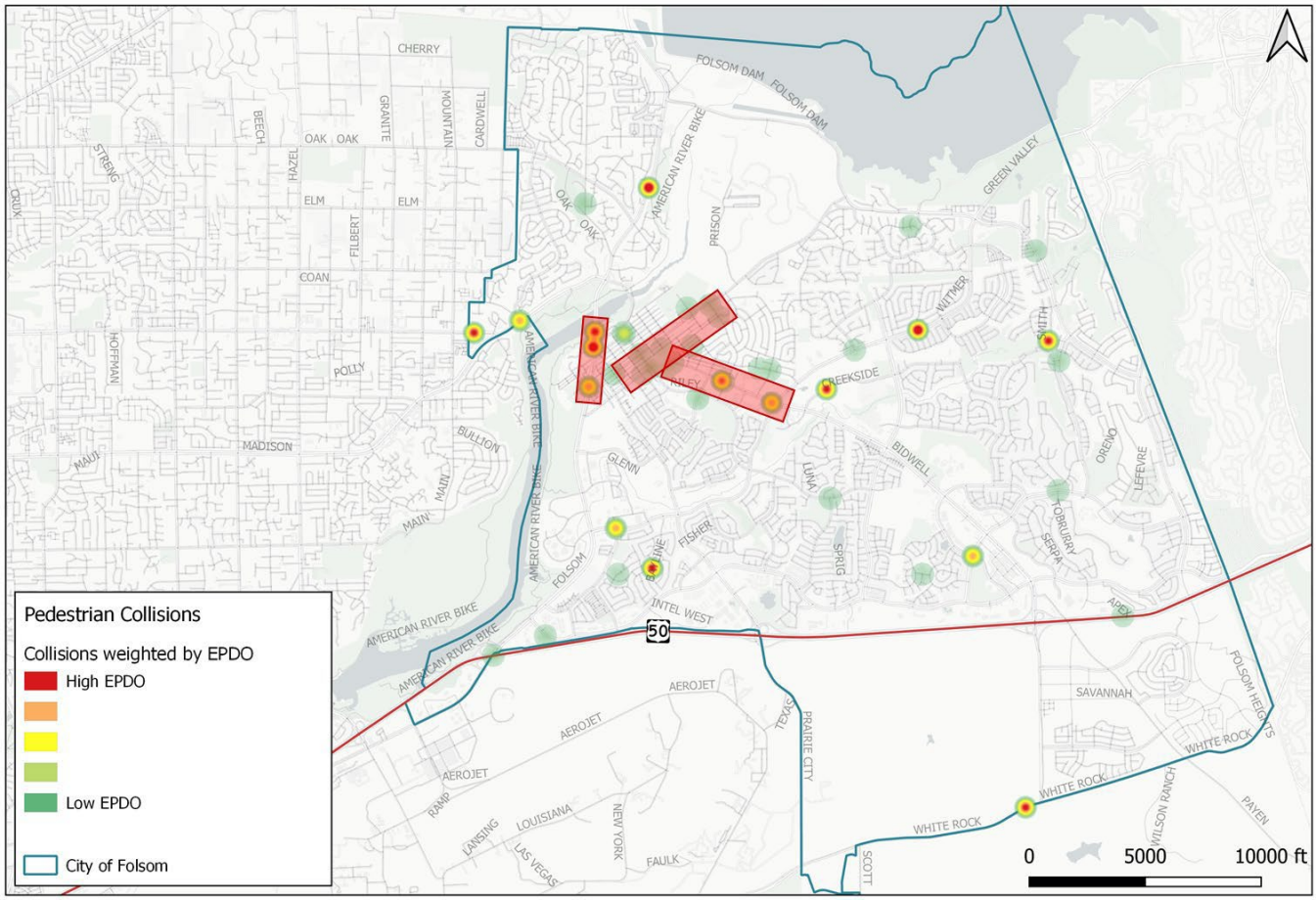
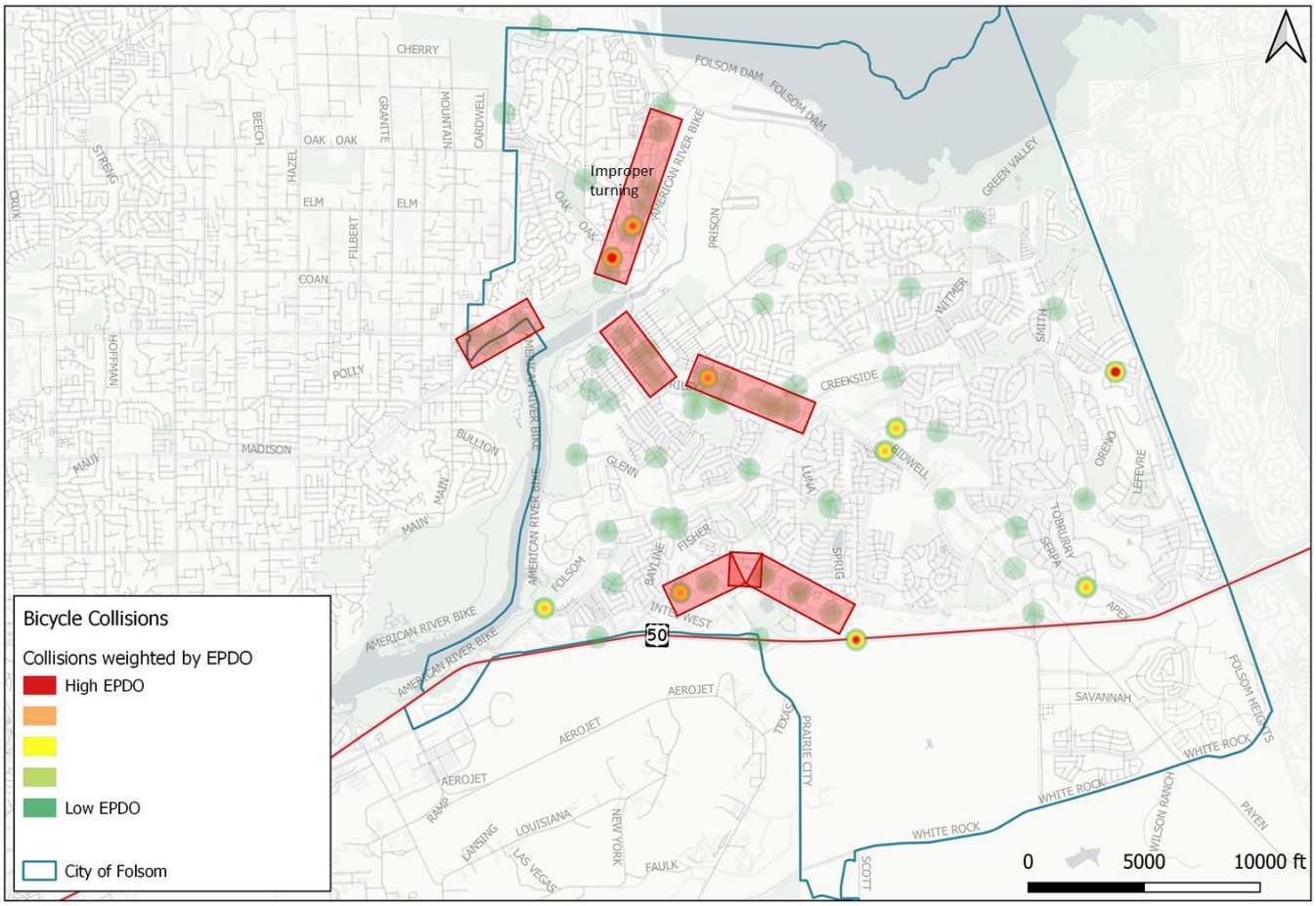


Figure 2: Bicycle Collisions and Bicycle Collision Focus Areas (represented by the red color bands)



2. Equity Analysis

Without access to transportation, people have a harder time getting to work, buying healthy food, seeing a doctor, going to school, or connecting with others. While all communities offer a variety of ways to get around, not everyone has equal access to a wide range of convenient, safe, and affordable means of transportation. Many communities rely on a variety of modes to connect to basic services that are necessary to live productive, fulfilling, and healthy lives. However, convenient, safe, and affordable transportation options are not always available to those who need them most.

Referenced here as vulnerable populations, the following analysis considers populations who have been historically disadvantaged or are otherwise considered vulnerable to disconnected or incomplete active transportation facilities. Vulnerable populations considered in this analysis include low-income populations, zero-vehicle households, and low-income workers. CalEnviroScreen and Healthy Places Index were also utilized to identify the public health of the community due to a variety of considerations such as air pollution, housing, healthcare access, economic conditions, etc.

The following analysis considered locations in Folsom with concentrations of vulnerable populations to help inform the needs assessment and to help prioritize the development of bicycling and walking infrastructure where it could have the greatest impact on the lives of Folsom residents.

The project team reviewed census data as well as results of CalEnviroScreen and the Healthy Places Index to help identify where populations that may have specific mobility needs or have historically been disadvantaged live within Folsom.

Census Data

The project team conducted a review of existing demographic information from the US Census Bureau. All data was obtained from the 2015-2019 American Community Survey (ACS) 5-year estimates and analysis was conducted at the Census tract level for the City of Folsom. For this review, the following indicators were applied using census data:

- **Median Household Income**: This indicator measures the median income for all households.
- **Zero-Vehicle Households:** This indicator measures the percentage of households who do not have regular access to a vehicle.

Results for each census tract are based on a comparison to all census tracts within the city of Folsom in order to provide greater context for the relative need identified through these indicators.

CalEnviroScreen 3.0

The California Office of Environmental Health Hazard Assessment developed the CalEnviroScreen tool to help identify communities that are disproportionately burdened by multiple sources of pollution. Areas with a higher score experience higher pollution burden than areas with lower scores. This is also a tool used in California's Active Transportation Program grant application scoring. Communities that score in the top 25% are considered to be the most burdened in the state and are therefore considered to be disadvantaged and receive a small advantage in the competitive funding process.

