DRAFT

ATTACHMENT 2

City of Manteca Active Transportation Plan

August 2020

Acknowledgments

Prepared for the City of Manteca

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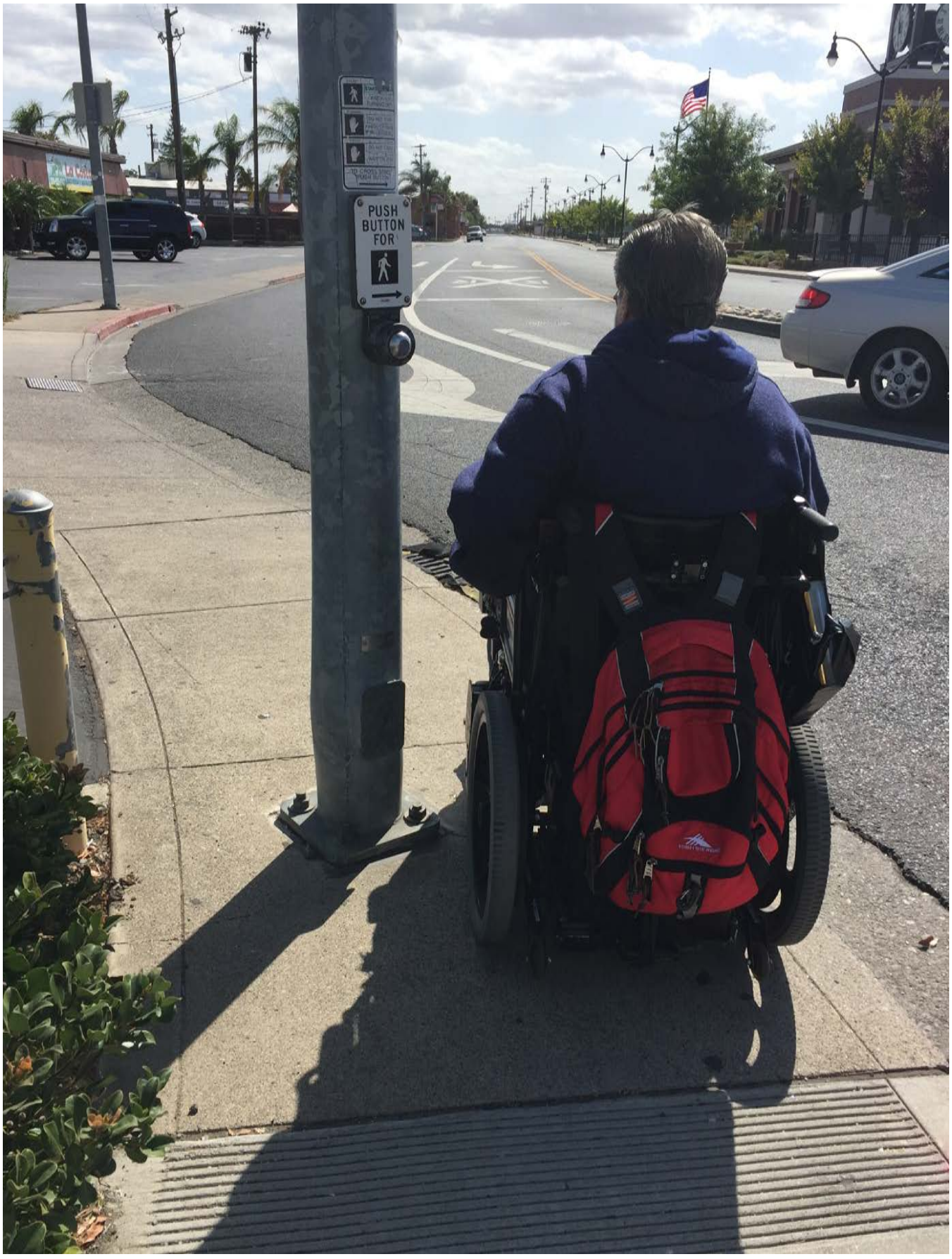
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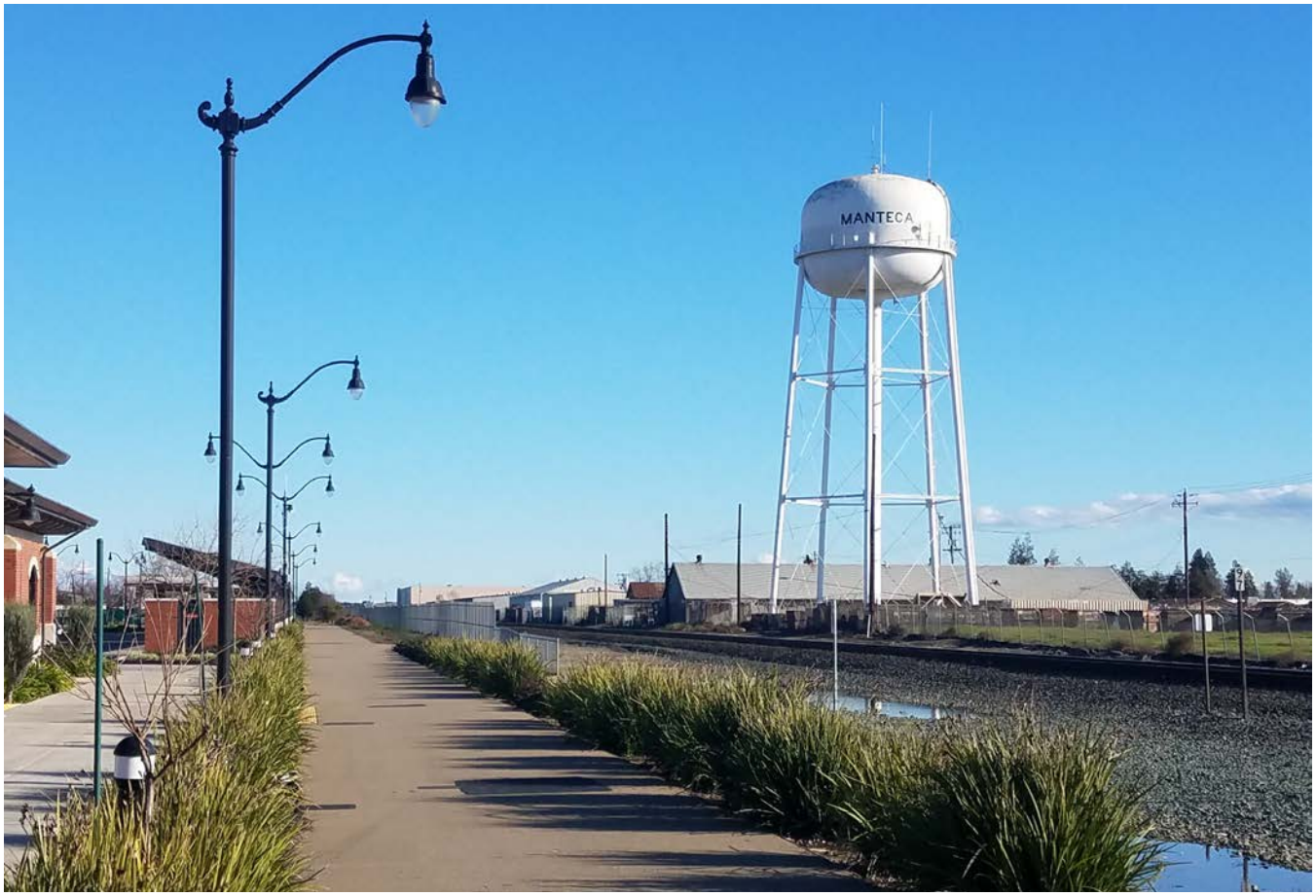
Introduction



