City of Merced

Active Transportation
and
Safe-Routes-to-School
Plan

Approved July 15, 2019
by Merced City Council
City of Merced Active Transportation and Safe-Routes-to-School Plan

Recommended for Adoption by the Merced Bicycle Advisory Commission on April 23, 2019

Adopted by the Merced City Council on July 15, 2019

Prepared by
The City of Merced Development Services Department, Planning Division
and
Alta Planning and Design

Under the Direction of
Steve Carrigan, City Manager
Scott McBride, Director of Development Services
Kim Espinosa, Planning Manager

Plan Prepared by
Michael Hren, Principal Planner
Kendra Ramsey, Alta Planning and Design

With the Assistance of
Taylor Gates, Administrative Assistant I
Emily Tracy, Alta Planning and Design
Brett Hondorp, Alta Planning and Design

In Cooperation with
Merced City Council
Merced City Bicycle Advisory Commission
Merced Active Transportation and Safe-Routes-to-School Technical Advisory Committee
Merced Active Transportation and Safe-Routes-to-School Citizens’ Focus Group
Executive Summary

The City of Merced’s *Active Transportation and Safe-Routes-to-School Plan* (ATP) outlines the goals for active transportation in Merced, and provides recommendations for how to make that vision into reality. The ATP envisions a safe, enjoyable, and interconnected network of facilities serving residents and visitors alike, while allowing users of all modes of transportation equitable access to clean, well-maintained, and sensibly designed facilities. The ATP has a number of goals, some of the most important are:

- Improve the safety and perceived safety of using active transportation in Merced
- Increase active transportation trips in Merced
- Improve the connectivity of the active transportation network in Merced
- Promote a data-driven approach to maintaining existing active transportation facilities and creating new ones in Merced

To achieve these goals, the ATP recommends a comprehensive network of citywide bikeways, trails, and sidewalks that connect all parts of the City of Merced. Since this process will take many years to complete, the ATP identifies priority projects based on a set of criteria derived with the help of the public. This ensures that the most important links and nodes in the Merced active transportation network are clearly identified and that agencies are able to advocate for funding, design, and construction of the most critical pieces of infrastructure when the opportunities to do so arise.

This ATP is proposing 50 pedestrian improvements or studies throughout Merced; these recommendations vary between specific spot improvements to corridor-wide change, totaling an estimated $11.7 million in costs. This includes:

- $9.4 million in construction costs
- $1.3 million of sidewalk construction, approximately 7,500 linear feet
- $6.5 million for two projects including 3 miles of pedestrian-scale lighting
- $1.6 million of other improvements including 28 pedestrian spot improvements
- $2.3 million in pedestrian studies: accessibility, corridor, intersection, crossing

This ATP is also proposing 90.4 miles of both enhanced and new bikeways throughout Merced. In total, these bikeways have a total estimated construction cost of $14,131,000. This includes:

- $9.4 million for Class I off-street bike path facilities
- $4.7 million for Merced’s on-street network
- 9.7 miles of bicycle boulevards
- 4.2 miles of separated bikeways

In all, the total estimated costs of the infrastructure recommendations is $25.8 million. If the City were to implement this entire list of recommendations over the course of the next 20 years, it would cost $1,290,000 per year to accomplish this.

*a: Estimated costs do not include engineering, design, right-of-way acquisition, labor, or other non-construction costs.*
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Section 1:
Foundations of the Active Transportation and Safe-Routes-to-School Plan
Foundations of the Active Transportation and Safe-Routes-to-School Plan

The City of Merced’s Active Transportation and Safe-Routes-to-School Plan (hereinafter referred to as the “ATP” the “Plan”) outlines the goals for active transportation in the City of Merced, and provides recommendations for how to make that vision into reality. Per the California Department of Transportation (Caltrans) Division of Local Assistance, the administering agency for statewide Active Transportation Program efforts, the purpose of the ATP is to encourage increased use of active modes of transportation by achieving the following goals:

- Increase the proportion of trips accomplished by biking and walking
- Increase safety and mobility for non-motorized users
- Advance the efforts of regional agencies to achieve greenhouse gas (GHG) reduction goals
- Enhance public health
- Ensure that disadvantaged communities fully share in the benefits of the program
- Provide a broad spectrum of projects to benefit many types of active transportation users

Figure 2 details the ATP Purpose and Goals as defined by California Senate Bill (SB) 99.

The City of Merced has also outlined specific goals for its local ATP, including:

- Improve the safety, perceived and actual, of using active transportation in Merced
- Increase active transportation trips in Merced
- Improve the connectivity of the active transportation network in Merced
- Promote a data-driven approach to maintaining existing active transportation facilities and creating new ones in Merced

Figure 1: University of California, Merced Bike Path
There is hereby established the Active Transportation Program in the department for the purpose of encouraging increased use of active modes of transportation, such as biking and walking. It is the intent of the Legislature that the program achieve all of the following goals: (a) - (f)

(f) Provide a broad spectrum of projects to benefit many types of active transportation users.

(a) Increase the proportion of trips accomplished by biking and walking.

(b) Increase safety and mobility for nonmotorized users.

(c) Advance the active transportation efforts of regional agencies to achieve greenhouse gas reduction goals as established pursuant to Senate Bill 375 (Chapter 728, Statutes of 2008) and Senate Bill 391 (Chapter 585, Statutes of 2009).

(d) Enhance public health, including reduction of childhood obesity through the use of programs including, but not limited to, projects eligible for Safe Routes to School Program funding.

(e) Ensure that disadvantaged communities fully share in the benefits of the program.

* “Plans” are not specifically listed as one of the project types.
Strong transportation networks are multimodal, allowing for all modes of travel including walking, bicycling, and transit to be used to reach key destinations in a community and region safely and directly. Jurisdictions can use “Complete Streets” design to construct networks of safe streets that are accessible to all modes and all users, no matter their age or ability.

The California Complete Streets Act (AB 1358) gives direction to local governments to address “Complete Streets” in their general plans. The Act states: “transportation planners must find innovative ways to reduce vehicle miles traveled (VMT) and to shift from short trips in the automobile to biking, walking, and use of public transit.” Table A below shows existing “Complete Streets” policies already in place in the City’s Merced Vision 2030 General Plan.

Table A: City of Merced “Complete Streets” Policies

<table>
<thead>
<tr>
<th>COMPLETE-STREETS RELATED</th>
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<tbody>
<tr>
<td>Policy T-1.1</td>
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<tr>
<td>Policy L-3.1</td>
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<td>Policy UD-1.2</td>
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<tr>
<td>Policy UD-1.1</td>
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<td>Policy L-3.3</td>
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<table>
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<tr>
<th>TRANSIT-RELATED</th>
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<tbody>
<tr>
<td>Policy T-2.1</td>
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<tr>
<td>Policy T-2.2</td>
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<td>Policy T-2.3</td>
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<table>
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<tr>
<th>BIKE-RELATED</th>
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<tr>
<td>Policy OS-3.2</td>
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<table>
<thead>
<tr>
<th>PEDESTRIAN-RELATED</th>
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<tr>
<td>Policy T-2.7</td>
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<tr>
<td>Policy T-2.8</td>
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</table>
The Merced Vision 2030 General Plan and 2013 Bicycle Transportation Plan (BTP) serve as the foundational documents and building blocks for this ATP. The ideals, data, research, information, and guidance from those documents were incorporated into, drawn on, and directly influential in the process of the creation of the ATP. In summary, the City’s General Plan envisions that all streets should be designed as “Complete Streets” which address all modes of motorized and non-motorized transportation, including vehicles, transit, pedestrians, and bicycles. These goals and policies, together with the goals and policies of the BTP, formed the foundation upon which to design, build, and construct active transportation facilities in the City of Merced.

**Why Build Active Transportation Infrastructure?**

Planning for an expanded active transportation system benefits the entire community: those who choose to walk or bicycle for transportation and recreation, those who are unable to drive or do not have access to a vehicle, and those who drive. A well-connected system of paths, bicycle lanes, sidewalks, and Safe-Routes-to-School enables freedom of safe, low-stress transportation choice, and can reduce traffic congestion as well.

There are a wide variety of pedestrian and bicycle infrastructure improvements that can increase safety and comfort for all roadway users. These improvements range from relatively low-cost items like striping and signage to more expensive improvements like pedestrian-scale lighting and sidewalk construction; with each type also having maintenance costs in addition to the initial capital costs. Improving the active transportation network within a city provides a variety of benefits for all residents and visitors, regardless of their preferred mode of travel.

**Benefits of Active Transportation**

Active transportation improvements provide a variety of transportation, health, economic, environmental, and social benefits for all residents and roadway users, not just pedestrians and bicyclists. While these benefits may not have an easily defined monetary value, they have strong positive impacts on communities.

**Safety**

Conflicts between bicyclists, pedestrians, and motorists can result from ineffective or inefficient roadway design, as well as poor driving, riding, or walking behavior. When infrastructure is designed to accommodate all users, these conflicts can be reduced, and safety can increase for all users. Designated bicycle facilities and enhanced pedestrian facilities and crossings reduce the risk of collisions and injuries compared to roadways without these facilities.
Designing infrastructure for all road users can help to increase the predictability of movements, make vulnerable roadway users like bicyclists and pedestrians more visible to drivers, slow vehicle speeds, and encourage a more deliberate and attentive use of the roadway system.\(^1\) Building enhanced pedestrian and bicycle infrastructure improves perception of safety, which can lead to additional use of these facilities. These results are attainable by designing facilities for people of all ages and abilities. Creating the documented “safety in numbers” effect of active transportation is vital to making multimodal travel more predictable and visible to all. One study found that when bicycling and walking rates double, per-mile pedestrian-motorist collision risk can decrease by as much as 34%.\(^2\)

Additionally, improving bicycle and pedestrian facilities around schools can directly improve the safety of children, who are some of the most vulnerable roadway users. Enhanced infrastructure can encourage more students and families to walk and bicycle to schools, which also eases pressure off the roadway network during pick-up and drop-off periods, reducing congestion. Most importantly, instituting specific changes for school travel improves the safety of children walking and biking to school.

Reducing collisions reduces injuries, which has both economic and health benefits. By reducing collisions and injuries, healthcare costs and the opportunity cost of missing work due to collision-related injury or disability are diminished. Additionally, a calmer, less stressful transportation environment is created, which encourages more people to use active transportation modes.

**Public Health**

Physical inactivity is now widely understood to play a significant role in the most common chronic diseases in the United States: heart disease, stroke, diabetes, and obesity-related illnesses. In fact, a 2004 study published in the American Journal of Preventive Medicine reported that for each extra 60 minutes spent in a car daily, there was a six percent increase in the chances of being obese.\(^3\) Creating a built environment that encourages bicycling and walking is a key component of fighting obesity and inactivity, which has been shown to have substantial impacts with relatively limited public investment.

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A growing number of studies show that the design of our communities—including neighborhoods, towns, transportation systems, parks, trails, and other public recreational facilities—affects people’s ability to reach recommended physical activity goals. The Centers for Disease Control and Prevention determined that creating and improving places to be active could result in a 25 percent increase in the number of people who exercise at least three times per week. This is significant, as even a small increase in physical activity can bring measurable health benefits.4

As walking and bicycling are both healthy and relatively low-cost forms of transportation, they can provide good opportunities for healthy exercise. When coupled with safe, low-stress facilities, walking and bicycling can become a practical and realistic means of transportation that can improve both physical and mental health. Improvements in public health also reduce the burden of healthcare costs on individuals and households, which allows more income to be spent on other necessities.

**Equity**

Walking and bicycling are relatively inexpensive and broadly accessible forms of transportation. The average annual operating cost of a bicycle is much lower than that of a car, and the monetary barriers to entry for bicycling and walking are much lower than driving. Walking and bicycling are affordable means of transportation for individuals and households with lower incomes, who disproportionally are people of color. Improving active transportation infrastructure also has many benefits for one-car or zero-car households, as they typically rely much more on both active transportation and transit. Additionally, improving the first and last miles from home to transit can make active modes a safer and more viable option for these households. Active transportation can give these households more travel options, increasing physical mobility, increasing the ability to travel to work, school, and other daily activities.

Improvements to bicycle and pedestrian infrastructure also benefit the most vulnerable roadway users, youth and seniors who walk and bicycle. These users tend to walk slower, perceive the speed and distance of oncoming vehicles differently, and may need assistance traveling. These improvements increase visibility, shorten crossing distances, increase separation between modes and provide many other benefits.

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Transportation

Nationwide, a high number of single-occupant vehicle trips are less than two miles in length, especially when commute trips are excluded. By taking these short trips on a bicycle or by foot, rather than in a car, residents can help reduce local traffic and congestion.

Active transportation improvements can also speed up and enhance access to transit services. Closing the first/last-mile gap is an important step in enhancing access to transit, which benefits all active transportation and roadway users. Reducing congestion is also a notable goal, as traffic reduces mobility, increases automobile operating costs, increases air pollution, and can cause stress.

Quality of Life

Many factors go into determining quality of life; commonly cited items include the local education system, prevalence of employment opportunities, and affordability of housing. In recent years, access to both quality transit service and an active transportation network (trails, greenways, bikeways, etc.) have become increasingly important for many people when determining their overall satisfaction with their community.

Creating conditions where bicycling and walking is accepted and encouraged increases a community’s livability from a number of different perspectives. The design, land use patterns, and transportation systems that comprise the built environment have a deep impact on travel behavior and the feel of a community. These conditions can determine whether the perception of a community is friendly and human-scale, or monolithic, cold, or void of activity as some areas designed primarily for vehicles can be.

Building a robust, low-stress active transportation network also increases freedom of choice. For maximum effect, these active transportation improvements must be designed to serve an array of users of all ages and abilities. Low-stress facilities such as separated bike lanes, while more expensive than facilities such as shared travel lanes or standard bike lanes, provide a much greater return on investment for a community. More users will take advantage of low-stress facilities, generating the greatest change to the transportation network. This gives more people greater mobility options, particularly those who do not or choose not to drive, ultimately increasing access to destinations throughout the area. Other residents may also want to spend less on transportation, feel safer on their community’s streets, and/or feel confident and comfortable allowing their children to walk or bike to school, the park, or a friend’s house.
Active transportation makes economic sense. Benefits include decreased family transportation costs, lower health care costs, higher property values, and more jobs created by way of new capital and infrastructure projects. In fact, some studies have even shown that bicycle and walking construction projects create more jobs per million dollars spent than roadway projects alone.

In addition to those more explicit economic benefits, improved quality of life tends to attract more diverse and creative population, which can generate higher economic growth for a city and region. Active transportation can also benefit downtowns and retail areas. As a slower mode of travel, active transportation allows users to observe and take in their surroundings more than driving or being an automobile passenger. This increases the likelihood of users stopping at local stores to shop, to spend money, and to bolster the economy.

Nationally, studies have shown that people prefer walkable communities. Bicycling and walking facilities often improve property values; Americans say that having pedestrian and bicycle facilities in their community is important to them, and two thirds of homebuyers consider the walkability of an area in their purchase decision. This is further proven by homes in walkable neighborhoods having property values that are higher than houses in areas with only average walkability.

On a community scale, bicycle infrastructure projects are generally far less expensive than automobile infrastructure. In terms of end-user costs, the annual operating costs for bicycle commuters are a fraction of those of automobile commuters, making bicycling and walking affordable options for a larger portion of households. The cost savings associated with bicycle travel expenses are also accompanied by potential savings in health care costs as described above.

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5 AAA’s “Your Driving Costs” Report (2013); League of American Bicyclists; Bureau of Transportation Statistics “Pocket Guide to Transportation” (2009); Metro Magazine, August (2014); Internal Revenue Service; “Quantifying the Benefits of Nonmotorized Transportation for Achieving Mobility Management Objectives”.


8 Heidi Garrett-Peltier, Pedestrian and Bicycle Infrastructure: A National Study of Employment Impacts, Political Economy Research Institute University of Massachusetts, Amherst, 2011, 1.

9 Same as 8.


**Environment**

Replacing vehicular trips with bicycling and walking trips has a measurable impact on reducing greenhouse gases in the atmosphere that contribute to climate change. Fewer vehicle trips and vehicle miles traveled (VMT) lead to fewer mobile source pollutants released into the air, such as carbon dioxide, nitrogen oxides, and hydrocarbons. Improving access to transit can also produce environmental benefits. Reducing vehicle use can also reduce other impacts such as noise, vibrations, and other vehicle discharges (oil, gas, and other fluids) that can end up in local waterways. Encouraging more schoolchildren to use active transportation modes can result in reduced congestion around pick-up and drop-off times, eliminating idling vehicles and the emissions that they produce.

**Schools**

Schoolchildren are key users of active transportation in any community. Planning for their ability to get to and from school and other destinations safely is a critical component of this Plan. Because of this, the Plan attempts to holistically address schools numerous times throughout and does not limit their influence to a single chapter. Based on community feedback during the creation of the prioritization methodology for the bicycle and pedestrian infrastructure recommendations in this Plan, proximity to schools earned projects the greatest amount of points of any category. For more about the prioritization and projects, see “Infrastructure Projects” on page 112. This reinforces the City of Merced’s commitment to ensuring that the projects it undertakes are serving the areas that have the greatest need and that are utilized by some of the most vulnerable groups.

While the Plan references schools far too frequently for a full index to be valuable, schools are discussed in conjunction to bicycle parking on Page 40, relative to pedestrian facilities on Page 44, and high collision corridors for cyclists and pedestrians on Page 56 and Page 61, respectively. Schools also deeply factor into the conversation about Potential Programs recommended by this Plan, particularly Education-based Programs, beginning on Page 119.
Development Patterns in Merced

To understand how to improve the active transportation infrastructure of Merced, it is helpful to describe how the City developed over the years. What follows is a brief synopsis of those development patterns. For a more exhaustive analysis of the City’s history, consult the Merced Vision 2030 General Plan.

Early Development

Merced was incorporated as a sixth class Charter City on April 1, 1889; the new City consisted of 1,700 acres. With the opening of the Yosemite Highway (Highway 140) in 1926, 16th Street began to develop in response to increased automobile traffic. As a result, motels, restaurants, and automotive-related businesses were built. In the 1940’s, significant residential growth occurred in Central and South Merced. Merced Airport and Atwater’s Castle Air Field were established in 1942.

1960-2000

By 1960, the City’s population had reached 20,000 and growth was beginning to boom in North Merced. Also in 1960, the elevated Highway 99 was constructed along 13th Street, effectively dividing South Merced from the downtown and creating three distinct subareas of Merced: North Merced, north of Bear Creek; Central Merced, between Bear Creek and Highway 99; and South Merced, south of Highway 99. The City adopted its first major general plan update in 1968, which signaled a change from the previous mainly east-west growth orientation along Highway 99/16th Street to the north-south growth pattern seen today.

Throughout the 1970s and 1980s, the City’s Creekside Bicycle Path system developed and Merced continued to grow. In response to growth projections that anticipated a population of up to 250,000 people by 2030 (a fivefold increase), the City embarked on a 40-year growth study. As a result of this study, the City established a “village” growth pattern and directed growth to occur primarily to the north and northeast around Lake Yosemite. In 1995, Merced’s population stood at 61,712, Castle Air Force Base closed, and Lake Yosemite was selected as the site for the next University of California campus.

2000-Modern Day

By 2000, Merced had 63,330 residents and 20,965 housing units and covered 20.94 square miles. In Fall 2005, the University of California (UC) Merced campus opened; also in 2005, the City’s population increased to 73,610 and a record 1,427 single-family building permits were issued. Unfortunately, in 2009 the economic downturn and foreclosure crisis led to only nine such permits being issued. From 1997 to 2010, the City annexed over 3,800 acres of new residential, commercial, and industrial land, and the City now covered 23.1 square miles with a population of 80,865. In May 2010, the new Mercy Medical Center Merced opened in North Merced replacing the old hospital in South Merced.
**Future Growth**

Merced has a number of important physical growth constraints that will continue to limit the direction of future growth. These growth constraints include the following:

1) Growth is restricted around the Merced Regional Airport in the southwest corner of the City due to the noise and safety hazards associated with the flight path. Residential growth around the airport cannot easily be accommodated without jeopardizing both the developing area and the presence of the airport. Land around the airport is primarily proposed for industrial uses, which are not as sensitive to noise and safety hazards.

2) Growth is limited south of Mission Avenue due to flooding potential, a high water table, and highly productive agricultural soils. Access and provision of public services also limit the growth potential of this area. However, limited growth is proposed along the south side of Mission Avenue to take advantage of this important transportation corridor.

3) Growth is limited to the east of the City, south of Yosemite Avenue and north of Highway 140 due to the existence of prime agricultural soil as well as a lack of access and public services. Campus Parkway will travel through this area, adding to growth pressures.

4) Growth to the northwest was once limited by the noise and safety hazards posed by Castle Air Force Base’s flight path. Now that the Castle Airport is repurposed for civilian uses, the approach zones for the airport are being reevaluated, which may create opportunities for additional residential development.

5) Growth to the northeast is limited for environmental reasons. The UC Merced campus and the proposed University Community sit on the southeast side of Lake Yosemite, and a planned community is proposed for the northwest side. Further development north of the Lake would be limited by sensitive habitat and wetland areas. Currently, the City has reached out to consultants to perform a study regarding growth to the northeast in response to a number of conversations with property owners about potential annexation, as well as an acknowledgement that the UC Merced Campus and the City of Merced need to grow together over the course of the next few decades.

For many years, the City has focused future growth predominantly to the north. The City’s Merced Vision 2015 General Plan directed growth away from more environmentally-sensitive areas in the City’s east and west areas and towards the lesser agricultural soils and grazing land to the north. However, new knowledge of sensitive habitats and species in this area will likely limit the ability of the City to grow any further in this direction. This focus on northward expansion has created some difficulty for active transportation users, particularly cyclists, in traveling between the three subareas of Merced. With limited facilities traversing such physical barriers as Highway 99 and Bear Creek, only certain pathways are available for active transportation.
Section 2:
Existing Active Transportation Users: The Count
Existing Active Transportation Users: The Count

The growth of the City of Merced, as described in the Development Patterns in Merced section, has also shaped the active transportation network. The current system is functioning but in need of buildout to complete existing gaps in order to reach more users and grow to serve the increasing population. This is especially important because a large number of the incoming residents and visitors are young, owing to UC Merced’s expansion, and more likely to eschew the single-occupant vehicle in favor of active transportation modes.

In order to better understand the needs of the future of Merced’s active transportation network, bicycle and pedestrian user counts were conducted to establish baseline active transportation data for key locations in the community. Below is the methodology for site selection and counting, along with a summary of findings.

Method

Counts were conducted manually by one trained and experienced observer at each location. Prior to the count period, observers positioned themselves near the appropriate intersections in a location with a clear vantage point of all approaches. Counts were conducted in 15 minute intervals for the two hour period. The one-hour span within those two hours with the highest count was selected as the “peak hour” for bicyclists and pedestrians separately.

Each bicyclist or pedestrian was recorded with a tally mark. Observers used judgment to record age across four approximate categories: Y – youth, under 14 years old; YA – young adult, 15-25 years old; M – middle ages, 25-50 years old; SS – senior, over 50 years old.

Observers also recorded trip purposes in two categories. Bicyclists and pedestrians were assumed to be “commuters” if they were carrying a work or school bag, or carrying groceries, shopping bags, or other cargo. All others were assumed to be walking or bicycling for recreational purposes.

Tallies were recorded in a table for each 15 minute period. An example is included below.

Table B: Example Count Tally Sheet

<table>
<thead>
<tr>
<th>Mode</th>
<th>Commuter (Bags/Cargo of any kind)</th>
<th>Recreational (Not carrying anything)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Y (&lt;14)</td>
<td>Y (&lt;14)</td>
</tr>
<tr>
<td>Bicycle</td>
<td>YA (15-25)</td>
<td>YA (15-25)</td>
</tr>
<tr>
<td>Pedestrian</td>
<td>M (25-50)</td>
<td>M (25-50)</td>
</tr>
<tr>
<td></td>
<td>SS (&gt;50)</td>
<td>SS (&gt;50)</td>
</tr>
</tbody>
</table>
Location Selection

Count locations were selected based on a data-driven process informed by the National Bicycle and Pedestrian Documentation Project (NBPDP). Further information on NBPDP can be found at [http://bikepeddocumentation.org](http://bikepeddocumentation.org). Based on the NBPDP approach, the scoring metrics in Table C: Count Location Scoring Metrics were identified to rank possible count locations.

Table C: Count Location Scoring Metrics

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Metric</th>
<th>Radius</th>
<th>Range</th>
<th>0 pts</th>
<th>1 pt</th>
<th>2 pts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equity</td>
<td>Disadvantaged per CalEnviroScreen – Y or N</td>
<td>Intersect</td>
<td>NA</td>
<td>No</td>
<td>Yes</td>
<td>NA</td>
</tr>
<tr>
<td>Collisions</td>
<td>Number of collisions</td>
<td>¼ mile</td>
<td>0-34</td>
<td>0</td>
<td>1-9</td>
<td>&gt;10</td>
</tr>
<tr>
<td>Schools</td>
<td>Number of schools</td>
<td>¼ mile</td>
<td>0-5</td>
<td>0</td>
<td>&lt;1</td>
<td>NA</td>
</tr>
<tr>
<td>Transit</td>
<td>Number of transit stops</td>
<td>¼ mile</td>
<td>0-13</td>
<td>0</td>
<td>1-2</td>
<td>&gt;2</td>
</tr>
<tr>
<td>Crossings</td>
<td>Number of crossings</td>
<td>¼ mile</td>
<td>0-69</td>
<td>0</td>
<td>1-15</td>
<td>&gt;15</td>
</tr>
<tr>
<td>Sidewalks</td>
<td>Distance (miles) of sidewalks</td>
<td>¼ mile</td>
<td>0-10.7</td>
<td>0</td>
<td>1-5</td>
<td>&gt;5</td>
</tr>
<tr>
<td>Parks</td>
<td>Number of parks</td>
<td>¼ mile</td>
<td>0-7</td>
<td>0</td>
<td>&gt;1</td>
<td>NA</td>
</tr>
<tr>
<td>Bikeway</td>
<td>On a bikeway – Y or N</td>
<td>Intersect</td>
<td>NA</td>
<td>No</td>
<td>Yes</td>
<td>NA</td>
</tr>
</tbody>
</table>

These rankings were then used to conduct a spatial analysis of possible count locations in a data analysis tool, Geographic Information Systems (GIS). The site selection criteria based on this analysis are listed in Table D: Count Site Selection Criteria.

Table D: Count Site Selection Criteria

<table>
<thead>
<tr>
<th>Site</th>
<th>Primary Selection</th>
<th>Secondary Selection</th>
<th>Tertiary Selection</th>
<th>Other Selection Criteria Met</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Within ¼ mile of school</td>
<td>Within 25 ft of bikeway</td>
<td>≥15 crossings within ¼ mile ≤ 5 miles of sidewalk within ¼ mile</td>
<td>Sidewalks, Transit, Collisions, Equity</td>
</tr>
<tr>
<td>B</td>
<td>Intersects major commercial area</td>
<td>Within 25 ft of bikeway</td>
<td>≥15 crossings within ¼ mile ≤ 5 miles of sidewalk within ¼ mile</td>
<td>Transit, Collisions, Equity, Parks, Schools</td>
</tr>
<tr>
<td>C</td>
<td>Within 25 ft of shared use path</td>
<td>≥1 park within ¼ mile</td>
<td>≥10 collisions within ¼ mile</td>
<td>Transit, Bikeways, Sidewalks, Parks, Equity</td>
</tr>
<tr>
<td>D</td>
<td>Within 25 ft of shared use path</td>
<td>Within 25 feet of bikeway</td>
<td>≤10 collisions within ¼ mile</td>
<td>Bikeways</td>
</tr>
<tr>
<td>E</td>
<td>Major rural street</td>
<td>Within 25 ft of bikeway</td>
<td>≤15 crossings within ¼ mile ≤ 5 miles of sidewalk within ¼ mile</td>
<td>High collisions</td>
</tr>
<tr>
<td>F</td>
<td>Speed ≤25 mph</td>
<td>Not on bikeway</td>
<td>≥1 park within ¼ mile ≥1 school within ¼ mile</td>
<td>≥10 collisions within ¼ mile</td>
</tr>
<tr>
<td>G</td>
<td>Speed ≤25 mph</td>
<td>Not on bikeway</td>
<td>≥1 park within ¼ mile ≥1 school within ¼ mile</td>
<td>≤10 collisions within ¼ mile</td>
</tr>
<tr>
<td>H</td>
<td>Major rural street</td>
<td>Within 25 ft of bikeway</td>
<td>≤15 crossings within ¼ mile</td>
<td>Low collisions</td>
</tr>
</tbody>
</table>
From this analysis, 45 possible count locations were identified and presented to the City of Merced’s Bicycle Advisory Commission (BAC). The BAC provided additional comments to refine the count locations, including a desire for equitable coverage in north and south Merced and a focus on key arterials including M Street, G Street, and 18th Street.

Based on a combination of analysis results and BAC input, four locations for bicycle and pedestrian counts were selected:

♦ 18th Street and M Street (downtown)
♦ 11th Street and M Street (South Merced)
♦ Bear Creek and G Street (gateway to downtown)
♦ R Street and Olive Avenue (North Merced)

**Time & Date**
Per the NBPDP recommendations, counts were conducted on Tuesday, September 19, 2018, during the morning commute from 7 a.m. to 9 a.m., and during the evening commute from 5 p.m. to 7 p.m. Weather was clear and sunny during each of the counts.

**Findings**

![Active Transportation Users by Location](image)

Across all four locations, more pedestrians than bicyclists were counted. G Street and Bear Creek had the highest peak hour counts for both, with 32 bicyclists and 46 pedestrians. M Street and 11th Street had the fewest bicyclists at 6, while M Street and 18th Street had the fewest pedestrians at 18.
Among bicyclists, 69 percent were assumed to be commuters and 31 percent were assumed to be recreational riders. G Street and Bear Creek had the highest number of commuters, at 27.

Among pedestrians, 59 percent were assumed to be commuters and 41 percent were assumed to be walking for recreation. M Street and 18th Street was the only location with more recreational pedestrians counted than commuters.

For explanations of how the assumptions of commuters versus recreational users were made, see “Method” on page 15.
M Street and 11th Street had a notably higher number of pedestrians aged 15-25 than any other age group. G Street and Bear Creek also had relatively high numbers of young adults both walking and bicycling. These count locations are near schools, which likely explains this activity. Higher numbers of both bicyclists and pedestrians aged 25-50 were counted at G Street and Bear Creek as well as R Street and Olive Avenue, suggesting these may be popular commuter routes as they provide access to downtown.
**Mode Split Estimations**

Using the count data described in “Findings” on page 17, the project team calculated approximations of daily, weekly, monthly, and annual trips for bicycle and pedestrian users for those locations. Table E shows these extrapolations. The City of Merced then compared this data to recent traffic study data that included vehicular counts. By comparing the peak hour data from each of these sources, the City estimates that active transportation has an approximate mode share of 1.2. Based on the creation of this Plan, the City of Merced estimates the active transportation mode share to increase to 1.4.\textsuperscript{13}

Table E: Approximation of Active Transportation Users

<table>
<thead>
<tr>
<th></th>
<th>M Street &amp; 11th Street</th>
<th>G Street &amp; Bear Creek</th>
<th>M Street &amp; 18th Street</th>
<th>R Street &amp; Olive Ave</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak Hour Count Total (Bicycle &amp; Pedestrian)</td>
<td>31</td>
<td>78</td>
<td>32</td>
<td>49</td>
</tr>
<tr>
<td>Daily Approximation</td>
<td>543</td>
<td>1,365</td>
<td>560</td>
<td>858</td>
</tr>
<tr>
<td>Weekly Approximation</td>
<td>4,173</td>
<td>10,500</td>
<td>4,308</td>
<td>6,596</td>
</tr>
<tr>
<td>Monthly Approximation</td>
<td>17,903</td>
<td>45,045</td>
<td>18,480</td>
<td>28,298</td>
</tr>
<tr>
<td>Annual Approximation</td>
<td>162,750</td>
<td>409,500</td>
<td>168,000</td>
<td>257,250</td>
</tr>
</tbody>
</table>

Raw count data for bicyclists is shown at Appendix A, Bicyclist Count Data, on Page 158. Raw count data for pedestrians is shown at Appendix B, Pedestrian Count Data, on Page 159. Data is provided for each 15-minute count interval, with the peak hour highlighted.

Section 3:
Existing Facilities
Existing Facilities

Bicycle Facilities

Bicycle Facilities is a term for all types of bicycle-related improvements. Bicycle facilities fall into one of two broad categories: bikeways and bike support facilities. Bikeways generally consist of linear areas used for bicycle travel, whereas support facilities include items located along these paths such as bikeway undercrossings, drinking fountains, parking, signage, and lights.

Bikeways

“Bikeway” is a generic term for any road, street, path, or way which in some manner is specifically designated for bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with other transportation modes. The Caltrans Highway Design Manual provides specific design criteria for the different types of bike facilities. Bikeways can be “off-road” or “on-road”.

Off-road, or Class I, bikeways are trails and dedicated paths that are available to bicyclists which offer significant separation from motorized vehicle traffic.

On-Road facilities consist of Class II, III, and IV bikeways, and are located within or immediately adjacent to motorized vehicle travel lanes or on-street parking areas. Bicyclists riding on a roadway are granted all of the rights and are subject to all of the responsibilities applicable to the driver of a vehicle, with certain exceptions.

It is helpful to have a common understanding of what each bikeway type is. For this purpose, a description of common types of bikeways is below.

Class I- Bike Path

A bike path, or Class I bikeway, is a separate off-road bikeway that runs within its own right-of-way and does not share a road or street right-of-way with motor vehicles.

Figure 7: Class I Bike Path
Bike paths are intended for the exclusive use of bicyclists, although they can also be utilized by pedestrians.

Bike paths are completely separated from motor vehicles by space or physical barrier, and have minimal cross-flow by motor vehicles (e.g. at driveways, roads and street intersections).

Bike paths are primarily used for recreational purposes along open space corridors, though they may be used for bike-related commuting too.

Bike paths tend to have relatively straight alignments that provide good visibility and smooth turns for cyclists.

In many cases, an existing bike path or multi-use trail will not meet Caltrans design standards. For safety reasons and because most federal and state funding is geared towards transportation facilities, this plan recommends that Caltrans standards be met.

- The minimum paved area for a two-way bike path is eight feet, with at least two feet of shoulder on each side, although three feet is recommended. The preferred paved width of bike paths is at least 12 feet, especially where bicycle traffic is expected to be heavy. Widths greater than eight feet are also needed if significant pedestrian traffic is anticipated, although such dual use is undesirable; the preferred solution is to provide separate bicycle and pedestrian facilities.

- Paths should be consistent with the Americans with Disabilities Act (ADA).

- If equestrians and/or heavy equipment including fire trucks are expected to use the facility, the vertical clearance should be 12 feet minimum.

- Landscaping should be low maintenance and low water types. Use or preservation of native materials, especially along riparian habitats, is recommended. Lighting should be provided along bike paths if open after dusk. Lighting standards may be similar to street standards.
• Barriers/gates should provide for disabled access, with 5 feet minimum between bollards. Barriers to prevent motorcycle entry onto bike paths should be constructed; all barriers should be removable by emergency vehicles.

• Striping and signing should be provided indicating the presence of the bike path and for speed limits, stops, and slow warnings.

• Bike paths should be constructed to accommodate maintenance vehicles (Note: Path sweepers may require more than 8 feet of vertical clearance. An evaluation should be performed on proposed undercrossings between the cost of providing additional headroom and the impact on sweeping operations).

• Pedestrians should be directed to unpaved paths when the opportunity exists.

• Adequate fencing (54-inch minimum) should be provided to protect the privacy of neighbors.

• At least 2 feet of unpaved shoulder should be provided for pedestrians where feasible.

• Trail head facilities (portable restroom, parking, drinking fountain) should be provided at appropriate locations.

• Maximum speed will be 15 mph unless otherwise posted.

• Minimum 5 feet of separation between bike path and adjacent roadway should be provided unless a barrier exists.

• 2 percent cross slope should be provided for drainage.

• All curve radii, super elevations, stopping sight distances, and lateral clearances on horizontal curves should conform to Caltrans Highway Design Manual, Chapter 1000, specifications.

**Class II- Bike Lane**

A Bike Lane, or Class II bikeway, is a bikeway established within the paved area of a road or street and shares the roadway with motor vehicles. It is marked by painted stripes, pavement markings and signage.

*Figure 9: Class II Bikeway without On-Street Parking*

♦ Bike lanes are intended to promote an orderly flow of traffic, by establishing specific lines of demarcation between areas reserved for bicycles and lanes to be occupied by motor vehicles.

♦ Signs and pavement markings are useful support facilities for bike lanes.
Bike lanes can increase bicyclists’ confidence that motorists will not stray into their path of travel.

Bike lanes are appropriate on busy urban thoroughfares, and may also be used on other streets where bicycle travel and demand is substantial.

Motor vehicles or pedestrians may not travel in bike lanes, but vehicle cross-flow is allowed to access on-street parking.

Bike lanes are designated by solid white striping, and dashed striping at intersection approaches, where vehicles may cross to make turns.

While none are currently present in Merced, providing buffers between Class II bikeways and motor vehicle traffic reduces potential conflict between cyclists and motorists. Adding vertical barriers in this separation area creates a Class IV bikeway. See “Examples of Bicycle Facilities from Other Communities” on page 29 for more details about Class IV bikeways.

The City of Merced’s preferred standards for bike lanes are summarized below.

- Where no curbside parking is allowed, bike lanes should generally be 6 feet wide in each direction, as measured from the curb. Where the paved width is inadequate, bike lanes can be narrowed to 5 feet, but only if absolutely necessary.

- Where curbside parallel parking is adjacent to bike lanes, if a buffer zone is provided, it should be striped so drivers do not park in the buffer. The preferred standard for a bike lane next to parking is 5 feet wide, assuming a 9-foot parking lane.

- Bike lanes are not recommended in areas where perpendicular or angle parking is allowed, due to the poor sight lines for motor vehicles backing into the street.

- On arterial streets where parking is allowed and demand is high, a second stripe should delineate the bike lane from the parking lane.

- Caltrans has specific standards for Class II lanes, including solid 6-inch-wide continuous white striping, and placing signage at the beginning of each bike lane, at the far side of each arterial crossing, and at change in directions. Existing bike lanes that do not meet Caltrans standards should be improved; those that cannot should be identified as Class III bikeways.

- Bike lanes should be located on the right hand side of one-way streets. The ability to install improvements is dependent on the available right-of-way and need, but should also apply to all new intersections along the proposed route.
• Where possible, four-foot pockets should be provided at intersections between the right turn only lane and the through lane.
• Signal loop detectors should be provided at major signalized intersections unless pre-timed signal coordination is in effect.
• Where possible, bike lane width should not include gutters. In places where spatial considerations make this impossible, bike lanes should extend at least 3 feet beyond the edge of the gutter. Combination gutters and bike lanes along with heavy traffic results in bicyclists using the sidewalk. This can increase danger for cyclists as sidewalks have significant impediments such as light poles and riding on sidewalks endangers pedestrians.

Figure 11: Gutter/Bike Lane Combinations and Heavy Traffic

Class III- Bike Route

A bike route, or Class III bikeway, is a bikeway that shares the street with motor vehicles. A signed bike route can include the use of sharrows to denote recommended lane position. Bicycles can operate within the travel lane, as they can on any roadway where a bike lane is not present. A bike route contains signs, but is not striped.

Figure 12: Class III Bike Route
Class III bike routes, to be avoided if possible, are best used to connect or continue Class I or II facilities for short distances. In general, the designated use of sidewalks as a Class III bikeway for bicycle travel is unsatisfactory.

Bike routes are common on neighborhood residential streets, on rural roads, and low-volume highways.

Bike routes should be primarily used in small street segments that provide a connection from a discontinuous Class II bike lane.

The decision to select and sign a bicycle route should be based on the suitability of encouraging bicycle travel in the corridor. Adequate width for a bike route depends on the volume, speed, and mix of traffic, the presence or absence of a paved shoulder, surface condition, grade, curves, sight distance, obstacles such as parked cars, and the skill of bicyclists using the road. Bike routes should provide a higher level of service than other streets and roadways to bicyclists and should:

- Provide for through and direct travel in bicycle-demand;
- Connect discontinuous segments of bike lanes;
- Access traffic control priority at intersections;
- Coincide with removal of parking in areas of restricted width;
- Have surface imperfections and irregularities corrected upon designation; and,
- Be maintained at a higher standard than comparable streets.

Bike routes should be provided on the proposed system if the requirements described for Class II bike lanes cannot be met. Bike routes, while lacking striped lanes, should provide the following where possible: detectors at signalized intersections, travel lanes at least 14 feet wide excluding parking or 21 feet wide including parking, warning signs to motorists, directional signs to bicyclists, and adequate pavement conditions with higher standards of maintenance.

**Shared Lane Markings- Sharrows**

A shared lane marking, or sharrow, is a marking on the ground to indicate recommended lane position for cyclists. It shows the correct direction of travel, reminds bicyclists to ride further from parked cars to prevent “dooring” collisions, and alerts road users of the lateral location bicyclists are likely to occupy within the traveled way. Sharrows encourage safe passing of bicyclists by motorists and reduces the incidence of wrong-way bicycling.

- Sharrows work best when the implementing agency provides a lot of education about their use and meaning to cyclists and motorists alike to prevent accidents.
- Do not place sharrows on major arterials; place them on streets with low traffic volumes.
♦ Use sharrows on streets with low speeds, generally 20-35 MPH.
♦ Place sharrows in rural or residential neighborhoods.
♦ Place sharrows on narrow streets so motorists are encouraged to pass cyclists.
♦ Place sharrows on roads with high bicycle demand.
♦ On streets with posted speeds of greater than 35 MPH or motor vehicle volumes higher than 3,000 vehicles per day, sharrows are generally not a preferred treatment.

The Shared Lane marking in use within the United States is the Bike-and-chevron “sharrow,” illustrated Figure 13 and in the Manual on Uniform Traffic Control Devices figure 9C-9.5. Shared Lane Markings should be placed immediately after an intersection and spaced at intervals of 50 to 100 feet along busier streets and up to 250 feet in low traffic streets. Shared lane markings shall not be used on shoulders or in designated bicycle lanes.

On streets with posted 25 mph speeds or slower, preferred placement is in the center of the travel lane to minimize wear and encourage bicyclists to occupy the full travel lane.

When adjacent to on-street parallel parking, as in Figure 14, the center of the sharrow should be at least 11 feet from the curb to ensure the marking is in the middle of the travel lane.