Healthy Places Index

The Healthy Places Index (HPI) aggregates a collection of community characteristics that predict life expectancy and allow users to see how public health intersects with transportation, climate, and other key factors. Characteristics included in the HPI score consists of social equity, healthcare access, economic, educational, housing, transportation, and environmental factors such as air and water pollutants. Higher scores indicate healthier community conditions, while lower scores indicate less healthy conditions.

Home and Work Locations of Low-Income Workers

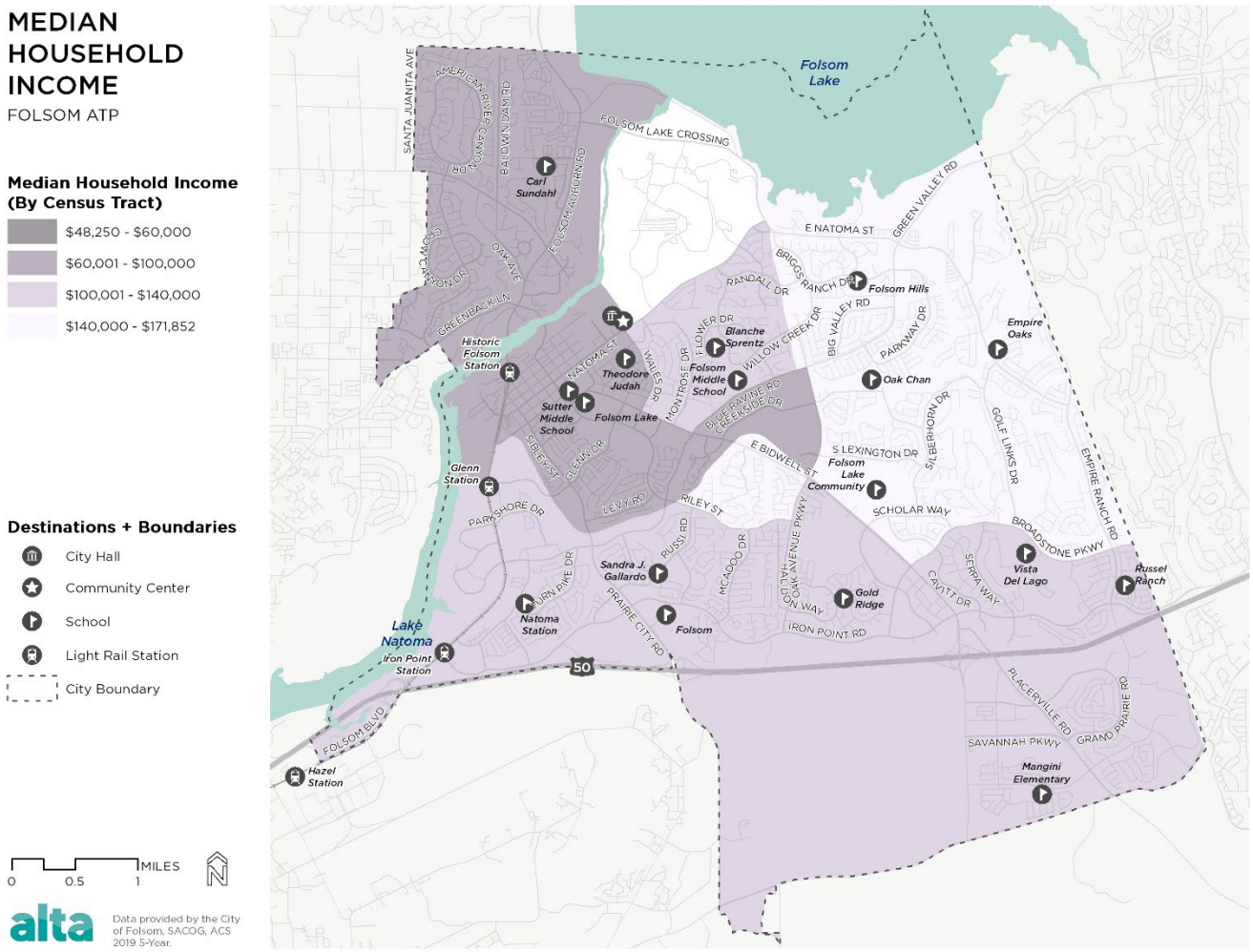
In order to better understand where vulnerable populations are located within Folsom and the surrounding communities, low-income job and home location data from the Longitudinal Employers Household Dynamics (LEHD) program was analyzed at the census tract level. Job and home locations can help provide insight beyond median household income, as it highlights areas that low-income commuters go to-and-from on their way to work. In this context, a low-income worker is considered to be someone with earnings less than $1,250 per month.

Results

Median Household Income

Figure 3 below shows the median household income for the City of Folsom. The City of Folsom is a relatively high-income community. The median household income is approximately $120,000, which is more than 1.5 times higher than the median household income of Sacramento County as a whole. The Census tracts in Folsom Historic District, directly south and adjacent to Folsom Historic District, and north of Folsom Historic District across Lake Natoma have relatively lower household incomes ($60,000 - $100,000) compared to the rest of the city. The census tract that includes Folsom Historic District has the lowest median household income in the city at around $60,000, which is half of the amount compared to the city of Folsom as a whole. The areas with the highest incomes are located in the far south and east portions of the city.

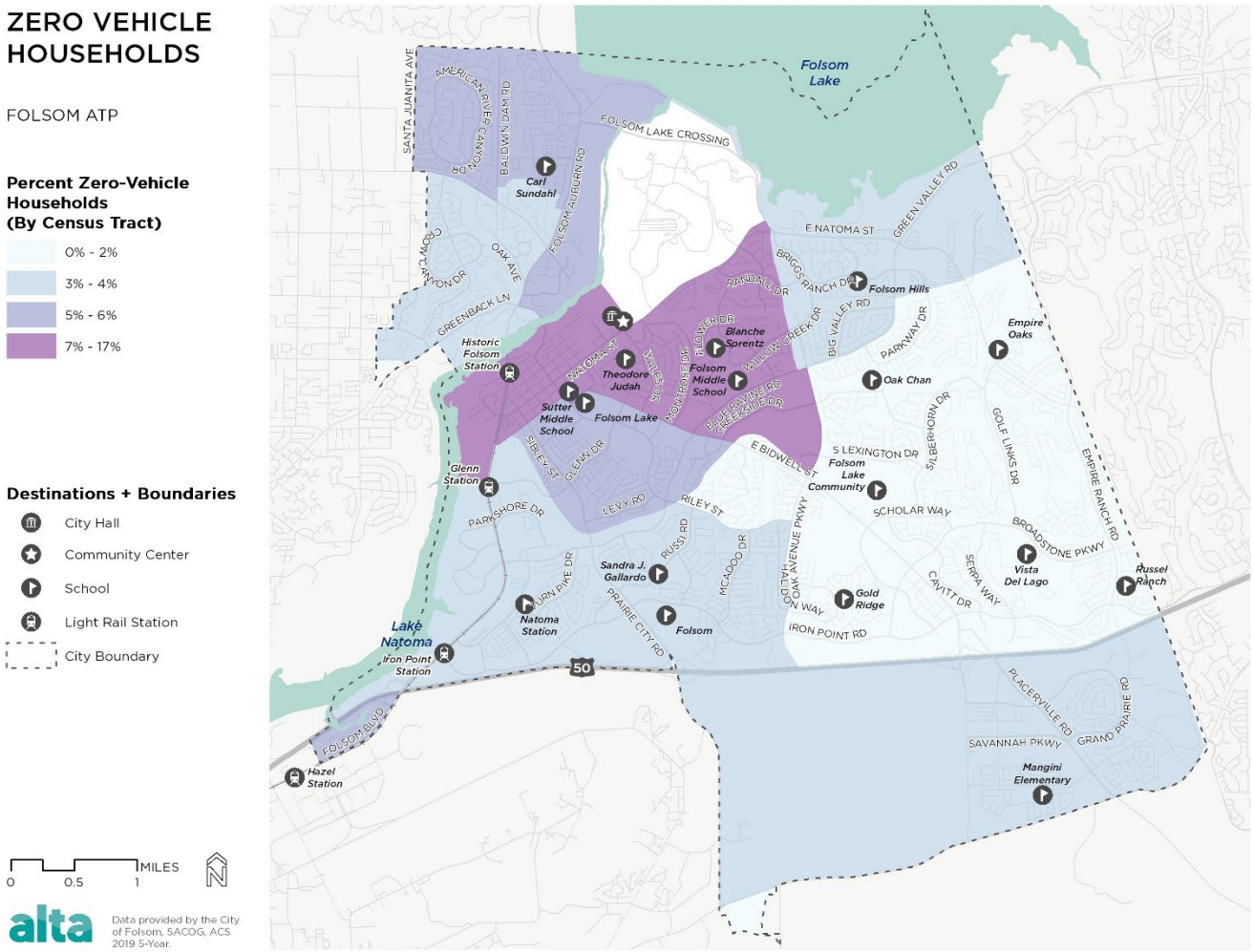
Figure 3: Median Household Income



Zero-Vehicle Households

Figure 4 below shows the percentage of households without access to a vehicle. At the census tract level, the households without vehicle access range from a minimum of 0% to a maximum of 17% of households. In general, areas with higher concentrations of no motor vehicle access are found in Folsom Historic District and the census tract directly southeast of Folsom Historic District.