Tidewater Bikeway near the Manteca Transit Center

Active transportation is human-powered travel, including walking and bicycling. These activities have many important health, economic, environmental, and social benefits.

Active transportation:

- Connects families to schools, parks, work, shopping, restaurants, and bus stops
- Improves health and reduces the incidence of disease and obesity
- Reduces air pollution and greenhouse gas production
- Saves money on gas and car maintenance

Bicycling and walking are modes that are used and enjoyed by many members of the community and visitors to Manteca. The city's pedestrian-scale downtown enables residents and shoppers to walk to many destinations. Students can ride their bikes or walk to neighborhood schools and parks. Residents often enjoy riding bicycles or walking along the Tidewater Trail.

However, walking and biking in Manteca can be challenging. The automobile is the primary mode of moving people in the city. Manteca is typical of many cities in California in that, outside of a historic downtown, most of the city was developed in a suburban, automobile-focused pattern, which has led to limited options for how people travel. A shortage of

facilities (particularly for bicycling) and limited funding have limited other solutions to transportation-related problems.

This active transportation plan (ATP) is an important step toward making walking and biking safer, easier, and more enjoyable for everyone. The plan will help make the City eligible for new funding to create new trails, sidewalks, bike lanes, and other improvements for bicycling and walking. The plan will support applications for funding from the statewide Active Transportation Program and other sources of funding.

This plan meets all requirements for active transportation plans as specified by the California Transportation Commission's 2021 Active Transportation Program Guidelines and San Joaquin County's Measure K program. A summary of these requirements and where they are addressed within the plan is provided in Appendix F, Plan Conformance with ATP Guidelines.

Goals and Objectives

The goals and objectives for this plan were developed with consideration of other local and state plans and policies, desires of local residents, and emerging trends and opportunities in active transportation.

The Manteca General Plan and the San Joaquin County Regional Transportation Plan / Sustainable Communities Strategy each have goals supporting increases in bicycling and walking. The California Transportation Plan and the California State Bicycle and Pedestrian Plan also have specific goals and policies for increasing biking and walking. (Each of these plans is further described in Appendix E, Other Plans and Policies.)

Local residents have expressed the desire for new, safe, and comfortable walking and biking facilities. Additionally, electric mobility devices such as e-bikes and scooters are increasing in popularity, and new laws and policies regarding reduction of vehicle miles traveled present an opportunity for synergy with active transportation. Based on all of these inputs, the goals and objectives of this plan were created.

Mobile workshop attendees in Downtown Manteca

GOAL 1 Allow all users to move safely on City bicycle and pedestrian networks.

- Implement infrastructure improvements to reduce collisions with bicyclists and pedestrians.
- Implement programs to educate, encourage, and enforce safe travel by all modes to reduce collisions with bicyclists and pedestrians.
- Regularly review collisions involving bicyclists and pedestrians and identify actions to reduce future collisions.

GOAL 2 Develop convenient, low-stress bicycle and pedestrian networks that connect Manteca residents and visitors to destinations in the city and other jurisdictions.

- Create networks that connect to residential, commercial, governmental, and recreational destinations directly and with low stress.
- Connect all schools to adjacent neighborhoods through the bicycle and pedestrian networks.
- Provide bicycle and pedestrian connections to adjacent jurisdictions.
- Provide convenient access to bus stops and train stations by walking and biking.
- Reduce the number of gaps in the bicycle and pedestrian networks and create a complete high-priority bicycle network.
- Create a trail network for recreation and transportation with convenient access for bicyclists and pedestrians across the city.
- Fund bicycling and walking improvements through a variety of means including grants, developer improvements, fee programs, and partnerships with other jurisdictions, agencies, and organizations.
- Support General Plan policies that will improve the bicycle and pedestrian networks and increase their use.

GOAL 3 Ensure bicycle and pedestrian networks are well-maintained.

- Implement a regular bicycle and pedestrian facility maintenance and monitoring program.
- Prioritize and address maintenance needs regularly.

GOAL 4 Increase bicycling and walking in Manteca to support improved public health and reduced chronic diseases related to inactivity, increased economic activity along commercial corridors, improved air quality, and reduced greenhouse gas production.

- Create bicycle and pedestrian networks for everyday transportation and recreation.
- Serve all residents and neighborhoods equitably, prioritizing investment in underserved communities.
- Support programs that increase bicycling and walking among all residents, especially youth.
- Adopt policies supporting use of e-bikes and other electric mobility options.
- Implement pedestrian and bicycle count programs to periodically assess use of bicycling and walking facilities.