When adjacent to diagonal parking, as in Figure 15, the center of the sharrow should be in the middle of the traffic lane.

Examples of Bicycle Facilities from Other Communities

The following facilities are best practices found in other communities around California and the world, but they have not yet taken root in Merced.

Bike Boulevard

A Bicycle Boulevard is a street that has been modified to prioritize through bicycle traffic and discourages motor vehicle traffic. Traffic calming devices control traffic speeds and discourage through trips by automobiles. Traffic controls limit conflicts between vehicles and bicyclist and give priority to through bicycle movement at intersections. Direct and continuous streets work better than circuitous routes that wind through neighborhoods.

Figure 16: Bike Boulevard

- Opposing traffic stops and yields to crossing bicycles
- Bicycles freely pass through islands on painted lanes
- Curb extensions increase pedestrian safety by reducing crossing distance
- “BIO-SWALE” inlet diverts rainwater from storm drains into islands for landscaping
- Existing planting strip
- Proposed curb extension
- Cars must turn off of Bike Blvd
- Preventing cut-through traffic creates quiet/safe bicycle-friendly streets
- Native landscaping filters storm water and creates mini-park
- "Bicycles freely pass through islands on painted lanes"
Bike boulevards work best on a street grid system, similar to that of downtown Merced. Additional recommendations for bike boulevards include:

♦ Place diverters at key intersections to reduce through motor vehicle traffic.
♦ Turn stop signs towards intersecting streets, to reduce interruptions for bicyclists.
♦ Place traffic-calming devices on streets to lower motor vehicle traffic speeds.
♦ Place directional signs or markings to route cyclists to key destinations, to guide cyclists through difficult situations, and to alert motorists of the presence of bicyclists.
♦ Provide crossing improvements where the boulevard crosses high-speed/high-volume streets. Example improvements include:
  • Signals where a traffic study has shown that a signal will be safe and effective and to ensure that bicyclists can activate the signal
  • Loop detection where bicyclists ride and/or push buttons that do not require dismounting
  • Median refuges of 8 feet at minimum with an opening at least 6 feet wide to allow bicyclists to pass through, that are designed such that bicyclists can see the travel lanes they must cross.

**Class IV- Separated Bikeway**

A Class IV separated bikeway, sometimes referred to as a protected bike lane or cycle track, is for the exclusive use of bicycles and is physically separated from motor traffic with a vertical feature. The separation may consist of grade separation, flexible posts, inflexible barriers, on-street parking, or other features. Class IV bikeways can provide for one-way or two-way travel. By providing physical separation from motor traffic, these bikeways can reduce the level of stress, improve comfort for more types of bicyclists, and contribute to an increase in bicycle volumes and mode share. However, this treatment takes a great deal of space and in many cases a great deal of expense to install. Figure 17 shows a Class IV bikeway that uses on-street parking as a separation between the bicycle lane and motor vehicle traffic, and Figure 18 shows a Class IV Bikeway using permanent planters as separation.

Figure 17: Class IV Bikeway with On-Street Parking as Separation

Figure 18: Class IV Bikeway with Permanent Planters as Separation
**Advanced Stop Lines and Bike Boxes**

For the minimal cost of changing the application of paint on the roadway, advanced stop lines and bike boxes can be a cheap way to improve the experience for cyclists and pedestrians while increasing safety at the same time. By providing a stop location for motor vehicles an increased distance from pedestrian crosswalks, a much more comfortable and safe crossing experience can be maintained. Vehicles are also much less likely to enter the pedestrian crossing while queueing to depart the intersection, allowing better visibility for pedestrians across their path of travel.

Cyclists benefit from these treatments as well. Whether using an advanced stop line as in Figure 19, or incorporating a full bike box as in Figure 20, cyclists become more visible to motorists as they move to the front of the queue. Since cyclists are given priority, turning motions are much easier to perform as a result of these configurations. Cyclists also are able to wait in an area with fewer exhaust emissions than if they were in the queue with the motor vehicles, making the cycling experience more pleasant. Figure 20 also shows an effective way to communicate to all roadway users that cyclists have a lane that continues through the intersection, shown with both the application of green paint on the roadway partway through the intersection, and also with the green on the sign at the right, connecting the two indicators.

**Existing Bikeways**

The City of Merced’s system provides approximately 70.05 miles of existing bikeways. The system can be further broken down into four types of facilities: lanes, paths, routes, and sharrows. There are not presently any bike boulevards in the City of Merced. A breakdown of the existing bikeways in Merced by type is below, and Map II depicts these existing bikeways.

- Bicycle Lanes: 34.449 miles
- Bicycle Paths: 22.208 miles
- Bicycle Routes: 10.062 miles
- Sharrows: 3.33 miles
**CalEnviroScreen**

Part of the process of reviewing the City of Merced’s existing system was to use CalEnviroScreen to map the City. Per the Office of Environmental Health Hazard Assessment (OEHHA) website, CalEnviroScreen is a mapping tool that helps identify California communities that are most affected by many sources of pollution, and where people are often especially vulnerable to pollution’s effects. CalEnviroScreen uses environmental, health, and socioeconomic information to produce scores for every census tract in the state. An area with a high score is one that experiences a much higher pollution burden than areas with low scores. CalEnviroScreen ranks communities based on data that are available from state and federal government sources.

CalEnviroScreen was developed to identify communities suffering from cumulative impacts of multiple pollutants and people who are especially vulnerable to pollution’s effects, such as young children and people with asthma. It also considers socioeconomic factors such as poverty, education, race and ethnicity.

Map III shows the City of Merced as per CalEnviroScreen; areas with darker blue hues have higher scores and are faced with more adverse conditions. South Merced has the highest scores in the City, with the downtown area and central Merced similarly high. North of Bear Creek, the scores trend toward the lower end of the scale, indicating fewer adverse conditions.

Map IV shows the CalEnviroScreen scores for Merced with the existing bicycle network superimposed on it. Higher-scoring areas tend to lack Class I Paths, whereas lower-scoring areas tend to have them. Particularly noteworthy is the lack of cycling facilities available south of Childs Avenue, where some of the highest-scoring and most disadvantaged communities are.

Map V shows CalEnviroScreen scores for Merced with a sidewalk gap analysis superimposed on it. Within City limits, sidewalk gaps are most severe in central and south Merced. Additionally, Map 5 shows a severe lack of facilities nearby but outside the City of Merced’s jurisdictional boundaries in the County, such as along Childs Avenue. This can be best addressed with cooperation between the City of Merced, the County of Merced, the Merced County Association of Governments (MCAG), and other organizations with interests in and resources to commit to the sidewalk network. For more discussion on pedestrian issues, see “Pedestrian Facilities”, Page 44.

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16 [https://oehha.ca.gov/calenviroscreen/about-calenviroscreen](https://oehha.ca.gov/calenviroscreen/about-calenviroscreen)
Map III: Merced CalEnviroScreen

Active Transportation Plan

CalEnviroScreen Scoring: CalEnviroScreen scores are environmental, health, and socio-economic conditions. Areas with higher scores are faced with more adverse conditions and areas with lower scores are faced with less adverse conditions.

Lowest Scores

Highest Scores
ACTIVE TRANSPORTATION PLAN

CalEnviroScreen
Scoring is based on environmental, health, and socioeconomic conditions. Areas with higher scores are faced with more adverse conditions and areas with lower scores are faced with less adverse conditions.

Lowest Scores

Highest Scores

BICYCLE NETWORK
Existing Bikeways
- Class I Shared Use Path
- Class II Bike Lane
- Class III Bike Route

Map produced March, 2017.
Data Source: ESRI, City of Merced, CalEnviroScreen
ACTIVE TRANSPORTATION PLAN

CalEnviroScreen
Scoring is based on environmental, health, and socioeconomic conditions. Areas with higher scores are faced with more adverse conditions and areas with lower scores are faced with less adverse conditions.

Existing Pedestrian Network
- No Sidewalk

Map V: Merced Pedestrian Network and CalEnviroScreen

Map produced March, 2017.
Data Source: ESRI, City of Merced, CalEnviroScreen
Bicycle Support Facilities

Several types of support facilities can be deployed to encourage bicycle commuting to work, commercial centers, public offices, parks, colleges and schools. These include, but are not limited to the facilities in Table F.

Table F: Bike Support Facilities

<table>
<thead>
<tr>
<th>Bike Support Facilities</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undercrossing</td>
<td>Used to provide a safe crossing under the road for a Class I bikeway.</td>
</tr>
<tr>
<td>Parking</td>
<td>Include secure racks, lockers, storage rooms, and valet service.</td>
</tr>
<tr>
<td>Showers</td>
<td>Allow bicyclists to refresh themselves before starting work or school.</td>
</tr>
<tr>
<td>Lockers</td>
<td>For storing a change of clothes.</td>
</tr>
<tr>
<td>Water Fountains</td>
<td>Along paths for refreshment.</td>
</tr>
<tr>
<td>Lighting</td>
<td>Along bikeways to increase safety and security.</td>
</tr>
<tr>
<td>Maintenance/Self-Repair Stations</td>
<td>Along bikeways providing air, water, and basic tools for bicycle repair.</td>
</tr>
<tr>
<td>Transit Connections</td>
<td>Includes bike racks/storage at transit centers and bike racks on buses.</td>
</tr>
<tr>
<td>Bikeway Trailhead Facilities</td>
<td>Includes such items as restrooms, parking, and drinking fountains.</td>
</tr>
<tr>
<td>Bridges</td>
<td>Widened road bridge, pedestrian/bike over roads.</td>
</tr>
<tr>
<td>Bike Detection Loops/Video/Push-Button</td>
<td>Allows cyclists to be detected at traffic signals without dismounting.</td>
</tr>
<tr>
<td>Bike Commuter Map</td>
<td>Guide citizens and visitors to navigate Merced bikeways.</td>
</tr>
<tr>
<td>Signs</td>
<td>Provide directional, way-finding, and safety information.</td>
</tr>
</tbody>
</table>

Signage supporting bicycling is most well-recognized with white text on green background, such as in figure 21 at the right. This signage works most effectively in combination with green striping and paint to create the visual linkage between the two.

The BIKE ROUTE signs (G93) may be used to mark bicycle routes, lanes, or paths may be used on the right along designated bike lanes. At turns, the sign shall be supplemented with directional arrows. Special guide signs indicating high demand destinations.

The BEGIN and END plates (G93A, G93B) may be used to supplement the G93 sign.

The BIKE PARKING sign (G93C) may be used to identify bicycle parking at Park and Ride lots and should be used at other bicycle parking facilities. The sign is to be placed at or near the parking area, or in any case, where the sign can be easily seen by traffic on the adjacent street.

Map VI shows existing and proposed bicycle support facilities as they relate to destinations including commercial areas, parks, and lakes.
Map VI: Existing Bicycle Support Facilities

Proposed Bike Rack

Existing Bike Rack

Active Transportation Plan

Bicycle Amenities

Existing Facilities

Existing Locker

Existing Bike Rack

Existing Shower

Bicycle Charging Station

Proposed Facilities

Proposed Bike Rack

Proposed Shower

Commercial

Park

Lake

Map produced March, 2017. Data Source: ESRI, City of Merced
Bicycle Parking

Bicycle racks are the most common short-term bicycle parking facility seen in Merced. Due to increasing popularity in both recreational and commuter bicycle use, bike racks are located at many sites throughout Merced including the downtown area, Merced Mall, schools, and several large employers. The majority of racks tend to be focused in two clusters in the central part of the City: around the downtown and around the Olive Avenue shopping area with the Merced Mall and other big box stores.

Safe, long-term bicycle security, such as the bicycle shelters at the Transportation Center and the Amtrak station may encourage bicyclists to use their bikes as initial transportation to one of these storage areas before continuing the trip by train or bus. This long-term parking can be especially helpful for bicyclists wanting to take trips with bus systems that do not carry bikes.

Downtown Merced

In the downtown area, bike racks are clustered on the western segment of 18th Street between R Street and V Street, and between 19th Street and 17th Street between N Street and M Street. The latter area also has a bike locker and a shower facility. One notable gap is the lack of bike racks between R Street and O Street, which makes parking a bicycle for destinations on these blocks less convenient.

Merced Transit Center

The Merced Transit Center, located near the intersection of N Street and West 16th Street, is served by a number of local transit and long-distance buses. While there are short-term bike racks located at this facility, there are no lockers or other long-term parking facilities. For those who use the transit center as a bus connection or for those traveling on a long-distance trip, secure long-term parking has the potential to make biking to the transit center a more practical and viable option. This is especially true if there is not a desire for the traveler to take their bike with them on the trip.

New Downtown Developments/Projects

There are many recent, planned, and in-progress developments for the City including the UC Merced Downtown Campus Project and the California High-Speed Rail Station. While existing racks may have enough coverage for current uses, both the UC project and the high-speed rail project will require different bike parking plans.

At the time of the creation of the existing facilities map, UC Merced was in the process of building an administrative building across the street from the Merced Civic Center. Being an administrative building with office workers and associated staff, a mix of both short and long-term parking is recommended to be built in the area to accommodate the new workers. Short-term parking in the form of loop bike racks are already available along 18th Street in front of the facility, shown in Figure 47 on Page 131.
Merced’s California High-Speed Rail station will be located near 16th Street, between J Street and G Street. While the train station may generate some demand for short-term parking, employees and travelers who wish to access the station via bicycle will require long-term facilities to sufficiently satisfy their parking needs. A bike cage with an appropriate security system, such as contactless cards or key fobs, would work well with the station site.

**Olive Avenue**

Olive Avenue is another large commercial area in Merced. The Merced Mall and other “big box” retailers are present in this corridor. Bike racks are present along the commercial areas of this corridor, but there is only one set of lockers. Providing additional lockers along the corridor can better serve the area’s workers and further encourage them to bike to work.

**Activity Generators That Need Bicycle Parking**

There are several land uses that can benefit from having the appropriate type and amounts of bicycle parking: commercial and retail areas, transit stations and centers, parks, and schools. Ensuring that these uses, along with areas with specific concentrations of activity such as Downtown Merced and the Olive Avenue area, have access to bicycle parking can be beneficial to workers, shoppers, students, travelers and business owners.

**Parks**

Parks are a great resource for everyone in the community. Whether by choice or by chance, some people are more fortunate and live and/or work closer to parks than others. When parks have bike racks, they provide people with a secure way to park their bikes; expanding the effective service area of a park beyond walking distance for those who cannot or will not drive to it. This can dramatically increase the value of existing park infrastructure at a fraction of the cost of creating additional parks.

**Schools**

A critical component of any Safe-Routes-to-School Plan is improving conditions for students who bike to school. Supplying adequate end of trip facilities is just as important for students as it is for workers, shoppers, and visitors. Each school should have an adequate amount of secure bicycle parking for students, faculty, and staff. Each school has a different enrollment area and various geographic and socio-economic conditions, so there can be no solution (i.e. number of and types of racks) that will fit every school. It will be important to find the solution that fits each school to maximize the effectiveness and use of the racks.
**Showers and Clothing Lockers**

Shower facilities for bicycle commuters in Merced are limited. Several schools have showers and lockers that could be used by faculty who choose to bicycle to work. A few businesses in the industrial parks, the hospital, and public facilities also have lockers for employees. Both showers and lockers are provided at the Merced City Civic Center.

**Bicycle Maintenance/Self-Repair Stations**

A relatively recently implemented measure, bicycle maintenance or self-repair stations were installed in three locations along some of Merced’s most frequented areas. Inclusive of a small shelter, an air pump, and tools to aid in bicycle maintenance and repair, these stations have seen mixed results. Their locations are notated on Map VI above as “Bicycle Charging Station”. All three stations have some combination of damage to the tool kit and vandalism; the station near Merced College has moderate wear but is generally well-preserved and sees consistent use, the station near Applegate Park has portions of its tool kit damaged or missing, and the station in south Merced near Tenaya Middle School has had its air pump broken and its entire tool kit is missing. Without these tools, the station has little to no power to assist cyclists outside of the stand to place a bicycle on and the shelter provided from the sun. While repairs to these stations or additional locations for new stations could be beneficial, a plan to fund monitoring and ongoing repair of the stations themselves with coordination between the public, the police department, local bicycle organizations, and other stakeholders is necessary if these stations will be a valuable tool to cyclists in Merced.

![Figure 22: Bicycle Maintenance Station Near Merced College](image1)

![Figure 23: Damaged Bicycle Maintenance Station Near Tenaya Middle School](image2)
Wayfinding Signage

The City of Merced has a number of wayfinding signs already in place. Future wayfinding would conform to the general aesthetic of the existing signage and continue to improve the ability for users of all modes to locate important recreational, cultural, civic, and other landmarks in the City. Figure 24 shows examples of wayfinding signs in the City of Merced, and Map VII shows their existing locations.

Figure 24: Wayfinding Signs
Disclaimer: This document was prepared for general inquiries only. The City of Merced makes no warranty, representation, or guarantee regarding the accuracy of this map. The City of Merced is not responsible for errors or omissions that might occur. Official information regarding specific parcels should be obtained from official records or adopted City documents.
Pedestrian Facilities

At present, the City of Merced has approximately 524.56 miles of sidewalks. Additionally, Merced has a number of Shared-Use paths that accommodate multiple modes of active transportation at once.

Map VIII shows Merced’s existing pedestrian network including sidewalks, shared-use paths, areas with no sidewalk, and crosswalks. Map IX focuses on sidewalk gaps and shared-use paths. The downtown area, shown in the inset map, has the highest concentration of crosswalks, particularly ones with all four crossings present. The crosswalks in south Merced are sparser, though some areas such as 8th Street and 11th Street have decent coverage. Major arterials are largely traversable by pedestrians where they intersect with other major roadways, but some gaps do exist, such as the intersection of Yosemite and Parsons as well as several intersections with Childs Avenue.

As mentioned in “CalEnviroScreen” on page 33, there are noticeable gaps in pedestrian facilities in County areas near the edge of the City of Merced’s city limits. This lack of facilities in these transitional areas would best be addressed in partnership with the City and County of Merced, along with the Merced County Association of Governments (MCAG), and other organizations with interests in and resources to commit to the sidewalk network. These organizations have already been working together, along with the City of Atwater, to propose improved facilities between Atwater and Merced, including areas in the County and connectivity to Franklin-Beachwood.

One gap that the City has recently tried to seek funding to improve is the Childs Avenue corridor between Manzanita Avenue and Coffee Street. At a 2018 Town Hall meeting held in south Merced near the site, local residents expressed extreme concern over the wellbeing and safety of students, pedestrians, and cyclists. Currently there is no pedestrian or bicycle infrastructure in place, and many children and parents with strollers walk in this area on the dirt shoulder in close proximity to traffic or an open irrigation canal. The proposed project intended to provide a safe east-west pedestrian corridor on the south side of Childs Avenue between Golden Valley High School and Weaver Middle School to improve the safety of the pedestrians traveling to and from those schools.

The project was proposed for Caltrans Cycle 4 Active Transportation Program funds, but did not receive an award. One of the difficulties of the project is the need to underground the Merced Irrigation District’s canal infrastructure on the south side of Childs Avenue. While this would significantly enhance public safety, it comes at a high cost, over $2 million for the undergrounding alone. The City should continue to investigate alternative funding options and alternative plans, including the possibility of collaborating with Merced County on improving the north side of Childs Avenue, which is within the County’s jurisdiction.
Map VIII: Existing Pedestrian Network
Bicycle and Pedestrian Bridges

The City of Merced has several bicycle and pedestrian bridges, listed below. Figures 25 and 26 depict some of these structures.

- Over Cottonwood Creek connecting White Dove Avenue to N Gardner Avenue
- Over Cottonwood Creek connecting Davenport Park to the west side of Cormorant Drive
- Over Black Rascal Creek in Rahilly Park
- Over Fahrens Creek at Donna Drive
- Over Fahrens Creek at La Playa Court
- Four (4) bridges over Fahrens Creek in Fahrens Park
- Connecting the bike lane on the west side of G Street south of Cardella Avenue
- Over Cottonwood Creek near Round Hill Drive

Figure 25: Bicycle Bridge to G Street

Figure 26: Pedestrian Bridge over Fahrens Creek at Donna Drive
**Multimodal Connectivity**

Bicycle and pedestrian multimodal connections encourage walking, bicycling, and transit use. Map X shows the existing transit system as a reference point.

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**Merced County Transit Buses**

The Merced County transit buses are equipped with bicycle racks; these features enhance the bicyclist’s range of travel. For locations that the Merced County transit system does not service directly, such as residences, bicyclists can ride to locations along the fixed-route bus transit system and use the racks to transport their bikes to the next portion of their journey. The Merced County bus service is run by the Transit Joint Powers Authority for Merced County.

**Cat Tracks**

Cat Tracks is a bus system that serves the University of Merced, connecting its riders to areas in Merced north of 16th Street and a single route that serves Atwater. Cat Tracks is run and operated by UC Merced, and their buses are equipped with bicycle racks.

**Amtrak and the Yosemite Area Regional Transportation System (YARTS)**

Bicyclists can take along their bikes on Amtrak and on YARTS. Bikes are permissible on certain Amtrak trains as long as the passenger’s bike is no more than 50 pounds. A passenger can take a bicycle on a YARTS bus as long as space is available in the bus’ undercarriage luggage compartment. Greyhound will not carry bikes.

**Existing Mobility Connection Maps**

Maps XI and XII show the existing bikeway system relative to the Merced County bus service, Cat Tracks, the Amtrak station, and the Merced Transportation Center. The Transportation Center is the hub location in Merced for the Merced County bus service, YARTS, and Greyhound Bus.
Map XI: Multimodal Connections in North Merced
Map XII: Multimodal Connections in South Merced
Recent Expenditures

Between 2014 and 2017, the City of Merced spent approximately $2.4 million dollars on active transportation projects. These projects included closing sidewalk gaps and constructing new multi-use paths along Black Rascal Creek, Bear Creek, and SR-59. This cost breaks down to expenditure of about $588,000 per year over the course of the past four years.

Assuming similar budgetary conditions, if Merced spent the same amount on active transportation per year as they have in the past, it would take about 40 years to fully build out all of the recommendations provided by this plan, excluding the pedestrian study corridors and any improvements recommended by those studies. There are other strategies that can be used to reduce costs including coordinating projects with existing projects or the street resurfacing schedule.

Though every completed project benefits the overall active transportation network, to fully realize the benefits of active transportation, a significant investment must be made. The intended results of the projects recommended in this plan is to transform the pedestrian and bicycle networks into systems that are friendlier and more enticing to active transportation users, beginning to shift people away from personal vehicles. It takes an interconnected, multimodal system to create active transportation-friendly environments. Creating these environments allows key destinations to be linked with residential areas providing equitable and cost-effective access to Merced’s most socially, culturally, and economically important places.

Additional funding from local, regional, state, federal, and private grant programs can be used to supplement local funds to expedite the design and construction of these facilities. For more on funding issues, see Anticipated Revenue Sources, Page 89.
Section 4: Hazards
Hazards

Hazards Overview

Collisions

Pedestrian and bicycle collision locations in Merced were analyzed over the most recent five-year period of available data: 2011 to 2015. During this five-year period, 410 collisions were reported involving a pedestrian and/or a bicyclist. Table G provides a snapshot of several key statistics including the total number of injuries and fatalities.

Table G: Collisions Overview

<table>
<thead>
<tr>
<th>Pedestrian- or Bike-Involved Collisions</th>
<th>Pedestrian Injuries</th>
<th>Pedestrian Fatalities</th>
<th>Bicyclist Injuries</th>
<th>Bicyclist Fatalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>410</td>
<td>177</td>
<td>8</td>
<td>232</td>
<td>2</td>
</tr>
</tbody>
</table>

The collisions in the City of Merced for non-motorized users, shown in Table H, are well-documented and acquired from collision reports from the Merced City Police Department. All of the data for each year captures one whole calendar year with the exception of 2015 which only contains information up to and including April 15th.

Table H: Collisions between Motorized and Non-Motorized Travelers: 2011-2015

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Collisions</td>
<td>72</td>
<td>99</td>
<td>86</td>
<td>118</td>
<td>35</td>
</tr>
<tr>
<td>-Bikes</td>
<td>48</td>
<td>67</td>
<td>59</td>
<td>81</td>
<td>21</td>
</tr>
<tr>
<td>-Pedestrians</td>
<td>24</td>
<td>32</td>
<td>27</td>
<td>37</td>
<td>14</td>
</tr>
<tr>
<td>Bike Fatalities</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1(^1)</td>
<td>0</td>
</tr>
<tr>
<td>Ped Fatalities</td>
<td>0</td>
<td>2(^2)</td>
<td>3(^3)</td>
<td>3(^2)</td>
<td>1(^2)</td>
</tr>
</tbody>
</table>

\(^1\) Side swiped \(^2\) Jaywalking

The majority of these collisions are centered in or near the downtown Merced area. The G Street, M Street, 16th Street, and R Street corridors were observed to have the highest concentration of collisions. Of the 410 reported collisions, only one did not result in any injuries or fatalities to pedestrians or bicyclists. Only ten collisions resulted in multiple injuries to pedestrians or bicyclists. Eight incidents involved injuries to two pedestrians and two incidents involved injuries to two bicyclists. No collision resulted in multiple fatalities.

Understanding where collisions occur is important, as this allows the City to target improvements where they are needed most. Additionally, improving pedestrian and bicyclist safety can make these collision hotspots, especially in downtown areas, not only safer but also more attractive for people to visit and enjoy. For more on Collisions, see “Collision Analysis” on page 55.
**Barriers**

The location and existence of physical and perceived barriers to active transportation is another important aspect to consider. There are two sets of railroad tracks that cut through the City of Merced, boxing in the downtown area on the north and south. Another physical barrier to active transportation is State Route 99, which runs parallel to the southern set of railroad tracks. Even though the highway is grade separated, the underpasses that elevate it impede pedestrians.

A natural barrier, Bear Creek, bisects Merced; crossing the creek can only be accomplished at relatively few crossing points. Ensuring that bridges across Bear Creek have adequate pedestrian and bicycle facilities can encourage additional people to walk and bike across it.

Having safe and comfortable pedestrian and bicycle facilities can also lead to more people walking and biking to transit. Residents, visitors, and students will have many transportation options, with the accessibility to buses, Amtrak, and the future expansion of California High-Speed Rail. See “Multimodal Connectivity” on page 48 for more about multimodal connectivity. For more on barriers, see “Barriers to Active Transportation” on page 70.

**Collision Analysis**

This section will analyze pedestrian and bicycle collisions in the City of Merced and will identify trends and areas or corridors that should be targeted for active transportation safety improvements. Collisions were analyzed for the five-year period between 2011 and 2015. A bicycle or pedestrian-related collision describes a collision involving a second party, such as a motor vehicle, pedestrian, bicycle, or stationary object. “Second party” can include a stationary object because if the stationary object is damaged in the collision, the person or entity that owns it would be an impacted party. It also can describe a collision without a second party, where the person riding a bicycle has a solo crash due to slippery road conditions or rider error.

Collision data for this section was generated using the Transportation Injury Mapping System (TIMS) from the Safe Transportation Research and Education Center at the University of California, Berkeley and from the California Statewide Integrated Traffic Report System (SWITRS). Because SWITRS combines records from all state and local police departments, data varies due to differences in reporting methods. It important to note that the number of collisions reported to SWITRS is likely an underestimate of the actual number of collisions that take place because some parties do not report minor collisions to law enforcement, particularly collisions not resulting in injury or property damage.

The analysis of reported pedestrian and bicycle collisions can reveal patterns and potential sources of safety issues, both design and behavior-related. These findings can provide the City of Merced with a basis for infrastructure and program improvements to enhance bicycle safety.
Bicycle-Involved Collisions

Between 2011 and 2015, there were 232 bicycle-involved collisions, shown on Map XIII. These collisions resulted in 232 bicyclist injuries and 2 bicyclist fatalities. While bicyclist collisions did occur throughout the City, there were several corridors that had a relatively high volume of bicyclist-involved collisions. Each of the three corridors below were also in the top three for pedestrian-involved collisions. Table I lists these corridors along with the number of bicyclist-involved collisions. The number of collisions for each corridor includes the number of collisions that occurred both on that street and at intersections that crossed it. When examined over time, bicycle-involved collisions varied between 2011 and 2015, with spikes in 2012 and 2014. The number of bicycle collisions by year is shown in Table J.

Table I: Bicycle-Involved Collisions by Corridor

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Number of Bicycle-Involved Collisions</th>
</tr>
</thead>
<tbody>
<tr>
<td>M Street</td>
<td>37</td>
</tr>
<tr>
<td>R Street</td>
<td>32</td>
</tr>
<tr>
<td>G Street</td>
<td>28</td>
</tr>
</tbody>
</table>

Table J: Bicycle-Involved Collisions by Year

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Bicycle-Involved Collisions</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>43</td>
</tr>
<tr>
<td>2012</td>
<td>52</td>
</tr>
<tr>
<td>2013</td>
<td>37</td>
</tr>
<tr>
<td>2014</td>
<td>67</td>
</tr>
<tr>
<td>2015</td>
<td>33</td>
</tr>
</tbody>
</table>

High Collision Corridors

The following section will focus on the three corridors with the highest volume of bicyclist-involved collisions: M Street, R Street, and G Street. All three of these corridors already have existing Class II facilities/bicycle lanes. The bicycle lanes on M Street have two gaps, and there are three gaps in bicycle lanes as well as a gap in a segment of Class III bicycle routes on R Street.

M Street

The M Street corridor had the highest volume of bicyclist-involved collisions between 2011 and 2015, with 37 collisions. M Street is a five-lane roadway with two travel lanes in each direction and a center turn lane. In downtown Merced, M Street is near commercial areas and many civic uses and parks including: Court House Square Park, Applegate Park, the Merced Police Department, the County Courthouse, Mercy Medical Center and many others. North of Bear Creek, M Street is near the Olive Avenue commercial area, Merced High School, Rudolph Rivera Intermediate School, and Merced College.

Bicycle-involved collisions on M Street are spread throughout the corridor, but the majority occurred in the downtown area. There are four intersections that had at least three bicyclist-involved collisions reported:

- M Street/Olive Avenue: 5 bicyclist-involved collisions. This intersection is near Merced High School and commercial areas.
• M Street/20th Street: 4 bicyclist-involved collisions. This intersection is near Court House Square Park and many civic uses.

• M Street/Yosemite Avenue: 3 bicyclist-involved collisions. This intersection is near Merced College.

• M Street/23rd Street: 3 bicyclist-involved collisions. This intersection is near civic uses and the northern railroad tracks.

R Street
As described in more detail in the Pedestrian “High Collision Corridors” on page 61, R Street is a large road that generally has two travel lanes in each direction with segments that have a center turn lane. R Street also has schools on or immediately adjacent to it.

Bicycle-involved collisions on R Street were predominantly clustered in two areas: south downtown Merced and between Olive Avenue and Esplanade Drive. Three intersections had at least three bicyclist-involved collisions. All three of these intersections are north of Bear Creek.

• R Street/Olive Avenue: 4 bicyclist-involved collisions. This intersection is near commercial areas.

• R Street/Buena Vista Drive: 3 bicyclist-involved collisions. This intersection is near Fahrens Park, and Rudolph Rivera Intermediate School.

• R Street/Loughborough Drive: 3 bicyclist-involved collisions. This intersection is near commercial areas and Fahrens Park.

G Street
As described in more detail in the Pedestrian “High Collision Corridors” on page 61, G Street is primarily a five-lane road with two travel lanes in each direction with a center turn lane. G Street crosses Bear Creek, and there are a number of schools on or immediately adjacent to G Street.

Bicycle-involved collisions on G Street are scattered throughout the corridor, but there is a stronger clustering of collisions in the downtown area. Four intersections in the corridor had at least three bicyclist-involved collisions reported:

• G Street/21st Street: 5 bicyclist-involved collisions. This intersection is near Yosemite High School and Independence High School.

• G Street/Bear Creek Drive: 4 bicyclist-involved collisions. This intersection is near the O’Sullivan Bike Path and commercial areas.

• G Street/23rd Street: 3 bicyclist-involved collisions. This intersection is near the Amtrak station.

• G Street/Santa Fe Avenue: 3 bicyclist-involved collisions. This intersection is near the Amtrak station and Herbert Hoover Middle School.
Pedestrian-Involved Collisions

Between 2011 and 2015, there were 178 pedestrian-involved collisions, shown on Map XIV. These collisions resulted in 177 pedestrian injuries and 8 pedestrian fatalities. While pedestrian collisions occurred throughout the City, there were several corridors that had a relatively high volume of pedestrian-involved collisions. Table K lists those corridors along with the number of pedestrian-involved collisions on them. The number of collisions for each corridor includes the number of collisions that occurred both on that street and at intersections that crossed it.

Table K: Pedestrian-Involved Collisions by Corridor

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Number of Pedestrian-Involved Collisions</th>
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</thead>
<tbody>
<tr>
<td>G Street</td>
<td>44</td>
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<tr>
<td>R Street</td>
<td>27</td>
</tr>
<tr>
<td>M Street</td>
<td>15</td>
</tr>
<tr>
<td>Martin Luther King, Jr. Way</td>
<td>9</td>
</tr>
<tr>
<td>16th Street</td>
<td>4</td>
</tr>
<tr>
<td>Olive Avenue</td>
<td>4</td>
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</table>

When examined over time, pedestrian-involved collisions remained relatively stable between 2011 and 2014, but spiked in 2015. The number of pedestrian collisions by year can be seen in Table L.

Table L: Pedestrian-Involved Collisions by Year

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Pedestrian-Involved Collisions</th>
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</thead>
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<tr>
<td>2011</td>
<td>31</td>
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<tr>
<td>2012</td>
<td>35</td>
</tr>
<tr>
<td>2013</td>
<td>29</td>
</tr>
<tr>
<td>2014</td>
<td>33</td>
</tr>
<tr>
<td>2015</td>
<td>50</td>
</tr>
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</table>
Map XIV: Collisions Involving Pedestrians

Pedestrian Collisions

1. 1
2. 2 - 3
3. 4 - 5
4. 6 - 10
5. 11 - 40

DESTINATIONS + BOUNDARIES

School
Civic/Public
College/University
Library
Medical
Park
Lake

Data Source: ESRI, City of Merced
High Collision Corridors

The following section will focus on the two corridors with the highest volume of pedestrian-involved collisions: G Street and R Street.

G Street

The G Street corridor had the highest volume of pedestrian-involved collisions between 2011 and 2015 with 44 collisions. G Street is primarily a five-lane road with two travel lanes in each direction with a center turn lane. G Street is also one of the roads that crosses Bear Creek. There are a number of schools on or immediately adjacent to G Street including: Yosemite High School, Independence High School, Herbert Hoover Middle School, Luther Burbank Elementary School, Merced High School, Herbert H. Cruickshank Middle School, and Merced College. In addition to schools, there are also a number of commercial, medical, and other activity generators along G Street. The High-Speed Rail Station is also planned to be near G Street.

The majority of collisions on G Street occurred in or near downtown Merced, but incidents also occurred on more northern stretches of G Street; including north of Bear Creek. The intersection of G Street and Alexander Avenue recorded 6 pedestrian-involved collisions, the most in the corridor. This intersection is near several commercial areas and Merced High School.

R Street

The corridor that had the second-highest volume of pedestrian-involved collisions was R Street. During the 2011-2015 period, 27 pedestrian-involved collisions were reported along the corridor. R Street is large road, generally with two travel lanes in each direction, with segments that have a center turn lane. R Street also has schools on or immediately adjacent to it including John C. Fremont Charter School and Rudolph Rivera Intermediate School. R Street also serves as the access point for many parks including Applegate Park and Fahrens Park.

Collisions on R Street are distributed throughout the corridor; however, the intersection with the most pedestrian-involved collisions, 16th Street, is in the downtown Merced area. The intersection of R Street and 16th Street had 6 pedestrian-involved collisions reported. This intersection is near commercial areas and the southern set of railroad tracks.
Type of Collisions by Year

Figures 27 through 31 detail the types of collisions that occurred from 2011-2015. The majority of collisions in each year are broadside collisions, with vehicle/pedestrian collisions the next highest percentage. One of the causes of broadside collisions can be vehicles turning without checking to see if a cyclist is in the path of travel. More awareness and education about the presence of and proper behavior around bicycles could reduce the frequency of these kinds of collisions.

Figure 27: 2011 Bicycle and Pedestrian Collisions
Figure 28: 2012 Bicycle and Pedestrian Collisions

Figure 29: 2013 Bicycle and Pedestrian Collisions
Figure 30: 2014 Bicycle and Pedestrian Collisions

Figure 31: 2015 Bicycle and Pedestrian Collisions
**Cause of Collisions by Type**

Using 2011-2015 police report data of collisions between motorized vehicles and active transportation users, graphs were created to illustrate the causes of different accident types. This data, along with a greater understanding gained through interviews with safety personnel, will help to identify behaviors, locations, and projects in an effort to reduce collision incidence.

As demonstrated in Figures 32-36, many of these collisions were due to operator behaviors, such as cyclists riding on the wrong side of the road, jaywalking, and driver/cyclist interaction errors. Additional education is a strong method of continuing to reduce these collisions by ensuring all users of transportation know how to properly interact with one another. Additionally, many collisions with active transportation user involvement are a result of facilities that do not provide adequate safety, where bicyclists or pedestrians use improper behavior because it feels more safe. Other such incidents are due to a lack of appropriate facilities, such as jaywalking resulting from marked crossings being too far apart or nonexistent.

---

**Figure 32: Head-On Collisions with Cyclists**

![Graph showing head-on collisions with cyclists from 2011 to 2015 with categories for unknown, pedestrian did not yield, driver did not yield, cyclist disobeying traffic laws i.e. no signal, not obeying stop signs or lights, and cyclist riding against traffic.](image-url)
Figure 33: Rear-End Collisions with Cyclists

Figure 34: Broadside Collisions with Cyclists
Other Collision Metrics

Merced County agreed to collaborate and analyze collision data to: 1) describe the amount and characteristics of collisions in the City, 2) identify areas of the City with the highest rates of collisions, and 3) identify any systematic factors that might predict a party being at fault in a collision.

To accomplish this, the County acquired data from the Statewide Integrated Traffic Records System (SWITRS), downloaded from Transportation Injury Mapping System (More on TIMS can be found at https://tims.berkeley.edu/). These data are based on police reports; only collisions that involved a pedestrian OR a cyclist AND a motor vehicle were selected. 2013 data was the most recent data available.

There were not enough collisions in any one calendar year to perform a meaningful data analysis, so three years of data (2011-2013) were collapsed and used in all subsequent reporting. An important caveat of these data is that these numbers only include collisions that were severe enough to generate a police report. Minor collisions, as well as near misses, are not reported, and are not included in these analyses.

As shown in Figure 37, crashes are fairly equally spread across months, but September and October have the highest numbers of collisions. Weekdays have higher rates of collisions than weekend days, as seen in Figure 38. Figure 39 shows that the majority of collisions resulted in only minor injuries. The data also showed that about half (47.8%) of collisions occurred in an intersection, and the majority of collisions (70.9%) occurred during the daytime.
**Spatial Analysis**

A more detailed spatial analysis identified the most hazardous areas in the City; for this analysis, pedestrian and cyclist collisions were combined. On Map XV below, higher densities of collisions are represented by increasingly red color. The highest density of collisions was the area bordered by 19th Street on the south, N Street on the west, 13th Street on the north and Martin Luther King Jr. Way on the east.

Other statistically significant hot spots include:

- The area bordered by 18th Street on the north, H Street on the west, Highway 99 on the south, and F Street on the east
- G Street between 20th and 22nd Street
- Martin Luther King Jr. Way between 25th Street and 26th Street

Map XV: Collision Hot Spots
Barriers to Active Transportation

In downtown Merced and in many other parts of the city, the grid/modified grid street pattern serves walking and bicycling effectively by allowing these users to travel using a relatively efficient route. However, there are several features scattered throughout the City that act as barriers and deter people from using active transportation, especially walking. There are two sets of railroad tracks that pass in a general east-west direction through the City, and State Route 99 also cuts through Merced near the southern set of railroad tracks. Water features with limited crossing points can also become barriers to walking and bicycling; Bear Creek, for example, has only four major crossing locations.

Particularly as major projects are developed downtown such as the UC Merced Administration Building, the development of major hotels, and the future California High-Speed Rail Station, construction activity provides additional temporary barriers to active transportation. Careful planning and mitigation of the effects of both temporary and permanent barriers is critical for the enticement of users to the Merced downtown core and its many attractions.

Shared Barriers (Pedestrian and Bicycle)

Bear Creek Crossings

While Bear Creek can be a pleasant creek to ride along with trails on both of its banks, crossing the creek can be a challenge for pedestrians and bicyclists. There are only four major roads that cross Bear Creek: McKee Road, G Street, M Street, and R Street. While limited crossing points can also be an inconvenience for motor vehicles, using these points can lead to significant out of direction travel and additional travel time and energy spent to cross for people walking and bicycling.

For pedestrians, it is important to ensure the intersection crossings around these creek crossing points have well-marked crosswalks, sufficient levels of illumination at night, and any other necessary treatments to improve pedestrian safety when walking in these areas. For bicyclists, the on-street facilities should be designed to get bicyclists safely to and across these bridges. On McKee and G Street, the Class II bicycle lanes do cross the creek, linking both sides together. However, the Class II and Class III facilities on M Street and R Street are not connected across the creek; leaving those bicycle riders more vulnerable at these important connection points.

Pedestrian-Specific Barriers

Pedestrian Facilities

An analysis of pedestrian facilities was completed to determine where gaps exist in the sidewalk network, and to visualize where marked crossings exist throughout the City. It can be difficult to accurately access pedestrian facilities at a citywide, macro scale; instead, it is best accomplished by focusing on key areas of pedestrian activity to aid in making the built environment both safer and more attractive to these users.
Downtown Merced, Olive Avenue, the California High-Speed Rail Station, the Amtrak Station, and the transit center are all potential high-volume pedestrian areas, where improvements to pedestrian facilities should be focused to create the largest potential for gains in pedestrian utilization.

In addition to sidewalks and crosswalks, there are many pedestrian amenities that can make walking much more attractive to people, including: shade trees, pedestrian-scale lighting, wayfinding signage, benches, trash cans, other street furniture, increased separation from larger faster moving streets via parkways or trees, and active and visible ground-floor uses.

**State Route 99 Overpasses**

State Route 99 cuts through Merced near the southern edge of the downtown. Overpasses can be a major barrier to pedestrians. Overpasses typically are very uninviting spaces, with limited pedestrian facilities and poor lighting; many pedestrians feel unsafe or uncomfortable walking under them. Improving these overpasses would make walking to and from downtown destinations and transit more palatable to many of the residents who live south of State Route 99.