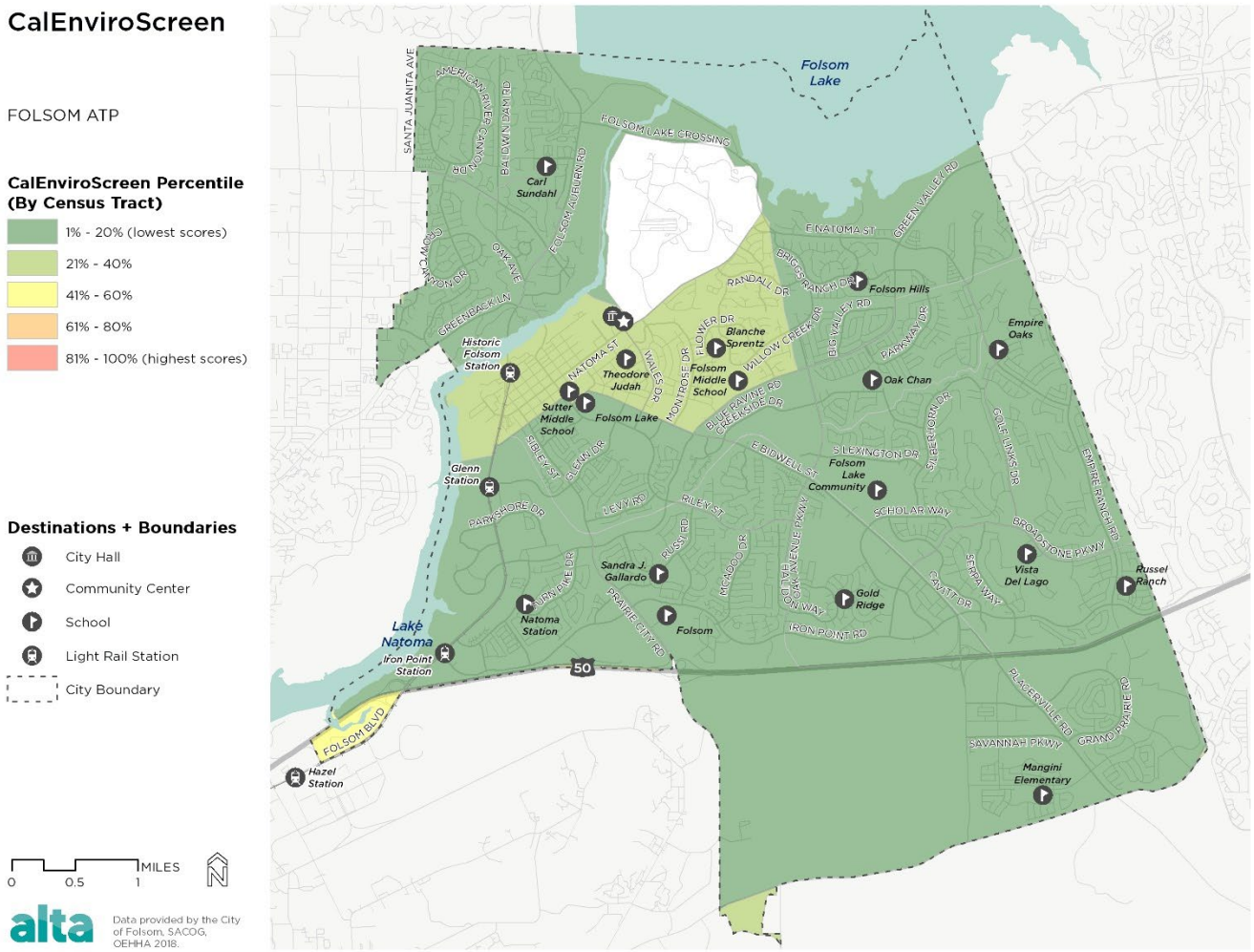
Figure 4: Zero-Vehicle Households



CalEnviroScreen 3.0

Figure 5 below shows the CalEnviroScreen 3.0 results. The City of Folsom has no disadvantaged communities as defined by the CalEnviroScreen 3.0 results. This means that no census tracts have scores within the highest 25% compared to the rest of the state of California. All areas of the city have low scores. The city's residents, therefore, are not disproportionately affected by sources of pollution and its effects.

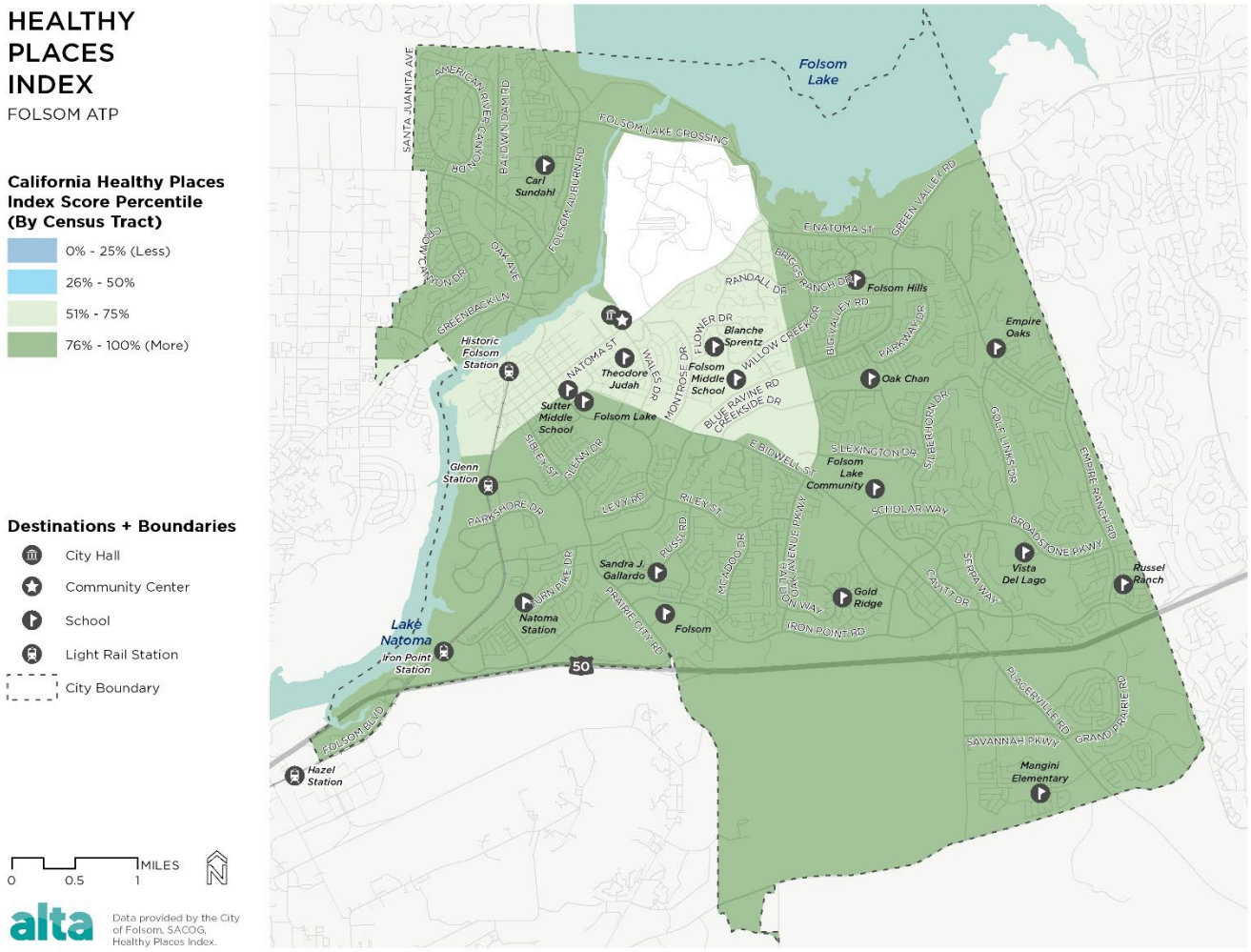
Figure 5: CalEnviroScreen 3.0



Healthy Places Index

Figure 6 below shows the results of the Healthy Places Index. Similar to the CalEnviroScreen 3.0 results, all areas of the city scored well in the Healthy Places Index. The city, therefore, has community characteristics that favor a healthy population.

Figure 6: Healthy Places Index



Home and Work Locations of Low-Income Workers

Figure 7 below shows the work locations of low-Income workers who live in Folsom. These locations can help guide the prioritization of multi-modal improvements in areas that could most benefit from additional travel options and improved access to jobs and services.

The results show:

- Approximately 1,300 workers live and work in Folsom, while nearly 1,900 workers live in Folsom but work outside of Folsom.
- Relative to other areas surrounding Folsom, a large number of workers commute from Folsom to Rancho Cordova. These groups have the option to take the Light Rail.
- Other popular commutes relative to the surrounding areas are from Folsom to El Dorado Hills (less than 5 miles from Folsom Historic District) and Folsom to Roseville (~10 miles from Folsom Historic District).