Public Participation

Obtaining input from the residents of Manteca was an important part of the ATP development process. The public helped identify recommended improvements to the bicycling and walking facilities as well as priorities for projects. Participation was solicited through:

- Two mobile workshops, with one focused on touring pedestrian conditions and concerns, and a second on bicycling facilities and conditions
- A pop-up workshop at the Manteca Pumpkin Fair, which included a temporary living preview of a Class IV cycle track on Main Street for attendees to experience and provide feedback
- An online crowdsourced interactive map, where the public could recommend improvements they would like to see and vote for improvements made by others
- A website hosted by the City to communicate information about the plan process
- A virtual public workshop to review and comment on the recommended bicycle and pedestrian improvements

Appendix D, Public Participation, provides additional details on the public input received.

Bicycle Facilities

Several types of bikeways and supporting facilities come together to form a complete bicycle network.

Bikeways are classified in Chapter 1000 of the Highway Design Manual (Caltrans, 2015) into four primary types:

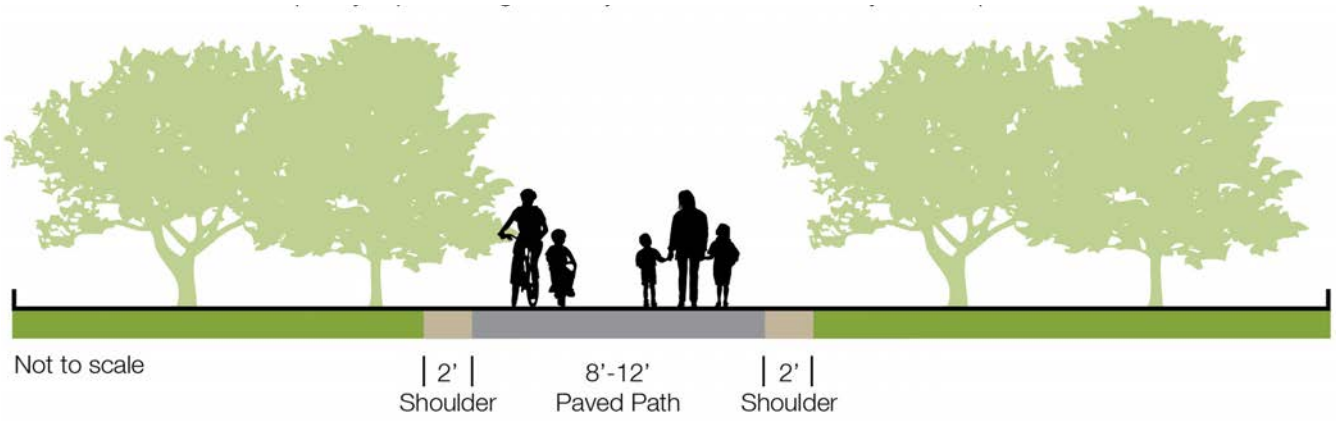
- Class I bike paths (including shared-use paths)
- Class II bike lanes
- Class III bike routes
- Class IV separated bikeways

Mobile workshop attendees at the Manteca Transit Center

Class I Bikeway: Bike Path

Bike paths, often referred to as shared-use paths or trails, are off-street facilities that provide exclusive use for non-motorized travel, including bicyclists and pedestrians (Figure 1). Bike paths have minimal cross flow with motorists and are typically located along landscaped corridors. Bike paths can be utilized for both recreational and commute trips. These paths provide an important recreational amenity for bicyclists, pedestrians, dog walkers, runners, skaters, and those using other non-motorized forms of travel. They are frequently designed to offer a benefit to users, such as a connection not previously included in the bicycle or pedestrian network or traversing a barrier such as a freeway or river. Unless specifically allowed by local laws, equestrians are generally prohibited from using bike paths. If horses and riders are allowed to use a bike path, the facility should be designed to accommodate all users, typically with wider widths than traditional multi-use paths.