**Railroad Crossings**

Similar overpasses, railroad tracks can act as a barrier to people walking. Railroad tracks can be a safety hazard; each crossing should be properly marked and have all necessary crossing arms, signals, bells, and lights. Additionally, at crossings near areas with high pedestrian volumes, pedestrian crossing gates or arms should be considered to further improve safety at these locations. California High-Speed Rail will raise the volume of trains passing through these area, increasing the importance of these safety improvements. The corridor on which the trains travel is unlikely to have at-grade intersections with roadways, however the prevention of pedestrians from entering the railway should be a major consideration in its design and implementation. Railroad companies will be an important partner to engage in order to address these needs.

**Bicycle-Specific Barriers**

**Lack of Low-Stress Bikeway Facilities**

Creating and maintaining a network of low-stress bikeways, which are facilities that all users regardless of experience level feel comfortable using, is a critical component of both increasing bicyclist safety and attracting new riders. Currently, there are no Class II Buffered Bikeways or Class IV Protected Bikeways within the City of Merced. For more about these facility types, see “Class II- Bike Lane” on page 24 and “Class IV- Separated Bikeway” on page 30. Expanding and upgrading the existing network
with these facilities is the first step to improving riding conditions on larger streets. These two types of facilities provide increased separation between riders and traffic, reducing stress and improving safety for riders.

On narrower, lower-volume, and residential/neighborhood streets, incorporating many of the techniques and features of bicycle boulevards can transform these streets into friendlier places for bicycle riders, pedestrians, and children. Bicycle boulevards are low-volume streets for vehicles on which bicycling is prioritized through signage, limited number of stop signs on the bicycle route, and other features. By attempting to better regulate traffic in residential areas, these treatments focus on reducing speed and cut-through traffic and increase pedestrian and bicyclist visibility. For more details on bicycle boulevards, see “Examples of Bicycle Facilities from Other Communities” on page 29.

### Bicycle Theft
Whether resulting from lack of education about proper bicycle security, lack of appropriate facilities to properly secure bicycles, or other factors, bicycle theft can be a major factor in preventing people from cycling. In some cases, theft of a bicycle can cause a cyclist to stop riding altogether, whether from the cost of replacement or the belief that a new bicycle would just be stolen again. It is also important to note that bicycle theft is a frequently underreported crime.

From 2013 to 2018, 876 bicycles have been reported stolen to the Merced Police Department, as shown in Table M. The City of Merced’s policy on mandatory registration of bicycles on a national online database is a first step toward making bicycle theft less prominent and making stolen bicycles easier to identify and recover. See “Bicycle Registration” on page 130 for more details.

### Gaps in the Bicycle Network
Having a well-connected bicycle network that connects riders from their residences to employment centers, stores, parks, schools, retail, and other activity generators is critical to attracting riders. Gaps in the network occur when a bike lane or facility stops and there is no indicated route for the bicyclist to continue. These gaps can sometimes leave riders in very vulnerable positions, without a safe or low-stress way to continue through an area to reach their destination. Closing gaps in a bicycle network strengthens the network, improves safety, and increases connectivity between various origins and destinations within the City.
Section 5: Solutions
Solutions

Overview

This section outlines actions that Merced can take to mitigate identified hazards; these actions include infrastructure improvements and creating programs that can improve the safety and efficiency of walking and bicycling in Merced. Recommendations regarding future policy actions can be found on Page 130. What follows are recommendations for actions to mitigate hazards and foster a safer, more inclusive, and more inviting bicycle and pedestrian network.

Actions for Hazard Mitigation

Throughout Merced, there are areas with high pedestrian-involved and bicycle-involved collisions, as well as physical barriers that limit and discourage walking and biking. The Hazards section on Page 54 identifies high-collision corridors, pedestrian-specific barriers, bicyclist-specific barriers, and shared active transportation barriers. This section proposes actions that should work towards minimizing the effects of these barriers.

Reducing and Eliminating Collisions

Of the 410 active transportation-involved collisions in Merced from 2011 to 2015, 177 pedestrians were injured and eight fatalities occurred. 232 bicyclists were injured with two fatalities. Only one of the 410 collisions did not result in an injury to the pedestrian or bicyclist involved. Ten of those collisions resulted in two active transportation user injuries: eight collisions involved two pedestrians, and two collisions involved two bicyclists. No collision resulted in multiple fatalities. The full collision analysis can be found in the Hazards section, Page 54.

Pedestrian-involved and bicycle-involved collisions were not limited to a single area, making it very difficult to study and improve all collision locations. Prioritizing high collision areas and corridors as well as areas with high volumes of pedestrian and bicycle traffic will be necessary to bring improvements to the areas that need them most.

Prioritization

The Hazards section identifies several high collision corridors and downtown Merced as areas where collision reduction infrastructure should be implemented first. Pedestrian Collisions were noted as frequent in the G Street, R Street, Martin Luther King Jr. Way, 16th Street, and Olive Avenue Corridors. Bicycle Collisions were noted as frequent in the G Street, R Street, and M Street Corridors.
Many of these streets run through the downtown area, further emphasizing the need for additional pedestrian and bicyclist safety and infrastructure improvements; this area will continue to grow as a location with high volumes of pedestrians and bicyclists. Additionally, transit areas including the future California High-Speed Rail Station should also be prioritized with these active transportation improvements.

**Recommendations and Improvements**

Utilizing the collision data, among other factors, this ATP is recommending several improvements along identified corridors to improve safety, network connectivity and efficiency, and make it more comfortable and enticing to walk and/or bike around Merced. The list of recommendations for the high priority corridors are shown in Table N, which continues on to the next page.

<table>
<thead>
<tr>
<th>Type</th>
<th>Project ID</th>
<th>Street 1</th>
<th>Start 1</th>
<th>End 1</th>
<th>Bikeway Type</th>
<th>Distance (miles)</th>
</tr>
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<td>Bike</td>
<td>B9</td>
<td>16th Street</td>
<td>G Street</td>
<td>V Street</td>
<td>Study</td>
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<td>1</td>
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<td>21st Street</td>
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<td>G Street/Olive Street Intersection</td>
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<td>Ped</td>
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<td>Martin Luther King Jr. Way</td>
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<td></td>
<td></td>
<td>Lighting</td>
<td></td>
</tr>
<tr>
<td>Ped Spot</td>
<td>PS31</td>
<td>M Street/Cartmel Drive</td>
<td></td>
<td></td>
<td>Lighting</td>
<td></td>
</tr>
<tr>
<td>Ped Spot</td>
<td>PS37</td>
<td>M Street/Main Street</td>
<td></td>
<td></td>
<td>Crossings</td>
<td></td>
</tr>
</tbody>
</table>

Pursuing the above recommendations along with other improvements will reduce hazards and barriers, improve safety, and create a stronger, more connected active transportation network.
Reducing the Impact of Barriers

Many factors, both physical and mental, play a role in shaping the active transportation network and how users do or do not interact with it. Street grid design, physical barriers, mental barriers, collision history, and perceived safety are all relevant factors.

Street Grid

While a common barrier in many cities, Downtown Merced and other parts of the city are laid out in a grid/modified grid street pattern that generally serves pedestrian and bicycle movements and access very well.

Physical Barriers

In Merced there are geographic and built environment features that can deter walking and bicycling. Some barriers affect both pedestrians and bicyclists, and others may only affect one mode. These barriers are discussed in greater detail in “Barriers” on page 55, but are mentioned below with potential actions to mitigate the effects of these barriers.

Shared Pedestrian and Bicyclists Barriers

Michael O’Sullivan Path (Bear Creek Path): The Michael O’Sullivan Path is an east-west path that follows Bear Creek. Many segments of the creek have paths on both of its banks; however, crossing the creek can be challenging for pedestrians and bicyclists because of limited crossing points. With only four roads that cross the creek (McKee Road, G Street, M Street, and R Street), active transportation users must share these crossing points with vehicles.

Having on-street facilities is important for bicyclists, as they utilize the same network that motor vehicles do. Currently the Class II bike lanes and Class III bike route on M Street and R Street, respectively, do cross Bear Creek, but the bike facilities on McKee Street and G Street do not cross the creek. Only one of these four crossing points has dedicated bicycle facilities. These other three crossings should be improved to incorporated Class II facilities, at minimum, to better facilitate and entice bicycle travel across the creek; this will benefit O’Sullivan Path riders and other bicyclists. The connections between the creek access/egress point should be well-designed and easy to navigate for riders of all ages and abilities.

For pedestrians, it is important to ensure that there are marked intersection crossings immediately adjacent to creek access/egress points near those four streets that do cross the creek. These crossings should be marked with high visibility crossings and enhanced with additional safety features (curb extensions, leading pedestrian interval, etc.) when necessary to further improve safety. Ensuring that these crossings and their approaches are well-lit is also very important. Because there are so few crossing points, enhancing these four locations should be a high priority.
Bicycle-Specific Barriers

Generally speaking, traffic calming and other pedestrian improvements tend to also benefit bicyclists because these improvements slow traffic and increase driver awareness of the presence of other modes. However, because bicyclists typically ride in the roadway, they may have additional route flexibility than pedestrians who are generally limited to sidewalks. Thus, the following bicycle barriers reflect macro-level bicycle network characteristics that act as barriers for riders and potential riders.

**Lack of Low-Stress Bikeway Facilities:** Low-stress bikeways, facilities that all users feel comfortable using regardless of age, experience, or ability, are a key component of increasing bicyclist safety and the perception of safety. Currently in Merced, there are no Class II buffered bike lanes or Class IV separated bikeways, some of the most notable low-stress facilities. Expanding the existing bicycle network and upgrading existing facilities to have increased levels of separation is the first step to creating a safer network for riders of all ages and abilities on arterials and larger collector streets.

Incorporating the traffic calming treatments of low-stress facilities like bicycle boulevards can help transform narrower residential, neighborhood, and urban village streets into safer places for motorists, pedestrians, cyclists, and children playing. Bicycle boulevards are streets on which active transportation is prioritized through attempting to better regulate vehicle traffic in these residential areas by implementing treatments that focus on reducing speed and cut-through traffic, while increasing pedestrian and bicyclists awareness and visibility. For more on bicycle boulevards, see “Examples of Bicycle Facilities from Other Communities” on page 29.

**Gaps in the Bicycle Network:** Having a well-connected bicycle network that links riders from their residences to employment centers, stores, parks, schools, retail centers, and other activity generators is critical to attracting riders and giving them safe connections between these locations. Gaps in the network occur when a bike facility stops and there is no indicated route for the rider to continue along. Sometimes these gaps can be large or leave riders in very vulnerable situations without a low-stress way to continue through an area to reach their destination. Closing gaps in a bicycle network strengthen the network, improve safety, and increase connectivity throughout the city.

*Merced currently has no Class II buffered bike lanes, Class IV separated bikeways, or bicycle boulevards. These facilities are low-stress facilities, ones that users feel comfortable using regardless of age, experience, or ability.*
Pedestrian-Specific Barriers

*Sidewalks and Sidewalk Gaps:* At a citywide level, it can be very difficult to address and prioritize sidewalk gaps and issues. As a part of the *Active Transportation and Safe-Routes-to-School Plan*, a sidewalk gap analysis was completed to document where there are gaps in the sidewalk network. Similar to other improvements, sidewalk gaps should be prioritized in key pedestrian locations like downtown, commercial centers, transit stops/stations, and other high-volume pedestrian areas.

Unlike other active transportation improvements, funding for sidewalk construction and replacement can often be charged to adjacent property owners, though this can be very burdensome for some property owners. Cities across the state and across the country have created cost sharing programs between the local municipality and the property owner to share costs of these improvements as needed.

*State Route 99 Overpasses/Underpasses:* State Route 99 cuts through Merced near the southern edge of downtown. Generally speaking, overpasses are not inviting spaces, because they have limited pedestrian facilities, poor lighting, and are places where pedestrians generally feel less comfortable walking. Designing and retrofitting over/underpasses with enhanced pedestrian facilities can help build stronger connections across this highway. This also creates a better connection between the southern part of the city and downtown. The importance of this connection across the highway will grow in importance after the opening of the California High-Speed Rail Station and other developments.

*Railroad Crossings:* There are two sets of railroad tracks that are barriers to walking. These tracks can pose a strong safety hazard; each track should be properly marked and have all the necessary crossing arms, signals, bells, and lights. Additionally, at crossings near areas with or the potential to have high volumes of pedestrians, pedestrian crossing gates and arms should be considered for additional awareness and safety. California High-Speed Rail will increase the volume of trains passing through the tracks near downtown; if these crossings are not grade separated, they should be enhanced to the extent possible to maximize pedestrian awareness and safety.

*Mental Barriers and Perceptions of Safety*

In addition to the aforementioned physical and infrastructure barriers, both existing and potential riders have perceptions about bicycling or the network that may discourage riding or lead to riders taking indirect or less efficient routes. Some of these mental barriers relate directly or indirectly to the above physical barriers, and others likely stem from overall perceptions of the built environment or bicycling in Merced. Understanding perceptions of the public is also important because these perceptions affect travel behavior and choices; if someone does not feel comfortable walking or biking somewhere, if they have other options, they are likely going to choose the one they feel more comfortable doing.
Mental barriers prevent or limit potential riders and even seasoned cyclists from biking in Merced. Highway crossings, railroad crossings, collision history, and the overall condition and buildout of the bikeway network are possible contributors to these mental barriers. Perceptions, accurate or not, play a major role in shaping transportation behavior and choices. Bicycling can be viewed as a risky form of transportation; high collision history and lack of separated bikeways likely play a major role in generating this perception. Enacting a Vision Zero campaign and building bike facilities that calm traffic and provide greater levels of separation are good first steps to combating these perceptions. Improving infrastructure to mitigate the effects of physical barriers like highways and railroad tracks will also be important to begin the process of shifting perceptions.

**Safety**

When discussing active transportation, the perception of safety can relate to two primary concepts: traffic safety and criminal safety. Traffic safety perception relates to whether a person believes they will get involved in a collision or whether they have a safe route to their destination. Criminal safety perception relates to whether the area a person wishes to traverse is well lit, whether other people pass through the area, whether the area has a history of crime, and generally whether the person feels safe traveling there. For both of these types of safety, especially the latter, perceptions matter for transportation decision making.

Building out well-connected and inclusively-accessible bicycle and pedestrian infrastructure in key areas can create a network that users will feel safer and more comfortable using. While criminal safety is much harder to control and change, there are design and infrastructure considerations that Merced can implement to try to shift the perception. Improving both street-level and pedestrian-level lighting in downtown, transit areas, and key active transportation areas will benefit all users by improving visibility and awareness. Ground floor facades and uses play a role in how pedestrians interact with and perceive a street. In busy and popular areas, having a visible police presence can also help shift the safety perception.
Section 6: Implementation
Implementation

This section provides information on potential construction costs for recommended bicycle and pedestrian improvements; the costs for which are broken down below. Additionally, Federal, state, regional, and local government agencies, as well as private foundations, invest billions of dollars every year in the nation’s transportation system that can help fund these improvements.

Cost Assumptions

Bikeway Unit Facility Costs

Table O shows conceptual unit cost estimates for bikeway facilities. These costs include estimated costs for mobilization, traffic control, earthwork, utility coordination, and grading. Cost assumptions do not include site-specific factors that may increase actual costs; these costs also do not include construction management, design, contingency, or staff time. Costs estimates are shown in 2018 dollars are rounded to the nearest $100. Actual costs may vary significantly.

<table>
<thead>
<tr>
<th>Facility</th>
<th>Unit</th>
<th>Cost</th>
<th>Notes &amp; Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class I Path</td>
<td>MI</td>
<td>$590,000</td>
<td>8’ asphalt path</td>
</tr>
<tr>
<td>Class II Lanes</td>
<td>MI</td>
<td>$44,000</td>
<td>Striping, signs, and stencils for both sides of road</td>
</tr>
<tr>
<td>Class II Buffered Lanes</td>
<td>MI</td>
<td>$110,000</td>
<td>Striping, signs, and stencils for both sides of road</td>
</tr>
<tr>
<td>Class III Route</td>
<td>MI</td>
<td>$9,000</td>
<td>Signs for both sides of road</td>
</tr>
<tr>
<td>Class III w Shared Lane Markings</td>
<td>MI</td>
<td>$16,000</td>
<td>Signs and stencils for both sides of road</td>
</tr>
<tr>
<td>Class III Bicycle Boulevard</td>
<td>MI</td>
<td>$43,000</td>
<td>Signs, stencils, striping, and road diet techniques</td>
</tr>
<tr>
<td>Class IV Separated Lanes</td>
<td>MI</td>
<td>$330,000</td>
<td>Striping, signs, stencils, and separation devices, for both sides of the road</td>
</tr>
</tbody>
</table>

Pedestrian Unit Facility Costs

Table P shows conceptual unit cost estimates for pedestrian facilities. These costs included estimated costs for mobilization, traffic control, earthwork, utility coordination, and grading. Cost assumptions do not include site-specific factors that may increase actual costs; these costs also do not include construction management, design, contingency, or staff time. Costs estimates are shown in 2018 dollars are rounded to the nearest $100. Actual costs may vary significantly.

17 Abbreviations for units in this section are as follows. MI: Mile, EA: Each, LF: Linear Foot
Table P: Conceptual Unit Costs for Pedestrian Facilities

<table>
<thead>
<tr>
<th>Facility</th>
<th>Unit</th>
<th>Cost</th>
<th>Notes &amp; Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curb Extension</td>
<td>EA</td>
<td>$30,000</td>
<td>Per extension – double if adding curb extension on both ends of crosswalk</td>
</tr>
<tr>
<td>Curb Ramp</td>
<td>EA</td>
<td>$4,000</td>
<td>Per directional ramp</td>
</tr>
<tr>
<td>High Visibility Crosswalk w/ Advance Line</td>
<td>EA</td>
<td>$2,800</td>
<td>Continental markings with advance stop bar or yield line</td>
</tr>
<tr>
<td>Pedestrian Scale Lighting</td>
<td>MI</td>
<td>$2,178,000</td>
<td>12’-15’ tall lightposts spaced 30’-45’ apart; both sides of street</td>
</tr>
<tr>
<td>Raised Crosswalk</td>
<td>EA</td>
<td>$8,000</td>
<td>Speed table and high visibility crosswalk markings</td>
</tr>
<tr>
<td>Raised Intersection</td>
<td>EA</td>
<td>$50,000</td>
<td></td>
</tr>
<tr>
<td>Pedestrian Actuated Beacon</td>
<td>EA</td>
<td>$25,000</td>
<td>Includes two beacon and sign assemblies, for both sides of road</td>
</tr>
<tr>
<td>Sidewalk</td>
<td>LF</td>
<td>$170</td>
<td>4' sidewalk including 6' curb and gutter; one side of road</td>
</tr>
<tr>
<td>Sign</td>
<td>EA</td>
<td>$500</td>
<td>Includes post</td>
</tr>
<tr>
<td>Speed Feedback Sign</td>
<td>EA</td>
<td>$16,000</td>
<td>One assembly</td>
</tr>
<tr>
<td>HAWK/Pedestrian Hybrid Beacon</td>
<td>EA</td>
<td>$100,000</td>
<td>Includes signals, sign assemblies, and pole</td>
</tr>
<tr>
<td>Leading Pedestrian Interval</td>
<td>EA</td>
<td>$20,000</td>
<td>Assumes sufficient existing signal technology. Costs are mostly for labor and planning.</td>
</tr>
<tr>
<td>Transverse Crosswalk</td>
<td>EA</td>
<td>$1,200</td>
<td>Transverse crosswalk markings with advance stop bar or yield line</td>
</tr>
<tr>
<td>Striping</td>
<td>LF</td>
<td>$3</td>
<td>4’ thermoplast</td>
</tr>
<tr>
<td>Study</td>
<td>EA</td>
<td>$100,000</td>
<td>Future study for stop sign warrants, parking removal, road diet, traffic impacts, or other additional analysis</td>
</tr>
</tbody>
</table>

Cost Estimates

Bikeway Costs

This Active Transportation and Safe-Routes-to-School Plan is proposing 90.4 miles of enhanced and new bikeways throughout Merced. More specifics regarding the proposed projects are available in “Bicycle Prioritized Projects” on page 113. In total these bikeways have a total estimated cost of $14,131,000. A breakdown of facility costs by bikeway type can be seen in Table Q.

Table Q: Cost of Proposed Bikeways in Merced

<table>
<thead>
<tr>
<th>Facility</th>
<th>Unit</th>
<th>Cost/Mile</th>
<th>Miles of Facilities</th>
<th>Cost per Facility Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class I Path</td>
<td>MI</td>
<td>$590,000</td>
<td>16</td>
<td>$9,440,000</td>
</tr>
<tr>
<td>Class II Lanes</td>
<td>MI</td>
<td>$44,000</td>
<td>50.1</td>
<td>$2,204,400</td>
</tr>
<tr>
<td>Class II Buffered Lanes</td>
<td>MI</td>
<td>$110,000</td>
<td>5.5</td>
<td>$605,000</td>
</tr>
<tr>
<td>Class III Route</td>
<td>MI</td>
<td>$9,000</td>
<td>0</td>
<td>$0</td>
</tr>
<tr>
<td>Class III w/Shared Lane Markings</td>
<td>MI</td>
<td>$16,000</td>
<td>4.9</td>
<td>$78,400</td>
</tr>
<tr>
<td>Class III Bicycle Boulevard</td>
<td>MI</td>
<td>$43,000</td>
<td>9.7</td>
<td>$417,100</td>
</tr>
<tr>
<td>Class IV Separated Lanes</td>
<td>MI</td>
<td>$330,000</td>
<td>4.2</td>
<td>$1,386,000</td>
</tr>
</tbody>
</table>
Implementing this network of bicycle facilities represents a significant expenditure for the City of Merced, and will be completed over time as funding, staffing, and planning processes dictate.

About two-thirds of the costs of these improvements, $9,440,000, are for Class I facilities, the most expensive facility type on a per mile basis and the facility type with the second-most miles of recommendations. Over 20 years, it would require $472,000 per year to implement these facilities. This represents the costs of the improvements to Merced’s off-street network.

The remaining bikeway recommendations constitute enhancements and additions to Merced’s on-street network, consisting of Class II, III, and IV facilities, including bike boulevards. For more about each facility type see “Bicycle Facilities” on page 22. These facilities would require approximately $4,691,000 total, or $234,550 per year over 20 years.

This plan is proposing 9.7 miles of bicycle boulevards and 4.2 miles of separated bikeways. These are the lowest stress facilities and provide the greatest traffic calming and bicyclist separation. Combined, these facilities have a cost of $1,803,100. Implementing these facilities would require an investment of about $90,155 over the course of 20 years.

**Pedestrian Costs**

This *Active Transportation and Safe-Routes-to-School Plan* is proposing 50 pedestrian improvements throughout Merced. These recommendations vary between specific spot improvements to corridor-wide changes. At the “master plan” level, it is impossible to detail specific intersection or crossing improvements at each of these identified areas. In some cases, based on Merced staff and public input, specific improvements have been recommended. In other cases, studies have been suggested to fully analyze the area to determine the most appropriate improvements.

**Studies**

On a project-by-project basis, 26 of the pedestrian improvements fell into the “Study” category. For simplicity and cost savings, some of these studies have been combined into larger, more topical groups.

**Highway & Rail Crossings**

Highway and railroad crossing improvements are the largest grouping of pedestrian improvement studies, with six projects falling into this category. Depending on the City’s needs, these crossings can be analyzed with individual studies, by grouping similar locations, or through one holistic study. The cost of the analysis will vary depending on the scope and number of crossings included.
Corridor Studies
Multiblock segments or corridor-wide studies were recommended for seven corridors. These corridors were reported to have characteristics that did not create a friendly pedestrian environment. A corridor study will be able to sufficiently analyze existing conditions, interact with the public, and produce improvements that will benefit the users of these roads. The following corridors were proposed for studies:

- G Street in Downtown
- 12th Street from E Street to M Street
- Olive Avenue from G Street to Loughborough Drive
- Childs Avenue entire corridor
- M Street in Downtown
- 26th Street entire corridor
- 9th Street from V Street to M Street

The cost of each of these studies will vary by the length of segment under study and other public engagement and traffic/parking studies that may need to included. For smaller corridor segments, these may cost less than $100,000, but longer and more complex corridors may cost more. These costs do not account for engineering and design plans, specifications, and estimates nor do they include the installation of whatever infrastructure the studies may recommend.

Downtown

The Plan is also recommending a pedestrian facilities study in the downtown Merced Area. The public indicated that there are multiple streets, intersections, and locations that can be challenging and uninviting for pedestrians. This study can incorporate the work of some of the aforementioned Corridor Studies such as G Street, M Street, and potentially others. Such a plan would also be beneficial to improving access to transit.

Intersection

There are four (4) additional intersections that were brought forward by the public that needed pedestrian improvements. These locations are in complex environments, that require additional study or additional infrastructure beyond the spot location to improve transportation conditions.

- 11th Street and V Street
- Santa Fe Avenue and 6th Avenue
- 8th Street and P Street
- Parsons Avenue and Merced Avenue
Transit
There was one transit-related pedestrian spot improvement, a study for a potential bus pull-in near Alicia Reyes Elementary School and Golden Valley Health Centers.

Accessibility
This plan is also recommending three different accessibility studies. The three studies can be conducted separately or as a larger accessibility study. The three areas to study are:

- Bear Creek Path: Assess accessibility issues
- Citywide: Curb inventory to determine and prioritize locations without curb ramps and other accessibility issues
- Citywide: Conduct an inventory of bus stops throughout the City to determine what accessibility and pedestrian enhancements can be made

Pedestrian Spot Improvements
There are 28 pedestrian spot improvements that have specific recommendations. These recommendations vary in size and complexity from simply striping high visibility crosswalks, to larger construction projects such as adding pedestrian-scale lighting or sidewalks. Using the cost estimates listed in the above tables, about $9.4 million dollars of improvements have been recommended.

---

**Pedestrian-Scale lighting** differs from traditional street lighting in a number of ways. The lights are closer to the ground and are grouped together more closely. This creates an even lighting of the sidewalk, as opposed to traditional street lighting which creates alternating bright and dark spaces. Pedestrian-scale lighting typically uses white light, rather than yellow light, to be more inviting to pedestrians.

The light fixtures also tend to come in interesting and attractive shapes. An additional benefit of pedestrian-scale lighting is that, like other street furniture, it alerts drivers to be ready to encounter pedestrians.

---

Figure 40: Pedestrian-Scale Lighting
$6.5 million of the recommendation is from two projects that together have about 3.16 miles of pedestrian-scale lighting included. Pedestrian-scale lighting, an example of which is shown in Figure 40, is very expensive; it is projected to cost over $2 million per mile.

The remaining 26 pedestrian spot improvements total to roughly $2.9 million. There are about 7,500 linear feet of sidewalk construction included, which accounts for $1.3 million of that $2.9 million. Accounting for the most expensive improvements, sidewalks and pedestrian-scale lighting, there are $1.6 million worth of other improvements. Table R breaks down the costs of these improvements by improvement type.

Table R: Cost Breakdown of Pedestrian Improvements

<table>
<thead>
<tr>
<th>Facility</th>
<th>Unit</th>
<th>Cost</th>
<th>Amount of Facilities</th>
<th>Cost of Facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curb Extension</td>
<td>EA</td>
<td>$30,000</td>
<td>24</td>
<td>$720,000</td>
</tr>
<tr>
<td>High Visibility Crosswalk w/ Advance Line</td>
<td>EA</td>
<td>$2,800</td>
<td>64</td>
<td>$179,200</td>
</tr>
<tr>
<td>Pedestrian Scale Lighting</td>
<td>MI</td>
<td>$2,178,000</td>
<td>3.16</td>
<td>$6,882,480</td>
</tr>
<tr>
<td>Pedestrian Actuated Beacon</td>
<td>EA</td>
<td>$25,000</td>
<td>5</td>
<td>$125,000</td>
</tr>
<tr>
<td>Sidewalk</td>
<td>LF</td>
<td>$170</td>
<td>8,093</td>
<td>$1,357,810</td>
</tr>
<tr>
<td>HAWK/Pedestrian Hybrid Beacon</td>
<td>EA</td>
<td>$100,000</td>
<td>1</td>
<td>$100,000</td>
</tr>
<tr>
<td>Leading Pedestrian Interval</td>
<td>EA</td>
<td>$20,000</td>
<td>4</td>
<td>$80,000</td>
</tr>
<tr>
<td>Curb Ramps</td>
<td>EA</td>
<td>$4,000</td>
<td>4</td>
<td>$16,000</td>
</tr>
</tbody>
</table>

The total investment of $9.4 million for all non-study projects equates to an expenditure of $470,000 over 20 years. Removing the costs of sidewalks and pedestrian-scale lighting, that is an investment of $1.6 million. Over 20 years, that would equate to an expense of $80,000 per year.
Site Feasibility

Projects recommended to improve the safety and connectivity of the active transportation network throughout Merced exist at many levels of difficulty, cost, and feasibility. Some are simple fixes, implementable when streets are repaved through striping plans. Some are longer-term, higher-difficulty projects requiring installation of new sidewalks along key corridors. Alongside the project prioritization analysis, this site feasibility analysis recommends a high-level assessment of priority projects to better understand project constraints and develop an implementation strategy.

Feasibility Assessment Tool

Table S shows a simple, high-level analysis tool that the city can use to develop a snapshot of project feasibility to assist with implementation decisions. While additional analysis may be required to fully assess a project, this tool provides a relatively quick analysis for a wide array of projects, to allow a holistic assessment of a project list. The table presents a summary of the feasibility scoring values. The total possible score is 50 points, with High Feasibility ranging from 35-50 points, Moderate Feasibility from 20-30 points, and Lower Feasibility from 0-15 points.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Definition</th>
<th>Rank</th>
<th>Measurement</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Features</td>
<td>Does the project intersect a wetland, floodplain, or critical habitat area?</td>
<td>High</td>
<td>Does not intersect natural feature</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>Does intersect natural feature</td>
<td>0</td>
</tr>
<tr>
<td>Railroad Crossing</td>
<td>Does the project intersect railroad corridors?</td>
<td>High</td>
<td>Does not intersect railroad corridor</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Medium</td>
<td>Intersects at existing at-grade crossing</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>Requires new at-grade crossing</td>
<td>0</td>
</tr>
<tr>
<td>Bridge Crossing</td>
<td>Does the project require a bridge crossing?</td>
<td>High</td>
<td>Does not require a bridge crossing</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Medium</td>
<td>Crosses a bridge but does not require expanding width</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>Requires expansion of bridge width</td>
<td>0</td>
</tr>
<tr>
<td>Cost</td>
<td>What range does the expected cost fall within?</td>
<td>High</td>
<td>Project can be accomplished through existing maintenance/operations budget</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Medium</td>
<td>Project costs under $150,000</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>Project costs $150,000 or more</td>
<td>0</td>
</tr>
<tr>
<td>Right of Way (ROW)</td>
<td>Does the project require ROW acquisition?</td>
<td>High</td>
<td>Project does not require ROW acquisition</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>Project requires ROW acquisition</td>
<td>0</td>
</tr>
</tbody>
</table>

Local conditions evolve over time, so the feasibility assessment tool is best utilized when the city is working to ascertain what projects to pursue in the near term, and how to create a long-term implementation plan for the full project list. Accordingly, it is recommended that the projects deemed “high-priority” in the prioritization process be assessed by City staff to help determine next steps for pursuing funding and folding projects into the CIP.
Anticipated Revenue Sources

Below is information on potential funding sources for bicycle and pedestrian improvements. Private foundations, as well as Federal, state, regional, and local government agencies invest billions of dollars every year in the nation’s transportation system. Only a fraction of that funding is used in development projects, policy development, and planning to improve conditions for pedestrians and bicyclists. To support agency efforts to find outside funding sources to implement bicycle and pedestrian improvements, a summary by level of government and grant program is provided below.

Federal Sources

Fixing America’s Surface Transportation (FAST Act)
The FAST Act, which replaced Moving Ahead for Progress in the 21st Century Act (MAP-21) in 2015, provides long-term funding certainty for surface transportation projects, meaning states and local governments can move forward with critical transportation projects with the confidence that they will have a Federal partner over at least the next five years.

The law makes changes and reforms to many federal transportation programs, including streamlining the approval processes for new transportation projects and providing new safety tools. It also allows local entities that are direct recipients of Federal dollars to use a design publication that is different than one used by their State DOT, such as the Urban Bikeway Design Guide by the National Association of City Transportation Officials. More information can be found at https://www.transportation.gov/fastact. In California, FAST money flows through the state Active Transportation Program (ATP), managed by the California Department of Transportation (Caltrans).

Surface Transportation Block Grant Program (STBGP)
STBGP provides states with flexible funds which may be used for a variety of highway, road, bridge, and transit projects. A wide variety of bicycle and pedestrian improvements are eligible including trails, sidewalks, bike lanes, crosswalks, pedestrian signals, and other ancillary facilities. Modification of sidewalks to comply with the requirements of the Americans with Disabilities Act (ADA) is also an eligible activity. Unlike most highway projects, STBGP-funded pedestrian facilities may be located on local and collector roads which are not part of the Federal-aid Highway System.

Fifty percent of each state’s STBGP funds are sub-allocated geographically by population. These funds are funneled through Caltrans to the Metropolitan Planning Organizations (MPOs) in the state. The remaining 50 percent may be spent in any area of the state. Merced County Association of Governments (MCAG) is the local MPO for Merced County.
The Surface Transportation Block Grant Program (STBGP) has a set-aside funded at $835 million for 2016 and 2017, and $850 million for 2018, 2019, and 2020. Up to 50 percent of the set-aside is able to be transferred for broader STBGP eligibility.

Improvements eligible for this set-aside include Safe-Routes-to-School and the Recreational Trails Program. These funds may be used for a variety of pedestrian and streetscape projects including sidewalks, multi-use paths, and rail-trails.

Non-profit organizations are now eligible to apply for funding for transportation safety projects and programs, including Safe-Routes-to-School programs and bike share. In California, STBGP funds are distributed through the State Transportation Improvement Program. Set-aside funds are to be distributed through the ATP program.

405 National Priority Safety Program

Approximately $14 million from this program annually, 5 percent of the $280 million allocated to the program overall, will be awarded to states to decrease bike and pedestrian crashes with motor vehicles. States where bike and pedestrian fatalities exceed 15 percent of their overall traffic fatalities will be eligible for grants that can be used for:

- Training law enforcement officials on bicycle/pedestrian related traffic laws
- Enforcement campaigns related to bicycle/pedestrian safety
- Education and awareness programs related to relevant bicycle/pedestrian traffic laws

Accessing money from this program is based on statewide eligibility. In California, these monies can be accessed through grants from the California Office of Traffic Safety.

Highway Safety Improvement Program (HSIP)

HSIP provides $2.4 billion nationally for projects that help communities achieve significant reductions in traffic fatalities and serious injuries on all public roads, bikeways, and walkways. Non-infrastructure projects are no longer eligible. Eligible projects are no longer required to collect data on all public roads. Pedestrian safety improvements, enforcement activities, traffic calming projects, and crossing treatments for active transportation users in school zones are examples of eligible projects. All HSIP projects must be consistent with the state’s Strategic Highway Safety Plan (SHSP).
**Congestion Mitigation and Air Quality Improvement Program (CMAQ)**

CMAQ provides funding for projects and programs in air quality nonattainment and maintenance areas for ozone, carbon monoxide, and particulate matter which reduce transportation related emissions. These federal dollars can be used to build pedestrian and bicycle facilities that reduce travel by automobile. Purely recreational facilities generally are not eligible.

To be funded under this program, projects and programs must come from a transportation plan or State or Regional Transportation Improvement Program that conforms to the SIP and must be consistent with the conformity provisions of Section 176 of the Clean Air Act. States are now given flexibility on whether to undertake CMAQ or STBGP-eligible projects with CMAQ funds to help prevent areas within the state from going into nonattainment. Areas in nonattainment are considered to have air quality worse than the National Ambient Air Quality Standards. An area may be a nonattainment area for one pollutant and an attainment area for others.

In Merced County, CMAQ funding is administered through the Merced County Association of Governments (MCAG) on the local level. These funds are eligible for transportation projects that contribute to the attainment or maintenance of National Ambient Air Quality Standards in nonattainment or air-quality maintenance areas. MCAG receives about $3 million annually of apportioned CMAQ funding. Examples of eligible projects include enhancements to existing transit services, rideshare and vanpool programs, projects that encourage pedestrian transportation options, traffic light synchronization projects that improve air quality, grade separation projects, and construction of high-occupancy vehicle (HOV) lanes. Projects that are proven to reduce direct particulate matter emissions, specifically PM2.5, are to be given priority.

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**PM**

PM$_{2.5}$ refers to atmospheric particulate matter that have a diameter of less than 2.5 micrometers, about 3% the diameter of a human hair. These fine particles are a dangerous air pollutant so small that they can only be detected with an electron microscope.
State Sources

Active Transportation Program

In 2013, Governor Brown signed legislation creating the Active Transportation Program (ATP). This program is a consolidation of the Federal Transportation Alternatives Program (TAP), California’s Bicycle Transportation Account (BTA), and Federal and California Safe-Routes-to-School (SRTS) programs. It is a program of the California Transportation Commission administered by Caltrans Division of Local Assistance, Office of Active Transportation and Special Programs. The Merced ATP leveraged a successful grant for *Active Transportation and Safe-Routes-to-School Plan* creation.

The Active Transportation Program goals include:

- Increase the proportion of trips accomplished by biking and walking
- Increase safety and mobility for non-motorized users
- Advance the active transportation efforts of regional agencies to achieve greenhouse gas reduction goals
- Enhance public health
- Ensure that disadvantaged communities fully share in the benefits of the program
- Provide a broad spectrum of projects to benefit many types of active transportation users

The most recent California Transportation Commission (CTC) ATP Guidelines are available at: [https://catc.ca.gov/programs/active-transportation-program](https://catc.ca.gov/programs/active-transportation-program)

Eligible bicycle and Safe-Routes-to-School projects include:

- Infrastructure Projects are Capital Improvements that will further program goals. This category typically includes planning, design, and construction.
- Non-Infrastructure Projects include education, encouragement, enforcement, and planning activities that further program goals. The focus of this category is on pilot and start-up projects that can demonstrate funding for ongoing efforts.
- Infrastructure projects with non-infrastructure components are also eligible.

The minimum request for non-SRTS projects is $250,000. There is no minimum for SRTS projects. More information is available at: [https://dot.ca.gov/programs/local-assistance/fed-and-state-programs/active-transportation-program](https://dot.ca.gov/programs/local-assistance/fed-and-state-programs/active-transportation-program)
**Office of Traffic Safety (OTS) Grants**

The Office of Traffic Safety Program is a partnership effort between the National Highway Traffic Safety Administration (NHTSA), Federal Highway Administration, and the states. In California, the grants are administered by OTS.

Grants are used to establish new traffic safety programs, expand ongoing programs or address deficiencies in current programs. Eligible grantees are governmental agencies, state colleges, state universities, local City and County government agencies, school districts, fire departments, and public emergency services providers. Grant funding cannot replace existing program expenditures, nor can traffic safety funds be used for program maintenance, research, rehabilitation, or construction. Grants are awarded on a competitive basis, and priority is given to agencies with the greatest need. Evaluation criteria to assess need include potential traffic safety impact, collision statistics and rankings, seriousness of problems, and performance on previous OTS grants.

The California application deadline is January of each year. There is no maximum cap to the amount requested, but all items in the proposal must be justified to meet the objectives of the proposal.

More information is available on the OTS website: [http://www.ots.ca.gov/](http://www.ots.ca.gov/)

**Road Repair and Accountability Act of 2017 (SB 1)**

SB 1 provides for an ongoing increase in state transportation funding and expands the CTC role and revenues to provide oversight and accountability for transportation infrastructure investments.

SB 1 funds several programs that the CTC will administer: Local Partnership Program, Local Streets and Roads Apportionments, Solutions for Congested Corridors Program, Freight Program, and Active Transportation Program Augmentation. SB 1 also provides additional funding for the State highway Operation and Protection Program and the State Transportation Improvement Program Stabilization.

**Regional and Local Sources**

**Merced County Association of Governments: Measure V**

Measure V is Merced County’s 30-year half cent transportation sales tax, passed by voters in November 2016. Measure V is expected to generate $15 million in new revenue annually and $450 million over the life of the measure. 40 percent of Measure V revenue will go towards Local Projects and 10% is dedicated to Local Alternative Modes. At least 20 percent of the Local Project funds each jurisdiction receives must be used for alternative modes projects. These alternative modes projects include bicycle, pedestrian, passenger rail, and other modes of transportation that reduce single-occupant vehicle use.
**Developer Impact Fees**

As a condition for development approval, municipalities can require developers to provide certain infrastructure improvements, which can include bikeway projects. These projects have commonly provided Class II facilities for portions of on-street, previously-planned routes. They can also be used to provide bicycle parking or shower and locker facilities. The type of facility that should be required to be built by developers should reflect the greatest need for the particular project and its local area. Legal challenges to these types of fees have resulted in the requirement to illustrate a clear nexus between the particular project and the mandated improvement and cost.

**Roadway Construction, Repair, and Upgrade**

Future road widening and construction projects are one means of providing improved pedestrian and bicycle facilities. To ensure that roadway construction projects provide these facilities where needed, it is important that the review process includes input pertaining to consistency with the proposed system. In addition, California’s 2008 Complete Streets Act and Caltrans’ Deputy Directive 64 require that the needs of all roadway users be considered during “all phases of state highway projects, from planning to construction to maintenance and repair.”

More information: [dot.ca.gov/hq/tpp/offices/ocp/complete_streets.html](http://dot.ca.gov/hq/tpp/offices/ocp/complete_streets.html)

**Utility Projects**

By monitoring the capital improvement plans of local utility companies, it may be possible to coordinate upcoming utility projects with the installation of bicycle and pedestrian infrastructure within the same area or corridor. Often times, the utility companies will mobilize the same type of forces required to construct bikeways and sidewalks, resulting in the potential for a significant cost savings. These types of joint projects require a great deal of coordination, a careful delineation of scope items and some type of agreement or memorandum of understanding, which may need to be approved by multiple governing bodies.

**Cable Installation Projects**

Cable television and telephone companies sometimes need new cable routes within public right-of-way. Recently, this has most commonly occurred during expansion of fiber optic networks. Since these projects require a significant amount of advance planning and disruption of curb lanes, it may be possible to request reimbursement for affected bicycle facilities to mitigate construction impacts. In cases where cable routes cross undeveloped areas, it may be possible to provide for new bikeway facilities following completion of the cable trenching, such as sharing the use of maintenance roads.
San Joaquin Valley Air Pollution Control District

The San Joaquin Valley Air Pollution Control District offers a number of grants to residents, businesses, and most importantly for the purposes of this Plan, public agencies. Each of their grant opportunities seeks to improve the air quality of the San Joaquin Valley and come in a variety of programs that are relevant to the goals and needs of the Active Transportation and Safe-Routes-to-School Plan. Grants for alternative-fuel vehicles and infrastructure, retrofitting or replacing school buses with emission-control systems, and bicycle infrastructure are among the Air Pollution Control District’s offerings.