Figure 7: Work Locations of Low-Income Workers Who Live in Folsom

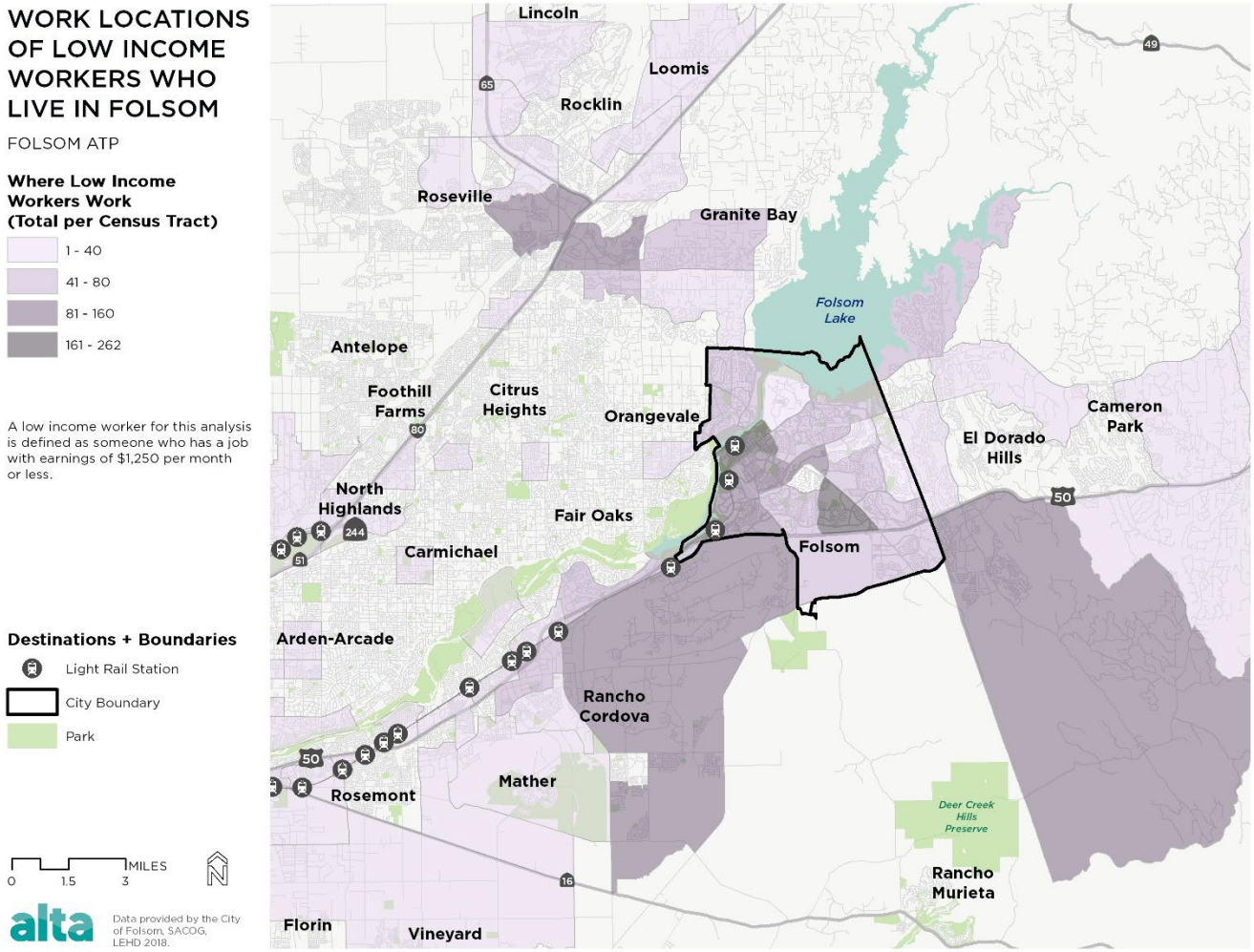
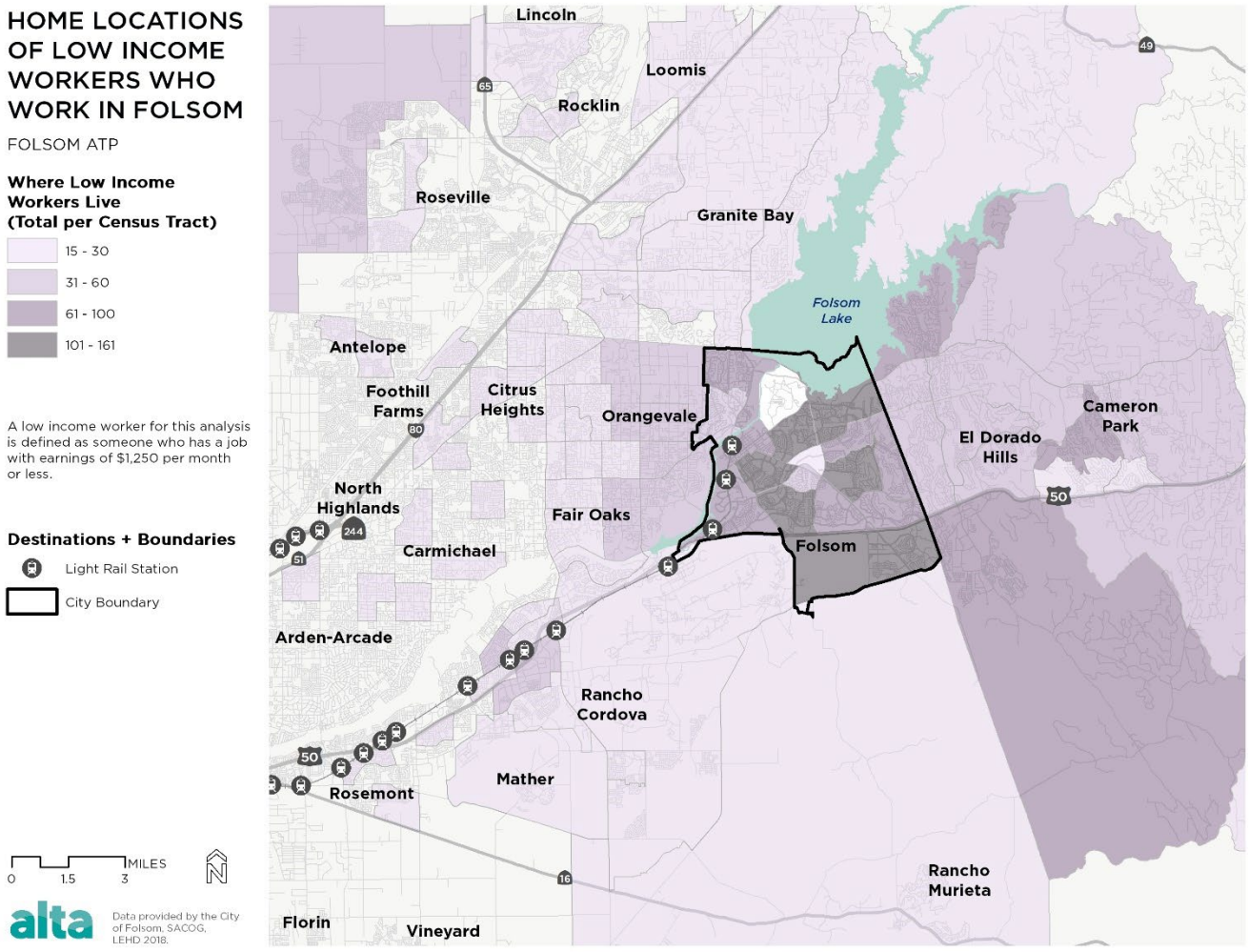


Figure 8 below shows the home locations of low-income workers who work in Folsom. The results show:

- Approximately 1,300 low-income workers live and work in Folsom, while approximately 2,200 low-income workers live outside of Folsom and work in Folsom.
- Relative to other areas surrounding Folsom, a large number of low-income workers commute from El Dorado Hills, Cameron Park, Orangevale, and Fair Oaks to Folsom. These groups don't have Light Rail stops to connect them to work.
- Sacramento Regional Transit and El Dorado Transit have bus routes and stops that connect to Folsom. The 50 Express bus on El Dorado Transit does connect low-income workers who live in El Dorado Hills and Cameron Park to Folsom. Sacramento Regional Transit also provides bus service for low-income workers who live in Fair Oaks and Orangevale to Folsom, however with relatively indirect routes requiring bus transfers to access Folsom's major commercial areas.

Figure 8: Home Locations of Low-Income Workers



Equity Analysis: Summary of Findings

As seen by the results of the CalEnviroScreen and Healthy Places Index tool, the residents of the City of Folsom are relatively affluent and live in neighborhoods with healthy conditions compared to the region and the rest of California. While still above levels and incomes in Sacramento County, the central area of the city, such as Folsom Historic District and the neighborhoods directly adjacent to Folsom Historic District, has relatively lower access to vehicles and lower incomes compared to the rest of the city. Approximately 1,300 low-income workers live and work in Folsom. Over 2,000 low-income workers live outside Folsom and work in Folsom, with a large number commuting from El Dorado Hills, Cameron Park, Orangevale, and Fair Oaks to Folsom. While these groups don't have Light Rail stops to connect them to Folsom, many of them do have bus service. Low stress connections to and from these transit options will be important for low-income workers and residents.

3. Existing Bicycle & Pedestrian Network

Existing Bicycle Network

The existing bicycle network in the City of Folsom consists of trails and on-street bicycle facilities, as shown in **Table 1** below and in **Figure 9** below.

Table 2. Existing Bicycle Facilities

Facility Type	Mileage
Class I: Shared Use Path (Trail)	64.7
Class II: Bicycle Lane	59.7
Class III: Bicycle Route	0.9
Class IIB: Buffered Bicycle Lane	3.6
Class IV: Separated Bikeway	0.5

Trails

The City of Folsom has an extensive paved trail network that connects neighborhoods, provides access to parks, transit, and shopping. The existing trail network can be categorized into regional trails, city-wide trails, and neighborhood trails, as described below. These trail categories are not officially recognized by the City of Folsom, but are useful in understanding the trail network. While trails form the backbone of the low stress bike network, many neighborhoods are disconnected from the larger trail network. While most neighborhoods have access to a trail, many of them are neighborhood trails that do not connect to the larger trail network and require people to cross and/or ride along major arterials to travel to other areas of the city.

Regional Trails

Regional trails connect different parts of the city and extend to neighboring municipalities in the region.

- The Jedediah Smith Memorial Trail runs along the American River from Sacramento all the way through central Folsom to Folsom Lake. This trail is a major attraction for recreational riders and some commuters in the region.

City-Wide Trails

City-wide trails connect to multiple neighborhoods and destinations throughout the city.

- The more local Johnny Cash Trail connects Folsom Historic District with Folsom Lake and the Jedediah Smith Memorial Trail.
- The Folsom Parkway Rail Trail runs north-south parallel to Folsom Parkway from Bidwell Street to the Iron Point Light Rail Station, connecting through the Glenn Light Rail Station along the way.
- The Folsom Parkway Rail Trail connects east on the Humbug Willow Creek Trail. The Humbug Willow Creek Trail follows Willow Creek and Humbug Creek, which provides an east-west connection through the middle of the city.
- Farther north, the Oak Parkway Trail similarly provides an east-west trail connection—with a major gap at Blue Ravine Road—from Folsom Historic District to the Foothills neighborhood, eventually connecting back to the Humbug Willow Creek Trail.

Neighborhood Trails

In addition to the regional and city-wide trails mentioned above, there are many trails, often shorter segments, that make connections within one or two neighborhoods. While some of them connect to the larger network of trails, most of these neighborhood trails are isolated and disconnected to the rest of the city.