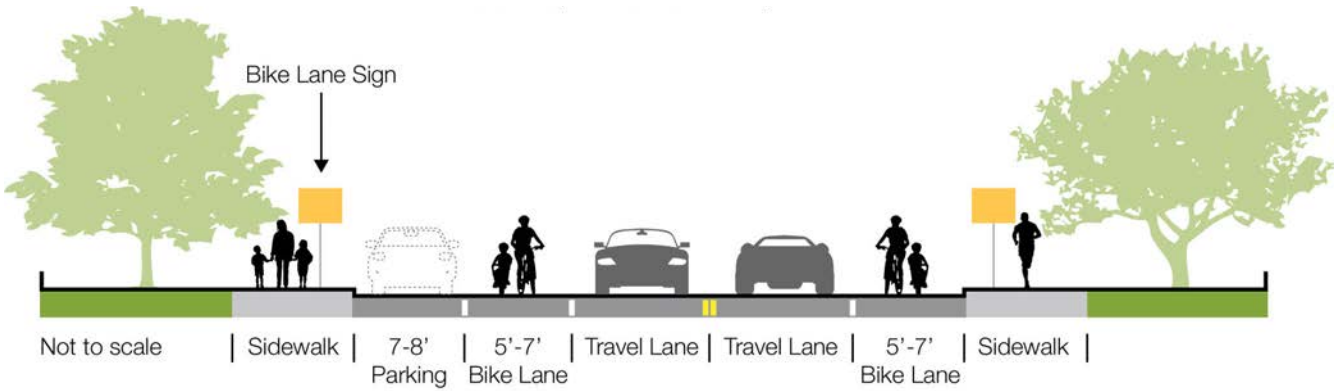
Figure 1: Bike Path



Class II Bikeway: Bike Lane

Class II bike lanes are on-street facilities that use striping, stencils, and signage to denote preferential or exclusive use by bicyclists. On-street bikes lanes are located adjacent to motor vehicle traffic (Figure 2). Bike lanes provide adequate space for comfortable riding and alert drivers about the predictable movements of bicyclists.

Figure 2: Bike Lane



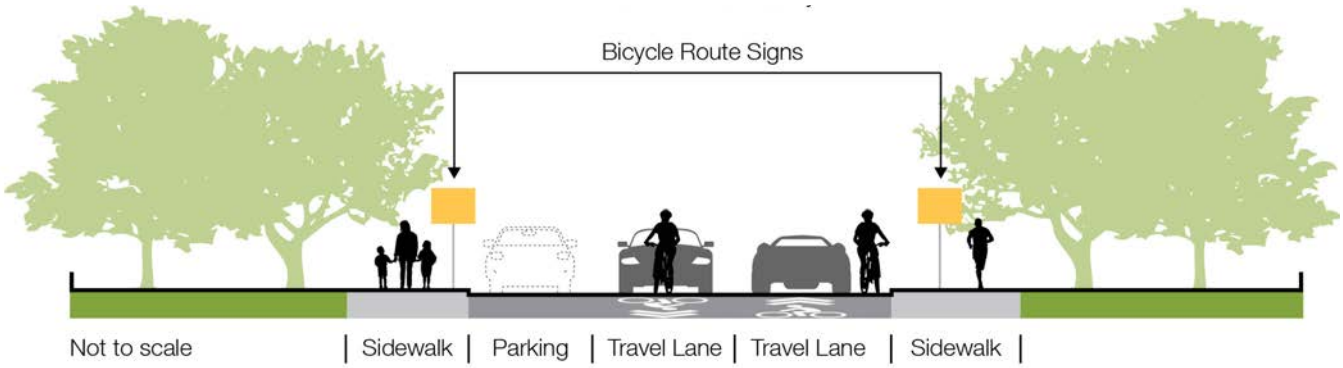
Class III Bikeway: Bike Route

Class III bike routes are streets with signage and optional pavement markings where bicyclists travel on the shoulder or share a lane with motor vehicles (Figure 3). Class III bike routes are utilized on low-speed and low-volume streets to connect bike lanes or paths along corridors that do not provide enough space for dedicated lanes. Shoulders are preferable but not required on streets with Class III bike routes. In addition to alerting motorists to the presence of bicyclists, bike routes help bike riders find their way to other bikeways or regional destinations like schools and parks.