Other Sources

High-Speed Rail

With the California High-Speed Rail Authority planning, designing, and building a station in downtown Merced, there will be opportunities for partnership in developing active transportation connections between downtown Merced destinations and the High-Speed Rail Station.

Miscellaneous Sources

Local sales taxes, fees, and permits may be implemented as new funding sources for pedestrian and bicycle projects. However, any of these potential sources would require a local ballot measure. Volunteer programs may be developed to substantially reduce the cost of implementing some routes, particularly multi-use paths. For example, a local college design class may use such a multi-use route as a student project, working with a local landscape architectural or engineering firm. Work parties could be formed to help clear the right of way for the route. A local construction company may donate or discount services beyond what the volunteers can do. A challenge grant program with local businesses may be a good source of local funding, in which the businesses can “adopt” a route or segment of one to help construct and maintain it.
Section 7:
Low-Cost Improvements and Safety Countermeasures
Low-Cost Improvements and Safety Countermeasures

Overview

This section suggests low-cost countermeasures that are effective at increasing safety and comfort for all roadway users, including the most vulnerable. The listed countermeasures in this section are considered cost-effective and feasible for Merced. The full list of potential countermeasures can be found at the following resources, all from the Federal Highway Administration (FHWA) except the final two, which are from Caltrans and UC Berkeley SafeTREC:

- BikeSAFE Bicycle Safety Guide and Countermeasure Selection System
- PedSAFE Pedestrian Safety Guide and Countermeasure Selection System
- Toolbox of Countermeasures and Their Potential Effectiveness for Pedestrian Crashes
- Crash Modification Factors Clearinghouse
- Low-Cost Safety Enhancements for Stop-Controlled and Signalized Intersections
- Systemic Safety Project Selection Tool
- Small Town and Rural Multimodal Networks
- Pedestrian Safety Improvement Program
- Strategies for Reducing Pedestrian and Bicyclist Injury at the Corridor Level

These sources provided the cost estimates for the treatments listed in this section, where available. For the remaining countermeasures, cost estimates were pulled from existing, recently completed Bicycle and Pedestrian Master Plans and projects in California.

Maintenance

Each section below provides costs to maintain the treatment where available. Maintaining the walking and bicycling network once it has been implemented preserves the investment and helps support a high quality of life for Merced residents. Maintenance costs are a concern for most cities, because there are often limited funds available in existing budgets, and grant programs are typically geared towards installation and do not usually provide ongoing or maintenance funding.
Setting Priorities

A detailed and systematic Maintenance Management System will help set priorities, though staff may be doing this effectively already. Sound overall advice on setting trail maintenance priorities is provided in the U.S. Forest Service *Trail Construction and Maintenance Notebook* 2004 edition (this edition is more specific on this topic than the updated 2007 edition). Though directed at backcountry trails, it is valid for pedestrian and bicycling settings. What follows is a short excerpt from that document:

*High-quality and timely maintenance will greatly extend the useful life of walking facilities. Even though you know the proper maintenance specifications, sometimes there is too much work for the time you have to spend. How do you decide what to do? Since it is a given that there will always be more work to do than people to do it, it’s important to:*

- Monitor your conditions closely
- Decide what can be accomplished as basic maintenance
- Determine what can be deferred
- Identify what area will need major work

*Setting priorities is critically important if maintenance dollars are going to be spent keeping facilities in the best possible condition. The first priority is to correct truly unsafe situations. The second priority is to correct things causing significant damage. The third priority is to restore the facility to the planned design standard. Whatever the priority, doing maintenance when the need is first noticed will help prevent more severe and costly damage later.*

Merced Connect App

Already in use by the City of Merced for incident reporting and notifications of maintenance needs, the Merced Connect App is an effective and efficient way of alerting City personnel when maintenance needs arise throughout the City’s infrastructure. While not exclusive to active transportation infrastructure, this application serves as an easily-accessed portal to provide the location and general information of damaged infrastructure that, in effect, crowd-sources the City’s ability to locate and quickly identify problem areas. Continuing to educate citizens and promote the use of the Merced Connect App will go a long way towards having the most rapid responses to maintenance needs.
Pedestrian Safety Countermeasures

Sidewalks and Walkways

Sidewalks and walkways are “pedestrian lanes” that provide people with space to travel within the public right-of-way that are separated from roadway vehicles. Sidewalks are associated with significant reductions in pedestrian collisions with motor vehicles. Sidewalks and walkways are "pedestrian lanes" that provide people with space to travel within the public right-of-way that are separated from roadway vehicles.  

Walkways should be part of every new and renovated road facility and every effort should be made to retrofit streets that currently do not have sidewalks. While sidewalks are typically made of concrete, less expensive walkways may be constructed of asphalt, crushed stone, or other materials if they are properly maintained and accessible to persons with mobility restrictions. To achieve this accessibility, paths should be firm, stable, and slip-resistant. In more rural areas, in particular, a “side path” made of one of these materials may be suitable. In areas where a separated walkway is not feasible, a wide paved shoulder on a roadway can provide a place for pedestrians to safely walk. Sidewalks or walkways should be at least five feet wide while paved shoulders should be at least six feet wide. A buffer zone of four to six feet is desirable to separate pedestrians from the street; the buffer zone will vary according to the street type. In downtown or commercial districts, a street furniture zone is usually appropriate; parked cars or bicycle lanes can also provide an acceptable buffer zone. In more suburban or rural areas, a landscape strip is generally most suitable. Careful planning of sidewalks and walkways is important in a neighborhood or area in order to provide adequate safety and mobility for all pedestrians, including those in wheelchairs and others with increased accessibility needs. For example, there should be a flat sidewalk provided in areas where driveways slope to the roadway. Costs vary depending on the length of sidewalk, the base material, and whether curb ramps are needed. Asphalt curbs and walkways are less costly, but require more maintenance, and are more difficult to walk and roll on for pedestrians with mobility restrictions. The approximate cost to add paved shoulders can range from $100,000 to $350,000 per mile for 5-6 feet wide shoulders. This cost can vary widely depending on the length of shoulder, site conditions, and other factors. Table T presents the cost estimates for various sidewalk designs.

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Path repair and maintenance is around $4,000 per linear mile, annually; maintenance costs for sidewalk repair can vary depending on the extent of the damage.

**Curb Ramps**

Curb ramps provide access between the sidewalk and roadway for people who have mobility restrictions that make it difficult to step up and down high curbs and for anyone using wheelchairs, strollers, walkers, crutches, handcarts, or bicycles. Curb ramps must be installed at all intersections and midblock locations where there are pedestrian crossings, as mandated by federal legislation, vis-à-vis the 1973 Rehabilitation Act and ADA 1990. Curb ramps must have a slope of no more than 1:12, that is, they must not exceed one inch per foot or a maximum grade of 8.33 percent, and a maximum slope on any side flares of 1:10.\(^\text{22}\)

Separate curb ramps for each crosswalk at an intersection should be provided rather than a single ramp at a corner for both crosswalks. The separate curb ramps improve orientation for visually impaired pedestrians by directing them toward the correct crosswalk. Similarly, tactile warnings alert pedestrians to the sidewalk and street edge. All newly constructed and altered roadway projects must include curb ramps. In addition, all agencies should upgrade existing facilities as the opportunity arises. One way to start this process is to conduct audits of the pedestrian facilities to make sure transit facilities, schools, public buildings, and parks are accessible to pedestrians who use wheelchairs. Table X presents curb ramp cost estimates.

### Table U: Curb Ramp Cost Estimates

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Price Range</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curb Ramp</td>
<td>Truncated dome/ detectable warning</td>
<td>$6.18 - $260</td>
<td>Square foot</td>
</tr>
<tr>
<td>Curb Ramp</td>
<td>Wheelchair ramp</td>
<td>$89 – $3,600</td>
<td>Each</td>
</tr>
</tbody>
</table>

While curb ramps are needed for use on all types of streets, priority locations are located in downtown areas and on streets near transit stops, schools, parks, medical facilities, shopping areas, and residences with people who use wheelchairs. Maintenance costs for curb ramp repair can vary depending on the extent of the damage.

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Marked Crosswalks and Enhancements

Marked crosswalks indicate optimal or preferred locations for pedestrians to cross and help designate right-of-way for motorists to yield to pedestrians. Crosswalks are often installed at signalized intersections and other selected locations with appropriate levels of pedestrian and vehicle traffic. Various crosswalk marking patterns are given in the Manual on Uniform Traffic Control Devices (MUTCD)23 and shown in Figure 41. Marked crosswalks are desirable at some high pedestrian volume locations, often in conjunction with other measures, to guide pedestrians along a preferred walking path. In some cases, they can be raised and should be installed in conjunction with other enhancements that physically reinforce crosswalks and reduce vehicle speeds. It is useful to supplement crosswalk markings with warning signs or beacons for motorists. At some locations, signs can get “lost” in visual clutter, so care should be taken in placement.

Crosswalk restriping should be conducted every five to seven years on arterial streets and 10 years on minor streets. Each restriping costs around $2,800.

Table V: Crosswalk Cost Estimates

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Price Range</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crosswalk</td>
<td>Ladder/continental design</td>
<td>$150 - $500</td>
<td>Each</td>
</tr>
<tr>
<td>Crosswalk</td>
<td>Brick paving/textured concrete</td>
<td>$7.25 - $15</td>
<td>Square foot</td>
</tr>
<tr>
<td>Crosswalk</td>
<td>Transverse design</td>
<td>$1.03 - $26</td>
<td>Linear foot</td>
</tr>
</tbody>
</table>

Figure 41: Crosswalk Types

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Pedestrians are sensitive to out-of-the-way travel, and reasonable accommodation should be made to make crossings both convenient and safe at locations with adequate visibility. At signalized intersections, this means that all four legs of the intersection should have crosswalks. Though midblock crossings are generally not preferred, if they are installed, Merced should make sure to accompany them with signs or markings to alert motorists of the upcoming crosswalk, because motorists generally do not expect midblock crossings. Many cities now use beacons such as the pedestrian hybrid beacon or the rectangular rapid flash beacon (RRFB) to alert motorists of pedestrians in the crosswalk. For more on these treatments, see Signal Enhancements and Beacons, Page 103.

Curb Extensions and Parking Restrictions

Wide roadways can create difficult crossing situations for pedestrians. Not only do pedestrians need more time to cross the roadway, but the roadway width encourages motorists to speed or take turns quickly. Curb extensions improve safety because they increase visibility, reduce speed of turning vehicles, encourage pedestrians to cross at designated locations, shorten the crossing distance, and prevent vehicles from parking at corners. Curb extensions, also known as bulb-outs or neckdowns, extend the sidewalk or curb line out into the parking lane, which reduces the effective street width.

If curb extensions are too expensive or if more space is not needed for sidewalk furniture, removing parking on the approach of an intersection may help pedestrians to safely cross the street by providing them with a clearer view of oncoming vehicles. Generally vehicles should not be parked within at least 20 feet of an intersection and parking restrictions should consider adequate sightlines for motorists and pedestrians to be able to see and react to each other. This treatment is sometimes called “daylighting” an intersection. Daylighting clears away obstructions and improves safety, especially for children who have difficulty seeing and being seen at intersections.

Costs can be minimal if all that is needed is to remove the striping of a parking space and/or adding paint. If curb extensions are added, the cost can increase substantially, generally from $2,000 to $20,000. Delineators cost approximately $50 to $100, and parking restriction signs cost approximately $200. Maintenance costs for curb extension repair can vary depending on the extent of the damage, but should not be needed more than once every 10-15 years. Paint and delineator repair or replacement may be needed every 3-5 years. Signs should not be needed to be replaced or repaired more than once every 10 years.
Signal Enhancements and Beacons

The Rectangular Rapid Flashing Beacon (RRFB) is a device using LED flashing beacons in combination with pedestrian warning signs, to provide a high-visibility strobe-like warning to drivers when pedestrians use a crosswalk. This device is currently not included in the MUTCD, but design, placement, and operation of RRFBs should be in accordance with FHWA’s Interim Approval for Optional Use of Rectangular Rapid Flashing Beacons issued July 16, 2008. Advance yield lines or stop lines should be included in the installation of an RRFB. Advance stop lines and yield markings improve the visibility of pedestrians to motorists and prevent multiple-threat crashes. Figure 43 and 44 show the details of an RRFB already in place in Merced along G Street.

A pedestrian hybrid beacon is a special type of beacon used to warn and control traffic at an unsignalized location to assist pedestrians in crossing a street or highway at a marked crosswalk. The MUTCD provides guidance on the pedestrian volume warrants, design features, and restrictions associated with the pedestrian hybrid beacon. The pedestrian volume thresholds required by the MUTCD for a pedestrian hybrid beacon are significantly lower than for a traffic signal, and this treatment may be installed at locations where traffic signals are not otherwise warranted. This can potentially allow Merced to address neighborhood concerns about such issues as driver speeds and pedestrian safety while still meeting California standards. Advance stop lines or advance yield lines should be included in the installation of a pedestrian hybrid beacon. For more on advance stop lines, see “Examples of Bicycle Facilities from Other Communities” on page 29.

Figure 43: RRFB Button

Figure 44: RRFB Context

Figure 45: Pedestrian Hybrid Beacon
Leading pedestrian intervals (LPIs) can be programmed into traffic signals to minimize conflicts between pedestrians crossing a roadway and left or right turning vehicles. LPIs give the pedestrian the WALK signal 3-7 seconds before the motorists are allowed to proceed through the intersection. By giving pedestrians a head start, it is less likely that there will be conflict between pedestrians and turning vehicles. LPIs increase the percentage of motorists who yield the right of way to pedestrians because pedestrians are in the crosswalk by the time the traffic signal turns green for parallel vehicle movements.

Prohibiting right turns on red lights is a simple, low-cost measure. A permissible right turn on red was introduced in the 1970s as a fuel-saving measure and has sometimes had detrimental effects on pedestrians. While the law requires motorists to come to a full stop and yield to cross-street traffic and pedestrians prior to turning right on red, many motorists do not fully comply with the regulations, especially at intersections with wide turning radii. Motorists may be so focused on looking for traffic approaching on their left that they may not be alert to pedestrians approaching on their right. In addition, motorists may pull up into the crosswalk to wait for a gap in traffic, blocking pedestrian crossing movements.

In some instances, motorists simply do not come to a full stop. One concern that comes up when right turns on red are prohibited is that it may lead to higher right-turn-on-green conflicts when there are concurrent signals. Using right turn prohibitions on red lights in conjunction with use of the LPI can often best address this issue. Where appropriate, right turn on red restrictions can be put into place only during certain times of day when pedestrian traffic is at its peak. Where pedestrian volumes are very high, exclusive pedestrian signals or “pedestrian scrambles” should be considered. Table W shows signal enhancement and beacon cost estimates.

Table W: Signal Enhancement and Beacon Costs

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Price Range</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beacon</td>
<td>Pedestrian hybrid beacon</td>
<td>$21,440 - $128,660</td>
<td>Each</td>
</tr>
<tr>
<td>Beacon</td>
<td>Rectangular Rapid Flashing Beacon (RRFB)</td>
<td>$4,520 - $52,310</td>
<td>Each</td>
</tr>
<tr>
<td>Signal enhancement</td>
<td>Leading pedestrian interval</td>
<td>$0 - $3,500</td>
<td>Each</td>
</tr>
<tr>
<td>Right turn on red restrictions</td>
<td>Standard signs or electronic signs</td>
<td>$200 - $3,500</td>
<td>Each</td>
</tr>
</tbody>
</table>

Maintenance costs for RRFBs depend on the manufacturer, but are typically less than $5,000 every three to five years. The City may be able to work with the manufacturer to ensure a warranty is in place that would cover the cost of maintenance. Maintenance costs for pedestrian hybrid beacons are similar to those of a traffic signal, but do not require a signal technician to program, configure, and maintain.

25 http://southernltg.com/
Bicyclist Safety Countermeasures

Bicycle Lanes

Bicycle lanes indicate a preferential or exclusive space for bicycle travel along a street. It is recommended that bicycle lanes be six feet wide and designated by striping and symbols placed within the lane. Older bicycle lanes are often narrower than the current recommended width, measuring four or five feet wide. Signage may also be used along bicycle lanes to provide additional visual indication. Colored pavement or a contrasting paving material has also been used in certain situations to distinguish bicycle lanes from the travel lanes. Use of green colored bike lanes has interim approval from the Federal Highway Administration (FHWA) and when paired with green signage it can improve the visibility profile of bicycle lanes. Bicycle lanes have been found to provide more consistent separation between bicyclists and passing motorists than shared travel lanes. The presence of the bicycle lane stripe has also been shown to result in fewer erratic motor vehicle driver maneuvers, more predictable bicyclist riding behavior, and enhanced comfort levels for both motorists and bicyclists. Reallocating existing street space by narrowing other travel lanes, removing travel lanes, and/or reconfiguring parking lanes is a way to create space for bicycle lanes on an existing roadway.

Wider bicycle lanes of six to seven feet and/or buffers provide additional operating space and lateral separation from moving and parked vehicles, thus increasing bicyclists’ sense of comfort and perceived safety and reducing the risk of dooring from parked vehicles. Using buffers between the bike and motor vehicle lanes can also be used to visually narrow a wide street and create a more attractive and comfortable bicycling environment.

Where space allows, vertical separation can be added within the buffer zone with flexible delineators/bollards, planter boxes, and other treatments. This treatment is called a separated bikeway, Class IV protected bikeway, or cycle track. Costs for separated bikeways depend on the design and treatments used.

Table X: Bicycle Lane Costs

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Price Range</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bikeway</td>
<td>Bicycle lane (two sides of road)</td>
<td>$1,000 - $90,000</td>
<td>Mile</td>
</tr>
<tr>
<td>Bikeway</td>
<td>Buffered bicycle lane (two sides of road)</td>
<td>$45,000 - $180,000</td>
<td>Mile</td>
</tr>
<tr>
<td>Bikeway</td>
<td>Signed bike route</td>
<td>$15,000 - $50,000</td>
<td>Mile</td>
</tr>
<tr>
<td>Bikeway</td>
<td>Separated bikeway</td>
<td>$500,000 - $1,000,000</td>
<td>Mile</td>
</tr>
</tbody>
</table>

Bike lanes can be maintained using normal street sweeping. Repainting bike lanes can cost between $1,000 and $100,000 per mile depending on the design and paint material used. Separated bikeways may require a separate, smaller street sweeping machine that would fit into the smaller bikeway. If neighboring cities install separated bikeways, Merced could jointly purchase a smaller street sweeper and share the costs.
**Roadway Reconfiguration/Road Diet**

Roadway reconfigurations, also called road diets, can be implemented relatively inexpensively as part of a repaving project. The most common road diet configuration involves converting a four-lane road to three lanes, with one travel lane in each direction and a center two-way left-turn lane (TWLTL), as well as a bicycle lane on each side of the roadway. Left-turning drivers can exit the traffic stream and wait in the TWLTL, while through traffic can maintain a fairly constant speed. Four-to-three-lane conversions should be considered for roadways with documented safety concerns, moderate volumes (up to 25,000 Average Daily Trips), and along priority bicycle and walking routes. Most agencies choose to allocate the remaining space to bicycle lanes, but reconfiguring on-street parking, widening sidewalks, or adding parklets are also common.

The cost for restriping a mile of four-lane roadway to one lane in each direction plus a TWLTL and bike lanes is about $5,000 to $20,000 per mile, depending on the amount of lane lines that need to be repainted. If a reconfiguration is done after repaving or with an overlay, and curbs do not need to be changed, there is little or no cost for space reallocations accomplished through new striping.

**Paved Shoulders**

Utilizing paved shoulder space on the roadway is another way to create dedicated space for bicyclists. If sufficient right-of-way is not available, narrowing vehicle lanes and therefore widening available paved shoulder space on the roadway is an inexpensive way to create space for bicyclists. This is especially effective on rural roads. Narrowing vehicle lanes has also been shown to reduce vehicle speeds. If the shoulder is wide enough, installing rumble strips on or next to the edge line may increase perceived safety for bicyclists.\(^{26}\) This should be done in areas free of noise issues or free of bicycle safety concerns. If rumble strips are not warranted, Merced can narrow vehicle lanes through raised pavement markers.

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Price Range</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lane narrowing</td>
<td>Through pavement markings and rumble strips</td>
<td>$20,000 - $40,000</td>
<td>Mile</td>
</tr>
<tr>
<td>Lane narrowing</td>
<td>Through pavement marking and raised pavement markers</td>
<td>$5,000 - $10,000</td>
<td>Mile</td>
</tr>
</tbody>
</table>

Though implementation costs for raised pavement markings is less than rumble strips, maintenance costs may be higher.

\(^{26}\) FHWA-HEP-17-024, Small Town and Rural Multimodal Networks, December 2016.
Traffic Safety Countermeasures

The countermeasures in this section are low-cost and intended to increase safety for all roadway users.

Stop Sign Enhancements

Reflective stripes on sign posts can be used on stop signs with low visibility due to sign clutter or competing background features to increase attention to the sign. LED stop signs, particularly helpful at night, can be installed at locations where visibility is low or vehicles running the stop sign is a problem. Typically these treatments are solar powered. Merced can decide to purchase several and rotate them around the city as needed.

Table Z: Stop Sign Enhancement Costs

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Price Range</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sign enhancement</td>
<td>Reflective strips</td>
<td>Less than $1,000</td>
<td>Each</td>
</tr>
<tr>
<td>Sign enhancement</td>
<td>LED stop sign</td>
<td>$5,000 - $15,000</td>
<td>Each</td>
</tr>
</tbody>
</table>

Maintenance costs for reflective strips are minimal. LED stop signs may cost more to maintain depending on the manufacturer and design of the sign.

Roundabouts and Traffic Circles

Roundabouts are circular intersections designed to eliminate left turns by requiring traffic to exit to the right of the circle. Roundabouts are installed to reduce vehicular speeds, improve safety at intersections through eliminating angle collisions, help traffic flow more efficiently, reduce operational costs when converting from signalized intersections, and help create gateway treatments to signify the entrance of a special district or area. They often work best where the traffic flows are balanced on all approaches. Landscaped traffic circles can help with storm water runoff and neighborhood beautification.

For neighborhood intersections a traffic circle can be installed for approximately $25,000 to $100,000, with landscaped roundabouts raising the cost to $45,000 to $150,000. For arterial streets, the cost is approximately $250,000, but can increase to more than $500,000 depending on the size, site conditions, and whether right-of-way acquisitions are needed. Roundabouts usually have lower ongoing maintenance costs than traffic signals, depending on whether the roundabout is landscaped. Maintenance costs for roundabouts and traffic circles vary depending on the size, materials, and landscaping. Long-term maintenance for a roundabout is usually less than a traffic signal.
Applications of Low-Cost Countermeasures in Merced

Table AA shows the recommended low-cost countermeasures for Merced. This was developed through input from the Technical Advisory Committee and Community Focus Group members.

Table AA: Recommended Low-Cost Countermeasures in Merced

<table>
<thead>
<tr>
<th>Project ID</th>
<th>Location</th>
<th>Challenge Observed</th>
<th>Recommended Low-Cost Countermeasure</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1</td>
<td>11th Street</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B2</td>
<td>11th Street</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B7</td>
<td>13th Street</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B8</td>
<td>14th Street</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B14</td>
<td>Bancroft Drive</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B15</td>
<td>Barclay Way</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B17</td>
<td>Bellevue Road</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B18</td>
<td>Bellevue Road</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B25</td>
<td>Childs Avenue</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B26</td>
<td>Childs Avenue</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B29</td>
<td>Coffee Street</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B30</td>
<td>Cooper Avenue</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B33</td>
<td>E Childs Avenue</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B35</td>
<td>East side of G Street</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B36</td>
<td>East side of McKee Road</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B40</td>
<td>G Street</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B41</td>
<td>G Street</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B43</td>
<td>G Street (east side)</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B44</td>
<td>Gardner Avenue</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B45</td>
<td>Gardner Avenue</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B46</td>
<td>Gardner Avenue</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B47</td>
<td>Gerard Avenue</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B48</td>
<td>Gerard Avenue</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B49</td>
<td>Gerard Avenue</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B50</td>
<td>Gerard Avenue</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B51</td>
<td>Gerard Avenue</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B52</td>
<td>Golf Road</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B53</td>
<td>Grogan Avenue</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B54</td>
<td>Henry Street</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B55</td>
<td>Highway 59</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B57</td>
<td>M Street</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B59</td>
<td>M Street</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B60</td>
<td>M Street</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B62</td>
<td>McKee Road</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>Project ID</td>
<td>Location</td>
<td>Challenge Observed</td>
<td>Recommended Low-Cost Countermeasure</td>
</tr>
<tr>
<td>------------</td>
<td>-----------------------</td>
<td>-------------------------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td>B63</td>
<td>McKee Road</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B67</td>
<td>Mission Avenue</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B68</td>
<td>Mission Avenue</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B69</td>
<td>Mission Avenue</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B70</td>
<td>Mission Avenue</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B73</td>
<td>Olive Avenue</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B76</td>
<td>Olive Avenue</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B80</td>
<td>Parsons Avenue</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B81</td>
<td>Parsons Avenue</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B82</td>
<td>Parsons Avenue</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B83</td>
<td>Parsons Avenue</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B84</td>
<td>Parsons Avenue</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B85</td>
<td>Parsons Avenue</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B91</td>
<td>R Street</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B92</td>
<td>R Street</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B93</td>
<td>Santa Fe Drive</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B97</td>
<td>SR-59</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B98</td>
<td>Thornton Road</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B99</td>
<td>Tyler Road</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B101</td>
<td>Wardrobe Avenue</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B102</td>
<td>West Avenue</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B103</td>
<td>West Avenue</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B106</td>
<td>Yosemite Parkway</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B13</td>
<td>Ashby Road</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B58</td>
<td>M Street</td>
<td>No bicycle facilities</td>
<td>Class II Bike Lane</td>
</tr>
<tr>
<td>B78</td>
<td>Parsons Avenue</td>
<td>No bicycle facilities</td>
<td>Class II Buffered Bike Lane</td>
</tr>
<tr>
<td>B105</td>
<td>Yosemite Avenue</td>
<td>No bicycle facilities</td>
<td>Class II Buffered Bike Lane</td>
</tr>
<tr>
<td>B3</td>
<td>11th Street</td>
<td>No bicycle facilities</td>
<td>Class III Bike Route</td>
</tr>
<tr>
<td>B4</td>
<td>11th Street</td>
<td>No bicycle facilities</td>
<td>Class III Bike Route</td>
</tr>
<tr>
<td>B5</td>
<td>11th Street</td>
<td>No bicycle facilities</td>
<td>Class III Bike Route</td>
</tr>
<tr>
<td>B11</td>
<td>8th Street</td>
<td>No bicycle facilities</td>
<td>Class III Bike Route</td>
</tr>
<tr>
<td>B27</td>
<td>Childs Avenue</td>
<td>No bicycle facilities</td>
<td>Class III Bike Route</td>
</tr>
<tr>
<td>B28</td>
<td>Childs Avenue</td>
<td>No bicycle facilities</td>
<td>Class III Bike Route</td>
</tr>
<tr>
<td>B42</td>
<td>G Street</td>
<td>No bicycle facilities</td>
<td>Class III Bike Route</td>
</tr>
<tr>
<td>B61</td>
<td>M Street</td>
<td>No bicycle facilities</td>
<td>Class III Bike Route</td>
</tr>
<tr>
<td>B104</td>
<td>West Avenue</td>
<td>No bicycle facilities</td>
<td>Class III Bike Route</td>
</tr>
<tr>
<td>B12</td>
<td>Ahwahnee Court - Joerg Avenue</td>
<td>No bicycle facilities</td>
<td>Class III Bike Route</td>
</tr>
<tr>
<td>BS4</td>
<td>Rascal Bike Path</td>
<td>Obscured visibility</td>
<td>Bicycle Spot Improvement</td>
</tr>
<tr>
<td>BS6</td>
<td>W 16th Street/SR-59</td>
<td>Intersection design</td>
<td>Bicycle Spot Improvement</td>
</tr>
<tr>
<td>Project ID</td>
<td>Location</td>
<td>Challenge Observed</td>
<td>Recommended Low-Cost Countermeasure</td>
</tr>
<tr>
<td>------------</td>
<td>----------</td>
<td>--------------------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td>P2</td>
<td>Main Street</td>
<td>Unmarked crossing</td>
<td>Pedestrian Crossing Enhancements</td>
</tr>
<tr>
<td>P6</td>
<td>Olive Avenue</td>
<td>Minimal crossing facilities</td>
<td>Pedestrian Crossing Enhancements</td>
</tr>
<tr>
<td>PS1 (partial)</td>
<td>16th Street/R Street</td>
<td>Minimal crossing facilities</td>
<td>Pedestrian Crossing Enhancements</td>
</tr>
<tr>
<td>PS8</td>
<td>Downtown Area</td>
<td>Minimal crossing facilities</td>
<td>Pedestrian Crossing Enhancements</td>
</tr>
<tr>
<td>PS11 (partial)</td>
<td>G Street/Alexander Avenue</td>
<td>Minimal crossing facilities</td>
<td>Pedestrian Crossing Enhancements</td>
</tr>
<tr>
<td>PS19</td>
<td>Parsons Avenue/Merced Avenue</td>
<td>Minimal crossing facilities</td>
<td>Pedestrian Crossing Enhancements</td>
</tr>
<tr>
<td>PS20</td>
<td>Parsons Avenue/SR-140</td>
<td>Minimal crossing facilities</td>
<td>Pedestrian Crossing Enhancements</td>
</tr>
<tr>
<td>PS21</td>
<td>Olive Avenue/M Street</td>
<td>Minimal crossing facilities</td>
<td>Pedestrian Crossing Enhancements</td>
</tr>
<tr>
<td>PS23</td>
<td>R Street/Yosemite Avenue</td>
<td>Minimal crossing facilities</td>
<td>Pedestrian Crossing Enhancements</td>
</tr>
<tr>
<td>PS24</td>
<td>R Street/Childs Avenue</td>
<td>Crossing beacon change</td>
<td>Crossing Beacon Enhancement</td>
</tr>
<tr>
<td>PS25</td>
<td>Fairfield Street/M Street</td>
<td>Minimal crossing facilities</td>
<td>Pedestrian Crossing Enhancements</td>
</tr>
</tbody>
</table>
Infrastructure Projects

Total of Recommended Projects
Combined, all recommended pedestrian and bicycle projects are estimated to have a construction cost of $25.8 million dollars. That cost excludes the costs of the infrastructure that would be recommended from the pedestrian studies.

Prioritization Methodology
This section presents a methodology for evaluating individual infrastructure projects based on their effectiveness at meeting this Plan’s vision and goals, as well as their anticipated competitiveness in grant funding programs. The evaluation criteria are described on the following page. Included in the description is information on how each of the criteria are measured, where the data or information comes from, and how each of the criteria will be scored.

The intent of evaluating projects is to create a prioritized list of projects for implementation. As projects are implemented, lower ranked projects move up the list. However, projects may not necessarily advance in the order presented on the prioritized list. External factors such as changes to grant program criteria, availability of other external funding, and related development projects may advance some projects from further down the list sooner. While this methodology makes every attempt to include relevant funding criteria, it cannot guarantee that projects highest up on the priority list will be most competitive in any particular grant cycle.

The project list and individual projects to be included in the Merced Active Transportation and Safe-Routes-to-School Plan are flexible concepts that serve as a guideline. The high-priority project list, and perhaps the overall project list, may change over time as a result of changing walking and bicycling patterns, land use patterns, implementation constraints and opportunities, and the development of other transportation improvements.

Development Process
These criteria and the weighting of scores are based on community feedback, as well as common criteria in grant funding sources. This will help ensure that high-scoring projects are those that both align with community priorities and are likely to be competitive for future funding.

Draft evaluation criteria were developed based on early project work including existing conditions analyses and public input. These draft criteria were circulated to the public for feedback at two workshops in November 2017, where participants were invited to vote for the criteria they felt should be the highest priority. Based on this feedback, the project team revised the evaluation criteria and possible scores.
**Evaluation Criteria**

Each proposed infrastructure project was evaluated against the criteria described in Table AB for a maximum of 100 points.

### Table AB: Evaluation Criteria

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Data Source</th>
<th>Description</th>
<th>Max Pts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety</td>
<td>SWITRS</td>
<td>The project addresses a bicycle or pedestrian related collision within 100 feet of project. Projects will be scored on a scaled ranking from 0 to 20 with location(s) with the most collisions receiving the maximum score.</td>
<td>20</td>
</tr>
<tr>
<td>Community Support Outreach Efforts</td>
<td>outreach efforts</td>
<td>The project is at a location identified as a challenge through public engagement activities, or the project was proposed by a member of the Technical Advisory Committee or community. Projects that fall into these areas receive 10 points. Projects that do not will receive 0 points.</td>
<td>15</td>
</tr>
<tr>
<td>Activity Generator Connection GIS</td>
<td>GIS</td>
<td>The project provides or improves a connection to a destination (schools, transit stops, community buildings, commercial areas, parks, and more), including bicycle parking projects. Projects that directly connect to an activity generator receive 15 points. Projects that provide indirect connections receive 10 points. Projects that do not connect to an activity generator receive 0 points.</td>
<td>15</td>
</tr>
<tr>
<td>SRTS GIS</td>
<td>GIS</td>
<td>The project is located within ½ mile of a school. Projects located within ¼ mile of a school receive 30 points. Projects located within ½ mile of a school receive 15 points. Projects not located within ½ mile of a school receive 0 points.</td>
<td>30</td>
</tr>
<tr>
<td>Disadvantaged Community Connection</td>
<td>CalEnviroScreen and GIS</td>
<td>The project falls within or provides a connection to South Merced or another disadvantaged community as defined by CalEnviroScreen. Projects within a disadvantaged community receive 15 points. Projects that provide a direct connection to a disadvantage community receive 10 points. Projects that do not connect to a disadvantaged community receive 0 points.</td>
<td>20</td>
</tr>
</tbody>
</table>

**Total Points Possible** 100
By scoring projects based on the Prioritization Methodology, the City developed a prioritized list of projects for implementation. The overall project list may change over time as a result of changing walking and bicycling patterns, land use patterns, implementation constraints and opportunities, and the development of other transportation improvements. As projects are implemented, lower ranked projects move up the list.

The criteria used in this prioritization and the weighting of scores are based on community feedback as well as common criteria in grant funding sources. This will help ensure that high-scoring projects are those that both align with community priorities and are likely to be competitive for future funding. The set of criteria was developed by researching industry best practices, incorporating grant funding criteria, and through consultation with the Merced community.

While the prioritization methodology was based on the importance of each project in isolation, the City of Merced has also developed a Feasibility Assessment Tool to help with implementation and funding decisions where limited resources cause need for additional scrutiny beyond what was considered in the prioritization analysis. See Page 88 for more details on the Feasibility Assessment Tool.

**Data Sources**

In order to score projects, data from various sources were compiled into GIS maps and analyzed. Programs, discussed on Page 203, received a qualitative evaluation regarding how well they meet this Plan’s vision and goals.

These datasets include:

- Statewide Integrated Traffic Records System (SWITRS) – a database that collects data gathered from collisions throughout the state
- CalEnviroScreen – a data source that uses environmental, health, and socioeconomic information to identify communities most affected by or vulnerable to the effects of pollution
- Existing bicycle, pedestrian, and transit network facilities
- Existing zoning – to identify commercial and retail activity generating areas
- Activity generating destinations: parks, schools, community buildings and more

Through compiling all this data, the City scored all recommended projects based on the evaluation criteria and developed a prioritization list.
**Bicycle Prioritized Projects**

This Plan is recommending over 90 miles of bikeways across six different bikeway classifications. The total estimated cost of implementing those improvements, based on planning-level estimates for construction only, is about $14.1 million dollars. When broken down into the off-street network (Class I recommendations) and on-street network (Classes II, III, and IV), about two thirds of the total cost is associated with building the off-street network: $9.4 million dollars is recommended for 16 miles of Class I paths. The remaining 74 miles of bikeway recommendations have a total estimated cost of $4.7 million dollars.

Map XVI on the next page shows the bicycle project recommendations. For the full list, see “Appendix C: Bicycle Prioritized Projects Table” on page 160.

**Pedestrian Prioritized Projects**

Through input from the Technical Advisory Committee, Citizen Focus Group, and other public engagement activities, fifty (50) locations were identified where pedestrian improvements should be implemented or studied for further reconfiguration or design. Of these identified locations, 26 of them were listed as needing further study. Studies were selected for some of these locations either because they are for corridors or areas, rather than one specific location, and for others because of the complexity of the situation, such as a railroad crossing or limited available space. Studies are recommended in these locations as they do not lend themselves to a specific recommendation in a citywide master plan. The studies encompass accessibility needs, corridor-wide needs, intersections, and crossings for highways and railroads. The projected cost of the studies, not including any infrastructure that the resulting recommendations might later propose, is $2.3 million.

The remaining 26 locations had specific countermeasures identified that work towards solving reported issues and concerns. In total, the estimated costs of improving these 26 locations would cost about $9.4 million. Excluding the two projects that include pedestrian-scale lighting, the total cost of these pedestrian improvements drops to $2.9 million dollars. Excluding sidewalk construction further decreases the total estimated costs $1.6 million dollars.

Map XVII on Page 117 shows pedestrian gaps and project recommendations. For the full list, see “Appendix D: Pedestrian Prioritized Projects Table” on page 167.
Section 9:
Programs
Program Recommendations

Potential Programs

This section presents recommended bicycle-related and pedestrian-related programs that the City of Merced could implement to improve active transportation. Programs are a vital part of a strong walking and bicycling community, fostering an educated and engaged public, supporting safety by enforcing good behavior, and providing ongoing guidance by evaluating the walking and bicycling environment regularly. For more about programs that already are occurring in Merced, see “Existing Programs” on page 175.

Programs are generally categorized into: education, encouragement, enforcement, and evaluation.

- Education programs improve safety and awareness. They may be delivered in schools as pedestrian and bicycle knowledge and skills programs, or provided through media campaigns and partnerships with nonprofit organizations.

- Encouragement programs such as walking/bicycling maps and special events reward current pedestrians and bicyclists and motivate more people to try active transportation.

- Enforcement programs that reinforce legal and respectful driving, bicycling, and walking behaviors can make active transportation feel more secure.

- Evaluation programs provide a method for monitoring implementation of recommendations in this plan and measuring effectiveness of improvements and programs to inform future investments.

Recommended Education Programs

Education programs are important tools for teaching traffic safety rules and laws as well as increasing awareness of walking and bicycling opportunities and existing facilities. Education programs should be designed to reach diverse groups at varying levels of knowledge and skill, as there may be many different audiences: pre-school age children, elementary school students, teens and college students, workers and commuters, families, retirees, the elderly, new immigrants, and non-English speakers. When feasible, education programs should be provided in an online format, supplemental to in-person outreach designed to address individual needs.
**Adult Bicycling Skills Classes**

Most people do not receive any formal training on safe bicycling practices, the rules of the road, and bicycle handling skills. Bicycling skills classes can address this education gap, and should also include information about basic bicycle mechanics and repairs. The League of American Bicyclists offers classes taught by certified instructors. Information can be found at: [http://www.bikeleague.org/](http://www.bikeleague.org/). This Plan recommends the City coordinate with the Merced Bicycle Coalition to support and publicize adult bicyclist skills classes. Large employers may consider offering classes for employees.

**Bicycle Related Ticket Diversion Class**

Diversion classes are classes offered to bicyclist offenders of certain traffic violations, such as running a stoplight. California Assembly Bill 209, signed by Governor Brown in September 2015, allows for such programs for violations not committed by a driver of a motor vehicle. This program is a good way to educate bicyclists about rights and responsibilities.

These classes may also be open to non-offenders should they not fill up. Classes can help offenders, as well as adults who are interested in starting to bicycle, an opportunity to learn the proper and lawful way to bicycle on public roads. This Plan recommends that these classes be implemented in the City of Merced. Similar programs exist throughout California. More information can be found at:

- [cityoflivermore.net/citygov/police/traffic/bikesafety/diversion.htm](http://cityoflivermore.net/citygov/police/traffic/bikesafety/diversion.htm)
- [bikeeastbay.org/biketrafficschool](http://bikeeastbay.org/biketrafficschool)

**City Website**

Providing information about events, projects, and resources related to walking and bicycling can empower residents to choose active transportation for their daily needs. The City currently has a Bicycle Improvements and Projects page on their website with this information that this Plan recommends the City continue to regularly update and increase the scope of to include all active transportation news and events.

**Motorist Education Program**

When new bicycle or pedestrian facilities are introduced to the community, motorists should be educated on how the new facility works. Education should include how bicyclists or pedestrians are intended to navigate the area, how motorists should behave, and key conflicts to be aware of. Education could be offered through voluntary classes, a ticket diversion program, or through signs and media outreach. This Plan recommends the City offer motorist education as new bicycle and pedestrian facilities are implemented or before large events such as Bike to Work and School Day or Back to School week. Educational campaigns could utilize sponsored social media posts, as well as City website posting and other media.
Share-the-Road Campaign

On a citywide scale, the City could start a share-the-road or “StreetSmarts” media campaign, similar to those in San Jose, Davis, and other California cities. Developed by the City of San Jose, StreetSmarts uses print media, radio, and television to educate people about safe driving, bicycling, skateboarding, and walking behavior. Local resources for conducting a campaign can be maximized by assembling local experts, law enforcement officers, business owners, civic leaders, and community volunteers. These allies could assist with a successful safety campaign goals based on the local concerns and issues. It may be necessary to develop creative strategies to achieve campaign goals. Community Media Access Collaborative (CMAC), the local cable access public, education and government channels, may be a resource for distributing information through commercials or public service announcements.

Supported by a City grant, a Bicycle Advisory Commission subcommittee created and arranged for a public service announcement to be aired on local radio that included safety education information for bicyclists and motorists. The announcement began airing in May and ran through August to coincide with the beginning of the new school year.

This Plan recommends the City coordinate with partners to implement a traffic safety program such as StreetSmarts. It also recommends working with local media partners to advertise the campaign. More information can be found at getstreetsmarts.org.

Student Bicycle and Pedestrian Traffic Safety Education

Student education programs are an essential component of bicycle and pedestrian education. Students are taught traffic safety skills that help them understand basic traffic laws and safety rules.