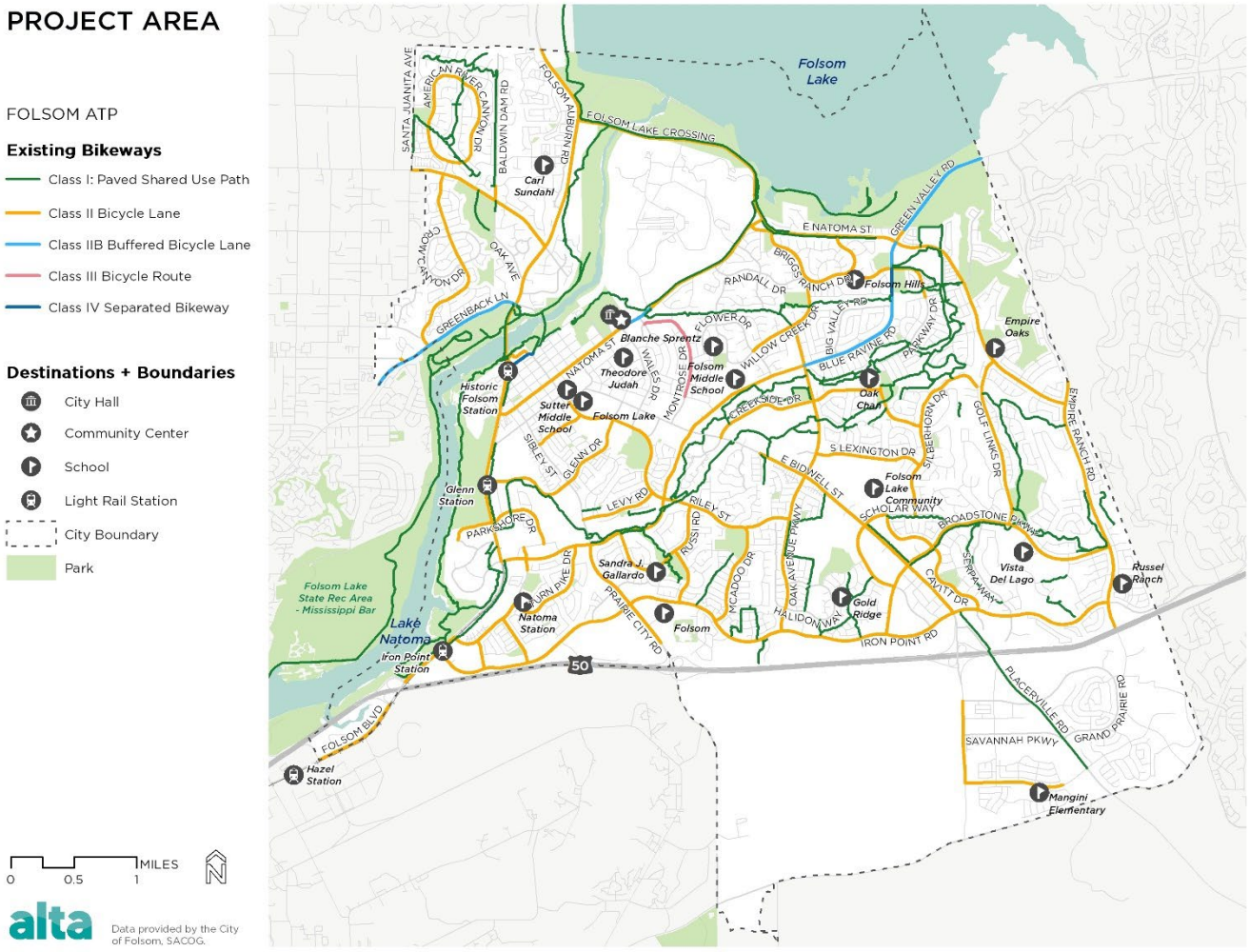
- Perhaps the most extensive and connected neighborhood trail is the Empire Ranch Trail. This trail loops through the entire Riata neighborhood along the eastern edge of the city and connects with the larger city through the Humbug Willow Creek Trail.
- More typical, however, is the trail that runs along the Natomas Ditch in the Willow Creek neighborhood. While this trail connects the neighborhood to parks, it is an isolated segment that does not directly connect to other low stress bike facilities.

On-Street Bicycle Facilities

The on-street bicycle facilities, shown in **Figure 9** on the following page, currently consist mostly of Class II bicycle lanes. Most of these bike lanes are along major roadways with high speeds and multiple travel lanes, likely making them uncomfortable and stressful for all but the most confident bicyclists. While some trails provide low-stress parallel routes to these major arterials—such as the Folsom Parkway Rail Trail—they are less direct and shorter than the major arterials.

In addition to the Class II bicycle lanes, Folsom does have a few Class IIB buffered bike lanes, and two short segments of Class IV separated bikeways. Folsom has a buffered bike lane along Greenback Lane west of Folsom-Auburn Road, along a short section of E Natoma Street connecting to the Johnny Cash Trail, and along Blue Ravine Road east of Oak Ave Parkway to E Natoma Street. While the buffered bike lanes provide added separation, and therefore comfort, for people biking, they currently are limited to short segments throughout the city and do not always connect to other low stress bike facilities. The Class IV separated bikeways exist along Blue Ravine Road—connecting the Oak Parkway Trail at Arrowsmith Drive to the trail at Manseau Drive—and along Leidesdorff Street in the Historic District.

Figure 9: Existing Bikeway Network



Existing Pedestrian Network

Sidewalks

The sidewalk network, as shown in **Figure 10**, shows:

- Most residential streets in Folsom Historic District lack sidewalks. This includes almost all of the residential streets within the Folsom Historic District grid.
- Some of the major arterials such as Folsom Boulevard, Folsom-Auburn Road, Greenback Lane, and large sections of Oak Ave Parkway, E Natoma Street, and Broadstone Parkway lack sidewalks either on both sides or one side of the street.
- The majority of Folsom north of Lake Natoma and Folsom Historic District, such as the American River Canyon and Valley Pines neighborhoods, do not have any sidewalks.

Trails and Pedestrians

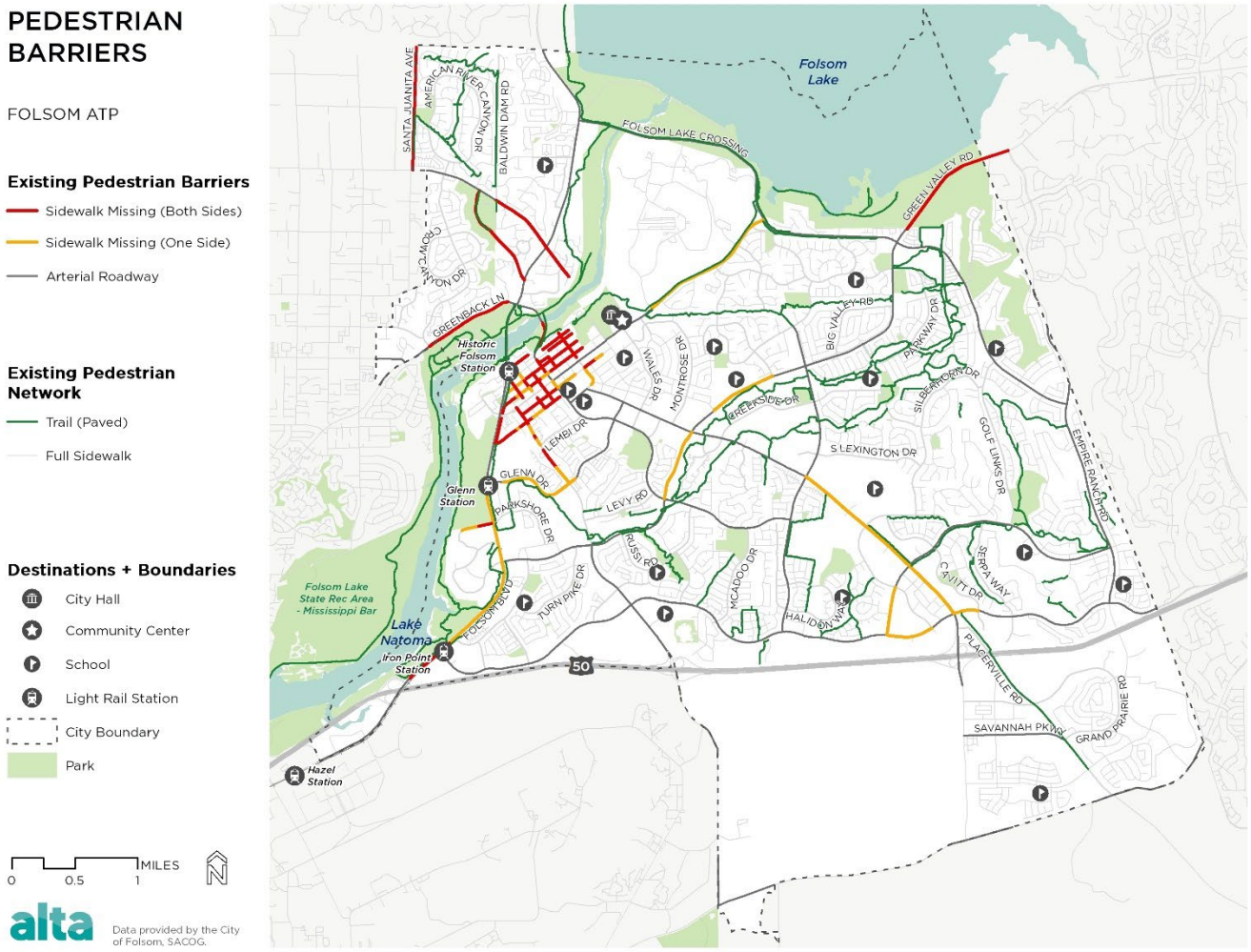
While the trail network in Folsom provides great connections for people biking and walking, quite a few trail entrances are difficult to access for pedestrians. While many of the trail entrances have adequate pedestrian access—mainly through crosswalks and pedestrian signals—some of the barriers to trail access for pedestrians include:

- No sidewalks or crossings connecting to the trail
- The crossing to access the trail is along a busy, wide arterial with long crossing distances
- The location of the trail entrance requires out-of-direction travel for pedestrians

A few specific examples of locations with limited pedestrian trail access include:

- Pedestrian access to the Willow Creek trail at Folsom Boulevard has no crossing and only sidewalk access from the south.
- Access to the Folsom Harvard Park Light Rail Trail from Glenn Drive has no crossing or sidewalk connecting to the trail entrance.
- The northern extent of the Folsom Parkway Rail Trail at Bidwell Street has no sidewalks nearby.
- The neighborhood adjacent to the two Johnny Cash Trail entrances at Leidesdorff Street has no sidewalks.
- Pedestrian access to the Johnny Cash trail from the Folsom City Lions Park—near the Folsom Public Library and Folsom Community Center—is limited as the sidewalk ends and pedestrians are forced to travel through the large parking lot to access the trail.
- Even though the intersection has a pedestrian signal and crosswalk, no sidewalks exist at the entrance to the Oak Parkway Trail at E Natoma Street across the street from the Folsom State Prison.
- Pedestrian access to the entrance of the Oak Parkway Trail at Willow Creek Drive is limited as Oak Ave Parkway has a sidewalk only on the east side of the street.
- There is no pedestrian access to the neighborhood trail at Walden Drive and Clarksville Road from the mall across the street.
- Pedestrian access to the trails in the northern part of Folsom north of Lake Natoma is limited because few sidewalks and crossings exist adjacent to trail entrances.