Bicycle and Pedestrian Assemblies

Schools should continue and expand in-school assemblies for Kindergarten through high school students addressing important bicycle and pedestrian safety skills. Each assembly is tailored to a particular age group and the program has been annually implemented at every Merced public school.

Bicycle Rodeos

Bicycle rodeos are offered every three years at the middle school level and hosted by League Cycling Instructors. They provide on-bicycle safety and handling skills training, with opportunities to practice on a series of short courses. In Merced, these can be coupled with basic bicycle maintenance information as well as safety assemblies. Student bicycle and pedestrian traffic safety education can benefit the Merced community in a number of ways, listed on the following page.
Bicycle Rodeo Benefits:

- Improving safety by teaching children lifelong safety skills
- Creating awareness with students and parents
- Encouraging families to consider walking or bicycling to school on a more frequent basis

This Plan recommends the City encourage the efforts of Merced County Department of Public Health, Merced City School District, and Merced Union High School District to continue the current programs and expand student bicycling and walking education to Merced County Office of Education schools as well as private or charter schools.

**Recommended Encouragement Programs**

Everyone from young children to elderly residents can be encouraged to increase their rates of walking and bicycling or to try active transportation instead of driving for short trips. Some encouragement also occurs at the civic level by providing opportunities to participate in the decision-making process alongside the City itself.

**Bicycle and Pedestrian Advisory Commission**

The City currently has a Bicycle Advisory Commission, an advisory body to the City Council on matters related to improving conditions for bicyclists, promoting bicycling as a means of transportation with the associated benefits of improved air quality, and improving safety conditions for bicyclists. This Plan recommends that the City consider evolving the Bicycle Advisory Commission into a Bicycle and Pedestrian Advisory Commission, shifting the focus to cover all active transportation-related matters.

Because of the Bicycle Advisory Commission’s commitment to the Complete Streets philosophy, this is a natural progression for the Commission to advise the City Council on a broader, more holistic, and more inclusive set of topics. The updated Commission would best serve Merced by encouraging its membership to have a mixture of interest and expertise on the needs of cyclists, pedestrians, schools, and persons with disabilities. Having members with these diverse backgrounds and interests would also align with the State of California’s requirements for funding opportunities.

The Bicycle Advisory Commission’s scope needs to broaden to continue to have the level of meaningful impact on the City of Merced that it has since its inception. The culture of the State of California has evolved in such a way that pedestrian and bicycle projects and programs are viewed through the lens of active transportation as a whole rather than separately, which is particularly relevant for the funding of active transportation infrastructure. This Plan does not recommend the creation of a separate Pedestrian Advisory Commission; active transportation as a whole should be considered concurrently and comprehensively.
**Safe-Routes-to-School Program**

Helping children walk and bicycle to school is good for children’s health and can reduce congestion, traffic dangers, and air pollution caused by parents driving children to school. Safe-Routes-to-School programs use a “6 Es” approach using Engineering, Education, Enforcement, Encouragement, Equity, and Evaluation strategies to improve safety and encourage children walking and bicycling to school. The programs are usually run by a coalition of city government, school and school district officials, and teachers, parents, students, and neighbors.

A Safe-Routes-to-School program could incorporate many existing programs in Merced that are currently being operated by various agencies and organizations. Pedestrian and bicycle assemblies, walking school buses, bicycle rodeos, and other school encouragement programs can be offered at more schools while adding or expanding additional activities. A program could also include bicycle giveaways for students.

This Plan recommends the City coordinate with local partners to pursue grant funding to develop and implement a cohesive Safe-Routes-to-School program in partnership with Merced County Department of Public Health, Merced City School District, and Merced Union High School District.

**Bicycle Helmet Giveaways**

The California Office of Traffic Safety (OTS) grant program can fund bicycle helmets for giveaways to children at schools or children observed bicycling without wearing helmets. Typically this type of program is a partnership with the Police Department. This Plan recommends the City coordinate with local partners to seek an OTS grant and conduct helmet giveaways for children.

**Bike Light Giveaways**

Local bicycle coalitions can raise funds to purchase inexpensive bike lights. They can set up a station a popular bike route and hand out lights to passing bicyclists who need them. This can be especially effective in early fall, around Daylight Savings Time. This Plan recommends the Merced Bicycle Coalition develop a plan to give away bike lights on an annual basis. The City could support grant application development, such as by providing a letter of support.

**Employer-Based Encouragement Programs**

Though the City cannot host employer-based bicycle and pedestrian encouragement programs, it can work with or provide information to employers about commuting on foot and by bicycle. Popular employer-based encouragement programs include hosting a bicycle user group to share information about how to bicycle to work and to connect experienced bicyclists with novice bicyclists.
Employers can host bicycle classes and participate in Bike to Work and School Day, or offer credits or health incentives for commuters who bike or walk to work. This Plan recommends the City encourage employers to implement bicycle and pedestrian programs.

**Launch Party for New Bikeways**

When a new bikeway is built, some residents will become aware of it and use it, while others may not realize that they have improved bikeway options available. A launch party and campaign is a good way to inform residents about a new bikeway. It can also be an opportunity to share other bicycling materials such as maps and brochures, and answer resident questions about bicycling. These events are well-suited to media coverage, with elected official appearances, ribbon cuttings, and a press release that includes information about the new facility, other existing and future facilities, and any timely information about bicycling.

This Plan recommends the City coordinate with the Merced Bicycle Coalition to host a launch party for all high-priority projects recommended in this Plan as well inform the public of all new bikeways through its bicycling website.

**Open Street Events**

Open Streets are periodic street closures that create a temporary park that is open to the public for walking, bicycling, dancing, hula hooping, roller-skating, and so on. They promote health by creating a safe and attractive space for physical activity and social contact, and are cost-effective compared to the cost of building new parks for the same purpose. Events can be weekly, annually, or one-time occasions. This Plan recommends the City establish an Open Streets program.

**Bicycle Friendly Community**

The League of American Bicyclists (LAB) recognizes communities that improve bicycling conditions through education, encouragement, enforcement, and evaluation programs. Communities can achieve platinum, gold, silver, or bronze status or an honorary mention. Bicycle friendliness can indicate that a community is healthy and vibrant. Like good schools and attractive downtowns, bicycle friendliness can increase property values, spur business growth, and increase tourism.

Merced applied for Bicycle Friendly Community status in the past, and received feedback from LAB on steps to take to achieve bronze status. This Plan recommends the City pursue Bicycle Friendly Community status again in the future, after progress has been made towards implementing projects, policies, and programs in this Plan. Many aspects of the Plan are being developed with an eye to improving bicycle-friendliness along the lines of the suggestions provided by LAB to achieve bronze status after the most recent application.

More information and application steps can be found at: http://www.bikeleague.org/community.
**Safe Routes to Transit Program**

Similar to a Safe-Routes-to-School program, a Safe Routes to Transit program includes infrastructure improvements and program efforts focused around transit stops and stations. Many of the recommendations in this Plan can be folded into a Safe Routes to Transit program by developing targeted efforts around transit, such as educational media posted at transit stops or stations, targeted enforcement at locations near transit, or incentive programs for transit users who walk or bicycle to transit.

**Recommended Enforcement Programs**

Enforcement programs enforce legal and respectful use of the transportation network. The bicycle and pedestrian safety analysis and community identified needs indicate enforcement programs will help educate motorists, bicyclists, and pedestrians about the rules and responsibilities of the road.

**Speed Feedback Signs**

Higher-speed traffic discourages walking and bicycling and can make pedestrians and bicyclists uncomfortable. At higher speeds, motorists are less likely to see and react to a bicyclist or pedestrian and are not always able to actually stop in time to avoid a crash. Higher-speed crashes are also much more lethal to pedestrians and bicyclists. Speed feedback signs display the speed of passing motor vehicles, with the intent that motorists will slow down if they are made aware of their speed. This Plan recommends the Police Department and Public Works operate mobile speed feedback signs.

**Targeted Police Enforcement**

Targeted enforcement consists of focused efforts of police officers to enforce traffic laws in specific locations with a history of traffic violations or collisions. Partnering with the Police Department on targeting drivers that fail to yield to pedestrians or bicyclists appropriately can help to raise awareness of the law, and these campaigns can produce sustained improvements in driver behavior. It can also improve bicyclist and pedestrian compliance with applicable laws by enforcing appropriate behavior.

Targeted enforcement programs can also help raise awareness and increase compliance with new laws, such as California’s three-foot passing distance established by SB 1371. Efforts should emphasize reducing behaviors that create the greatest risk or potential conflict, and care should be taken that programs do not unfairly target specific demographics or modes of transportation. Targeted enforcement should begin with education and positive reinforcement before punitive actions. This could include education-enforcement, where officers stop individuals and discuss how to correct the unsafe behavior they observed without issuing citations. Many communities have used similar programs to distribute bike lights to cyclists riding without them at night.

This Plan recommends that the Police Department conduct targeted enforcement at locations known for noncompliance with traffic laws and at high conflict or high crash areas.
Recommended Evaluation Programs

Evaluation programs help the City measure how well it is meeting the goals of this Plan and the General Plan, and evaluation is a key component of any engineering or programmatic investment. It is also a useful way to communicate success with elected officials, as well as local residents.

Annual Crash Data Review

Reviewing bicycle-related and pedestrian-related crashes and near-misses on an annual basis can help the City identify challenging intersections or corridors. This Plan recommends the City and Police Department review of bicycle and pedestrian related crash data on an annual basis to identify needed improvements.

Annual Report Card

Many communities prepare annual report cards to update elected officials and members of the public on progress being made to improve walking and bicycling, and towards implementation of an adopted plan. This report card could be a simple report outlining the projects and programs advanced over the previous year, and sharing any available statistics about safety improvements or increased active transportation trips. This Plan recommends the City prepare and distribute an annual report card documenting progress towards implementation of this Plan.

Bicycle and Pedestrian Community Survey

Survey evaluation programs measure and evaluate the impact of projects, policies, and programs through questionnaire survey forms. Typical evaluation programs range from a simple year over year comparison of US Census Journey to Work data to bicycle and pedestrian counts and community surveys. Bicycle and pedestrian community surveys act as methods to evaluate not only the impacts of specific improvement projects but can also function as way to measure progress towards City goals, such as increased bicycle and pedestrian travel for trips one mile or less. This Plan recommends a bicycle and pedestrian related community survey regarding the walking and bicycling environment in Merced be conducted in conjunction with updates of this Plan, roughly every five years.
Program Prioritization

Methodology

As detailed above, an important part of the *Active Transportation and Safe-Routes-to-School Plan* is the development and implementation of education, encouragement, enforcement, and evaluation programs to accompany the engineering and infrastructure complements represented in the project list. This section details implementation recommendations for a number of such programs which would benefit the City of Merced in its efforts to increase safe active transportation.

Short-term program recommendations should be implemented during year one of Plan adoption. Medium-Term program recommendations should be implemented in two to four years of Plan adoption. Long-Term programs should be implemented in five or more years after Plan adoption.

Table AC identifies the partner that is most likely to have the ability to organize and implement each program as the “Lead Organization” and other entities that may be able or necessary to provide assistance with those programs as “Partner Organizations”.
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<thead>
<tr>
<th>Type</th>
<th>Program</th>
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<td><strong>Evaluation</strong></td>
<td>Bicycle and Pedestrian Community Survey</td>
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Policies

Policy Recommendations

In addition to infrastructure and other physical changes that can be undertaken, there are also policy and guidance changes that can be made to improve the designs of future developments and street changes to better integrate pedestrian and bicycle infrastructure into these designs and developments. Suggested policy changes are listed below by policy area.

Municipal Code

To support increased walking and bicycling in the city, the following revisions to the municipal code are recommended.

Bicycle Registration

In response to the suggestion from the Bicycle Advisory Commission and backed by the research performed for this ATP, the City has recently eliminated its mandatory bicycle licensing requirement and instead encourages registration to a national database. This Plan recommends that Merced initiate media and awareness campaigns in conjunction with the Merced Bicycle Coalition to encourage and educate cyclists about existing national registration websites. While the City has not officially endorsed any one registry, Bike Index (bikeindex.org) and the National Bike Registry (nationalbikeregistry.com) are among the most widely used and accessible options.

Bicycle Parking

Recommended Bicycle Racks

No bicycle network is complete without secure places to park bicycles near desired destinations in visible, well-situated locations. Bicycle racks for short-term parking are relatively inexpensive and can be installed in unused space along building frontages, in furniture zones on sidewalks, or in underutilized parking spaces (often called a bike corral, see “Additional Types of Bicycle Parking” on Page 131 for more). The rack types illustrated in Figure 46 are consistent with those recommended in the Association of Pedestrian and Bicycle Professionals’ Essentials of Bike Parking. Figures 47 and 48 on the next page show local examples of these recommended styles of bicycle parking.

Figure 46: Recommended Bicycle Parking Facilities
Additional Types of Bicycle Parking

An additional type of bicycle parking that is gaining popularity among municipalities is the bike corral. Typically placed in the street, replacing an automobile parking spot, corrals can accommodate a number of bikes dependent on design, size, and configuration and can be stylized to fit a number of aesthetics. Bike corrals are useful parking devices as not only do they accommodate a relatively large number of bikes, but they also can be especially useful in areas with narrower sidewalks; placing bike parking in the street keeps all available sidewalk width for pedestrians or other uses.

Merced’s bike parking guidelines should also incorporate policies that are inclusive of “non-standard” bikes. These types of bikes include cargo bikes, useful for transporting both cargo and children, and bikes that are specially designed for those with certain physical impairments. Due to their unique design, these bikes may not easily be locked to a typical U-rack. While the volume of these bikes is likely relatively small, there may be a need to install parking devices that can accommodate them in popular downtown, transit, or shopping areas. Alternatively, the City could also set up a request program, where residents who have these bikes can suggest where these devices should be installed; this ensures that the racks serve those who need them.

Bicycle Racks to Avoid

Conversely, there are a number of bicycle racks in use which can cause damage to bicycles of certain sizes and types. Often called ‘wheel bender’ racks, these racks provide space and support for only one wheel, often only usable by the front wheel. Other racks which are not recommended provide support only at one point on the bicycle, or limit the type of bicycle which can be stored. The rack types illustrated below are consistent with those noted as Racks to Avoid by the Association of Pedestrian and Bicycle Professionals’ Essentials of Bike Parking.
Currently Exempt Land Uses

The existing municipal code language requires all future multi-family and nonresidential land uses provide some level of both short-term and long-term bicycle parking. There are eight uses that are exempt from providing bicycle parking. While these are generally auto-oriented and freight-oriented uses such as gas stations, auto repair shops, and warehouses, the transportation needs of the facilities’ employees should also be considered. These employees may choose to bike to and from these locations; this should be both encouraged and the sites should be prepared to properly handle these transportation choices. There may be little to no short-term parking demand for these uses, but the employees may generate long-term parking needs.

For more industrial or auto-focused land uses, it may be beneficial to calculate the number of required bicycle parking spaces based on the number of employees as opposed to the square footage of the facility. A sample Bicycle Parking Ordinance from Change Lab Solutions recommends at least two short-term parking spaces and one long-term parking space per 20 employees for industrial uses.

Calculating the Number of Required Short-Term and Long-Term Spaces

Currently, bicycle parking requirements are tied to the amount of required motor vehicle parking; it may be beneficial to make the bicycle requirements independent of the automobile requirements. There is an important distinction to make between these groups’ needs as bicyclists and automobile users interact with the surrounding environment very differently. As bicyclists are typically going slower and can more easily stop than automobile traffic, they have more opportunities to examine and interact with their surroundings. Similar to pedestrians, bicyclists are more likely to stop and explore something that catches their attention than automobile drivers. By providing sufficient bicycle parking that serves commercial and civic uses, this opens up additional possibilities for these road users to stop, explore, eat, shop, and spend money at local businesses.

The full list of bicycle parking requirements from the Change Lab Solutions sample ordinance can be found in Table AD. All of the parking requirements in this list are based on building uses/characteristics and not a percentage of an automobile requirement.

Reporting Damaged Parking Facilities

Bike racks and other facilities are designed and intended to last for an extended period of time with little maintenance. Over time, wear and tear and vandalism may still require that a parking device be replaced or adjusted. The Merced Department of Public Works should set up a system where residents and visitors can report damaged facilities, triggering the City to inspect the facilities in question and perform any necessary maintenance. The Merced Connect application could make this a very easy and efficient reporting system. The system should be noted on the Public Works website and could be posted on the parking facilities with an informational sticker.

27 http://www.changelabsolutions.org/publications/CA-bike-parking
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<td>(a) without private garage or equivalent separate storage space for each unit</td>
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<td>(b) with private garage or equivalent separate storage space for each unit</td>
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<tr>
<td>Civic</td>
<td>Non-assembly cultural (e.g., library, government buildings)</td>
<td>[.5] per each [8,000 -10,000] sq. ft. of floor area</td>
<td>[1 -1.5] per each [10-20] employees</td>
</tr>
<tr>
<td></td>
<td>Assembly (e.g., church, theater, stadiums, parks)</td>
<td>Spaces for [2-5] per cent of maximum expected daily attendance</td>
<td>[1- 1.5] per each [20] employees</td>
</tr>
<tr>
<td>Industrial</td>
<td>Manufacturing and Production, Agriculture (Can be increased at discretion of Planning/Zoning Administrator)</td>
<td>[2] spaces</td>
<td>[1] per 20 employees</td>
</tr>
</tbody>
</table>

Table AD: Sample Bicycle Parking Requirements
Additional End of Trip Facilities

To further encourage bicycling as a practical commute option, additional destination amenities such as showers, lockers, and changing rooms can be provided. These amenities are valuable resources for cyclists, as they allow for riders to wash up after a ride or at least change clothes, reducing barriers, both physical and perceived, to cycling as a viable commute option.

These amenities can be amended into the zoning code for future nonresidential developments above a minimum size based on square footage, number of employees, or other measurements. Additionally, municipalities and bicycle groups can partner with other local agencies and facilities such as bike shops, gyms, and others that may already have existing end of trip facilities to further empower bicycle commuters and expand access to them.

Bicycle Parking at Special Events

At festivals, open streets events, and other gatherings, valet bicycle parking can be established to provide a monitored temporary bicycle parking area to encourage users to travel to the event by bicycle. The following is sample language from Change Lab Solutions that could be used to create such a policy:

**PURPOSE:** The purpose of this policy is to provide sufficient safe and convenient bicycle parking at special events involving street closures to encourage bicycling as a form of transportation, which in turn reduces traffic congestion, air pollution, wear and tear on roads, and use of fossil fuels, while fostering healthy physical activity.

**CONDITIONS ON STREET CLOSURE PERMITS:** As a condition of a permit for the closure of a street for a special event in which the daily number of participants is projected to be [1,000] or more, monitored bicycle parking shall be provided by the event sponsor (or a designee) for at least [1] % of expected daily participants beginning [½ hour] before and ending [½ hour] after the time of the event each day of the event.

**REQUIREMENTS FOR MONITORED PARKING:** Monitored bicycle parking shall include the presence, at all times, of one attendant, or more as needed, to receive bicycles, dispense claim checks, return bicycles, and provide security for all bicycles.

**LOCATION:** All monitored bicycle parking shall be located within [500] feet of at least one regular entrance or access point to the event.

**PUBLICITY AND SIGNAGE:** All publicity, including signs, for the event shall state the availability of monitored bicycle parking, its location, and cost, if any. All event maps shall include the location of monitored bicycle parking. If monitored bicycle parking is not within eyeshot of each entrance, signs shall be provided to ensure easy way finding.

**INSURANCE COVERAGE AND FEES:** The event sponsor or designee must provide insurance coverage for the monitored bicycle parking in case of damaged or stolen bicycles, and may charge users a fee to cover the cost of providing the monitored parking.

One method that could be used to ensure compliance of such a policy is to have special event bicycle parking be one of the items necessary for the issuance of the event’s permit.
Bicycle Parking Considerations in Construction Areas

Construction is something every municipality must deal with. Dependent on the location and scale of the project, both road and sidewalk closures can occur to accommodate the work. When these closures happen, it is critical to minimize the impacts on both pedestrians and cyclists. Sidewalk infrastructure like bike racks may sometimes need to be removed. Using a policy, like the sample below, can minimize the impacts to these users as they are typically the ones most affected by sidewalk and road detours and closures. This sample language also comes from Change Lab Solutions.

The City of Merced should use the following or similar language to provide guidance for the accommodation of removed bicycle parking for construction purposes:

In the event that the City of Merced has authorized a permit holder to remove existing bicycle parking in the public right-of-way due to construction, the permit holder shall replace such bicycle parking no later than the date of completion of the construction. At least [7] days prior to removal of such bicycle parking, the permit holder shall post, in the immediate vicinity of the bicycle parking area, a weather-proof notice, with a minimum type size of [1] inch, specifying the date of removal. In the event that any bicycles remain parked on the date of the removal, such bicycles shall be stored for a reasonable period, not less than [45] days, and a conspicuous, weather-proof notice shall be placed as close as feasible to the site of the removed bicycle parking containing information as to how to retrieve a removed bicycle.

If bicycle parking is likely to be removed, pursuant to this section, for more than [120] days, it shall, to the extent possible, be temporarily re-sited, in coordination with the appropriate department, to a location as close to the original site as feasible, pending completion of the construction. If the temporary site is not clearly visible from the original site, the permit holder shall post a conspicuous, weather-proof notice in the immediate vicinity of the original site informing bicyclists of the location of the temporary site.

Bike Rack Request Program

Without detailed study and field research, it can be very hard to predict the demand for bicycle parking. In order to best serve residents and businesses, the City of Merced should set up a bicycle rack request program. This would be a program where residents and local businesses could request bike racks and corrals be installed in non-residential areas. These programs can be set up in a variety of ways, but the ultimate goal is to have the public help the City understand where the demand for bike parking is; this allows the City to install additional racks where there is a documented demand.

Bicycle Self-Repair Stations

Bicycle self-repair stations are a type of street furniture where users can lift their bikes onto a stand and perform minor repairs and adjustments. Each station comes with a small collection of attached tools, an air pump, and a built-in stand to hold bikes. These stations are usually located in popular areas such as parks, near transit stations, and other popular bicycle areas. For more about existing stations, see Page 41.
Removal of Abandoned Bicycles

The prompt removal of abandoned bicycles is critical as these bikes effectively eliminate bicycle parking spaces and can deter use of bicycle parking areas. They may also encourage theft of parts from parked bicycles. A policy should be established that formalizes the process for reporting, tagging the bike(s) in question, removal, and storage/disposal of the removed bike that is compliant with the California Civil Code.

Urban Form/Development

Multiple City of Merced documents state that new developments should follow a compact urban form, allowing public transit, walking, and bicycling to be encouraged. While encouraging transit, walking, and bicycling are great action items and should definitely be encouraged, it is critical to partner that encouragement with appropriate infrastructure. Building sidewalks, bikeways, paths, and improved crossings are very important to growing the active transportation network, improving safety, and enticing additional users. Policies should both encourage the desired behavior and solidify the link between policy goals and action items needed for implementation and results.

Some documents stressed the importance of ensuring that new developing areas should be designed as mixed-use, pedestrian-and transit-friendly neighborhoods or urban villages. These policies should also be inclusive of building connections to other neighboring communities; this may involve connections across major arterials or other common active transportation barriers. These new developments may have retail establishments, parks, schools, and other amenities/attractions that those in neighboring communities should be able to easily access and enjoy as well. These developments are designed to have destinations internally accessible by multiple modes, and the same should be said for access from neighboring areas.

Enticing More People to Use Active Transportation

Found in many policies, the City of Merced has a strong desire to encourage more people to use active transportation around the city. These policies are anchored around built environment conditions and infrastructure. While these items do play a role in increasing mode shift, the city should also do more to entice people to ride and walk. Municipalities around the state and the country have implemented various programs to attract new users such as folding or electric bike subsidy/discount programs, supplying free secure bicycle parking, offering business incentives to local employers, hosting open streets events, and others. One current policy that Merced can review to determine if it would entice more active transportation users downtown is its ban on skateboarding in the downtown area.
**Bicycle Infrastructure**

Existing policy and design documents should be updated to include “newer” types of infrastructure. New facility treatments and designs have been developed in recent years, and new treatments will likely continue to be developed and studied. Class IV separated bikeways, bike boxes/two-stage turn boxes, bicycle signals, and other traffic control devices should be included in all future relevant updates for these documents. For more on some of these tools, see “Examples of Bicycle Facilities from Other Communities” on page 29. Industry best practices should be referenced as well, and these can include sources like the National Association of City Transportation Officials, the American Association of State Highway and Transportation Officials, and the Federal Highway Administration. When performing roadway maintenance, updates, and reconfigurations, efforts should be made to redesign the striping of streets to better serve cyclists by adding bike boxes, bike lanes, sharrows, and other low-cost improvements. These amenities should also be considered when designing and implementing new facilities.

**Pedestrian Infrastructure**

The Merced Urban Design Guidelines describe the need to provide marked crossings in Core Commercial areas and at signalized intersections along and crossing arterial streets. Marking these crossings should be considered the minimal treatment. Arterials are typically multilane roadways that can take extended periods to cross, especially for seniors, children, or those with mobility impairments. In some cases, crossing these roadways can be made safer, easier, and more enticing by being enhanced. Items like curb extensions, high visibility crosswalks, advanced stop lines, median refuge islands removing slip lanes, and leading pedestrian intervals are some of the enhancements that can be applied to crossings, particularly when already performing roadway maintenance, updates, and reconfigurations or when implementing new facilities.

**Electric Scooters and Bike Rentals**

A growing trend in California has been the emergence of motorized scooters and bike rentals as a major means of transportation. While personally-owned motorized scooters are relatively easy to manage via existing infrastructure and policy, the advent of easy-to-rent electric scooters and bikes, whether pedal or electric, and the companies that manage them are a unique challenge for many cities. The ability for any person to download a free application for a mobile device and within minutes be able to unlock and use a motorized scooter or bicycle is a novel and exciting mobility option for many, particularly in communities with large numbers of visitors. Whether communities are host to tourists, guests of locals, prospective residents, prospective students, people on business, or others, the impact of these options has been undeniable in a brief period of time. In 2018 alone, 84 million trips were taken on shared bikes and scooters in the United States, more than twice as many as in 2017.
Merced has a reinvigorated hotel industry, proximity to Yosemite National Park, the presence of a UC campus, and a number of other factors that suggest both the permanent and temporary populations present in Merced will rise in the coming years. While these rental companies are not yet prominent in the community, this ATP recommends that the City of Merced pursue a study of how best to regulate, if at all, motorized scooters and bike rentals within its boundaries. A number of considerations should be taken into account in whatever form the study is conducted, including but not limited to:

- **Safety concerns**
  - Proliferation of infrequent and untrained riders
  - Minimum age of riders
  - Helmet requirements, realistic implementation strategies thereof
  - Limitation of top speed of electric scooters and bikes
  - Lawfulness of sidewalk use
  - Dangers to pedestrians from sidewalk-riding scooter and bicycle users, regardless of legality
  - Liability and maintenance issues

- **Education concerns**
  - Renters understanding their rights and responsibilities as a roadway user
  - Renters understanding Merced-specific regulations
  - Motorists understanding their rights and responsibilities when interacting with scooters and bicycles
  - Appropriate signage reinforcing correct and lawful scooter and bicycle use

- **Impacts on growth and development patterns, particularly in Downtown and near college campuses**

- **Benefits and hazards to charging and relocating scooters and electric bikes to independent contractors, largely local residents working in a gig economy**

- **Parked rental vehicles obstructing sidewalks and other paths of travel**

- **Theft and security concerns**

- **Economic impacts and opportunities**
Connecting Actions & Policies to Plan Recommendations

There are infrastructure and natural hazards in Merced that can act as obstacles and barriers that discourage walking and bicycling. Throughout the process of developing this *Active Transportation and Safe-Routes-to-School Plan*, existing conditions in Merced were reviewed and analyzed. Some of the recommendations that came from those analyses were:

♦ Improve design and development standards to create a built environment more conducive to walking and bicycling

♦ Make it easier and safer for children and families to walk to any destination, particularly schools

♦ Reduce collisions

“Reducing the Impact of Barriers” on page 77 discusses both physical and perceived barriers that can deter walking or biking in Merced. Physical barriers include creeks, railroad tracks, and highways. Mental or perceived barriers can include underpasses, poor lighting, and a disjointed bicycle network. This document references the recommended project list and emphasizes the importance of certain projects that would do the most to mitigate and minimize these barriers. Specific attention was given to recommendations that would:

♦ Reduce collisions

♦ Improve the size and connectivity of both the bicycle and pedestrian networks

♦ Create/improve connectivity over major physical barriers

♦ Improve conditions in downtown and near major transit areas

Both the recommendations here, and in other locations throughout the *Active Transportation and Safe-Routes-to-School Plan* were all made with the intentions mentioned above. While recommendations were made for all known and reported physical barriers, correcting the mental barriers can only in part be accomplished by improving physical infrastructure. Shifting city policies and standards will also be necessary to help break down these perceived barriers. These changes should be accompanied by education and trainings that can better acquaint the public with new facilities and policies; helping to change their perceptions about both specific spot problems and the overall Merced walking and bicycling environment.

Supporting Other Agencies

This plan encourages the City of Merced to actively support other agencies and entities in their efforts to improve active transportation, particularly ones that have a statewide reach. One example of such an improvement would be the addition of a component of the drivers’ license permitting process that incorporated motorists’ interactions with cyclists and pedestrians.
Section 11: Public Participation and Community Engagement
Public Participation and Community Engagement

Introduction

A key focus of the Active Transportation and Safe-Routes-to-School Plan (ATP) development was to engage in meaningful outreach to the public, and particularly to Merced’s disadvantaged communities, to ensure that their needs are reflected in the ATP. This section details the specific organizations, stakeholders, and interest groups that the Plan has and will continue to engage, and lays out the channels, strategies, and tools harnessed in this effort.

Project Background

A regional hub within California’s agricultural center, Merced is a diverse city rich with educational and economic opportunities, as well as cultural amenities. With the newest University of California campus opened in 2005, and the future development of a high-speed rail station, Merced is poised as a regional leader and has immense potential to enhance an already vibrant community with improved active transportation opportunities.

The City of Merced was successful in securing an award from Round II of the California Department of Transportation (Caltrans) Active Transportation Program. Combining this award with local funds and in-kind service, the City sought to develop an Active Transportation and Safe-Routes-to-School Plan that updates the 2013 Bicycle Transportation Plan and brings Merced in line with current Active Transportation Program project and program grant funding requirements, standards, and criteria.

The ATP is intended to result in increased active transportation throughout Merced, with particular emphasis on increasing these modes in disadvantaged communities, creating opportunities for active transportation to and from school (Safe-Routes-to-School projects and programs), and connectivity to the future high-speed rail station. The Plan seeks to address the many challenges, including Barriers to Active Transportation, Safety and Comfort, and Funding Availability.

Critical to the development of a meaningful plan was significant engagement with the members of the Merced community who currently use active modes of transportation. This important consultation allows the project team to better understand the nuanced challenges users face, and to collaboratively develop realistic and appropriate improvements.
Why Engagement?

Public outreach is a standard component of development of an Active Transportation and Safe-Routes-to-School Plan and other municipal planning documents. Many public outreach efforts follow a standardized process of notices and meetings, focused on providing relevant information to the public in an efficient manner. Unfortunately, outreach often includes static messages and one size fits all public workshops, and thus often fails to speak to the situation or needs of stakeholders.

By contrast, community engagement is a multi-faceted approach that seeks to uncover the concerns of various stakeholder groups and communities through a context and culturally-appropriate approach, which often involves iterative, targeted messages through channels specific to the community of focus. To put it simply, outreach can be a one-directional presentation, while engagement is a multi-directional conversation.

An engagement campaign informed through consultation with community leaders is more likely to be meaningful and reach the communities desired than one shaped by independent research of the project team. Accordingly, the ATP team has developed this Strategy through consultation with community leaders at a December 2016 project kick-off meeting, as well as feedback received from the Citizen Focus Group and Technical Advisory Committee formed by the City of Merced for this project.

Why Disadvantaged Communities?

Many of the people who rely most on active transportation in their daily lives such as students, low-income individuals, communities of color, and people with mobility impairments are often left out of public planning processes that shape the transportation networks they rely on. In developing the Active Transportation and Safe-Routes-to-School Plan, Merced seeks to understand and address the needs of residents of all Merced communities, especially those reliant on active modes of travel to access school, work, and daily needs.

The City identified several key stakeholder groups of particular importance for engagement during development of this plan. Based on proximity to identified barriers to active transport, need to access facilities in central Merced, and current travel patterns, these communities were the focus of the engagement efforts outlined in this plan.

Disadvantaged Communities

The City of Merced identified a set of stakeholder groups of importance to engage during development of this plan. Through consultation with community leaders at the Plan Kick-Off meeting, work with City staff, and feedback from Citizen Focus Group and Technical Advisory Committee, the following identification of focus areas was developed.
**Identification of Focus**

The identification of stakeholder groups for deep engagement begins with broad categories outlined by the City of Merced in the Plan Request for Proposals document:

- K-8 students
- High school and post-secondary students
- Hmong and Latino communities
- Low-income residents
- Individuals with mobility impairments

Through the initial meeting held as part of the Project Kick-Off, the above list was fleshed out to include specific organizations, establishments, and key contact people to ensure these communities are effectively engaged in the plan development process.

**Community Identification**

Disadvantaged communities in Merced are diverse, and concerns held by each are important to include in the framing of the AT/SRTS Plan. Table AE outlines the major disadvantaged communities identified through work with Merced community leaders, which were referenced during planning of engagement events and public workshops.

### Table AE: Community Identification

<table>
<thead>
<tr>
<th>Name</th>
<th>Character</th>
</tr>
</thead>
<tbody>
<tr>
<td>K-8 Students</td>
<td>Small stature; dependent on family members for transportation; still developing active transportation skills</td>
</tr>
<tr>
<td>High School and Post-Secondary Students</td>
<td>Often independent active transportation users; often rely on transit</td>
</tr>
<tr>
<td>Hmong Community</td>
<td>May reside in areas of Merced with disconnected active transportation infrastructure; language barrier to government; potential for mistrust of government</td>
</tr>
<tr>
<td>Latino Community</td>
<td>May reside in areas of Merced with disconnected active transportation infrastructure; language barrier to government; potential for mistrust of government</td>
</tr>
<tr>
<td>Low-Income Residents</td>
<td>May reside in areas of Merced with disconnected active transportation infrastructure; likely to depend on transit and active modes</td>
</tr>
<tr>
<td>Individuals with Mobility Impairments</td>
<td>Often depend on transit and active modes of transport; disproportionately impacted by disconnected active transportation networks</td>
</tr>
</tbody>
</table>
**Identifying Disadvantaged Communities**

In order to identify disadvantaged communities in Merced, The CalEnviroScreen 3.0 tool was used. CalEnviroScreen is a screening methodology that can be used to help identify California communities that are disproportionately burdened by multiple sources of pollution. It is used by the Active Transportation Program grant application to identify the populations that are more sensitive to pollution. In the grant application scoring, projects that are within higher levels of pollution vulnerability receive higher scores, increasing the likelihood of receiving funding. See “CalEnviroScreen” starting on Page 33 for more discussion and maps showing the CalEnviroScreen scores for Merced, along with the existing bikeway and pedestrian networks overlaid by the CalEnviroScreen scores. The communities with higher scores are the focus of the Merced AT/SRTS Plan engagement efforts.

**Engagement Channels and Strategies**

The City of Merced identified a set of stakeholder groups of importance to engage during development of this plan. Through consultation with community leaders at the Plan Kick-Off meeting, work with City staff, and feedback from Citizen Focus Group and Technical Advisory Committee, the following identification of focus areas was developed.

**Channel Identification**

The identification of engagement channels has been developed through multiple meetings with stakeholders. The emphasis in these exchanges was clear, the City needed to reach people where they already are. Channels identified include:

- Public school site meetings and events
- Outreach before and after the school day to reach parents
- Community events such as markets, festivals, and meetings
- Shopping centers frequented by communities of concern
- Transit hubs
- Community centers

Channels of engagement identified in early conversations include ideas of locations that concerned residents frequent on a daily or weekly basis, to allow the project team to reach these stakeholders without requesting attendance at a meeting. Further, these are places where stakeholders are more likely to feel safe and comfortable, as opposed to an unfamiliar setting like City Hall or the like where public meetings are often held.
Engagement Strategies

During the Kick-Off meeting in December 2016, community leaders were clear that traditional public outreach strategies would not be effective at garnering meaningful community participation from Merced’s diverse disadvantaged communities. Traditional workshops held in English with translation available, at City Hall or a similar government facility, were not deemed useful for the type of engagement this plan development process wishes to achieve.

The most promising strategies to engage members of Merced’s disadvantaged communities are ones that demonstrate the valuation of participants’ time, knowledge, and experience as residents and users of the transportation system. Formatting the engagement in culturally-appropriate ways, with tailored presentations and materials, is also critical. Several strategies to achieve these goals included:

♦ Make primary presentation in the language of participants, instead of in English. Provide translation to English for project staff. This shows respect to the community and communicates that the meeting is created with the participants in mind, rather than facilitating only the staff’s needs.

♦ Provide materials in an appropriate tone and reading level to reach lay people. The general recommendation is a sixth grade reading level; acronyms and technical terms should be avoided.

♦ When possible, use facilitators from trusted community organizations. Compensate the organizations for their participation.

♦ Bring meetings to the communities, instead of holding at a central government facility such as City Hall. This provides convenience to participants, as well as a comfortable, familiar setting.

♦ Hold pop-up engagement tables at existing community events as a way to reach large number of community members without asking busy people to take time out of their day to attend yet another meeting.

♦ Provide supportive services at the events to make participation easy: child care, appropriate refreshments for the time of day, transit passes for return travel if held outside the community.

In addition to general ideas for effectively engaging Merced’s diverse communities, specific facilitation strategies to be considered include:

♦ World Café Facilitation, providing a short introduction to topics of discussion and projects at a number of tables. Each table has a specific topic, and participants go to table they are interested in. Moving between tables is encouraged.

♦ Open Space Facilitation, arranging people into groups by primary languages, to talk at table with facilitators in their native language. Topics and themes are not preset at these tables, the discussion will be whatever attendees want to talk about. Each table’s facilitator acts as a guide to these conversations.
Promising Organizations and Venues

In discussions with community leaders, several community based organizations in Merced were identified as promising partners for assisting with participants recruiting and/or co-hosting of events:

♦ Healthy South Merced
♦ Environmental Literacy Group
♦ Healthy House
♦ Health Department
♦ Hmong Lao Family
♦ Building Healthy Communities
♦ Cultiva La Salud

In addition, several local venues which often host meetings for community based organizations were identified as possible locations to host events within the community:

♦ Assembly of God Church
♦ Golden Valley Health Center
♦ Boys & Girls Club
♦ Golden Valley High School
♦ Tenaya Middle School

Local events identified where the City could set up a table to spark casual conversations with stakeholders include the Certified Farmers Market and the Merced Art Hop.

ATP Engagement

Extensive engagement has been conducted as part of this Plan; this will continue as the Plan matures. In order to be have the most impact, outreach involved the City, consultant, the Technical Advisory Committee (TAC) and Citizen Focus Group (CFG) Members, as well as the general public. Involving local stakeholders and leaders is the most efficient way to gather meaningful participation. Table AF shows the outreach schedule throughout the process.

In order to achieve meaningful engagement for the City of Merced AT/SRTS Plan, the project team attempted to think outside of the traditional public outreach box. The stakeholders who use active transportation most, many rely upon it for daily life, are often not reached by traditional outreach processes. The City made a concerted effort to meet residents where they are as a focus of the strategy outlined in this document. Setting up tables and having casual conversations with stakeholders at existing events, such as events at schools, community festivals, or markets, are more likely to garner participation and solicit feedback from members of groups identified by the City of Merced as critical to the success of this Plan.
In addition to the formation of the TAC and CFG bodies, the City reached out to the public at events such as the July 27, 2017 Street Faire with a table, activities for children to encourage their involvement and allow parents to have the opportunity to engage with staff, and both map-based and text-based materials to allow feedback in whatever form participants preferred. Another successful instance of meeting the public in their community was the November 30, 2017 Workshop held at Tenaya Middle School in South Merced. This event was held primarily in Spanish, with English and Hmong interpretation available as well. More about this event can be found on Page 148. These events were some of the most beneficial instances of public outreach, and yielded valuable information and feedback on the creation of this ATP.

Table AF: Engagement Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Meeting</th>
<th>Attendees</th>
<th>Outcome/Anticipated Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>February 24, 2017</td>
<td>Citizens Focus Group (CFG) Meeting</td>
<td>CFG Members</td>
<td>Orientation to Plan process</td>
</tr>
<tr>
<td>April 18, 2017</td>
<td>Technical Advisory Committee (TAC) &amp; CFG Meeting</td>
<td>TAC &amp; CFG Members</td>
<td>Goal-Setting, High Priority Connections, Engagement Priorities</td>
</tr>
<tr>
<td>June 21, 2017</td>
<td>California Walks Community Pedestrian and Bicycle Safety Workshop</td>
<td>Students, Community Members, Agency staff</td>
<td>Orientation to walkability/bikability concerns, outreach tools, walk audit and recommendation development</td>
</tr>
<tr>
<td>July 27, 2017</td>
<td>TAC Meeting</td>
<td>TAC members</td>
<td>Collected input on revenue sources and uses, constraints and opportunities</td>
</tr>
<tr>
<td>July 27, 2017</td>
<td>Street Faire outreach</td>
<td>Public</td>
<td>Collected public input on needs</td>
</tr>
<tr>
<td>August 22, 2017</td>
<td>Bicycle Advisory Committee Meeting</td>
<td>Bicycle Advisory members</td>
<td>Orientation to Plan process, Collected input on user count locations</td>
</tr>
<tr>
<td>September 19, 2017</td>
<td>TAC &amp; CFG Meeting</td>
<td>TAC &amp; CFG members</td>
<td>Presented low-cost countermeasures, progress on Plan</td>
</tr>
<tr>
<td>November 29 &amp; 30, 2017</td>
<td>Public Workshops</td>
<td>Public</td>
<td>Reviewed and commented on project and program recommendations</td>
</tr>
<tr>
<td>January 23, 2018</td>
<td>TAC &amp; CFG Meeting</td>
<td>TAC &amp; CFG members</td>
<td>Reviewed and commented on project and program recommendations</td>
</tr>
<tr>
<td>May 29, 2018</td>
<td>TAC &amp; CFG Meeting</td>
<td>TAC &amp; CFG members</td>
<td>Reviewed and endorsed project and program prioritization</td>
</tr>
<tr>
<td>April 23, 2019</td>
<td>Bicycle Advisory Committee Meeting</td>
<td>Bicycle Advisory Committee Members</td>
<td>Review and endorse draft ATP/SRTS</td>
</tr>
<tr>
<td>May 22, 2019</td>
<td>TAC &amp; CFG Meeting</td>
<td>TAC &amp; CFG Members</td>
<td>Review and endorse draft ATP/SRTS</td>
</tr>
<tr>
<td>July 15, 2019</td>
<td>City Council Meeting</td>
<td>City Council Members, Public</td>
<td>Approve final ATP/SRTS</td>
</tr>
</tbody>
</table>
November Workshop Feedback

This section summarizes feedback received at November 2017 workshops held to gather community input on the draft recommendations and prioritization criteria for the Merced Active Transportation & Safe-Routes-to-School Plan. Two workshops were held on consecutive evenings to increase opportunities for community members to participate. The first workshop, held at the Merced Multi-Cultural Arts Center on November 29 from 6:30-8:30 p.m., was not attended by any residents. The reason for this is unclear, but as a result there is no documented feedback from this workshop.

The second workshop was held at Tenaya Middle School on November 30 from 6:30-8:30 p.m.; fourteen people attended. The workshop presentation and discussions were conducted in Spanish, with English and Hmong interpretation available. Several community groups in South Merced were contacted in advance of the workshop, specifically advertising that it would be held in Spanish to encourage participation by residents who may not have participated in a primarily English-language event.

Participants watched a brief presentation on the project background and types of improvements included in the draft recommendations, and were then invited to comment on the draft recommendation maps, vote on prioritization criteria, and ask questions of project staff. Feedback from these discussions is included below.

Recommendations Feedback

Comments received on the draft recommendations are included in Table MR00. Comments in the table have been translated from Spanish into English where applicable. Figures 50-58 include feedback on the bicycle and pedestrian maps that were used at this meeting to collect data.

Table AG: Feedback on Recommendations

<table>
<thead>
<tr>
<th>Context/Location</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>G St near Mercy Hospital</td>
<td>Bicycle Path crossing G Street at Mercy Hospital - the proposed Class I path would be a grade separated crossing connecting the bicycle path north of Merced College that terminates at G Street, with the bicycle path north of Merced Hospital that also terminates at G Street</td>
</tr>
<tr>
<td>Olive Ave &amp; Hwy 59</td>
<td>Bicycle Path extending over Olive Avenue along the Portland cement rail spur. The path would be a Class I path extending over Olive Avenue, eliminating the current safety challenges bicyclists face crossing at Olive and Hwy 59</td>
</tr>
<tr>
<td>University Dr</td>
<td>Traffic calming needed – speeding cars</td>
</tr>
<tr>
<td>W 16th St &amp; SR 59</td>
<td>Dangerous intersection. Stop sign needed.</td>
</tr>
<tr>
<td>R St near 21st St</td>
<td>Existing light for school zone flashes 24 hr/day, so most people ignore it. Consider changing to flash only during school hours.</td>
</tr>
<tr>
<td>Fairfield St &amp; M St (north of Olive Ave)</td>
<td>Safety concerns</td>
</tr>
<tr>
<td>Context/Location</td>
<td>Comment</td>
</tr>
<tr>
<td>------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Mimi Ln &amp; Childs Ave</td>
<td>Bus pullout. Make it safer for passengers to get on and off.</td>
</tr>
<tr>
<td>Railroad near Herbert Hoover Elementary</td>
<td>Students – unsafe behavior near RR tracks. Underpass (G Street) feels unsafe, so people don’t use it.</td>
</tr>
<tr>
<td>22nd St near G St</td>
<td>Needs lighting</td>
</tr>
<tr>
<td>Global</td>
<td>Lighting for shared use paths – need at night for safety</td>
</tr>
<tr>
<td>Childs Ave (full length)</td>
<td>Sidewalk, wider road/fix the infrastructure, add bike lanes. This truck route is a speeding concern for multiple schools.</td>
</tr>
<tr>
<td>Global</td>
<td>Stray dog problem</td>
</tr>
<tr>
<td>Global</td>
<td>Make bicycle lanes green so drivers see them</td>
</tr>
<tr>
<td>Global</td>
<td>Education needed for bicyclists and drivers</td>
</tr>
<tr>
<td>M St corridor and Childs Ave corridor</td>
<td>Both corridors need traffic calming – fast cars and trucks</td>
</tr>
<tr>
<td>Neighborhood south of Childs Ave near West Ave</td>
<td>Speeding concerns in neighborhood. Needs sidewalks, pedestrian scale lighting, and traffic calming.</td>
</tr>
<tr>
<td>M St &amp; Cartmell Dr</td>
<td>El Cap High School students are at the bus stop at 6:14 a.m. in the dark each morning. Lights would address safety concerns – both traffic and personal safety</td>
</tr>
<tr>
<td>M St &amp; Childs Ave</td>
<td>Crosswalks needed across M Street for children who walk to Alicia Reyes Elementary School, children who get the bus to El Cap HS, and pedestrians walking to GVHC and Tenaya Middle School</td>
</tr>
<tr>
<td>Childs Ave</td>
<td>We would like to see improvements to Childs Avenue since it’s a heavily traveled route by GVHS and Weaver Middle School students. It’s dark, and sidewalks/crosswalks are missing.</td>
</tr>
<tr>
<td>P St &amp; 8th St</td>
<td>Stop signs needed - students cross here</td>
</tr>
<tr>
<td>11th St &amp; V St</td>
<td>Consider traffic signal. Students cross here. Several collisions have occurred at this intersection – very important.</td>
</tr>
<tr>
<td>Hoover Middle School</td>
<td>Install stop signs near Hoover Middle School. Area is full of students and senior citizens.</td>
</tr>
<tr>
<td>9th St between V St and M St</td>
<td>Speeding issues – needs stop sign or traffic calming. This segment also needs street lighting – lots of kids use this route</td>
</tr>
<tr>
<td>N St from Cartmell Dr to Gerard Ave</td>
<td>Needs sidewalks.</td>
</tr>
<tr>
<td>Gerard Ave from N St to M St</td>
<td>Needs sidewalks and midblock crosswalk with RRFB to help students get to bus stop in front of Golden Valley High School</td>
</tr>
<tr>
<td>Gerard Ave &amp; M St</td>
<td>Needs crosswalk</td>
</tr>
<tr>
<td>Canal St from Alamar Apartments to Childs St</td>
<td>Needs sidewalks. Lots of kids walking to Alicia Reyes ES, Tenaya Middle School, and bus stop to travel to El Capitan HS, MUHSD, and Golden Valley Health Center. This segment also needs street lighting.</td>
</tr>
</tbody>
</table>
Figure 50: Feedback on Bicycle Map
Figure 52: Enhanced Item 1 from Pedestrian Feedback

1. No hay banquetas

2. Canal hasta

3. Childs

4. Depart.

5. mentos

6. Amapark

Los niños caminan para las esquinas

Alicia Reyes Elementary

Middle School

Tenaya y Parada

de Camion para

High School Captain

must do

Golden Valley Health Center y PUCES.
Figure 53: Enhanced Item 4 from Pedestrian Feedback

Figure 54: Enhanced Item 5 from Pedestrian Feedback

Figure 55: Enhanced Note from Pedestrian Feedback
Figure 56: Enhanced Item 6 from Pedestrian Feedback

Figure 57: Enhanced Item 7 from Pedestrian Feedback

Figure 58: Enhanced Item 8 from Pedestrian Feedback
**Prioritization Feedback**

Workshop participants were invited to provide input on the prioritization of projects by voting on the criteria they felt was most important. Workshop boards in Spanish and English described six criteria: safety, feasibility, community support, activity generator connection, Safe-Routes-to-School, and disadvantaged community connection. Each participant was given three dots with which to vote. Criteria and voting results are shown in Table AH and Figures 59 and 60.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Description</th>
<th>Votes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety</td>
<td>The project addresses a bicycle or pedestrian related collision within 100 feet of the project</td>
<td>2</td>
</tr>
</tbody>
</table>
| Bicycle Friendly Community      | The project addresses one or more priority action items identified by the LAB to achieve a bronze Bicycle Friendly Community Award:  
  ♦ Increase mileage of bikeways, especially on arterial streets  
  ♦ Increase bicycle parking at schools, transit stops, and other activity generators  
  ♦ Implement innovative bikeway designs: colored pavement markings, separated bikeways, or contra-flow bikeways | 3     |
| Community Support               | The project is at a location identified as a challenge through public engagement activities, or the project was proposed by a member of the TAC or community | 4     |
| Activity Generator Connection   | This project provides or improves a connection to a destination (schools, transit stops, community buildings, commercial areas, parks, and more), including bicycle parking projects | 3     |
| Safe-Routes-to-School           | The project is located within ½ mile of a school                            | 17    |
| Disadvantaged Community Connection | The project falls within or provides a direct connection to a community identified as being disproportionately burdened by pollution, adverse health impacts, and/or low socio-economic status | 8     |

Table AH: Prioritization Criteria Feedback
**Project Prioritization Criteria**

We are seeking your feedback to help prioritize our project recommendations. Which criteria are most important to you?

*Place up to 3 dots in the corresponding boxes.*

<table>
<thead>
<tr>
<th>Safety</th>
<th>Activity Generator Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>The project addresses a bicycle or pedestrian related collision within 100 feet of project</td>
<td>The project provides or improves a connection to a destination (schools, transit stops, community buildings, commercial areas, parks, and more), including bicycle parking projects</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Feasibility</th>
<th>Safe Routes to School</th>
</tr>
</thead>
</table>
| The project addresses one or more priority action items identified by the LAB to achieve bronze award:  
  • Increase mileage of bikeways, especially on arterial streets  
  • Increase bicycle parking at schools, transit stops, and other activity generators  
  • Implement innovative bikeway designs: colored pavement markings, separated bikeways, or contra-flow bikeways | The project is located within ½ mile of a school |

<table>
<thead>
<tr>
<th>Community Support</th>
<th>Disadvantaged Community Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>The project is at a location identified as a challenge through public engagement activities, or the project was proposed by a member of the TAC or community</td>
<td>The project falls within or provides a connection to a community identified as being disproportionately burdened by pollution, adverse health impacts, and/or low socio-economic status</td>
</tr>
</tbody>
</table>
Figure 60: Prioritization Criteria Feedback- Dots (Spanish)
The following tables provide raw count data for bicyclists and pedestrians, respectively. Data is provided for each 15-minute count interval, with the peak hour highlighted for clarity.

### Table 4-1: Bicyclist Count Data

<table>
<thead>
<tr>
<th>Time Interval</th>
<th>M St &amp; 11th St</th>
<th>G St &amp; Bear Creek</th>
<th>M St &amp; 18th St</th>
<th>R St &amp; Olive St</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Commuter</td>
<td>Recreation</td>
<td>Commuter</td>
<td>Recreation</td>
</tr>
<tr>
<td></td>
<td>Y (&lt;14)</td>
<td>YA (15-25)</td>
<td>Y (&lt;14)</td>
<td>YA (15-25)</td>
</tr>
<tr>
<td>0:00 - 0:15</td>
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<tr>
<td>Totals</td>
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</table>

### Appendix A: Bicyclist Count Data

<table>
<thead>
<tr>
<th>Time Interval</th>
<th>M St &amp; 11th St</th>
<th>G St &amp; Bear Creek</th>
<th>M St &amp; 18th St</th>
<th>R St &amp; Olive St</th>
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</thead>
<tbody>
<tr>
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<td>Commuter</td>
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<td>Commuter</td>
<td>Recreation</td>
</tr>
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<td>YA (15-25)</td>
<td>Y (&lt;14)</td>
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<td>Totals</td>
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</table>
### Appendix B: Pedestrian Count Data

<table>
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<tr>
<th>Time Period</th>
<th>Y (&lt;14)</th>
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<td><strong>Peak Hour Totals</strong></td>
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</table>

#### M St & 11th St

<table>
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<tr>
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<th>SS (&gt;50)</th>
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</tr>
<tr>
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</tr>
</tbody>
</table>

#### G St & 28th St/ Bear Creek

<table>
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<tr>
<th>Time Period</th>
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<th>YA (15-25)</th>
<th>M (25-50)</th>
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<tr>
<td>1:45 - 2:00</td>
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#### M St & 18th St

<table>
<thead>
<tr>
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<th>YA (15-25)</th>
<th>M (25-50)</th>
<th>SS (&gt;50)</th>
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<tr>
<td><strong>Subtotal</strong></td>
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<td><strong>8</strong></td>
<td><strong>14</strong></td>
<td><strong>10</strong></td>
<td><strong>46</strong></td>
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</tbody>
</table>

#### R St & Olive St

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Y (&lt;14)</th>
<th>YA (15-25)</th>
<th>M (25-50)</th>
<th>SS (&gt;50)</th>
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</tbody>
</table>

A sample of the count tally form used by observers is included on the following page.
## Appendix C: Bicycle Prioritized Projects Table

For more information about improvement types, see “Existing Facilities” on page 22. For details about the scoring criteria and prioritization methodology, see “Infrastructure Projects” on page 112.

<table>
<thead>
<tr>
<th>Project ID</th>
<th>Location/Street</th>
<th>Start</th>
<th>End</th>
<th>Bikeway Type</th>
<th>Spot Improvement Detail/Notes</th>
<th>Safety (20pts)</th>
<th>Community Support (15pts)</th>
<th>Activity Generator (15pts)</th>
<th>Safe-Routes-to-School (30pts)</th>
<th>Disadvantaged Community (20pts)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>B9</td>
<td>16th Street</td>
<td>G Street</td>
<td>V Street</td>
<td>Study</td>
<td>Study for Class II Buffer</td>
<td>20</td>
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### Appendix C: Bicycle Prioritized Projects Table

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## Appendix C: Bicycle Prioritized Projects Table

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<td>Class II</td>
<td>Caltrans jurisdiction; additional width needed for full Class II along only connection in area</td>
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<td>BS5</td>
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<td>Heitz Court</td>
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<td>Old Lake Road</td>
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## Appendix D: Pedestrian Prioritized Projects Table

For more information about improvement types, see “Existing Facilities” on page 22. For details about the scoring criteria and prioritization methodology, see “Infrastructure Projects” on page 112.

<table>
<thead>
<tr>
<th>Project ID</th>
<th>Location/Street</th>
<th>Start</th>
<th>End</th>
<th>Distance (mi)</th>
<th>Spot Improvement Detail/Notes</th>
<th>Safety (20pts)</th>
<th>Community Support (15pts)</th>
<th>Activity Generator Connection (15pts)</th>
<th>Safe-Routes-to-School (30pts)</th>
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<tbody>
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<td>P16</td>
<td>M Street Corridor in Downtown</td>
<td>16th Street</td>
<td>24th Street</td>
<td>0.75</td>
<td>Traffic Calming and crossing enhancements curb extensions, leading pedestrian interval, high visibility crosswalks, etc.</td>
<td>20</td>
<td>15</td>
<td>15</td>
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<td>P4</td>
<td>G Street Corridor in Downtown</td>
<td>SR-140</td>
<td>24th Street</td>
<td>0.8</td>
<td>Install crossing enhancements such as curb extensions, leading pedestrian interval, high visibility crosswalks</td>
<td>20</td>
<td>10</td>
<td>15</td>
<td>30</td>
<td>20</td>
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<tr>
<td>P2</td>
<td>Main Street</td>
<td>G Street</td>
<td>V Street</td>
<td>1.37</td>
<td>Stripe currently unmarked crossings and study key locations for enhanced crossings</td>
<td>15</td>
<td>15</td>
<td>15</td>
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<td>20</td>
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<td>Parsons Avenue</td>
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<td>Multi Use Path</td>
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<td>15</td>
<td>15</td>
<td>30</td>
<td>15</td>
<td>90</td>
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<td>PS30</td>
<td>22nd Street/G Street</td>
<td>22nd Street</td>
<td>G Street</td>
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<td>Provide pedestrian scale lighting to improve ped. visibility and safety</td>
<td>5</td>
<td>15</td>
<td>15</td>
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<td>85</td>
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<tr>
<td>P8</td>
<td>Childs Avenue</td>
<td>MLK Jr. Parkway</td>
<td>De Long Street</td>
<td>Close sidewalk gaps and improve lighting</td>
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<td>15</td>
<td>10</td>
<td>30</td>
<td>20</td>
<td>85</td>
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<td>MLK Jr. Parkway</td>
<td>De Long Street</td>
<td>Study Traffic Calming Measures</td>
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<td>30</td>
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<tr>
<td>P3</td>
<td>MLK Jr. Way</td>
<td>SR-99/ SR140</td>
<td>Childs Avenue</td>
<td>Install crossing enhancements: curb extensions, LPI, high visibility crosswalks, etc.</td>
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<td>15</td>
<td>15</td>
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<td>P15</td>
<td>Canal Street</td>
<td>Cartmell Drive</td>
<td>Childs Avenue</td>
<td>Install sidewalks on east side of street where missing. Install lighting.</td>
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<td>15</td>
<td>15</td>
<td>15</td>
<td>20</td>
<td>75</td>
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<td>E Santa Fe Ave</td>
<td>Midge Avenue</td>
<td>Green</td>
<td>0.9</td>
<td>Install Sidewalks</td>
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<td>15</td>
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<td>PS29</td>
<td>G Street Railroad Tracks underpass</td>
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<td>Improve lighting under the overpass to improve perception of safety</td>
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<td>15</td>
<td>20</td>
<td>75</td>
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<td>Start</td>
<td>End</td>
<td>Distance (mi)</td>
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<td>M Street/ Main Street</td>
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<td>High visibility crosswalks and leading pedestrian interval</td>
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<td>Loughborough Drive</td>
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<td>26th Street</td>
<td>Glen Avenue</td>
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<td>Study potential traffic calming measures on 26th Street including marked high visibility crossings, and curb extensions.</td>
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<td>High visibility crosswalks (including across Childs), RRFB (across Childs), curb extensions.</td>
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<td>Improve lighting with railroad undercrossing to improve perception of safety</td>
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<td>Cartmell Drive</td>
<td>Gerard Avenue</td>
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<td>Install sidewalks to fill gaps</td>
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<tr>
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<td>Safety (20pts)</td>
<td>Community Support (15pts)</td>
<td>Activity Generator Connection (15pts)</td>
<td>Safe-Routes-to-School (30pts)</td>
<td>Disadvantaged Community (20pts)</td>
<td>Total</td>
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</tr>
<tr>
<td>P12</td>
<td>9th Street</td>
<td>V Street</td>
<td>M Street</td>
<td></td>
<td>Study potential traffic calming measures including high visibility crosswalks, and curb extensions. Improve lighting throughout this corridor.</td>
<td>2</td>
<td>15</td>
<td>10</td>
<td>15</td>
<td>20</td>
<td>62</td>
</tr>
<tr>
<td>PS33</td>
<td>11th Street/V Street</td>
<td></td>
<td></td>
<td></td>
<td>Conduct stop sign and signal warrant study. Install high visibility crosswalks at all approaches.</td>
<td>2</td>
<td>10</td>
<td>10</td>
<td>15</td>
<td>20</td>
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</tr>
<tr>
<td>PS1</td>
<td>16th Street/R Street</td>
<td></td>
<td></td>
<td></td>
<td>Stripe high visibility crosswalks and install curb extensions</td>
<td>15</td>
<td>5</td>
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<td>0</td>
<td>20</td>
<td>55</td>
</tr>
<tr>
<td>PS26</td>
<td>Fairfield Street/M Street</td>
<td></td>
<td></td>
<td></td>
<td>Upgrade to high visibility crosswalks and curb extensions on west approach</td>
<td>15</td>
<td>10</td>
<td>15</td>
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<td>0</td>
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<tr>
<td>P7</td>
<td>G Street</td>
<td>Bear Creek Trail</td>
<td>Olive Avenue</td>
<td>0.6</td>
<td>Crossing improvements such as removing slip lane at Bear Creek Drive, installing high visibility crosswalks, leading pedestrian interval, curb extensions where necessary</td>
<td>10</td>
<td>10</td>
<td>15</td>
<td>15</td>
<td>10</td>
<td>55</td>
</tr>
<tr>
<td>PS11</td>
<td>G Street/Alexander Avenue</td>
<td></td>
<td></td>
<td></td>
<td>Stripe high visibility crosswalks and install curb extensions</td>
<td>5</td>
<td>5</td>
<td>15</td>
<td>30</td>
<td>0</td>
<td>55</td>
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<tr>
<td>PS28</td>
<td>Railroad tracks near Hoover Middle School</td>
<td></td>
<td></td>
<td></td>
<td>Study installing fencing or other safety enhancements to keep students away from tracks. Pair with student educational programming.</td>
<td>2</td>
<td>5</td>
<td>15</td>
<td>30</td>
<td>0</td>
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<tr>
<td>PS34</td>
<td>Santa Fe Avenue/6th Avenue</td>
<td></td>
<td></td>
<td></td>
<td>Study redesign of Santa Fe Ave/6th Avenue Intersection</td>
<td>2</td>
<td>5</td>
<td>15</td>
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<tr>
<td>PS32</td>
<td>P Street/8th Street</td>
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<td>Conduct stop sign warrant study and install high visibility crosswalks at all approaches</td>
<td>5</td>
<td>10</td>
<td>0</td>
<td>15</td>
<td>20</td>
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</tr>
<tr>
<td>Project ID</td>
<td>Location/Street</td>
<td>Start</td>
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<td>Distance (mi)</td>
<td>Spot Improvement Detail/Notes</td>
<td>Safety (20pts)</td>
<td>Community Support (15pts)</td>
<td>Activity Generator Connection (15pts)</td>
<td>Safe-Routes-to-School (30pts)</td>
<td>Disadvantaged Community (20pts)</td>
<td>Total</td>
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<tr>
<td>PS35</td>
<td>Parsons Avenue, north of Childs Avenue</td>
<td></td>
<td></td>
<td></td>
<td>Install mid-block crossing with RRFB and curb extensions to improve access to/from bus stops</td>
<td>2</td>
<td>15</td>
<td>15</td>
<td>15</td>
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<tr>
<td>PS3</td>
<td>Bellevue Road/Lake Road</td>
<td></td>
<td></td>
<td></td>
<td>Improve safety of crossing</td>
<td>0</td>
<td>5</td>
<td>10</td>
<td>30</td>
<td>0</td>
<td>45</td>
</tr>
<tr>
<td>PS5</td>
<td>Childs Ave/Carol Ave/SR-99</td>
<td></td>
<td></td>
<td></td>
<td>Partner with Caltrans to install/improve pedestrian access to and mobility to and through the overcrossing</td>
<td>5</td>
<td>5</td>
<td>10</td>
<td>15</td>
<td>10</td>
<td>45</td>
</tr>
<tr>
<td>P14</td>
<td>Gerard Avenue</td>
<td>N Street</td>
<td>M Street</td>
<td></td>
<td>Widen sidewalk to recommended 8 feet width in high-volume pedestrian area on east side to better accommodate school pedestrian traffic</td>
<td>5</td>
<td>10</td>
<td>10</td>
<td>0</td>
<td>20</td>
<td>45</td>
</tr>
<tr>
<td>PS23</td>
<td>R Street/ Yosemite Avenue</td>
<td></td>
<td></td>
<td></td>
<td>Install high visibility crosswalks, leading pedestrian interval</td>
<td>0</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>0</td>
<td>45</td>
</tr>
<tr>
<td>PS6</td>
<td>Citywide</td>
<td></td>
<td></td>
<td></td>
<td>Conduct a curb inventory to determine and prioritize locations without curb ramps and other accessibility features</td>
<td>0</td>
<td>5</td>
<td>10</td>
<td>15</td>
<td>10</td>
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<tr>
<td>PS7</td>
<td>Citywide</td>
<td></td>
<td></td>
<td></td>
<td>Conduct an inventory of bus stops throughout the City to determine with accessibility and pedestrian enhancements can be made within the City right of way leading to and from bus stops</td>
<td>0</td>
<td>5</td>
<td>10</td>
<td>15</td>
<td>10</td>
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## Appendix D: Pedestrian Prioritized Projects Table

<table>
<thead>
<tr>
<th>Project ID</th>
<th>Location/Street</th>
<th>Start</th>
<th>End</th>
<th>Distance (mi)</th>
<th>Spot Improvement Detail/Notes</th>
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<th>Community Support (15pts)</th>
<th>Activity Generator Connection (15pts)</th>
<th>Safe-Routes-to-School (30pts)</th>
<th>Disadvantaged Community (20pts)</th>
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<tbody>
<tr>
<td>PS9</td>
<td>Downtown Area</td>
<td></td>
<td></td>
<td></td>
<td>Install pedestrian amenities such as shade trees, pedestrian-scale lighting, wayfinding signage, benches, trash cans, and other street furniture. Consider policy change to promote mixed uses with ground floor retail</td>
<td>0</td>
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<td>PS19</td>
<td>Parsons Avenue/ Merced Avenue</td>
<td></td>
<td></td>
<td></td>
<td>Install high visibility crosswalks, advanced yield markings. Consider upgrading RRFB to HAWK because of width of roadway (5 lanes)</td>
<td>0</td>
<td>10</td>
<td>15</td>
<td>15</td>
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<tr>
<td>PS22</td>
<td>R Street/ Loughborough Drive</td>
<td></td>
<td></td>
<td></td>
<td>Improve pedestrian safety by removing slip lane, installing high visibility crosswalks and leading pedestrian interval, and extending median on R Street to create refuge islands</td>
<td>10</td>
<td>15</td>
<td>15</td>
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<tr>
<td>PS12</td>
<td>G Street/ Brookdale Drive</td>
<td></td>
<td></td>
<td></td>
<td>Install mid-block crossing with enhancement such as HAWK or RRFB to allow people in adjacent neighborhood more convenient and safe access to park without long detour to marked crossing</td>
<td>2</td>
<td>10</td>
<td>10</td>
<td>15</td>
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<td>37</td>
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<tr>
<td>PS36</td>
<td>Gerard Avenue/M Street</td>
<td></td>
<td></td>
<td></td>
<td>Stripe crosswalks at all approaches</td>
<td>0</td>
<td>15</td>
<td>0</td>
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<td>PS20</td>
<td>Parsons Avenue/ SR-140</td>
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<td></td>
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<td>Partner with Caltrans to install high visibility crosswalks, advance stop markings, leading pedestrian interval</td>
<td>5</td>
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<tr>
<td>PS2</td>
<td>Bear Creek Path</td>
<td></td>
<td></td>
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<td>Inspect and correct any ADA-related accessibility issues</td>
<td>0</td>
<td>5</td>
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<td>Project ID</td>
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<td>End</td>
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<td>Community Support (15pts)</td>
<td>Activity Generator Connection (15pts)</td>
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<tr>
<td>PS16</td>
<td>Parsons Avenue and Bear Creek</td>
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<td></td>
<td></td>
<td>Improve lighting in undercrossing to improve perception of safety</td>
<td>0</td>
<td>5</td>
<td>10</td>
<td>15</td>
<td>0</td>
<td>30</td>
</tr>
<tr>
<td>PS4</td>
<td>Black Rascal Creek &amp; McKee Road</td>
<td></td>
<td></td>
<td></td>
<td>Install crossing enhancements such as curb extensions, leading pedestrian interval, high visibility crosswalks</td>
<td>2</td>
<td>5</td>
<td>15</td>
<td>0</td>
<td>0</td>
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<td>PS13</td>
<td>Glen Avenue &amp; Bear Creek</td>
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<td></td>
<td></td>
<td>Bridge crossing improvements</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>15</td>
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<tr>
<td>PS15</td>
<td>Lake Road &amp; Yosemite Avenue</td>
<td></td>
<td></td>
<td></td>
<td>Improve lighting in undercrossing to improve perception of safety</td>
<td>0</td>
<td>5</td>
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Appendix E: Existing Programs

Introduction

Programs are a vital part of a strong walking and bicycling community, fostering an educated and engaged public, supporting safety by enforcing good behavior, and providing ongoing guidance by evaluating the walking and bicycling environment regularly. This section lists existing programs Merced can build on to continue to foster an active transportation culture about which citizens can become invested and excited.

Programs are generally categorized into: education, encouragement, enforcement, and evaluation.

- Education programs improve safety and awareness. They may be delivered in schools as pedestrian and bicycle knowledge and skills programs, or provided through media campaigns and partnerships with nonprofit organizations.

- Encouragement programs, such as walking and bicycling maps or special events, reward current pedestrians and bicyclists and motivate more people to try walking or bicycling for transportation.

- Enforcement programs that reinforce legal and respectful driving, bicycling, and walking behaviors can make walking and bicycling feel more secure.

- Evaluation programs provide a method for monitoring implementation of recommendations in this plan and measuring effectiveness of improvements and programs to inform future investments.

Existing Education Programs

Bicycle Safety Presentation at Community Meeting

The Merced Bicycle Coalition gave a presentation at a Healthy South Merced Community Meeting in May 2017. The presentation covered bicycling safety and rules of the road, with an aim to help residents understand shared-lane markings and other bicycle infrastructure treatments in their neighborhoods.

Poster Contest

A traffic safety poster contest is a fun way to engage students and their families in traffic safety principles, and raises awareness of the SRTS program in the broader community. After learning about bicycle and pedestrian safety in school, students are asked to create a poster illustrating a safety concept they learned about. This can either be done in-class as an art activity, or completed at home as students discuss bicycle and pedestrian safety with their parents.
All 3rd, 4th, and 5th grade classrooms in the Merced City School District were invited to create posters illustrating how bicycling can be fun, safe, and good for the environment. Educational materials were provided to all teachers to review with their students. More than 300 student posters were submitted, and a winner from each grade was announced during the Mayor’s Bike Ride and given a bicycle. The winning posters were displayed in the lobby of the Civic Center for the month of June. The contest was supported by a City grant through the Bicycle Advisory Commission.

The City should continue to offer grant funding for the poster contest every three years. The City should also increase the amount of funding available to allow for schools in Merced Union School District to also hold a contest. Funding partners, such as local or regional employers or foundations, are a great tool to support such a campaign.

**Radio Announcements**

Supported by a City grant, a Bicycle Advisory Commission subcommittee created and arranged for a public service announcement to be aired on local radio that included safety education information for bicyclists and motorists. The announcement began airing in May 2017 and ran through August 2017 to coincide with the beginning of the new school year.

**Youth Organization Education**

Local youth leadership organizations, including the Boy Scouts of America and 4H, have coordinated with the Merced Bicycle Coalition to offer bicycle education as part of their programming. A morning bicycling workshop was offered to boy scouts, and the 4H club participated in a weeklong bicycle construction and maintenance course.

**Safe-Routes-to-School**

The Safe-Routes-to-School (SRTS) program offers a variety of activities in the City and County of Merced. Program support and activities are coordinated by the Merced County Department of Public Health, Merced County of Public Works, local school districts, and the Merced Bicycle Coalition. SRTS programs at Merced schools have included the following activities:

**Bicycle Rodeos**

Bicycle rodeos often include a bicycle safety check, helmet giveaway and fit check, and hands-on instruction for pulling out of driveways, bicycling in traffic, safe turning, and identifying and managing hazardous situations.

**Safe Riding Assemblies**

Educational assemblies held during school hours reach a large number of students, teaching about rules of the road, safe bicycling behaviors, and other topics.
Existing Encouragement Programs

All Merced Road Ride

The Merced Bicycle Coalition has hosted this free, fully supported road bike ride annually since 2010. Three route lengths encourage riders of all ages and skill levels to participate.

Bike to Work and School Day

Bike to Work and School Day is a national event promoting bicycling to work and is typically the third Thursday in May. Merced Bicycle Coalition organizes Bike to Work events throughout the city. Some of the most popular events are energizer stations where volunteers set up a table with promotional items, coffee, and snacks along popular bicycle commuting routes during the morning and afternoon commute hours. The City currently sponsors annual Bike to Work and School Day events hosted by Merced Bicycle Coalition including an energizer station.

Energizer stations are tents or tables along popular bicycling routes where students or commuters can pick up free snacks, drinks, and other incentives such as t-shirts, patch kits, or clip-on lights. The Merced Bicycle Coalition coordinates with UC Merced, Dignity Health, and Golden Valley Health Center to provide energizer stations on Merced’s combined Bike to Work and School Day in May. The San Joaquin Valley Air Pollution Control District supports the event with a $250 grant, and alternative transportation nonprofit “Dibs” provides material support including t-shirts, lights, and snacks. This has been an annual event since 2009. This Plan recommends the City continue their sponsorship of Bike to Work and School Day events.

Appendix E Figure 1: Bike to Work and School Day
**Bike Ride with the Mayor**

During May, which is Bike Month, Mayor Mike Murphy participates in a leisurely ride supported by a city grant through the Bicycle Advisory Commission and conducted by the Merced Bicycle Coalition. The ride included giveaways of helmets, lights, and locks, along with basic bicycle safety checks and helmet fittings. Seventy-five riders of all ages participated in 2018. The bicycle ride also included an educational poster contest, described under Education. The Mayor’s Bike Ride is also host to a poster contest to raise awareness and encourage youth to participate. See “Poster Contest” on page 173 for more about this aspect of the activity.

Appendix E Figure 2: Bike Ride with the Mayor

**Group Rides**

Group rides such as those hosted by The Merced Bicycle Coalition can encourage more people to bicycle. The Merced Bicycle Coalition has hosted many group rides, including:

- Holiday Lights Ride
- All-Merced Road Ride
- The Mayor’s Bike Ride
- Bi-monthly community rides

This Plan recommends The Merced Bicycle Coalition continue to host group rides.

**Existing Enforcement Programs**

No existing enforcement programs specific to bicycle and pedestrian transportation were located.

**Existing Evaluation Programs**

No existing evaluation programs specific to bicycle and pedestrian transportation were located.
Introduction

This section presents a list of relevant policies in planning documents that relate to the Merced Active Transportation and Safe-Routes-to-School Plan. Relevant policies are presented grouped by policy document. Because only those policies most relevant to this Plan have been included, numbering may be nonconsecutive. See “Policy Recommendations” on page 130 for proposed policies.

Federal Plans and Policies

US DOT Policy Statement on Bicycle and Pedestrian Accommodation
Regulations and Recommendations

The United States Department of Transportation (US DOT) issued this Policy Statement to support and encourage transportation agencies at all levels to establish well-connected walking and bicycling networks.

Policy Statement

The DOT policy is to incorporate safe and convenient walking and bicycling facilities into transportation projects. Every transportation agency, including DOT, has the responsibility to improve conditions and opportunities for walking and bicycling and to integrate walking and bicycling into their transportation systems. Because of the numerous individual and community benefits that walking and bicycling provide – including health, safety, environmental, transportation, and quality of life – transportation agencies are encouraged to go beyond minimum standards to provide safe and convenient facilities for these modes.

Recommended Actions

The DOT encourages States, local governments, professional associations, community organizations, public transportation agencies, and other government agencies, to adopt similar policy statements on bicycle and pedestrian accommodation as an indication of their commitment to accommodating bicyclists and pedestrians as an integral element of the transportation system. In support of this commitment, transportation agencies and local communities should go beyond minimum design standards and requirements to create safe, attractive, sustainable, accessible, and convenient bicycling and walking networks. Such actions should include:

♦ Considering walking and bicycling as equals with other transportation modes: The primary goal of a transportation system is to safely and efficiently move people and goods. Walking and bicycling are efficient transportation modes for most short trips and, where convenient intermodal systems exist, these non-motorized trips can easily be linked with transit to significantly increase trip distance. Because of the benefits they provide, transportation agencies should give the same priority to walking and bicycling as is given to other transportation modes. Walking and bicycling should not be an afterthought in roadway design.
Ensuring that there are transportation choices for people of all ages and abilities, especially children: Pedestrian and bicycle facilities should meet accessibility requirements and provide safe, convenient, and interconnected transportation networks. For example, children should have safe and convenient options for walking or bicycling to school and parks. People who cannot or prefer not to drive should have safe and efficient transportation choices.

Going beyond minimum design standards: Transportation agencies are encouraged, when possible, to avoid designing walking and bicycling facilities to the minimum standards. For example, shared-use paths that have been designed to minimum width requirements will need retrofits as more people use them. It is more effective to plan for increased usage than to retrofit an older facility. Planning projects for the long-term should anticipate likely future demand for bicycling and walking facilities and not preclude the provision of future improvements.

Integrating bicycle and pedestrian accommodation on new, rehabilitated, and limited-access bridges: DOT encourages bicycle and pedestrian accommodation on bridge projects including facilities on limited-access bridges with connections to streets or paths.

Collecting data on walking and biking trips: The best way to improve transportation networks for any mode is to collect and analyze trip data to optimize investments. Walking and bicycling trip data for many communities are lacking. This data gap can be overcome by establishing routine collection of non-motorized trip information. Communities that routinely collect walking and bicycling data are able to track trends and prioritize investments to ensure the success of new facilities. These data are also valuable in linking walking and bicycling with transit.

Setting mode share targets for walking and bicycling and tracking them over time: A byproduct of improved data collection is that communities can establish targets for increasing the percentage of trips made by walking and bicycling.

Improving non-motorized facilities during maintenance projects: Many transportation agencies spend most of their transportation funding on maintenance rather than on constructing new facilities. Transportation agencies should find ways to make facility improvements for pedestrians and bicyclists during resurfacing and other maintenance projects.
Statewide Plans and Policies

AB 32 – Global Warming Solutions Act & SB 375 – Sustainable Communities and Climate Protection Act

The past ten years have seen an expansion of legislative and planning efforts in California to reduce emissions of greenhouse gases (GHGs) in order to mitigate climate change. Assembly Bill 32, the California Global Warming Solutions Act of 2006, aims to reduce the state’s GHG emissions to 1990 levels by 2020 and to 80 percent below 1990 levels by 2050. Meanwhile, Senate Bill 375, passed into law in 2008, is the first in the nation that will attempt to control GHG emissions by directly linking land use to transportation. The law required the state’s Air Resources Board to develop regional targets for reductions in GHG emissions from passenger vehicles for 2020 and 2035 as a way of supporting the targets in AB32.

AB 1358 – Complete Streets Act

Assembly Bill 1358 requires “that the legislative body of a city or county, upon any substantive revision of the circulation element of the general plan, modify the circulation element to plan for a balanced, multimodal transportation network that meets the needs of all users [including] motorists, pedestrians, bicyclists, children, persons with disabilities, seniors, movers of commercial goods, and users of public transportation....” This provision of the law went into effect on January 1, 2011, and has resulted in a new generation of circulation elements and a surge in Complete Streets policies around the state as general plans are updated over time.

SB 99 – Active Transportation Program Act

The Active Transportation Program was established by this legislation in 2013, and serves as the mechanism for distributing federal funds for local and regional efforts to promote walking and bicycling. It specifies goals that the funding will be disbursed to help meet, including increasing the mode shares of biking and walking trips, increasing safety for non-motorized users, and providing support to disadvantaged communities to promote transportation equity. It also updated the list of requirements for completed Active Transportation Plans including the number and location of collisions, serious injuries, and fatalities suffered by bicycle riders in the Plan area, a description of bicycle safety and education programs conducted in the area, and a resolution showing adoption of the Plan by the Council of Governments.

California Transportation Plan 2025

The California Transportation Plan 2025 seeks to provide for mobility and accessibility of people, goods, services, and information throughout California. It encourages consideration of bicycle and pedestrian facilities in capacity improvement projects, and promotes integration of active transportation into modeling and projection efforts.
The Plan also speaks to the public health benefits of active transportation, urging better education of youth on personal health and air quality impacts of making trips by bicycle or on foot.

**Caltrans Complete Streets Policy and Deputy Directive 64**

In 2001, the California Department of Transportation (Caltrans) adopted Deputy Directive 64, “Accommodating Non-Motorized Travel,” which contained a routine accommodation policy. The directive was updated in 2008 as “Complete Streets – Integrating the Transportation System.” The policy includes the following language:

The Department views all transportation improvements as opportunities to improve safety, access, and mobility for all travelers in California and recognizes bicycle, pedestrian, and transit modes as integral elements of the transportation system.

The Department develops integrated multimodal projects in balance with community goals, plans, and values. Addressing the safety and mobility needs of bicyclists, pedestrians, and transit users in all projects, regardless of funding, is implicit in these objectives. Bicycle, pedestrian and transit travel is facilitated by creating “Complete Streets” beginning early in system planning and continuing through project delivery and maintenance operations.

The directive establishes Caltrans’ own responsibilities under this policy. The responsibilities Caltrans assigns to various staff positions under the policy include the following:

- Ensure bicycle, pedestrian, and transit interests are appropriately represented on interdisciplinary planning and project delivery development teams.
- Ensure bicycle, pedestrian, and transit user needs are addressed and deficiencies identified during system and corridor planning, project initiation, scoping, and programming.
- Ensure incorporation of bicycle, pedestrian, and transit travel elements in all Department transportation plans and studies.
- Promote land uses that encourage bicycle, pedestrian, and transit travel.
- Research, develop, and implement multimodal performance measures.

In part to address these issues, Caltrans adopted the Complete Streets Implementation Action Plan in 2010. The plan sets forth actions under seven categories to be completed by various Caltrans districts and divisions within certain timelines to institutionalize Complete Streets concepts and considerations within the department. The action categories include updating departmental plans, policies, and manuals; raising awareness; increasing opportunities for training; conducting research projects; and actions related to funding and project selection. As one of its implementation activities, Caltrans updated the Highway Design Manual in large part to incorporate multimodal design standards.
Toward an Active California: California State Bike and Pedestrian Plan (2017)

Toward an Active California: California State Bicycle and Pedestrian Plan is the first statewide plan of its kind for California. Mainly a policy document, the plan complements local and regional active transportation plans being developed across the state and supports agencies as they undertake their own efforts to improve the walking and bicycling environment in California. While Caltrans has the greatest control over state transportation facilities, it exerts influence on bicycling and walking facilities on local roads through funding programs, design, and design guidance.

The Plan focuses on four strategies, which are accompanied by associated action items recommended for implementation. Many of the strategies and action items, while focused on the statewide purview of Caltrans, suggest avenues for improvement to local, countywide, and regional transportation planning, programs, and infrastructure development. The strategies and action items are shown in Appendix E Table A below.