Figure 10: Existing Pedestrian Barriers



4. Connectivity Analysis

Bicycle Level of Traffic Stress

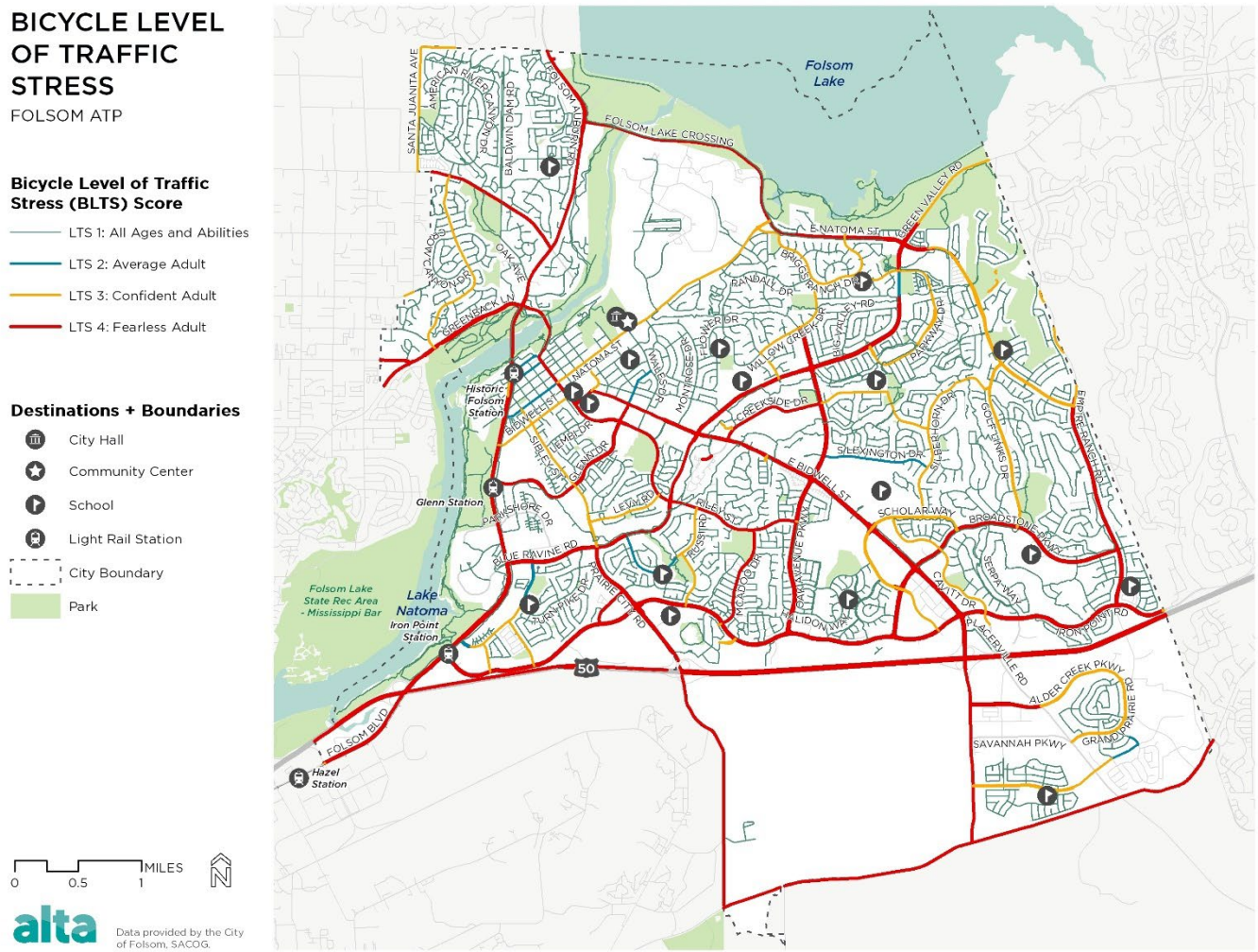
Bicycle Level of Traffic Stress (LTS) refers to the perceived comfort level of a roadway for bicyclists. At its foundation, LTS relates to the speed of the roadway, the width of the roadway, and provision of space for bicycles. A roadway with fewer lanes for motor vehicles, lower posted speeds, and greater separation from motor vehicles is considered most comfortable, while high speeds and mixed traffic conditions are least comfortable. A score of LTS 1 is typically considered to be an all ages and abilities facility. A Bicycle LTS was conducted to provide insight into network gaps or focus areas for improving the bicycle network.

The main findings from the LTS analysis, as shown in **Figure 11** below, include:

- Neighborhood roadways are typically low stress.
- Many minor collectors are high stress, with an LTS score of 3. Examples include two lane roadways such as Willow Creek Road, Sibley Street, and Silberhorn Drive.
- While many major arterials include designated Class II bicycle lanes, factors such as high motor vehicle speeds and number of lanes result in higher stress routes for bicyclists. Examples include E Bidwell Street, Blue Ravine Road, Oak Avenue Parkway, Iron Point Road, and Folsom-Auburn Road.

While most of the major arterials present barriers and gaps in the bicycle network, some portions of these major roadways have parallel trails that provide a low stress alternative route. The Folsom Parkway Rail Trail, for example, provides a parallel low stress bikeway along Folsom Boulevard. Plan recommendations will consider ways to improve low-stress connections to the trail network to improve the usefulness of the active transportation network.

Figure 11: Bicycle Level of Traffic Stress



Low Stress Bicycle Network and Barrier Roadways

As described above, a roadway with fewer lanes for motor vehicles, lower posted speeds, and greater separation from motor vehicles is considered low stress and most comfortable for all ages and abilities. **Figure 12** depicts the low stress bicycle network and barrier roadways. The low stress network (roadways with an LTS score of 1 and 2) are shown in blue. High stress roadways (roadways with an LTS score of 3 and 4) are shown in red. Low stress travel is disrupted by the high stress roadways shown in red. The high stress roadways surround the low stress roadways to create "islands" of low stress connectivity.

Destinations ***within*** neighborhoods, such as smaller neighborhood parks and schools, are accessible via low stress local streets. Destinations that require travel ***outside of a particular neighborhood*** are difficult to access because distances are far and require travel along or across high stress arterials.

Low stress travel is possible across some high stress roadways where there are protected crossings. Protected crossings are places where dedicated signals exist or where the crossing is separated from the roadway. Examples include:

- Crossing Riley Street at Sutter Street Folsom Historic District
- Humbug Willow Creek Trail overcrossing of E Bidwell Street (south of Blue Ravine Road)
- Humbug Willow Creek Trail undercrossing of E Bidwell Street (south of Creekside Drive)
- Folsom Parkway Rail Trail signalized crossing of Parkshore Drive

More typically, however, low stress travel is not possible across high stress roadways because of unprotected crossings where no dedicated signals or separated crossings exist. Examples include:

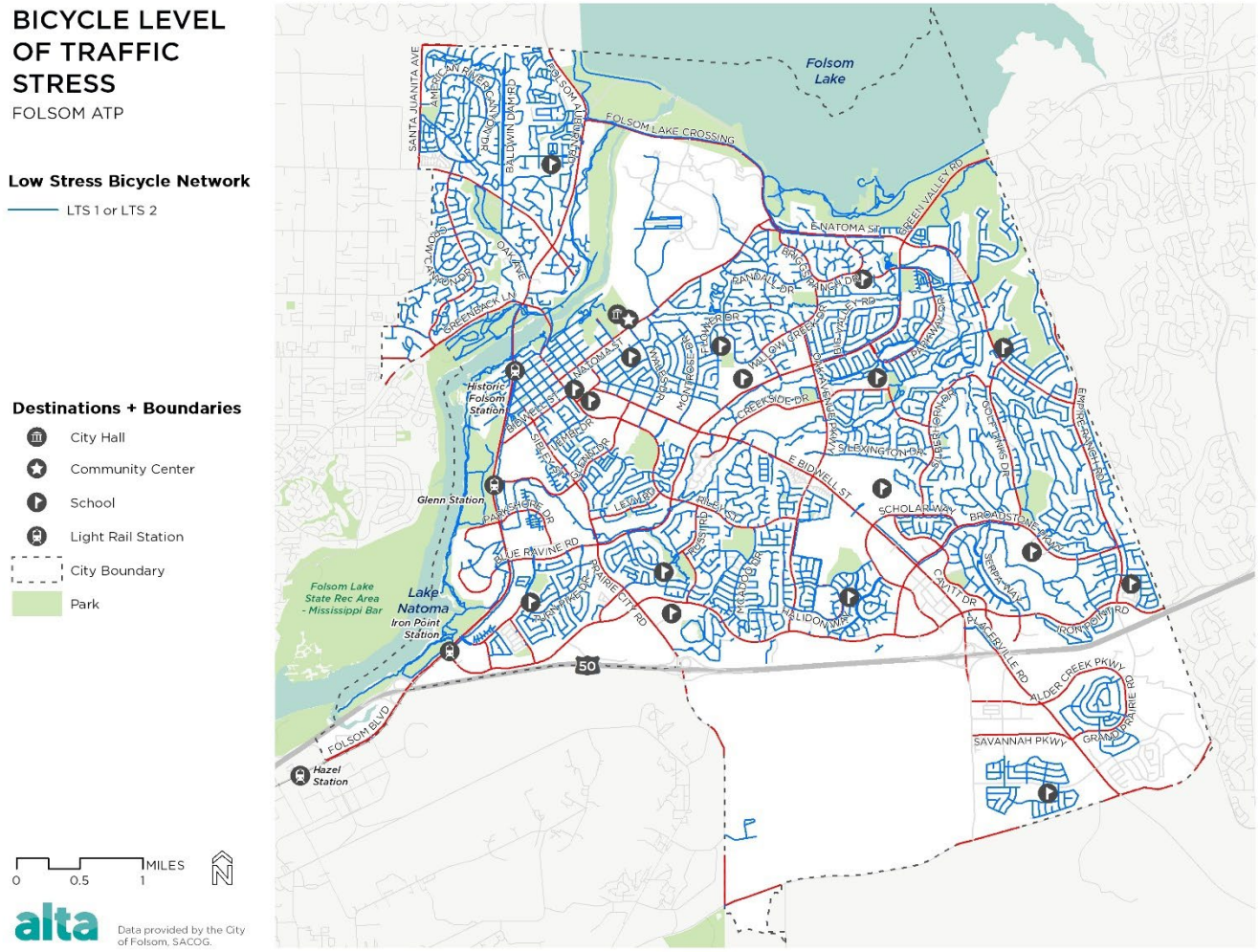
- The crossing of Folsom-Auburn Road connecting Berry Creek Drive to Jedediah Smith Memorial Trail (identified in the Folsom Pedestrian Master Plan)
- The trail along Natomas Ditch at Iron Point Road (identified in the Folsom Pedestrian Master Plan)
- The crossing of American River Canyon Drive at Crow Canyon Drive
- Trail crossing of Oak Avenue Parkway (just south of Blue Ravine Road)
- The crossing of Blue Ravine Road at Big Valley Road

An additional barrier is crossing Highway 50. Crossing Highway 50 at Prairie City Road and E Bidwell Street are currently high stress. As the area south of Highway 50 continues to grow, as outlined in the Folsom Area Plan, it has become critically important to provide low stress travel for residents across Highway 50 in order to access the rest of Folsom.

Folsom's extensive trail network, as previously described in this memo, *does* provide low stress connections between many neighborhoods and across some high stress roadways either through signalized crossings, overcrossings, or undercrossings. The trail system, however, is still limited in its ability to provide a continuous low stress experience that directly connects to destinations. Many trails, for example, are disconnected from each other, do not extend to all neighborhoods in the city, and often require unprotected crossings of high stress roadways. Many local residential streets also do not provide protected crossings of major high stress roadways.

Plan recommendations will consider opportunities to improve travel along and across the major, high stress roadways in Folsom in order to expand low stress travel to schools, light rail, shopping, and other destinations.

Figure 12: Low Stress Bicycle Network and Barrier Roadways



Public Comments from Interactive Webmap

The City of Folsom published a publicly-accessible web map—WalkBikeTrailsFolsom.com—to gather feedback from residents and visitors about walking and biking in the city. The map was available for comment beginning in April 2021 and captured comments through July 31, 2021. Specifically, participants were asked to share information about:

- Destinations they currently or would like to access by walking or biking
- Routes that they need walking or bicycling improvements
- Barriers to bicycling or walking

In addition to providing information for the categories listed above, participants also had the opportunity to indicate support for comments shared by other participants. This information provides further insight into the findings of the needs analysis and will inform future stages of this project, including recommendations and prioritization.

Overall, more than 500 unique comments were shared on the web map. Participants "liked" comments more than 1,500 times, and overall, participants interacted with the map and comments more than 2,100 times. Comments provided captured several common themes among participants. These themes are summarized in the sections below.

Common Barriers or Challenges

- Participants expressed concern about the safety of walking or biking in Folsom today. Specifically comments often mentioned high vehicle speeds along major roadways.
- Further, participants also identified major road crossings as a challenge to safe and comfortable walking and biking. This includes not only opportunities for more crossings but also desire for safety improvements at existing crossings.
- Incomplete sidewalks limit connectivity to destinations.
- Connections to and from the trail (Class I: Paved Shared Use Path) network are difficult to navigate or missing.
- Comments indicated that bicycle infrastructure along major roadways either is missing or does not provide enough protection, limiting the connectivity of the network.

Locations or Types of Improvements

Participants noted both specific locations for improvements across the network as well as types of improvements they were most interested in. These include:

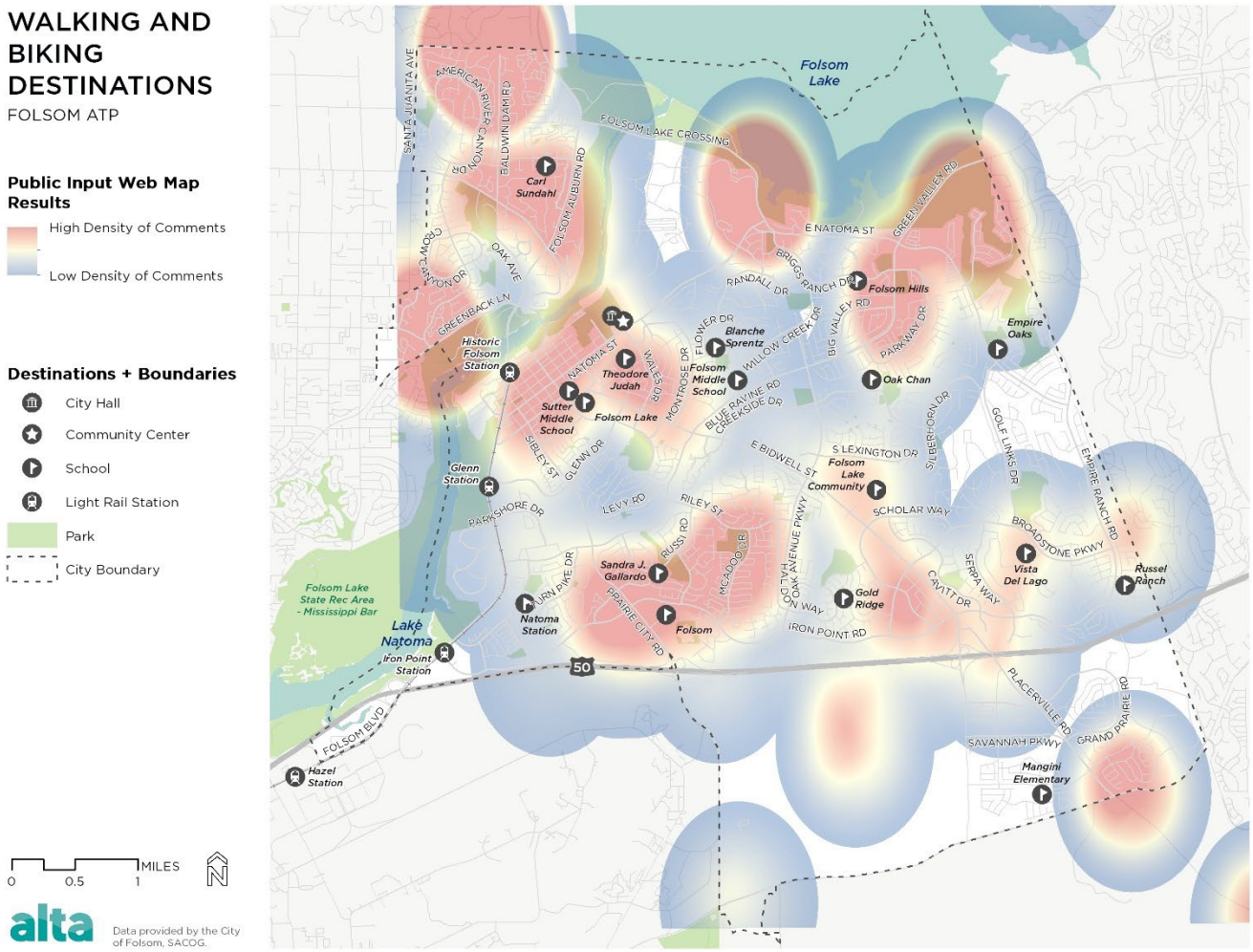
- Completing gaps in the sidewalk network, with support for locations such as Baldwin Dam Road, Valley Pines Drive, and connections to schools.
- Improved connections to and from trails, including Oak Parkway Trail connections to the Humbug-Willow Creek Trail.
- New or enhanced bicycle infrastructure. Comments typically identified paved shared use paths (Class I), separated bikeways (Class IV), or buffered bike lanes (Class IIB). In general, feedback included support for greater separation from motor vehicles. East Bidwell Street was frequently identified as a location for separated bikeway improvements.
- Crossing improvements range from locations for new mid-block crossings to improving existing crossings through safety improvements such as high visibility markings, signals or beacons where applicable, or overcrossings for particularly challenging crossings. Improved signal timing was also frequently mentioned to improve travel conditions for people walking and biking. Commonly noted locations include: East Natoma Street and Hancock Drive, Riley Street at Lembi Park, Greenback Lane and Folsom-Auburn Road.
- Expanded bicycle parking was also requested at locations such as schools and commercial areas.