Appendix E Table A: California Bike and Pedestrian Plan Action Items

### Safety

<table>
<thead>
<tr>
<th>S1: Safer Streets &amp; Crossings</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1.1 Develop equity focused plans at the regional or district level to proactively identify opportunities for safer highway crossings, including addressing personal safety</td>
</tr>
<tr>
<td>S1.2 Work with regional and local agencies to apply the guidelines in Caltrans’ Complete Intersections Guide, Main Street California Guide, and National Association of City Transportation Officials guidelines</td>
</tr>
<tr>
<td>S1.3 Develop and implement a systemic safety analysis approach to address infrastructure that poses a higher risk to vulnerable users</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>S2: Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>S2.1 Include active transportation infrastructure concepts and bicycle/pedestrian safety information in regular driver handbook updates</td>
</tr>
<tr>
<td>S2.2 Include bicycle and pedestrian content in driver testing exams for all new and re-licensing drivers</td>
</tr>
<tr>
<td>S2.3 Explore periodic re-licensing of drivers</td>
</tr>
<tr>
<td>S2.4 Provide universal elementary school bicycle and pedestrian curriculum</td>
</tr>
<tr>
<td>S2.5 Advance an adult-oriented safe bicycling and walking curriculum</td>
</tr>
<tr>
<td>S2.6 Incorporate ADA awareness into all active transportation educational programs</td>
</tr>
<tr>
<td>S2.7 Engage colleges and universities in including current, best-practice bicycle and pedestrian design in engineering programs</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>S3: Safety Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>S3.1 Continue developing approaches to integrate hospital data into collision reporting</td>
</tr>
<tr>
<td>S3.2: Develop improved exposure estimates for bicycling and walking</td>
</tr>
<tr>
<td>S3.3: Explore the feasibility of conducting a pilot study of the information being compiled regarding collisions involving bicycles and pedestrians, leveraging investment in exposure estimates developed in S3.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>S4: Enforcement</th>
</tr>
</thead>
<tbody>
<tr>
<td>S4.1 Support updates to police officer training to curb road user behaviors that pose the greatest risk of collision, injury, and fatality</td>
</tr>
<tr>
<td>S4.2 Support and fund diversion programs for bicyclists and pedestrians cited for a traffic offense. Preliminary target of making diversion programs available to 25% of Californians</td>
</tr>
<tr>
<td>S4.3 Explore use of technology and engineering methods to reduce speeding and aggressive driving</td>
</tr>
<tr>
<td>S4.4 Research methods for setting and enforcing speed limits</td>
</tr>
</tbody>
</table>
### Mobility

#### M1: Connected and Comfortable Networks

- **M1.1** Develop District-level plans to identify bicycle and pedestrian needs and priority projects on or parallel to the state highway system, with a focus on closing gaps and building complete, comfortable networks that consider the context.

- **M1.2** Provide ongoing implementation of existing Caltrans Complete Streets education and hands-on training.

- **M1.3** Increase state investment and encourage local and regional investment in complete bicycle and pedestrian networks.

- **M1.4** Explore opportunities to develop a network of separated ‘bicycle highways’ to serve regional and interregional travel.

- **M1.5** Consider bicyclist and pedestrian comfort when designing new or improved facilities for state highways, and encourage use of this approach by local agencies.

- **M1.6** Provide a comprehensive resource on best practice bicycle and pedestrian design treatments for California.

#### M2: Multimodal Access

- **M2.1** Incorporate first mile/last mile planning for bicycle/pedestrian access needs for all intercity/high-speed rail and transit systems.

- **M2.2** Identify bicycle parking needs at transit, rail and park and ride services and define appropriate bicycle accommodation policies.

- **M2.3** Explore development of a statewide bike share system that reaches the maximum number of Californians.

- **M2.4** Provide seamless integration of bike share and public transit fare systems on a regional or statewide scale.

- **M2.5** Support expanded use of electric bicycles in California, including the provision of a network of public electric bike charging infrastructure.

- **M2.6** Facilitate opportunities for local freight delivery by bicycle, including funding pilot implementation.

#### M3: Efficient Land Use and Development

- **M3.1** Provide guidance to state and local agencies on school and government building siting that considers walkability, bikeability, and proximity to transit.

- **M3.2** Link land use plans, zoning, and design standards to active transportation planning, integrating principles of location efficiency and urban form.

- **M3.3** Support the design of transit-oriented and location efficient development that creates density and urban form to encourage pedestrian, bicycle, and transit travel.

- **M3.4** Explore opportunities for a consolidated, universal and flexible wayfinding system applicable to all modes of travel.

#### M4: Network and Travel Data

- **M4.1** Develop a standard collection method for bicycle and pedestrian counts and create a central database for storing counts.

- **M4.2** Explore opportunities to leverage existing data collection by Caltrans and third parties to better understand use of the system by bicyclists and pedestrians.

- **M4.3** Improve state travel surveys to better represent bicycle and pedestrian travel.

- **M4.4** Work with the Federal Highway Administration and other partners to develop a standard for bicycle and pedestrian infrastructure and data.

- **M4.5** Appropriately consider bicycling, pedestrian, and transit concerns in traffic analysis methods.

#### M5: Statewide Trails

- **M5.1** Promote awareness of and connections to key statewide bicycling and walking routes.

- **M5.2** Coordinate with state and local convention and visitors bureaus to market bicycling and walking options to tourists.
<table>
<thead>
<tr>
<th>Appendix E Table A, Continued: California Bike and Pedestrian Plan Strategies and Action Items</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>M6: Encouragement</strong></td>
</tr>
<tr>
<td>M6.1 Support and promote bicycling and walking events for all ages</td>
</tr>
<tr>
<td>M6.2 Implement model encouragement programs to incentivize walking and bicycling to work for state and partner agency employees</td>
</tr>
<tr>
<td>M6.3 Research applications of the science of behavior change in transportation</td>
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<tr>
<td><strong>Preservation</strong></td>
</tr>
<tr>
<td><strong>P1: Quality of Condition</strong></td>
</tr>
<tr>
<td>P1.1 Develop a standardized menu of services and condition expectations/quality service standards for bicycle and pedestrian facilities and update the existing maintenance manual</td>
</tr>
<tr>
<td>P1.2 Require consideration of bicyclists and pedestrians during temporary traffic control for construction or maintenance</td>
</tr>
<tr>
<td>P1.3 Explore changes to sidewalk maintenance responsibility in California to reduce the burden on individual property owners of ongoing maintenance for priority pedestrian routes</td>
</tr>
<tr>
<td><strong>P2: Coordination</strong></td>
</tr>
<tr>
<td>P2.1 Incorporate bicycle and pedestrian needs into asset management plans and associated programming and prioritization processes</td>
</tr>
<tr>
<td>P2.2 Develop an Adopt-a-Bikeway program to assist with maintenance of bicycle facilities, similar to Adopt-a-Highway</td>
</tr>
<tr>
<td>P2.3 Include maintenance staff in Project Initiation Document, planning, and design phases for projects to consider impacts</td>
</tr>
<tr>
<td><strong>Social Equity</strong></td>
</tr>
<tr>
<td><strong>E1: Community Support</strong></td>
</tr>
<tr>
<td>E1.1 Proactively identify disadvantaged communities without active transportation plans and help them develop plans</td>
</tr>
<tr>
<td>E1.2 Provide active transportation technical assistance as part of existing Caltrans technical assistance programs</td>
</tr>
<tr>
<td>E1.3 Require District staff to reach out to regional transportation planning agencies, metropolitan planning organizations, and disadvantaged communities to identify opportunities to integrate active transportation into local plans and programs</td>
</tr>
<tr>
<td>E1.4 Develop education and encouragement materials that can be distributed by communities without resources to develop their own programs</td>
</tr>
<tr>
<td><strong>E2: Equity Lens</strong></td>
</tr>
<tr>
<td>E2.1 Develop equity-focused Caltrans district plans to identify and improve state highway crossings that limit accessibility to or within disadvantaged communities (See S1.1)</td>
</tr>
<tr>
<td>E2.2 Consider access to economic opportunity as a critical component to serving disadvantaged communities</td>
</tr>
<tr>
<td><strong>E3: Access to Funding</strong></td>
</tr>
<tr>
<td>E3.1 Develop a centralized information resource for grant funding and partnership opportunities for active transportation projects</td>
</tr>
<tr>
<td>E3.2 Identify opportunities to simplify and streamline grant funding for local agencies, and provide technical assistance with analysis for applications</td>
</tr>
<tr>
<td>E3.3 Evaluate funding efforts to determine how grant funds address bicycle and pedestrian network needs</td>
</tr>
<tr>
<td>E3.4 Explore joint funding of active transportation plans and programs with county public health agencies, tribal governments, transit agencies, parks and recreation departments, and other potential partners</td>
</tr>
<tr>
<td>E3.5 Highlight successful non-traditional funding partnerships as models for other communities</td>
</tr>
</tbody>
</table>
**Local Plans & Policies**

**City of Merced General Plan 2030 (2012)**

The City of Merced General Plan notes several broad challenges and opportunities related to transportation in the community. Four creeks, three freeways, and two railroads pass through the city, creating barriers with limited crossing options. For a map of existing and proposed land uses, see Figure 21.

The University of California at Merced campus lies outside city limits to the northeast, but is a significant transit destination and an important hub to connect to the city. Ensuring that safe paths of travel exist for users of all modes, including consideration of electric rental vehicles, will require a long-term partnership between the University and the City of Merced.

**Chapter 4: Transportation and Circulation**

The General Plan’s Transportation and Circulation element notes Merced has an ideal climate for bicycling and walking, with fair weather year-round. M Street, identified as an enhanced transit corridor, has potential to support enhanced biking and walking as well. Bellevue Road and Mandeville Lane have also been designated transitways.

The General Plan includes vehicular level of service (LOS) thresholds to define acceptable conditions for various street classifications.

**Transit System**

Merced is served by a local public bus system that operates 16 fixed routes in addition to on-demand service, inter-regional private buses, and privately owned taxis. Fixed routes connect downtown with other major destinations, including the Civic Center, schools, hospitals, and shopping centers.

**Bicycle/Trail System**

Merced notes that development of bicycle networks should make use of major streets and provide the quickest, shortest, and safest routes for bicyclists to reach their destinations. The bikeway system also includes a network of off-street paths, used for both recreation and transportation trips. A Bicycle Advisory Commission of seven members provides advice to City Council on relevant matters. This Plan is recommending that this Commission see a number of changes and updates; see “Bicycle and Pedestrian Advisory Commission” on page 122 for more details.

Existing off-street paths are primarily located along creeks within the city. Proposed paths seek to complete two loop systems: one smaller loop along Bear and Black Rascal Creeks between McKee Road and Highway 59, and a larger loop along Fahrens Creek to Lake Yosemite, Lake Road, and Black Rascal Creek. This loop system could also provide the basis for regional bicycle access to UC Merced.
Appendix E Map I: City of Merced General Plan - Land Use

Legend
- Merced City Limit
- SDIS/UCP
- Area of Interest

Merced City General Plan
- BUSINESS PARK
- BUSINESS PARK RESERVE
- THOROUGHBRED COMMERCIAL
- COMMERCIAL RESERVE
- GENERAL COMMERCIAL
- REGIONAL COMMUNITY COMMERCIAL
- NEIGHBORHOOD COMMERCIAL
- COMMERCIAL OFFICE
- SCHOOL
- FUTURE SCHOOL
- PUBLIC/GENERAL USE
- MANUFACTURING/INDUSTRIAL
- AGRICULTURAL
- OPEN SPACE - PARK RECREATION
- FUTURE PARK
- VILLAGE RESIDENTIAL
- LOW DENSITY RESIDENTIAL
- LOW TO MEDIUM DENSITY RESIDENTIAL
- HIGH TO MEDIUM DENSITY RESIDENTIAL
- HIGH DENSITY RESIDENTIAL
- RURAL RESIDENTIAL
- MOBILE HOME PARK RESIDENTIAL
- RESIDENTIAL RESERVE

Industries Reserve
Pedestrian Circulation

The General Plan notes providing pedestrian access for school-aged children and for people with disabilities is a priority for the City of Merced, but does not include specific projects or priority corridors for pedestrian facilities.
**Goal Area T-1: Streets and Roads**

**Goals:**

- An integrated road system that is safe and efficient for motorized and nonmotorized uses
- A circulation system that is accessible, convenient, and flexible
- A circulation system that minimizes adverse impacts upon the community
- A comprehensive system of “Complete Streets” which addresses all modes of transportation

**Policies:**

- **T-1.1:** Design streets consistent with circulation function, affected land uses, and all modes of transportation.
  - 1.1.b: Whenever feasible, implement a system of arterials and higher order streets in new growth areas based upon the adopted concept of arterials/expressways and ensuring the development of “Complete Streets” which address all modes of transportation.
- **T-1.4:** Promote traffic safety for all modes of transportation.
  - 1.4.c: Promote increased traffic safety with special attention to hazards which could cause personal injury.
- **T-1.5:** Minimize unnecessary travel demand on major streets and promote energy conservation.
- **T-1.6:** Minimize adverse impacts on the environment from existing and proposed road systems.
  - 1.6.b: Make a strong commitment to increase the number of people per vehicle so that the existing street system is utilized to its fullest.
  - 1.6.f: Ensure to the extent feasible that pedestrian, bicycle, and automobile connections are maintained in existing neighborhoods affected by transportation and other development projects.
Goal Area T-2: Bicycles, Pedestrians, and Public Transit

Goals:

♦ An efficient and comprehensive public transit system
♦ A comprehensive system of safe and convenient bicycle routes (within the community and throughout the urban area)
♦ A comprehensive system of safe and convenient pedestrian facilities
♦ A comprehensive system of “Complete Streets” addressing all modes of transportation

Policies:

♦ T-2.4: Encourage the use of bicycles.
  o 2.4.a: Encourage area employers to promote bicycle use through incentive programs or other means.
  o 2.4.b: Continue to support whenever feasible local efforts to promote cycling.
  o 2.4.c: Seek to involve a cross-section of actual bicycle users in bicycle planning efforts and transportation-related bicycle activities through the City’s Bicycle Advisory Commission.

♦ T-2.5: Provide convenient bicycle support facilities to encourage bicycle use.
  o 2.5.a: Develop guidelines for public and private development relating to the design and location of bicycle parking facilities for both residential and non-residential uses and consider a bike parking ordinance.

♦ T-2.6: Maintain and expand the community’s existing bicycle circulation system.

♦ T-2.7: Maintain a pedestrian-friendly environment.

♦ T-2.8: Improve planning for pedestrians.

♦ T-2.9: Ensure that new development provides the facilities and programs that increase the effectiveness of transportation control measures and congestion management programs.
  o 2.9.c: Expand programs to reduce vehicle miles traveled, stop and go traffic, and traffic congestion in order to improve traffic flow.
  o 2.9.d: Complete the City’s network of bicycle and pedestrian transportation routes and allow for new forms of non-motorized transportation.
City of Merced Bicycle Master Plan (2013)

The Bicycle Master Plan is organized around six E’s: education, encouragement, enforcement, engineering, evaluation, and equity. It also describes the city’s Bicycle Advisory Commission responsibilities.

Bicycle Advisory Commission

The City established a Bicycle Advisory Commission in early 2009, with an ordinance that describes three key purposes for the new commission:

♦ Improve conditions for bicyclists
  - Review and advise the City Council on the design of capital improvement projects, street improvements, and parking facility projects as they relate to bicycling, except for matters pertaining to pedestrian issues
  - Review and advise the City Council on changes and updates to the Bicycle Master Plan, General Plan, Municipal Code, and other policy documents which relate to bicycling
  - Initiate requests to City staff from the community on issues of concern

♦ Promote bicycling as a means of transportation
  - Promote bicycling as a viable form of transportation
  - Initiate requests to City staff from the community on issues of concern

♦ Improve safety conditions for bicyclists
  - Assist in the development and dissemination of bicycle safety awareness and education materials to the community
  - Initiate requests to City staff from the community on issues of concern

Policies

The Bicycle Master Plan’s policies relating to the 6 E’s were, understandably, created with cycling as the sole focus. The goals and policies presented below have been updated to address active transportation more holistically while retaining the spirit of the Bicycle Master Plan’s intentions.

Complete Streets

A Complete Street is a transportation facility that is planned, designed, operated, and maintained to provide safe mobility for all users, including bicyclists, pedestrians, transit vehicles, truckers, and motorists, appropriate to the function and context of the facility. Every complete street looks different, according to its context, community preferences, the types of road users, and their needs.
The Complete Streets philosophy is an important one in guiding future policy and infrastructure decisions in the City of Merced. “Table A: City of Merced “Complete Streets” Policies” on page 4 shows the bike and pedestrian related policies of the Merced Vision 2030 General Plan that support the concept of “Complete Streets.”

6 E’s

The ATP follows in the aims of the 2013 Bicycle Transportation Plan to inspire, educate, guide, and create a safe means of transportation throughout the community for all types of users. The plan frames its goals and policies around the six “E’s” of planning, including:

♦ Education  ♦ Encouragement  ♦ Engineering
♦ Enforcement  ♦ Evaluation  ♦ Equity

Education

Education, an integral part of a successful transportation plan, will promote all modes of active transportation as viable and attractive transportation modes. All citizens engaged in riding bicycles could benefit from learning bicycle-related laws and safe-riding techniques. Motorists should also be reminded to be aware of and be respectful to bicyclists and pedestrians sharing the roadways and crossing intersections or driveways. Increased awareness and knowledge may lead to fewer collisions, injuries, and fatalities.

GOAL: Educate the public, specifically pedestrians, cyclists, and motorists, of their responsibility to act in accordance with traffic laws. Education should encompass safety, bicycle handling skills, and traffic skills.

Policies:

♦ Seek to educate the public by publicizing and promoting safe commuting.
♦ Consider the dedication of a new page on the City’s website to active transportation and education; include links to the ATP, bicycle laws, safety tips and other such helpful resources.
♦ Promote transportation safety programs in employment centers and local schools, and adopt a more proactive approach to safety education, including holding yearly safety classes at local schools at the beginning of the school year.
♦ Consider the use of the City’s newsletter as a means of distributing active transportation safety information to the public.
♦ Utilize signage in coordination with infrastructure to educate citizens about the locations and appropriate usage of active transportation.
Encouragement

Encouragement includes partnering with local organizations and persons to champion active transportation education and fun activities. The City of Merced, in a leadership example role, is doing its part as a major employer by providing facilities that enable its employees to use alternative modes of transportation to get to/from work. Coordinating planning and implementation with the local interest entities, (i.e. employers, school districts, Merced College, UC Merced, commercial and industrial businesses), will build the sense of benefit through ownership. Educating the public of the financial, health, and environmental benefits of active transportation will provide further encouragement for these mode choices.

GOAL: Promote the financial, health, and environmental benefits of active transportation.

Policies:

♦ Encourage and assist employers to implement walk/bike-to-work incentive programs at the workplace.

♦ Continue to support cycling sports, family fun rides, and other cycling events in the City as a means to encourage bicycling.

♦ Encourage the use of bike transportation by providing students and school faculty with safe and direct bicycle facilities.

♦ Continue with programs that educate the general public on the health benefits of active transportation.

♦ Encourage large employers to promote carpooling and other transportation alternatives within their work force

♦ Seek to create an incentive-based program as a means to encourage employers to provide destination amenities required by active transportation, including showers; lockers; and safe, secure, covered bicycle parking.

♦ Reinforce active transportation as an important consideration in all sizes of projects by encouraging advocates for active transportation to take part in more City of Merced committees and commissions, including but not limited to the Traffic Committee and the Parks and Recreation Commission.

Engineering

Continuing to improve the City of Merced’s active transportation network involves the coordination of the City’s Planning and Engineering Departments with the public. This coordination addresses the major consideration to provide safe, convenient, and complete system access from residences to destinations. For the existing system, measures could be implemented to optimize its attractiveness and usefulness.

GOAL: Strive to provide safe and convenient active transportation access and support facilities to all destinations within the City and other regional destinations, including the UC Merced campus.
Policies:

- Strive to provide sidewalks, pathways, and bikeways that link residential areas with employment centers, downtown, schools, shopping centers, parks, and other major target areas.
- The system should fit the needs of commuters, while serving recreational and exercise purposes.
- Site support facilities such as bike racks, lockers, water fountains, etc., along sidewalks, pathways, and bikeways and near destination areas, to the extent possible.
- Plan facilities in coordination with the development of UC Merced.
- Continue to integrate bicycling with the transit system.
- Promote the development of a “Bicycle Buddy” website.
- Design sidewalks, pathways, and bikeways that integrate with the City’s Parks and Open Space Master Plan.
- Design facilities that support choosing active transportation at night.
- Provide training in pathway and bikeway design to City staff involved in land use and infrastructure development.
- Use cities designated by the League of American Bicyclists (LAB) as Platinum or Gold cities as models to follow for the best bikeway designs and encourage staff to seek advice from other bikeway planning professionals through the use of professional organizations to use as resources.
- Explore designs and appropriate sites in Merced for treatments such as sharrows, shared streets, and bike boulevards.
- Encourage the use of green thermoplastic in treatments for on-street cycling facilities and green cycling signage to reinforce their connection in users of all modes’ minds.
- Design bikeways that conform to the Caltrans Design Manual standards for bikeway classifications.

Enforcement

Enforcement involves police officers ensuring that all parties are held accountable to the law, but enforcement is also about implementing proactive measures to improve the safety of users of all modes. Increasing the public’s awareness of pedestrians and bicyclists through education will enhance safety; as such, many of the Education-related policies supplement and support the “Enforcement” policies listed below.

GOAL: Reduce the incidence of pedestrian-related and bicycle-related collisions with enforcement that emphasizes education, compliance, and proactive measures.
Policies:

♦ Continue to design sidewalks, pathways, and bikeways that minimize conflicts between bicyclists, motor vehicles, and pedestrians to the extent practical.

♦ Consider a system whereby people can easily report maintenance issues such as paths in need of sweeping, overgrown vegetation, lack of support facilities, vandalism, etc.

♦ Consider the provision of police patrol on paths.

♦ Seek to minimize the occurrence of bicycle thefts in the community through site plan review and consideration of use of bike lockers.

♦ Promote increased traffic safety with special attention to intersection operations and associated design, and hazards which could cause personal injury.

♦ Avoid situations where *paths* are located along the back sides of homes with limited visibility. Open fencing along *paths* should be considered, especially adjacent to multi-family developments.

**Evaluation**

To determine the benefits and successes associated with implementing the measures addressed in the ATP, routine assessments will need to be conducted. As funding is made available, coordination between various City Departments (Planning, Engineering, Parks and Recreation, Police, and Public Works), will ensure the implementation of the most beneficial, high priority improvements.

**GOAL:** Develop means to consistently and accurately measure active transportation use. Monitor facility and program successes.

**Policies:**

♦ Encourage surveys at schools and major employers to measure active transportation mode share from year to year.

♦ Seek to measure active transportation activity at various areas.

♦ Monitor the progress of the ATP, and update as required.

♦ Utilize the ATP to guide future decisions and recommendations, particularly as it pertains to project selection both for use of local funding sources and grant opportunities.

♦ Seek funding from various sources to implement the ATP.

♦ Evolve the Bicycle Advisory Commission into a more comprehensive Commission whose charges include pedestrian matters, issues affecting users or potential users with disabilities, and other active transportation subjects.

♦ Monitor progress on the League of American Bicyclist’s recommendations, with the goal of applying to increase Merced’s standing on the list of “Bike Friendly Communities.”
Equity

When considering transportation needs to accommodate growth of the community, improvements to the City’s active transportation network should be implemented with due consideration given to enhancements to all transportation modes (i.e. bicycle, vehicular, transit, and pedestrian). It is important to make sure that system improvements benefit the community as a whole, not just a limited geography or population. Reaching out to all regions of the community in workshop settings will provide opportunities for the City’s populace to address their comments and suggestions during the planning process.

Many of the policies under the “Encouragement” category, as they pertain to partnering and coordination, also apply to “Equity,” as a means to providing bike facilities throughout the City to most potential users.

GOAL: Work to encourage active transportation throughout the community for the residents, visitors, students and employees of the City of Merced.

Policies:

♦ Include, where appropriate, an assessment of pedestrian and cyclist transportation issues in City reports of discretionary projects, and environmental reviews.

♦ Seek to update the Official City Design Standards to be consistent with the ATP, the *Merced Vision 2030 General Plan* and the *Climate Action Plan*, by inclusion of facilities such as: traffic signal sensors that detect bicycles, placement of sharrows and other on-street pavement markings including preferred materials therefor, and signs beside and on the street that alert motor vehicle drivers to the presence and appropriateness of bicyclists on the street.

♦ Seek to develop an off-street trail and bikeway system in South Merced.

♦ Where consistent with City policies, consider adoption of code amendments concerning active transportation-related facilities.
**Bikeway Standards**

This chapter of the Bicycle Master Plan discusses several bikeway design guidance documents, and seeks to clarify which must be followed and which should be viewed as resources. These determinations and applicable roadways are listed in Appendix E Table B.

Appendix E Table B: City of Merced Bicycle Master Plan - Guidance Documents

<table>
<thead>
<tr>
<th>Document</th>
<th>Application</th>
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</thead>
<tbody>
<tr>
<td>AASHTO Green Book</td>
<td>Mandatory for National Highway System</td>
</tr>
<tr>
<td></td>
<td>Optional for local roads</td>
</tr>
<tr>
<td>California Highway Design Manual</td>
<td>Mandatory for State Highways</td>
</tr>
<tr>
<td></td>
<td>Optional for local roads</td>
</tr>
<tr>
<td>California Manual on Uniform Traffic Control Devices</td>
<td>Mandatory for all roads and highways, with limited options for flexibility or experiments</td>
</tr>
<tr>
<td>California Fire Code</td>
<td>Requires minimum clear width of 20 feet on all streets, unless exempted by local fire department</td>
</tr>
<tr>
<td>California Streets and Highways Code, and California Vehicle Code</td>
<td>Include elements that influence the California Manual on Uniform Traffic Control Devices</td>
</tr>
</tbody>
</table>

**Existing and Proposed Bikeways**

Maps of existing and proposed bikeways from the City of Merced Bicycle Master Plan are included on the following pages, in Appendix E Map III through Appendix E Map VI.
Appendix E Map IV: City of Merced Bicycle Master Plan– Existing Bikeways South
Appendix E Map V: City of Merced Bicycle Master Plan – Proposed Bikeways North
Appendix E Map VI: City of Merced Bicycle Master Plan– Proposed Bikeways South
Existing Programs

Many education and encouragement programs serve the Merced community. Programs and agencies are listed in Appendix E Table C below.

Appendix E Table C: City of Merced Bicycle Master Plan- Existing Programs

<table>
<thead>
<tr>
<th>Program</th>
<th>Description</th>
<th>Lead</th>
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<tbody>
<tr>
<td>Bicycle Clinics or Rodeos</td>
<td>Children learn bicycle skills at an annual Merco Credit Union racing event.</td>
<td>Merced Police Department Explorer Scouts</td>
</tr>
<tr>
<td>Youth Bicyclist Diversion Program</td>
<td>Children cited for riding without helmets or other infractions attend a bicycle safety class with their parents in lieu of a fine, and receive a free helmet. This program is on hold due to lack of funding.</td>
<td>Merced Police Department and probation department</td>
</tr>
<tr>
<td>Share the Road Outreach</td>
<td>Share the Road signs, driver’s education materials, and a dedicated page on the city’s website include information about sharing the road safely, and bicyclists’ right to use the road.</td>
<td>City and County</td>
</tr>
<tr>
<td>Professional Driver Training</td>
<td>Transit drivers receive 40 hours of training upon hire, which includes a unit on bicyclists that covers their right to the road, use of bike lanes, and safe passing distances. School bus drivers receive training based on a Department of Education manual that emphasizes caution driving near bicyclists, safe passing distances, and rights of bicyclists.</td>
<td>City, School District, and Transit Operators</td>
</tr>
<tr>
<td>Wheel Solutions</td>
<td>Wheel Solutions is an education program that teaches bicycle repair and maintenance skills to homeless individuals, and provides each participant with a donated bicycle. The program is currently operating on a reduced schedule due to lack of funding, but holds monthly repair clinics and accepts bicycle donations.</td>
<td>Merced County Community Action Board</td>
</tr>
</tbody>
</table>

Enforcement

The Merced Police Department has a limited bicycle safety program that includes basic academy training on traffic laws and targeted enforcement campaigns.

Safety

The Merced Bicycle Master Plan includes a discussion of several metrics of safety, including collisions, school information, youth citations, and bicycle theft.
Transit

Multiple transit providers serve the City of Merced, including:

- Merced County Transit offers fixed-route service in the City
- Cat Tracks is a UC Merced transit service
- Amtrak train and bus service
- Yosemite Area Regional Transit Service (YARTS)

All transit vehicles in these fleets are equipped with racks or other space to carry bicycles, extending the potential range of bicycling trips in the area.

Past Expenditures

A list of past bicycle-related expenditures included in the 2013 Bicycle Master Plan is included in Table 23 below. This table includes projects between 2008 and 2013. Since the passage of the Bicycle Master Plan, further expenditures have been made which are discussed in “Recent Expenditures” on page 52.

Appendix E Table D: City of Merced Bicycle Master Plan- Previous Expenditures

<table>
<thead>
<tr>
<th>Project Type</th>
<th>Project</th>
<th>Approximate Expense</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bike Path</td>
<td>Cottonwood Creek – Phase I (E of G St N of hosp to Tanager) (Project #103045)</td>
<td>$207,000</td>
</tr>
<tr>
<td>Bike Path</td>
<td>Cottonwood Creek – Phase II (Cottonwood Creek Commuter Bike Path)</td>
<td>$120,457</td>
</tr>
<tr>
<td>Bike Path</td>
<td>Cottonwood Creek – Phase III (White Dove to Gardner &amp; W of G Street)</td>
<td>$197,531</td>
</tr>
<tr>
<td>Bike Path</td>
<td>Campus Parkway bike path</td>
<td>Unknown</td>
</tr>
<tr>
<td>Bike Path</td>
<td>Highland Park bike path</td>
<td>Unknown</td>
</tr>
<tr>
<td>Bike Path</td>
<td>Black Rascal Creek bikeway (Parsons to McKee)</td>
<td>$83,600</td>
</tr>
<tr>
<td>Bike Path</td>
<td>Barclay Way Bike Path (next to Bellevue Rd high school)</td>
<td>Unknown</td>
</tr>
<tr>
<td>Bike Path</td>
<td>Fahrens Creek Bike Path (W of R St, N of Yosemite Av) (Project #101067)</td>
<td>$458,465</td>
</tr>
<tr>
<td>Bike Path</td>
<td>Cottonwood Creek Bike Bridge to G Street (W of G over ditch)</td>
<td>$25,669</td>
</tr>
<tr>
<td>Bike Path</td>
<td>Black Rascal Creek – Moraga to Yosemite Ave/Lake Rd – ACTIVE</td>
<td>$591,000</td>
</tr>
<tr>
<td>Bike Path</td>
<td>Black Rascal Creek Bikeway “G” to “M”</td>
<td>$149,847</td>
</tr>
<tr>
<td>Bike Path</td>
<td>Bear Creek Bike Path/Bridges CMAQ Grant – ACTIVE</td>
<td>$1,674,000</td>
</tr>
<tr>
<td>Bike Lane</td>
<td>Yosemite Avenue bike lane @ G St / (Project #111061)</td>
<td>$21,500</td>
</tr>
<tr>
<td>Bike Lane</td>
<td>G Street Underpass (22nd St to 26th St) (Project #109052)</td>
<td>$33,000</td>
</tr>
<tr>
<td>Bike Lane</td>
<td>16th Street Overlay (on G St, from 16th St to 22nd St)</td>
<td>$33,000</td>
</tr>
<tr>
<td>Bike Lane</td>
<td>G Street Overlay (26th St to Park Ave)</td>
<td>$33,000</td>
</tr>
</tbody>
</table>
**Appendix E Table D, Continued: City of Merced Bicycle Master Plan- Previous Expenditures**

<table>
<thead>
<tr>
<th>Project Type</th>
<th>Project</th>
<th>Approximate Expense</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bike Lane</td>
<td>Paseo-Merced (10 feet of pavement on G/Bellevue)</td>
<td>Unknown</td>
</tr>
<tr>
<td>Bike Lane</td>
<td>Moraga (bike lanes on Yosemite Ave)</td>
<td>$100,000</td>
</tr>
<tr>
<td>Bike Lane</td>
<td>Bike lanes on Mercy Ave @ hospital</td>
<td>Unknown</td>
</tr>
<tr>
<td>Bike Lane</td>
<td>W 18th Street restriping/resurfacing (G to N Streets)</td>
<td>$33,000</td>
</tr>
<tr>
<td>Bike Lane</td>
<td>Bike lanes, Central &amp; South Merced – ACTIVE</td>
<td>$280,000</td>
</tr>
<tr>
<td>Bike Lane</td>
<td>Parsons Avenue Extension (Project #112036)</td>
<td>$5,000</td>
</tr>
<tr>
<td>Support Facility</td>
<td>M Street Retaining Wall (Bear Creek @ Mercy Community) (Project #104006)</td>
<td>$119,710</td>
</tr>
<tr>
<td>Support Facility</td>
<td>Mercy Hospital (employee bike cage) / privately installed</td>
<td>Unknown</td>
</tr>
<tr>
<td>Support Facility</td>
<td>Bike Racks/Bike Shelters (CMAQ grant) – ACTIVE</td>
<td>$202,100</td>
</tr>
</tbody>
</table>

**Safe-Routes-to-School: Improving Safety and Health for Merced Students (2016)**

A consultant team led a series of walk audits and working sessions at three Merced schools in August 2016. The resulting plan documents challenges identified during these sessions along with recommendations for improving walking and bicycling for Merced students and families.

Key challenges documented include:

- Arterial streets create barriers when safe crossings are not provided
- Railroad creates significant barrier
- Personal safety concerns including “stranger danger,” homeless camps, and stray dogs
- Lack of marked crossings and curb ramps
- Distance from home to school is challenging for walking
- Lack of connected bicycle facilities near schools, and lack of bicycle parking at schools

Recommendations were developed to address these challenges and divided into citywide efforts as well as specific improvements around four Merced campuses.
Citywide Recommendations

Programs

♦ Formalize a City or County SRTS planning committee
♦ Convene SRTS school teams at participating schools
♦ Launch pilot programs
♦ Develop a model school for walking and bicycling
♦ Encouragement: expand program beyond annual walk and bike to school days
♦ Encourage high school students to lead programs
♦ Teach traffic safety in schools
♦ Launch walking school bus and bike train programs
♦ Increase crossing guards and add safety patrols

Policies

♦ Evaluate school catchment areas for walkability
♦ Provide increased separation between modes of transportation
♦ Utilize temporary road configurations
♦ Stagger school release and establish remote drop-off locations
♦ Create or evaluate School Zones
♦ Implement pop-up traffic calming in School Zones
♦ Reduce speeds in School Zones
♦ Make double curb ramps the default
♦ Pass a strong Complete Streets ordinance, Develop a Complete Streets implementation guide
♦ Adopt a street design guide
♦ Conduct Health Impact Assessments

Projects

♦ Install curb extensions and crossing islands
♦ Install protected and buffered bike lanes
♦ Add leading pedestrian intervals and longer walk phases to pedestrian signals
♦ Install on-campus bicycle parking
♦ Install bike shelters and corrals
♦ Create a bicycle boulevard network
**School Recommendations**

**Pioneer Elementary School**
- Host “pop-up” parking lot reconfiguration
- Improve bicycle parking
- Calm traffic and improve crossings on East Gerard Avenue
- Work with developers to ensure that school access is prioritized
- Ensure that the new park east of campus is directly accessible
- Build roundabouts and open traffic flow on Coffee Street
- Build a pathway from S Parsons Avenue

**Hoover Middle School**
- Improve rail tunnel and intersections on E Santa Fe Avenue
- Formalize and enforce parking and drop off on E Santa Fe Avenue
- Paint intersection at E Santa Fe Avenue and 6th Street
- Traffic calm 26th Street between Glen and 7th; install raised crosswalk at 26th and 7th
- Work with Golden Valley students to lead programs

**Tenaya Middle School**
- Improve intersections adjacent to school
- Improve W Childs Avenue crossings
- Use traffic cones to reduce motor vehicle conflicts
- Install sheltered bicycle parking

**Golden Valley High School**
- Develop a bicycle map and bike route system
- Sponsor a student bicycle shop on campus
- Teach bicycle safety in school or after school
- Launch a campaign to build a skate park
Bicycle Friendly Community Application Feedback (2011)

The City of Merced submitted applications to the League of American Bicyclists (LAB) Bicycle Friendly Community (BFC) program in 2010 and 2011, and received an Honorable Mention. The LAB provides feedback to communities who submit applications outlining specific recommendations for the local contexts to either attain a BFC designation or reach the next higher BFC category.

The Merced Bicycle Advisory Commission reviewed this feedback at a meeting in 2017, summarizing the actions that had been completed since the previous application, and identifying short-term attainable actions the LAB recommended for Merced to become a Bronze BFC.

The following sections summarize progress made and short-term goals in each of the five E’s the LAB evaluates communities on: engineering, education, encouragement, enforcement, and evaluation.

Engineering

Progress Made:

♦ Engineering standards consider bicyclists
♦ Trail network under development
♦ City planners & engineers receive training in bicycle and pedestrian planning and engineering
♦ Bicycle parking facilities conform to currently recognized standards
♦ Most public buses are equipped with bicycle racks
♦ 20% of roads accommodate bicycles, and 1/3 of arterial streets have bike lanes or paved shoulders

Short-Term Goals

♦ Increase the amount of bicycle parking at popular destinations (transit stops, schools, recreation/entertainment facilities, retail/office clusters, and churches)
♦ Improve efficiency and safety at intersections and multi-use path crossings:
  ♦ Time traffic lights for bicycle speeds, and incorporate cameras, loop detectors, or bicycle signal heads
  ♦ Include on-street pavement markings to help bicyclists trigger loop detectors
  ♦ Consider installing bicycle boxes for greater bicyclist visibility
  ♦ Incorporate grade-separated multi-use path crossings and other treatments for medium and high-traffic roads
♦ Educate path and road users on right-of-way hierarchies
♦ Ensure schools and surrounding neighborhoods are safe and convenient for bicycling
♦ Ensure new or improved facilities conform to NACTO Urban Bikeway Design Guide & AASHTO Guide for the Development of Bicycle Facilities & CA MUTCD & California HDM Chapter 1000
♦ Consider infrastructure such as colored bike lanes, bicycle tracks, and contra-flow bicycle lanes
♦ Provide ongoing training for engineering, planning, and law enforcement staff
♦ Consider a membership to the Association of Pedestrian and Bicycle Professionals for City bicycle and pedestrian staff
♦ Host a Smart Cycling course for City staff to increase understanding of bicyclist needs, behavior, and their right to use city streets and multi-use paths for transportation
♦ Install wayfinding signage at strategic locations
♦ Consider measuring the bicycle level of service (BLOS) on roads and intersections, to identify:
  ◊ The most appropriate routes for inclusion in the bicycle network
  ◊ The weak links in the network and priority sites for improvement
  ◊ Any alternative treatments for improving the bicycle-friendliness of a roadway or intersection
♦ Consider road diets in appropriate locations to make streets more efficient and safe; use created space for bicycle and pedestrian facilities

Education

Progress Made

♦ Community website has a page dedicated to motorists & bicyclists sharing the road safely
♦ “Share the Road” signs have been installed on G Street
♦ Transit operators and school bus drivers take a safe driving training
Short-Term Goals

♦ Make bicycle safety curriculum a routine part of public education

♦ Work with BAC and local advocates to implement a Safe-Routes-to-School program that emphasizes bicycling for all grade levels

♦ Continue to expand public education campaigns through public service announcements, a community newsletter article, or a bicycle ambassador program

♦ Enlist the help of local advocates for content and strategy development, and for implementation assistance

♦ Improve the reach of bicycle safety campaigns; use the LAB’s “Ride Better” tips in outreach, education, and encouragement efforts

♦ Add bicycling and motorist education messages to local activities, such as drivers licensing and testing, or include inserts in utility bills

♦ Start a bicyclist and motorist ticket diversion program (waive violation fees by attending a bicycling education course)

♦ Start a motorist education program for professional drivers such as bus and taxi drivers

♦ Integrate Smart Cycling curriculum into motor vehicle violation diversion programs, SRTS, and motorist education classes for City and private sector employees

♦ Host a League Cycling Instructor (LCI) seminar to increase the number of LCIs in the community

♦ Offer regular bicycle maintenance classes to residents at public parks, libraries, community centers, and in conjunction with City events

♦ Offer skills classes, Traffic Skills 101, and commuter classes on a frequent basis

Encouragement

Progress Made

♦ National Bike Month is promoted with a City proclamation, community ride, mayor-led ride, an event calendar, a website, commuter breakfasts and energizer stations, and a trail construction/cleanup day

♦ Outside of Bike Month, community rides and trail construction/cleanup days are held
Short-Term Goals

- Reach additional children through recreational programs, bicycle repair co-ops, family-friendly community bicycle events, and through youth bike clubs
- Promote, host, sponsor, or encourage bike-themed family-friendly community events:
  - Bicycle Movie Festival
  - 4th of July bicycle parade
  - Thanksgiving appetite ride
  - “Dress like Santa” community rides
  - Kids triathlon
  - Halloween bicycle decorating contest
  - Bike to the Arts events
- Pass an ordinance that would require larger employers to provide bicycle parking, shower facilities, and other end-of-trip facilities
- Encourage local colleges to promote bicycling and seek recognition through the Bicycle Friendly University
- Actively involve the local bicycle community in planning efforts, policy development, and public outreach
- Set up and promote celebrations, ribbon cuttings, and rides each time the community completes a new bicycle-related project
- Design and publish local bicycle maps in paper and online, addressing diverse needs and user levels, and also identifying the location of landmarks, greenways, public restrooms, bike routes, scenic routes, bicycle repair stations, bicycle parking, and transit stations
- Offer a “Ciclovia” or “Summer Streets” event, closing off a major corridor to auto traffic and offering the space to bicyclists, pedestrians, and group exercise events
- Partner with a local advocacy group or club to launch a bike buddy or mentorship program for inexperienced riders
- Ensure that there is a place for visitors and community members to rent bicycles
- Implement a mechanism that ensures facilities, programs, and encouragement efforts are implemented in traditionally underserved communities
Enforcement

Progress Made

♦ Officers receive specific training on the relationship between bicycling and law enforcement
♦ Specific penalties are in place for failing to yield to a bicyclist when turning, and/or it is illegal to park or drive in a bicycle lane
♦ There are penalties for motor vehicle users that “door” bicyclists
♦ There is a ban on cell phone use while driving
♦ There is a ban on texting while driving

Short-Term Goals

♦ Invite police staff to become an active member of the bicycle advisory committee
♦ Appoint a law enforcement point person to interact with bicyclists
♦ Actively facilitate stronger connections between bicycle advocates, the wider bicycling community, and law enforcement
♦ Use targeted information and enforcement to encourage motorists and bicyclists to share the road, i.e. with brochures or tip cards explaining each user’s rights and responsibilities
♦ Increase the number of police officers patrolling multi-use paths and streets on bike, keeping secluded multi-use paths safe, and expanding the officers’ understanding of the condition for bicyclists
♦ Repeal local laws that discriminate against bicyclists, or restrict their right to travel, or reduce their relative safety

Evaluation & Planning

Progress Made

♦ Merced has a Bicycle Master Plan with a dedicated funding source
♦ There is a trip reduction ordinance or program

Short-Term Goals

♦ Expand the City bicycle manager’s time focused on bicycle projects
♦ Increase bicycle program staff time
♦ Fully implement the comprehensive bike plan and continue to close gaps in the bicycling network

♦ Expand efforts to evaluate bicycle crash statistics and produce a specific plan to reduce the number of crashes in the community

♦ Conduct an economic impact study on bicycling in your community

♦ Expand the bicycle manager’s time focused on BFC efforts

♦ Consider a full-time staff person devoted to acquiring bike/pedestrian grants and making the community bike-friendly

City of Merced Municipal Code

Title 8 Health and Safety

8.40 Nuisance: 8.40.050 Keeping Sidewalks Clean

The occupant or tenant, or in the absence of occupant or tenant, the owner, lessee, or proprieter of any real property in the city in front of which there is a paved sidewalk shall maintain the sidewalk free of accumulating dirt, sand, soil (including eroding dirt, sand, or soil), leaf, vegetation, waste paper, hay, grass, straw, weeds, litter, sawdust, building materials, paint, chemical, combustible materials, trash, or other debris, and shall promptly remove such materials from the sidewalk, gutter, and storm drains located under or next to the sidewalks. Sweepings from the sidewalk shall not be swept, blown by mechanical means, or otherwise made or allowed to go into the gutter or roadway, but shall be disposed of in receptacles maintained on such real property as required for the disposal of garbage or green waste, as appropriate.

Title 10 Vehicles and Traffic

10.24 Pedestrians: 10.24.010 Crosswalks

A. The city engineer shall establish, designate and maintain crosswalks at intersections and other places by appropriate devices, marks or lines upon the surface of the roadway as follows:

Crosswalks shall be established and maintained at all intersections within a business district, and at other places within or outside business districts where the city engineer determines that there is a particular hazard to pedestrians crossing the roadway subject to the limitation contained in subsection B of this section.

B. Other than crosswalks at intersections, no crosswalk shall be established in any block which is less than four hundred (400) feet in length. Elsewhere, not more than one additional crosswalk shall be established in any one block and such crosswalk shall be located as nearly as practicable at midblock.
10.44 Bicycles: 10.44.020 Bicycle Registration

No person shall ride, operate or use a bicycle upon any public street or highway in the city without first registering the bicycle on a national bicycle registry.

10.44 Bicycles: 10.44.040 Registration – Operation Restricted

When registered, bicycle registration shall entitle the owner to operate such bicycle for which the registration has been issued upon all the streets, public highways and designated bicycle trails of the city. Bicycles may also be operated on all the sidewalks of the city except the following, when appropriate signs are displayed thereon:

- Main Street from G to V Street
- 18th Street from Martin Luther King Jr Way to N Street
- I Street from 16th to 18th Street
- Martin Luther King Jr Way from 16th to 18th Street
- K Street from 16th to 18th Street
- M Street from 16th to 20th Street
- N Street from 16th to 18th Street.

Title 20 Zoning

20.38 Parking and Loading: 20.38.080 Bicycle Parking

A. Applicability. All multi-family and nonresidential land uses shall provide bicycle parking as specified in this section and in accordance with Sections 20.38.020 (Applicability) and 20.38.030 (Required Parking Spaces), except for the following uses:

1. Gas and service stations
2. Maintenance and repair services
3. Vehicle repair
4. Vehicle sales and rental
5. Wholesaling
6. Construction and material yards
7. Warehousing and distribution
8. Other similar uses as determined by the director of development services.
B. Types of Bicycle Parking.

1. Short-Term/Class II Bicycle Parking. Short-term/Class II bicycle parking provides shoppers, customers, and other visitors who generally park for two (2) hours or less a convenient and readily accessible place to park bicycles.

2. Long-Term/Class I Bicycle Parking. Long-term/Class I bicycle parking provides employees, residents, visitors and others who generally stay at a site for several hours a secure and weather-protected place to park bicycles.

C. Bicycle Parking Spaces Required. The number of required bicycle parking spaces shall be as specified in Table 20.38-4 (Required Bicycle Parking Spaces).

Appendix E Table E: City of Merced Municipal Code- Required Bicycle Parking

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Required Short-Term Spaces</th>
<th>Required Long-Term Spaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multi-family Dwellings of 6 units or more, Group Housing, and Single Room Occupancy</td>
<td>10% of required automobile parking spaces; minimum of 2 spaces</td>
<td>1 per 10 units; minimum of 2 spaces</td>
</tr>
<tr>
<td>Non-Residential Uses</td>
<td>8% of required automobile spaces; minimum of 2 spaces</td>
<td>8% of required automobile spaces for uses 10,000 square feet or greater; minimum of 2 spaces</td>
</tr>
</tbody>
</table>

D. Short-Term/Class II Bicycle Parking Standards. Short-term bicycle parking shall be located within one hundred (100) feet of the primary entrance of the structure or use it is intended to serve, be readily visible to passers-by, and at least twenty-five (25) percent of required short-term bicycle parking spaces shall be covered.

E. Long-Term Bicycle Parking Standards. Following standards shall be recommended for long-term bicycle parking:

1. Location. Long-term bicycle parking shall be located in highly visible, well-lighted areas that are convenient to the street and users.

2. Cover. A minimum of seventy-five (75) percent of required long-term bicycle parking spaces shall be covered.

3. Parking Facilities. Long-term bicycle parking spaces must be secure and may include:
   a. Covered, lockable enclosures with permanently anchored racks for bicycles; or,
   b. Lockable bicycle rooms or areas with permanently anchored racks; or,
   c. Lockable, permanently anchored bicycle lockers.

F. Parking Space Dimensions.

1. Minimum dimensions of two (2) feet by six (6) feet shall be provided for each bicycle parking space (illustrated in Figure 20.38-3).

2. An aisle of at least five (5) feet shall be provided behind all bicycle parking to allow room for maneuvering.

3. Two (2) feet of clearance shall be provided between bicycle parking spaces and adjacent walls, polls, landscaping, pedestrian paths, and other similar features.
4. Four (4) feet of clearance shall be provided between bicycle parking spaces and adjacent automobile parking spaces and drive aisles.

G. Rack Design. Bicycle racks must be capable of locking both the wheels (one (1) wheel with a U-type lock), providing at least two (2) points of contact with the frame of the bicycle, and supporting bicycles in an upright position. “Inverted U” bicycle racks are highly recommended.

H. Cover. Required cover for bicycle parking spaces shall be permanent, designed to protect the bicycle from sun and rainfall, and be at least seven (7) feet above the floor or ground.

Appendix E Figure 3: City of Merced Municipal Code - Short-Term Bike Parking

City Maintenance Policies

On-Street Bikeways

On-street bicycle facilities are swept in conjunction with roadways. Residential streets are swept twice monthly; business districts are swept weekly.

Bicycle Paths

Off-street bicycle paths are maintained by the Streets and Parks Divisions. Paths are swept every other week, and other maintenance or repairs are performed on an as-needed basis when an issue is reported to Public Works.

Sidewalks

Routine sweeping and clearing of debris on sidewalks is the responsibility of the adjacent property owner or tenant, as established in code section 8.40.050. Repairs to the sidewalk surface are made by Public Works on an as-needed basis when issues are reported by the public, or when staff identify a need during other work or maintenance operations.
Appendix F: Public Participation Documents

Documentation of Public Outreach and Coordination

Appendix F contains documentation of public outreach undertaken while creating this plan, including photos, agendas, sign-in sheets, flyers, presentational materials, and notes from meetings.

This information also shows the coordination with neighboring jurisdictions, including school districts within the plan area, and how it is consistent with other local or regional transportation, air quality, or energy conservation plans, including but not limited to, general plans and a Sustainable Community Strategy in a Regional Transportation Plan. The coordination between the City of Merced and organizations, both locally and statewide, throughout the process has helped to ensure that this plan aligns with those agencies’ plans.

Examples of agencies participating in this process include but are not limited to the Merced Union High School District, Merced County Public Health, the High-Speed Rail Authority, Merced College, the Merced County Association of Governments, Cultiva La Salud, Building Healthy Communities, UC Merced, and other partners.
<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mark Chalmers</td>
<td>Resident</td>
<td><a href="mailto:markchalmers@gmail.com">markchalmers@gmail.com</a></td>
</tr>
<tr>
<td>Juana Chavez</td>
<td>Resident</td>
<td><a href="mailto:chavez.juana@gmail.com">chavez.juana@gmail.com</a></td>
</tr>
<tr>
<td>Rose Porter</td>
<td>Resident</td>
<td></td>
</tr>
<tr>
<td>David Ocampo</td>
<td>Merced Union HSD</td>
<td><a href="mailto:docampo@merced.org">docampo@merced.org</a></td>
</tr>
<tr>
<td>Nicholette Gallagher</td>
<td>Resident</td>
<td><a href="mailto:vincandnikid@yahoo.com">vincandnikid@yahoo.com</a></td>
</tr>
<tr>
<td>Ben Lichty</td>
<td>CA High-Speed Rail Authority</td>
<td><a href="mailto:Ben.Lichty@hsr.ca">Ben.Lichty@hsr.ca</a></td>
</tr>
<tr>
<td>Laurel Smith</td>
<td>CA High Speed Rail Authority</td>
<td><a href="mailto:laurel.smith@hsr.org">laurel.smith@hsr.org</a></td>
</tr>
<tr>
<td>Corinne Chavez</td>
<td>Rec + Parks Commissioner</td>
<td><a href="mailto:corinne.chavez08@yahoo.com">corinne.chavez08@yahoo.com</a></td>
</tr>
<tr>
<td>Theresa Rosen</td>
<td>City of Merced</td>
<td><a href="mailto:trosen@cityofmerced.org">trosen@cityofmerced.org</a></td>
</tr>
<tr>
<td>Natalia Austin</td>
<td>MCAG</td>
<td><a href="mailto:natalia.austin@mcag.org">natalia.austin@mcag.org</a></td>
</tr>
<tr>
<td>Paul Baxter</td>
<td>Merced College</td>
<td><a href="mailto:paul.baxter@merced.edu">paul.baxter@merced.edu</a></td>
</tr>
<tr>
<td>Stephanie Nathan</td>
<td>Public Health</td>
<td><a href="mailto:snathan@co.merced.ca">snathan@co.merced.ca</a></td>
</tr>
<tr>
<td>Lisa Kuyper-Grant</td>
<td>Bicycle Advisory Committee</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>or Bicycle Coalition</td>
</tr>
</tbody>
</table>
Merced Active Transportation & Safe Routes to School Plan
Joint Meeting: Technical Advisory Committee & Citizen Focus Group
April 18, 2017 from 4:00 PM to 6:00 PM

Meeting Notes
A joint meeting of the Technical Advisory Committee and the Citizen Focus Group was held to present project work completed to date and gather input on project goals and priorities. Discussion themes and outcomes are documented below.

Introductions
♦ Mark Chalico – resident
♦ Juana Chavez – resident
♦ Rose Porter – resident; Living Well Café
♦ David Ocampo – Merced Union High School District
♦ Nicholette Gallagher – resident
♦ Ben Lichty – California High Speed Rail Authority
♦ Laurel Smith – California High Speed Rail Authority
♦ Corinne Chavez – Recreation & Parks Commissioner
♦ Theron Roschen – City of Merced Engineer
♦ Natalia Austin – MCAG
♦ Paul Baxter – Merced College
♦ Stephanie Nathan – Merced County Public Health
♦ Lisa Kayser-Grant – Bicycle Advisory Commission & Bicycle Coalition

Goal Setting Exercise
Participants were asked to write down and discuss their vision for walking and bicycling in Merced ten years from today, thinking about what a successful plan would accomplish for the community. Responses are documented below.

♦ Distinguished walking and bicycling paths
♦ Merced is a walking town with appropriate transportation where needed
♦ K Street and Canal Street are complete streets that are safe and comfortable for walking and bicycling, and accessible
♦ Key walking and bicycling routes to school are identified, and improvements are prioritized along these routes
♦ Shift in thinking – driving is not the default, and lifestyle/livability are more important
♦ Complete Streets connect Merced
Walking and bicycling are the highest priority for downtown investment
- Bike-share, bike parking, and separated bikeways
- Leadership champions walking and bicycling
- A politically sanctioned priority list of projects with dedicated funding
- Significant mode shift for children walking and bicycling to school safely
- Updated improvement and development standards that address ATP goals
- Bicyclists are a common sight
- Cars in the downtown area are scarce
- Cars are slower, and there is less congestion
- Well-defined bikeways
- Healthier community
- Reduced greenhouse gases, reduced congestion
- More people bicycling and walking creates an inviting atmosphere
- People from other cities that are used to walkable communities see Merced as an inviting community and will move here
- More businesses will be attracted to downtown areas and other places where people are walking and bicycling
- More people can reach their destinations without driving
- Wider bicycle and pedestrian paths
- Merced is an active and vibrant community, where downtown residents advocate for the area to be a bicycling and walking city with wider sidewalks.
- K Street is a walking hub to John Muir Elementary and to Main Street
- Gold standard – Merced considered a Bicycle Friendly Community by the League of American Bicyclists
- UC Merced is better connected to downtown
- Every road has a sidewalk, bicycle path, and trees, and there are few or no collisions between vehicles and bikes/pedestrians
- Bus routes and transit stops are improved

Review Completed Work
- Removing on-street parking to provide bicycle facilities is likely a non-starter in the downtown area
- Consider mode share goals for public agency employees – schools, city, and county
- Coordination with High Speed Rail station area planning
  - Downtown station area plan focusing on how to bring people to the station on foot, by bicycle, and on transit
- Measure V – half cent sales tax; could be used to leverage as a local match for federal funding
- Enforcement challenges – limited funding; their mission is focused on addressing crime, not on traffic enforcement
High Priority Connections

General Comments and Improvement needs:

♦ Uneven sidewalk surfaces create challenges for people walking and bicycling, especially for those using wheelchairs or other mobility devices
♦ Accessibility improvements to bus stop areas – paved surfaces, shelters, fewer potholes
♦ Consider community group to support or raise funding for ADA improvements, or “sponsor” the corner near their home or business
♦ Personal security concerns near schools, with strangers in vehicles trying to recruit children for illegal activity or engaging in domestic disputes
♦ School events could build excitement around walking and bicycling
♦ Motorists generally do not respect or stop for people in wheelchairs or power chairs
♦ Conduct SRTS/ADA audits at every school to identify improvements

Locations for Improvements:

♦ Main Street needs a stop sign or flashing light to protect pedestrians
♦ Exit point of Bear Creek Bike Path needs to have ADA accessibility, completed sidewalks, and better water drainage
♦ Merced Avenue and Parsons & Childs need distinguished walking and bicycling paths
♦ Key accessibility challenges:
   o 23rd Street and P Street – no ramp
   o 23rd Street and O Street – uneven pavement
   o 23rd Street and R Street – sidewalk pavement damaged; bus drops off passengers in grass; no marked crosswalk
♦ 16th Street – priority for Complete Street; leads to freeways and currently lacks sidewalks
♦ SR 99 is a barrier
♦ Motel Drive/Merced Avenue/Almond Avenue – offset skewed intersection with triangular island; consider reconfiguring or creating a roundabout to improve flow and reduce conflicts
♦ G Street and R Street – connections north to shopping, university, and across SR 99
♦ Need for better sidewalk and bike lanes on Santa Fe
Engagement Priorities
Meeting participants were provided with a packet identifying stakeholders and advocates, and asked to provide feedback if information was incorrect or they knew of additional groups or individuals that should be contacted. General comments included:

- Park cleanup groups
- Church-based groups, including youth groups
- Tabernacle Church currently has a late-night walking group that conducts neighborhood patrols
- Present information at Sunday church services

Next Steps

- Alta will distribute schedule information to the group
- Alta & City staff will identify project milestones to share information with Council and encourage their feedback
Meeting Agenda

1. Introductions

2. Overview of Considerations
   a. Staffing
   b. Design and construction
   c. Maintenance

3. General Funding Sources

4. Challenges and Opportunities

5. Next Steps
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<thead>
<tr>
<th>Name</th>
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<tr>
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</tr>
<tr>
<td>Steven Son</td>
<td>City of Merced</td>
<td><a href="mailto:sons@cityofmerced.gov">sons@cityofmerced.gov</a></td>
</tr>
<tr>
<td>Adilene Peña</td>
<td>Cultiva La Salud</td>
<td><a href="mailto:qpena@unitedwaymerced.org">qpena@unitedwaymerced.org</a></td>
</tr>
<tr>
<td>Martha Armas-Kelly</td>
<td>Cultiva La Salud United Way</td>
<td><a href="mailto:martha@unitedwaymerced.org">martha@unitedwaymerced.org</a></td>
</tr>
<tr>
<td>Michael Heen</td>
<td>City of Merced</td>
<td><a href="mailto:heen@cityofmerced.org">heen@cityofmerced.org</a></td>
</tr>
<tr>
<td>Lisa Kaysor-Grant</td>
<td>Merced Bicycle Coalition</td>
<td><a href="mailto:LKaysorgrant@yahoo.com">LKaysorgrant@yahoo.com</a></td>
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<td>MCAG</td>
<td><a href="mailto:natalia.austin@mcagov.org">natalia.austin@mcagov.org</a></td>
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Introductions

♦ Steven Son – Engineering; Deputy Dir. Public Works
♦ Michael Hren – Principal planner
♦ Ben Lichte – HSR Authority
♦ Kendra & Emily – Alta
♦ ALTA send Steven the information on the ATP cycle 3 resubmitting happening now
♦ Adalyn Pena – Cultiva la Salud
♦ Martha Armas-Kelley – Cultiva la Salud (PITCH grant, ATP grant coordinator)
  o PITCH partnership in community health
♦ Lisa Keyser-Grant – BAC, past grant work
♦ Natalia - MCAG

Overview of Considerations

♦ Staffing
  o Project delivery is a struggle – restructuring of department. Trying to refocus staff on what needs to be done. Anticipating 6 months-1 yr before things settle.
  o Projects prioritized based heavily on how easily they can be delivered
  o Need to move towards dedicating individual staff time at the City solely to bike/ped, with the hope of eventually having a person fully devoted to active transportation
  o UC Merced has a transportation planner, but doesn’t have a dedicated bike/ped person

♦ Design & Construction
  o City doesn’t have staff to design in-house. Don’t have staff to hire consultants to do the design either though. That’s part of the next year.
  o Low ridership/walking currently, so we should be doing a lot of surveying/input gathering to make sure we can identify where people WANT to be walking and bicycling now
    ▪ Education and marketing/encouragement of new facilities will be important
    ▪ SafetyTown USA
  o Need for capacity building around the planning & design process for residents, so they understand the constraints
  o Use signs as education
  o Plan needs to consider whether each recommendation is feasible – ATP has a tight turnaround, any ROW acquisition is going to make a project unappealing for engineering to tackle
  o City policy on lane width? Steven not sure – he’ll look it up.

♦ Maintenance
  o Concerns about separated bikeways – maintenance, don’t want to be the guinea pig.
  Concerns about building something that involved if we aren’t sure who will potentially use it
  o Emphasis on “common sense approach” by the city
Animal control is a concern moving forward

General Funding Sources

♦ SB 1 – Merced is disadvantaged, and with HSR on the horizon
  o $100M for parkway expansion to campus
  o $400M for ACE extension towards Modesto (Merced is phase 2 of this effort)
  o ATP applications are best bet to access this funding

♦ ATP – regional through SanJuan COG
  o January release – Applications due in February 2018
  o $25 million available for Cycle 4. Half to MPOs, half through statewide competitive

♦ FHWA HSIP
  o General Notes
    ▪ Data driven, focused on hard figures that can be assigned
  o SR 59/MLK Jr Way
  o SR 140/Central Yosemite Highway
  o Hwy 99 crossings

♦ People for Bikes Community Grant Program
  o Smaller funding amounts
  o Requires coalition of city involvement, nonprofit partners
  o Potential uses – refresh sharrows downtown, small projects

Challenges & Opportunities

♦

Next Steps

♦ Project Mesa (community effort)
What Mode of Transportation Do You Prefer?
¿Qué Medio de Transporte Prefieres?

Place a GREEN dot next to the mode of transportation you currently use for everyday purposes.
Coloque un punto VERDE al lado del medio de transporte que usted usa actualmente.

Place a YELLOW dot next to the mode of transportation you would like to use for everyday purposes.
Coloque un punto AMARILLO al lado del medio de transporte que a usted le gustaría usar día a día.

Walking/Caminar
Driving Alone/Manejar sola

Bicycling/En bicicleta
Carpooling/Compartir automóvil

Merced Active Transportation/SRTS Plan
Merced Active Transportation & Safe Routes to School Plan
Technical Advisory Committee Meeting
September 19, 2017 from 2:00 PM to 3:00 PM
Merced City Hall

Meeting Agenda

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<tr>
<td>1. Introductions</td>
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<td>2. Overview of Low-Cost Countermeasures</td>
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<tr>
<td>3. Discussion: Where Countermeasures Would Benefit Merced</td>
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<tr>
<td>4. Next Steps</td>
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Meeting Notes

1 Introductions

- Kendra & Emily
- Michael Hren
- Ben Lichty HSRA
- Laurel Smith HSRA
- Juana Chavez
- Abigail, District 7
- Juan Olmos (Public Works)
- Corinne Chavez, Parks
- Janet Epling Casper – Human Services Agency

2 Low-Cost Countermeasures & Applications in Merced

- Bicycle Lanes, including buffered bike lanes
  - Parsons Ave – buffered bike lanes? (South of Bear Creek new portion, and some N of the creek as well. Some locations are wider than others)
  - G Street – lanes are currently quite wide
  - R Street N of Bear Creek
  - M Street N of Bear Creek
  - Bellevue (key university connection, safety concerns)
- 5th and N, by Tenaya School – there’s a street that’s wide enough for parking; can we provide a bike facility to connect to Childs
- Childs Ave going towards Golden Valley HS – there’s no sidewalk, only dirt, from B Street to the Overpass (which is also a mess) – canal east of the High School, kids walk along to get to Weaver School
  - Might be a candidate for paved shoulder and/or DG paths

- Roadway Reconfiguration (road diet)
  - Lane widths (10-12 feet) – has the city researched whether they allow lanes less than 12 feet wide? (Unsure – need to check in with Engineering, may be context-sensitive to the specific roadway)
  - 16th Street
  - Olive

- Paved Shoulders
  - What distinguishes a bicycle lane from a paved shoulder?
  - Bellevue (this is what they did)
  - Childs Ave – both sides
  - MLK – wherever the bike lanes stop

- Sidewalks and walkways
  - One of the alleyways between downtown & the bike trail (see meeting notes from one of the first meetings of this group – a woman was recommending this)
  - Campus Parkway – has nice sidewalks built, but there’s nothing over there. Buffered bike lanes?
    - Sidewalk is 8’ wide currently
  - South Merced residents feel a lack of connectivity to the facilities (paths especially) that are being newly built north of Bear Creek
  - Motel Drive – near freeway, Childs, McDonalds – no formal walkway, just gravel (challenging for strollers or wheelchairs etc) – Merced/Motel/Rose(?) may be a good candidate for a roundabout or some other way to facilitate traffic at that irregular/skewed intersection
  - Maintenance of existing sidewalks is another challenge. Many are skewed, cracked, tripping hazards/roots.
• Curb ramps
• Marked crosswalks and enhancements
  o Does Merced have any plans to implement ped scrambles at an intersection? (It’s been discussed, but not sure if there are any specific plans or timeframe to move forward)
    ▪ May be appropriate in contexts near future high speed rail station, where you have lots of people exiting the train/station area all at the same time
    ▪ UC Merced has talked about a few locations on their campus that may make sense for these in the future
  o R and Childs – they just did a 4 way stop sign, but it’s an irregular intersection. Marking crosswalks would help (and probably needs ped lighting as well)
    ▪ Need for education – students from Golden Valley
  o Hoover Area – some streets are pretty narrow (yield street), others are quite wide but lack formal pedestrian space. Many intersections with no stop in any direction
    ▪ Santa Fe, after the end of Hoover
  o Intersection – Yosemite/Stretch/Green (Alta take a look)
  o
• Curb Extensions and Parking Restrictions
  o V Street, south Merced – coming off of 8th has challenging sight lines
  o Olive Ave exiting the mall – landscaping creates visibility challenges for bicyclists (who are told to use the sidewalk in that section)
  o M Street btwn 18th & 16th – bike lanes end, and people go up onto the sidewalk (which is against city ordinance)
    ▪ Could be addressed with signage or other campaigns that make bicyclists confident that they should/could be taking the full lane
• Signal Enhancements and Beacons
  o Beacon by Golden Valley on Parsons has not been successful – cars don’t yield. (RRFB with in-pavement flashers)
  o One on G street by train overpass – heavily used, works well
    ▪ Concerns though with the new underpass, cars don’t stop because they are worried about being rear-ended by other cars
- Consider other traffic calming or increased visibility measures to address this challenging location

  - Stop Sign Enhancements
  - Roundabouts and Traffic Circles
    - Send out conflict (roundabout vs conventional) diagram to TAC/CFG
    - Merced Avenue & Ronnie
    - Challenges – limited budget for law enforcement/PD, too (they are just now getting their dedicated Traffic Unit back)

3 Discussion: Where Countermeasures Would Benefit Merced

4 Next Steps
## Merced Active Transportation Plan

### TAC Meeting Sign-In Sheet
September 19, 2017
Merced City Hall

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<td>City of Merced</td>
<td><a href="mailto:olmosj@cityofmerced.org">olmosj@cityofmerced.org</a></td>
</tr>
<tr>
<td>Juanita Chávez</td>
<td>Merced</td>
<td><a href="mailto:chavez.juanita@gmail.com">chavez.juanita@gmail.com</a></td>
</tr>
<tr>
<td>Cynthia Ratlaff</td>
<td>Youth Council</td>
<td><a href="mailto:gratzlaff7051232@musdstudents.org">gratzlaff7051232@musdstudents.org</a></td>
</tr>
<tr>
<td>Corinne Chávez</td>
<td>Rec &amp; Parks</td>
<td><a href="mailto:corinne.chavez.08@yahoo.com">corinne.chavez.08@yahoo.com</a></td>
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</tr>
<tr>
<td>Abigail Ramirez</td>
<td>LCSA</td>
<td><a href="mailto:ramirez2@leadershipcounsel.org">ramirez2@leadershipcounsel.org</a></td>
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<td>Lisa Kayser-Grant</td>
<td>Merced Bicycle Coalition</td>
<td><a href="mailto:lkbaysergrant5@yahoo.com">lkbaysergrant5@yahoo.com</a></td>
</tr>
<tr>
<td>Karin Groth</td>
<td>UC Merced</td>
<td><a href="mailto:kgroth@ucmerced.edu">kgroth@ucmerced.edu</a></td>
</tr>
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</tr>
<tr>
<td>Laurel Smith</td>
<td>HSR</td>
<td><a href="mailto:laurel.smith@hsr.ca.gov">laurel.smith@hsr.ca.gov</a></td>
</tr>
<tr>
<td>Abigail Ramirez</td>
<td>Leadership Counsel for Justice</td>
<td><a href="mailto:aramirez@leadershipcounsel.org">aramirez@leadershipcounsel.org</a></td>
</tr>
<tr>
<td>David Kesan</td>
<td>HSA</td>
<td><a href="mailto:jraspen@hsa.ca.merced.ca.us">jraspen@hsa.ca.merced.ca.us</a></td>
</tr>
<tr>
<td>Isai Palma</td>
<td>BHC</td>
<td><a href="mailto:isai@unitedwaymerced.org">isai@unitedwaymerced.org</a></td>
</tr>
<tr>
<td>Stephanie Nathan</td>
<td>Public Health</td>
<td><a href="mailto:snathan@cc.merced.ca.us">snathan@cc.merced.ca.us</a></td>
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Ciudad de Merced
Plan de Transporte Activo y Caminos

¡Ayuda a que nuestras calles sean más seguras para todos!

El Plan de Transporte Activo y Caminos Seguros a la Escuela de la Ciudad de Merced mejorará la seguridad, el acceso y movilidad de las personas de todas las edades para que puedan caminar y andar en bicicleta de forma segura en nuestra comunidad. ¡Necesitamos su opinión para poder mejorar nuestra comunidad!

**Taller Comunitario 1:** En inglés con traducciones al español y hmong disponibles
Centro Multicultural de Artes de Merced
645 W Main St, Merced, CA 95340
Miércoles 29 de noviembre de 6:30-8:30PM

**Taller Comunitario 2:** En español con traducciones al inglés y hmong disponibles
Tenaya Middle School
760 W 8th St, Merced, CA 95341
Jueves 30 de noviembre de 6:30-8:30 PM

Organizado por la Ciudad de Merced.
Merced Active Transportation and SRTS Plan Public Workshops

Help make our streets work for everyone!

The Merced Active Transportation and Safe Routes to School Plan will address safety, access, and mobility for people of all ages to walk and bicycle safely in the community. We need your input to improve our community!

Workshop 1: English with Spanish and Hmong Translation Available
Merced Multi-Cultural Arts Center
645 W Main Street, Merced, CA 95340
Wednesday, November 29, 2017 6:30-8:30 PM

Workshop 2: Spanish with English and Hmong Translation Available
Tenaya Middle School
760 W 8th Street, Merced, CA 95341
Thursday, November 30, 2017 6:30-8:30 PM

Organized by the City of Merced
<table>
<thead>
<tr>
<th>Name/Nombre</th>
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<tbody>
<tr>
<td>Yuliana Gomez</td>
<td>PLTI / PIQE</td>
<td><a href="mailto:yulianagomez282@yahoo.com">yulianagomez282@yahoo.com</a></td>
</tr>
<tr>
<td>Blanca Deanda</td>
<td>NUBSM</td>
<td>N/A</td>
</tr>
<tr>
<td>Isabel Sánchez</td>
<td>NUBS-Merced</td>
<td></td>
</tr>
<tr>
<td>Claudia G. Corchado</td>
<td>Cultiva la Salud</td>
<td><a href="mailto:claudia@unitedwaymerced.org">claudia@unitedwaymerced.org</a></td>
</tr>
<tr>
<td>Luz Mosquedo</td>
<td>PLTI / PIQE</td>
<td></td>
</tr>
<tr>
<td>Chai Charles Munn</td>
<td>Healthy House</td>
<td><a href="mailto:chai.munn@gmail.com">chai.munn@gmail.com</a></td>
</tr>
<tr>
<td>Juan Manuel Haro</td>
<td>PLTI</td>
<td><a href="mailto:haro.1.mcccd@juno.com">haro.1.mcccd@juno.com</a></td>
</tr>
<tr>
<td>Esperanza Elias G</td>
<td>PLTI / PIQE</td>
<td>Esperanza Elias <a href="mailto:43@gmail.com">43@gmail.com</a></td>
</tr>
<tr>
<td>Alicia Sánchez</td>
<td></td>
<td><a href="mailto:Alicia.Sanchez32@gmail.com">Alicia.Sanchez32@gmail.com</a></td>
</tr>
<tr>
<td>Sara Cortez</td>
<td></td>
<td><a href="mailto:Cortezsara1236@yahoo.com">Cortezsara1236@yahoo.com</a></td>
</tr>
<tr>
<td>Blanca de la Torre</td>
<td></td>
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<tr>
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<td></td>
</tr>
<tr>
<td>Maria Vargas</td>
<td>NUBSM</td>
<td><a href="mailto:maria.vargas1936@gmail.com">maria.vargas1936@gmail.com</a></td>
</tr>
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*Diego Hagan*
Merced Active Transportation & Safe Routes to School Plan
Technical Advisory Committee Meeting
January 23, 2018 from 10:30 AM to 11:30 AM
Merced City Hall

Meeting Agenda

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<td>3. Feasibility Assessment</td>
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<td>4. Funding Opportunities</td>
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## TAC Meeting Sign-In Sheet

**January 23, 2018**  
**Merced City Hall**

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<tr>
<td>Mark Buschoten</td>
<td>Energize Colleges – UC Merced</td>
<td><a href="mailto:msbuschoten@gmail.com">msbuschoten@gmail.com</a></td>
</tr>
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<td>Cultiva la Salud</td>
<td><a href="mailto:claudia@unitedwaymerced.org">claudia@unitedwaymerced.org</a></td>
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<td>City of Merced</td>
<td><a href="mailto:sons@cityofmerced.org">sons@cityofmerced.org</a></td>
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<tr>
<td>a. Recent outreach/feedback</td>
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# CFG Meeting Sign-In Sheet

January 23, 2018

Merced City Hall

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<td>City of Merced</td>
<td><a href="mailto:olmosj@cityofmerced.org">olmosj@cityofmerced.org</a></td>
</tr>
<tr>
<td>Mark Chierez</td>
<td>BTTM Merced</td>
<td><a href="mailto:markd@bttm-merced.org">markd@bttm-merced.org</a></td>
</tr>
<tr>
<td>Ben Lighty</td>
<td>High-Speed Rail Authority</td>
<td><a href="mailto:Ben.Lightly@hsr.ca.gov">Ben.Lightly@hsr.ca.gov</a></td>
</tr>
<tr>
<td>Nichollette Gallagher</td>
<td>Citizen</td>
<td><a href="mailto:vinceandnikia@yahoo.com">vinceandnikia@yahoo.com</a></td>
</tr>
<tr>
<td>Abigail Ramirez</td>
<td>Leadership Counsel Accountability</td>
<td><a href="mailto:aaminedi@leadershipcounsel.org">aaminedi@leadershipcounsel.org</a></td>
</tr>
<tr>
<td>Corinne Chavez</td>
<td>Citizen</td>
<td><a href="mailto:corinne.chavez.08@yahoo.com">corinne.chavez.08@yahoo.com</a></td>
</tr>
<tr>
<td>Isai Palma</td>
<td>BHC Merced</td>
<td><a href="mailto:i1niek@bhc.merced.org">i1niek@bhc.merced.org</a></td>
</tr>
<tr>
<td>Lisa Kasper-Grant</td>
<td>Merced Bicycle Coalition</td>
<td><a href="mailto:lKaysergrant@yahoo.com">lKaysergrant@yahoo.com</a></td>
</tr>
<tr>
<td>Tony Lee Sczaz</td>
<td>Youth Council</td>
<td><a href="mailto:Cratzlaff705123@muhsdstudents.org">Cratzlaff705123@muhsdstudents.org</a></td>
</tr>
</tbody>
</table>

* send presentation.
Merced Active Transportation & Safe Routes to School Plan
January 23, 2018 Meeting Discussion Outcomes & Action Items

Technical Advisory Committee Meeting: 10:30-11:30AM
- Discussion of draft bicycle and pedestrian network recommendations:
  - Share draft recommendation maps with TAC members when available
  - Alta to revisit recommendations on the following corridors for feasibility and context-appropriate facilities:
    - M Street separated bikeway
    - Bear Creek Drive from railroad to 16th Street – consider neighborhood street alternatives and/or traffic calming
  - Discussion of unit cost assumptions
    - Alta to provide revised memo to City outlining what is/is not included in cost assumptions

Citizen Focus Group Meeting: 1:30-2:30PM
- Discussion of revised bicycle and pedestrian network recommendations:
  - Desire for connectivity and continuity of planning between City, County, and University jurisdiction
  - Alta to revisit recommendations on the following corridors for feasibility and context-appropriate facilities:
    - Parsons Avenue
    - University Parkway bicycle path connection
    - 26th Street near Hoover Middle School
    - Class I path alignment through new housing development north of Bellevue
  - Concerns about bicycle facilities in the community not being constructed to meet minimum standards, i.e. a “shared-use path” that is not wide enough for comfortable bicycle use
  - Desire for a bicycle network that accommodates all skill levels and trip purposes, both higher-speed transportation bicyclists and slower more leisurely riders
  - Consider developing a high-level summary to call out the most innovative, separated facilities to showcase investments
  - Consider celebrating completion of this plan with a pilot project and/or presentation to decision-makers
    - Possible pilot project: M Street separated bikeway
  - Discussion of programs recommendations:
    - Consider partnering with UC Merced and/or hiring a full-time position at the City to coordinate bicycle and pedestrian activities.
Merced Active Transportation & Safe Routes to School Plan  
Technical Advisory Committee and Citizen Focus Group Meeting  
May 29, 2018, 1:00-3:00PM  
Merced City Hall

Meeting Agenda

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<th>Item</th>
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<tr>
<td>1. Introductions</td>
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<td>2. Presentation on Prioritized Projects and Programs</td>
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<td>3. Comments from TAC and CFG members</td>
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<td>4. Next Steps</td>
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<td>5. Adjourn</td>
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Merced Active Transportation Plan

**TAC/CFG Meeting Sign-In Sheet**

Date: May 29, 2018
Merced City Hall

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sydney Loewen</td>
<td>Dept. of Public Health</td>
<td><a href="mailto:sloewen@co.merced.ca.us">sloewen@co.merced.ca.us</a></td>
</tr>
<tr>
<td>Lisa Kayser-Grant</td>
<td>Merced Bicycle Coalition</td>
<td><a href="mailto:lkaysergran@yahoo.com">lkaysergran@yahoo.com</a></td>
</tr>
<tr>
<td>Ben Lichty</td>
<td>CA High-Speed Rail Auth.</td>
<td><a href="mailto:benlichty@hsr.ca.gov">benlichty@hsr.ca.gov</a></td>
</tr>
<tr>
<td>Vince Evans</td>
<td>Merced Union High School Dist.</td>
<td><a href="mailto:vlevans@muhsd.org">vlevans@muhsd.org</a></td>
</tr>
<tr>
<td>Natalia Austin</td>
<td>MERCEDES ASSOC. CONTS</td>
<td><a href="mailto:nataledc88@natalia.austin">nataledc88@natalia.austin</a>@merced.org</td>
</tr>
<tr>
<td>Abigail Ramirez</td>
<td>LCJA</td>
<td><a href="mailto:a.ramirez@leadershipcounsel.org">a.ramirez@leadershipcounsel.org</a></td>
</tr>
<tr>
<td>Claudia &amp; Corinada</td>
<td>Cultiva tu Salud-BHS</td>
<td><a href="mailto:Claudia@unitedwaymerced.org">Claudia@unitedwaymerced.org</a></td>
</tr>
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CITY OF MERCED
"Gateway to Yosemite"

CITY CLERK’S CERTIFICATE

I, STEVEN S. CARRIGAN, City Clerk of the City of Merced, California, do hereby certify that the attached document, entitled:

RESOLUTION 2019-40

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MERCED, CALIFORNIA, ADOPTING THE CITY OF MERCED ACTIVE TRANSPORTATION AND SAFE-ROUTES-TO-SCHOOL PLAN

is a true and correct copy of the original on file in the Office of the Merced City Clerk, Merced, California.

DATED: July 16, 2019

STEVEN S. CARRIGAN, CITY CLERK

BY: JENNIFER LEVESQUE
Deputy City Clerk
RESOLUTION NO. 2019- 40

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MERCED, CALIFORNIA, ADOPTING THE CITY OF MERCED ACTIVE TRANSPORTATION AND SAFE-ROUTES-TO-SCHOOL PLAN

WHEREAS, the Active Transportation and Safe-Routes-to-School Plan is founded on the work of the City of Merced 2013 Bicycle Transportation Plan and that the ideals, data, research, information, and guidance from that document was incorporated into, drawn on, and directly influential in the process of creating the City of Merced Active Transportation and Safe-Routes-to-School Plan;

WHEREAS, the City of Merced expects an increase of active transportation users for both recreational and commuter purposes as the City population and the University of California Merced attendance increase over the coming years;

WHEREAS, active transportation improvements provide a variety of transportation, health, economic, environmental, and social benefits for all and planning for an expanded active transportation system benefits the entire community, enabling freedom of safe, low-stress transportation choice and reducing motor vehicle traffic;

WHEREAS, the City of Merced, recognizing the transportation, health, economic, environmental, and social benefits of active transportation, is intent on continuing its commitment to improving its infrastructure, including but not limited to sidewalks and bikeways;

WHEREAS, in accordance with the California Environmental Quality Act (CEQA), Staff recommended the adoption of a Statutory Exemption pursuant to Section 15262 of the CEQA Guidelines;

WHEREAS, the City of Merced Bicycle Advisory Commission held a public meeting on April 23, 2019, at which time the Commission provided feedback on a draft of the Active Transportation and Safe-Routes-to-School Plan and unanimously voted to recommend the plan to the City Council, along with any changes that might result from the Commission's feedback or additional public feedback;
WHEREAS, the City of Merced has continued to ensure the involvement of the public in the development of the Active Transportation and Safe-Routes-to-School Plan with public outreach, public meetings, and other efforts, most recently holding a joint meeting on May 22, 2019, of the Technical Advisory Committee and Citizen Focus Group to discuss an updated draft of the Active Transportation and Safe-Routes-to-School Plan and seek additional feedback; and,

WHEREAS, the City Council held a noticed public hearing on July 15, 2019, at which time all those interested in the matter were provided the opportunity to speak or to provide written or oral testimony regarding the City of Merced Active Transportation and Safe-Routes-to-School Plan.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF MERCED DOES HEREBY RESOLVE, DETERMINE, FIND, AND ORDER AS FOLLOWS:

SECTION 1. The adoption of the Active Transportation and Safe-Routes-to-School Plan is statutorily exempt pursuant to Section 15262 of the CEQA Guidelines.

SECTION 2. Based upon the evidence and testimony in the record at the City Council public hearing, the City Council, exercising its independent judgment and review, hereby approves the Active Transportation and Safe-Routes-to-School Plan.

SECTION 3. By approving the Active Transportation and Safe-Routes-to-School Plan, the City Council directs the City Manager to assist in carrying out the intentions, goals, and guidelines presented in the Active Transportation and Safe-Routes-to-School Plan whenever possible and practical within the financial constraints and priorities of the City to further the quality of active transportation in the City of Merced.

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PASSED AND ADOPTED by the City Council of the City of Merced at a regular meeting held on the 15th day of July 2019, by the following vote:

AYES: 6  Council Members: BLAKE, MARTINEZ, MCLEOD, MURPHY, SERRATTO, SHELTON

NOES: 0  Council Members: NONE

ABSENT: 1  Council Members: ECHEVARRIA

ABSTAIN: 0  Council Members: NONE

APPROVED:

[Signature]
Mayor

ATTEST:
STEVE CARRIGAN, CITY CLERK

[Signature]
Assistant/Deputy City Clerk

(SEAL)

APPROVED AS TO FORM:

[Signature]
City Attorney  Date

X:\Resolutions\2019\Planning\Adopting Active Transportation and Safe Routes to School Plan v2.docx