Identified Destinations/Where People Want to Go:

- Schools, including Folsom Lake College, Folsom High School, and Folsom Middle School.
- Parks, including Lembi Park, Livermore Community Park, and Lake Natoma.
- Commercial areas
- Intel and office parks
- Folsom Historic District

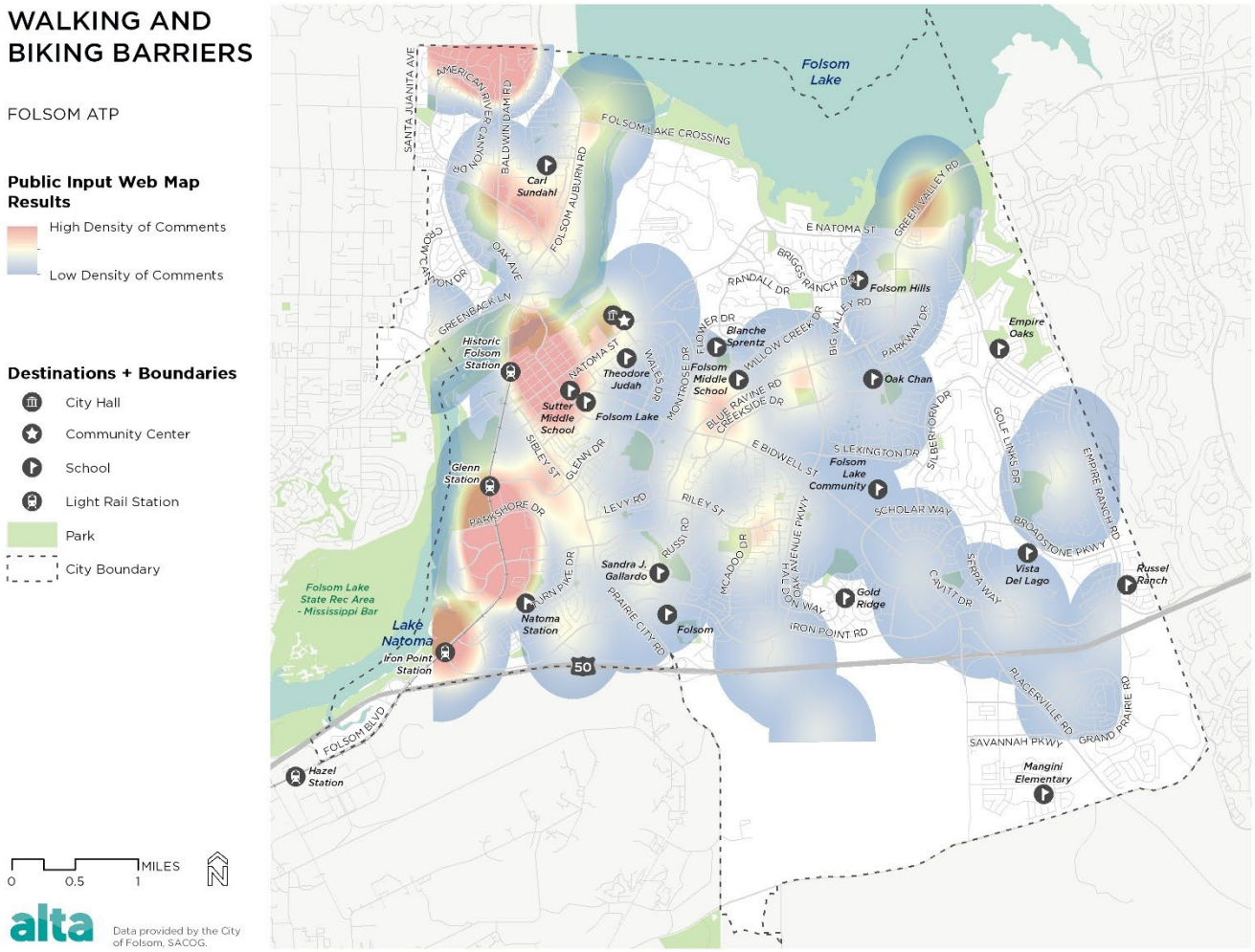
While the majority of public comments focused on challenges and potential improvements to biking and walking in Folsom, many Folsom residents also acknowledged the City's parks system and high-quality trail (Class I: Paved Shared Use Path) network as local assets. Connections to these facilities was of greater interest for participants. The following maps (Figures 11, 12, and 13) summarize the locations of comments provided for each comment type, including consideration for the support captured through "likes" of each comment.

Figure 13: Walking and Biking Destinations



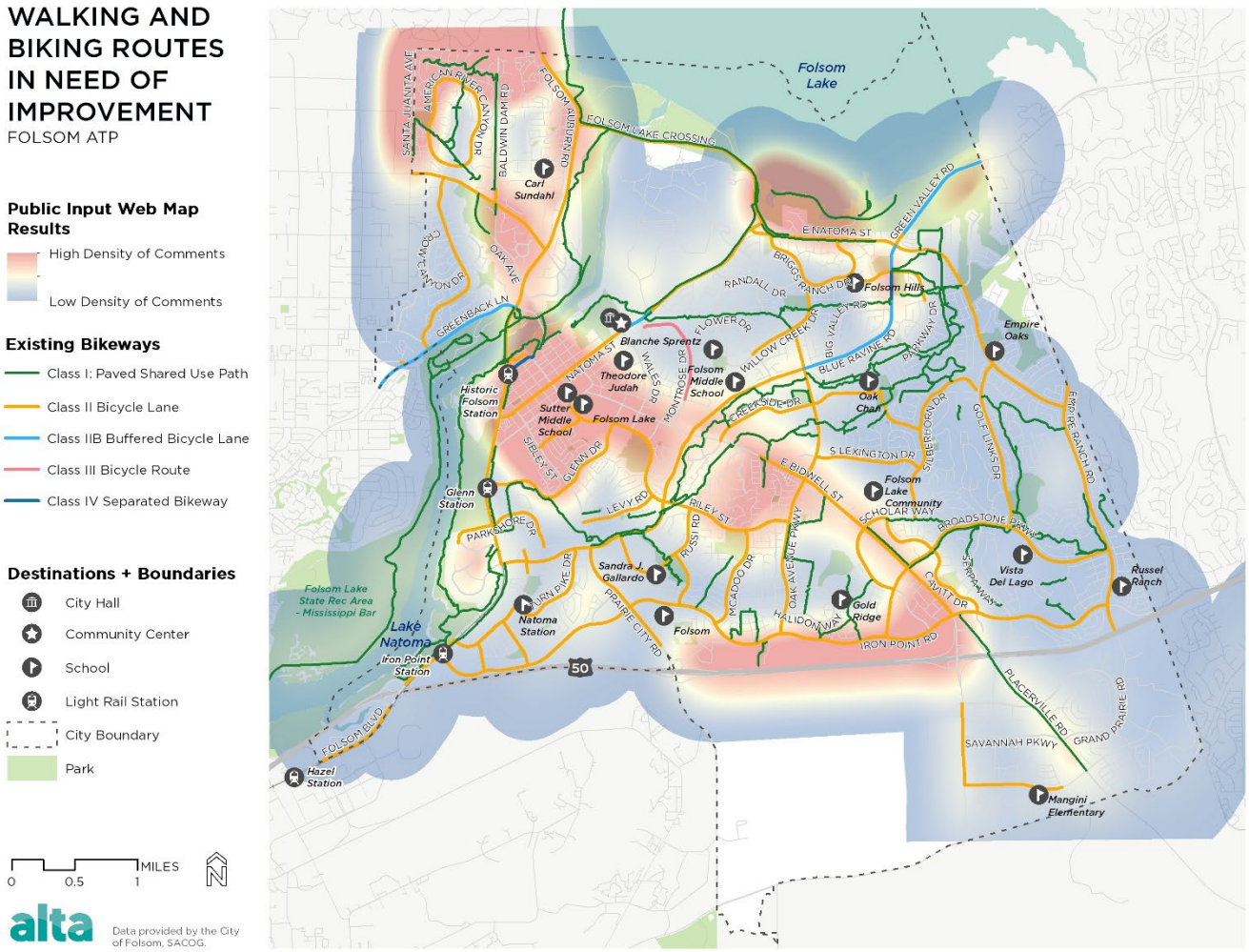
- The majority of identified walking and biking destinations in Folsom are schools, parks, and Folsom Historic District.
- The top three most liked destinations are: Mormon Islands State Park in the northeast corner of the city, Willow Springs Reservoir, and the intersection of Greenback Lane and American River Canyon Dr.

Figure 14: Walking and Biking Barriers



- The most "liked" comment regarding a biking barrier is located at the northern end of Temperence River Ct. The comment expresses a desire to access the service road along Baldwin Reservoir in order to head east to Auburn-Folsom Road.
- The most liked walking barrier is located on Iron Point Road, noting that the Natoma Station neighborhood to the north lacks walking and biking connections to the Iron Point sidewalks/bike lanes.
- General areas throughout Folsom with a high density of identified walking and biking barriers include: the intersection of Iron Point Rd and Folsom Blvd at Iron Point Station, the intersection of Parkshore Dr and Folsom Blvd at Glenn Station, Folsom Historic District, City Hall, and Green Valley Rd in Mormon Islands State Park.

Figure 15: Routes in Need of Improvement



- Routes with the highest number of comments include: the trail connection to Folsom Auburn Rd from the American River Trail, the trail connection linking the Oak Parkway Trail to the Humbug-Willow Creek Trail, and an existing dirt trail parallel to US 50 between Bidwell St and Prairie City Rd.
- General areas in need of walking and biking route improvements include Folsom Historic District, the neighborhoods surrounding Carl Sundahl Elementary School, northwest Folsom, Riley St, and routes through Mormon Islands State Park.

Needs Analysis Summary

The Needs Analysis and review of Public Comments from the interactive web map identify several key opportunities and challenges for the bicycle, pedestrian, and trails network in Folsom. In summary, these include the following:

Opportunities

- A well-developed paved trail network
- A well-developed on-street bikeway network
- Three Sacramento Regional Transit Gold Line Light Rail stations
- An active community focused on recreation

Challenges

- High speed arterials
- Challenging intersections and crossings
- Standard bike lanes are high stress
- Sidewalk gaps
- Transition focus from recreation to active transportation
- Disconnected street network with limited connectivity between destinations

These opportunities and challenges should be considered as the project advances, including identification of goals and project recommendations.