Class III Bikeway: Bicycle Boulevard

Class III bicycle boulevards are similar to Class III bike routes, in that they are primarily utilized on low-speed and low-volume streets, and can close important gaps in the bicycle network where there may be insufficient space for dedicated lanes. Bicycle boulevards provide further enhancements to bike routes to encourage slow speeds and discourage non-local vehicle traffic via traffic diverters, chicanes, traffic circles, and/or speed tables. Bicycle boulevards can also feature special wayfinding signage to nearby destinations or other bikeways

Figure 3: Bike Route

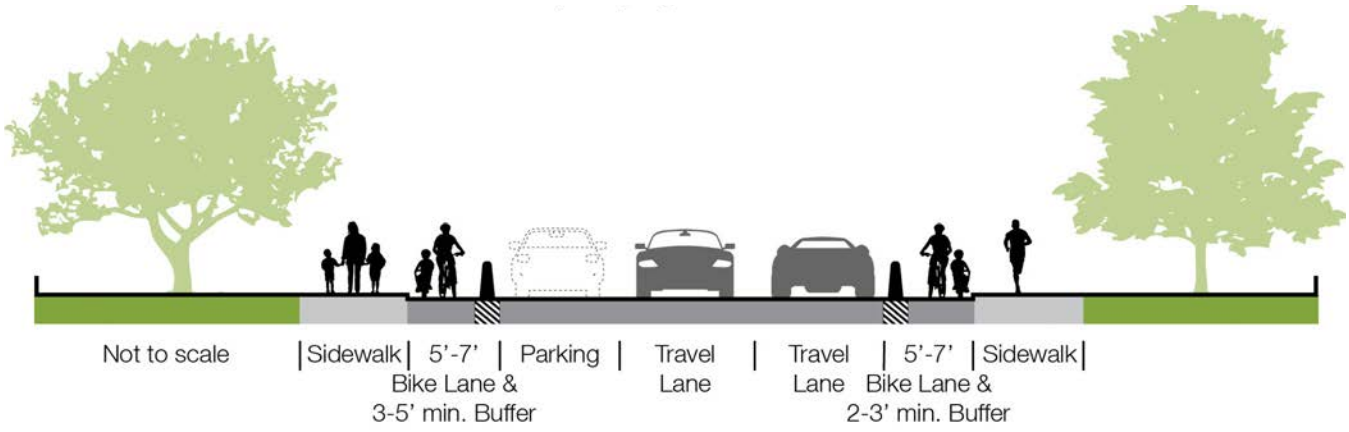


Shared-lane markings, or sharrows, are a common Class III pavement marking that alerts drivers that bicyclists are sharing the road and facilitate wayfinding through neighborhoods. They are best used on streets with less than a 3,000 average daily traffic (ADT) count. The chevrons in sharrow markings should be painted near the center of the travel lane, out of the parked vehicle door zone.

Class IV Bikeway: Separated Bikeway

Class IV separated bikeways, commonly known as cycle tracks, are physically separated bicycle facilities that are distinct from the sidewalk and designed for exclusive use by bicyclists. They are located within the street right-of-way, but provide comfort similar to Class I bike paths. The key feature of a separated bikeway is a vertical element that provides physical separation from motor vehicle traffic. Common vertical elements used for separation include a vertical curb, a painted buffer with flexible posts, parked cars, a landscaped area, large planters, or a fixed barrier. Separated bikeways may also be constructed by creating a bike lane at a height above the vehicular lanes, with a continuous sloped transition. Separated bikeways can be either one-way or two-way, accommodating a single direction of travel or both (Figure 4). Streets with high vehicular volumes and speeds are appropriate candidates for separated bikeways, which increase the comfort of bicyclists on these higher-stress roads. Separated bikeways require wider right-of-way than Class II and III facilities and, to minimize conflicts with motor vehicles, are best placed in areas with fewer driveways. Because of these factors, separated bikeways require careful planning.

Figure 4: Separated Bikeway



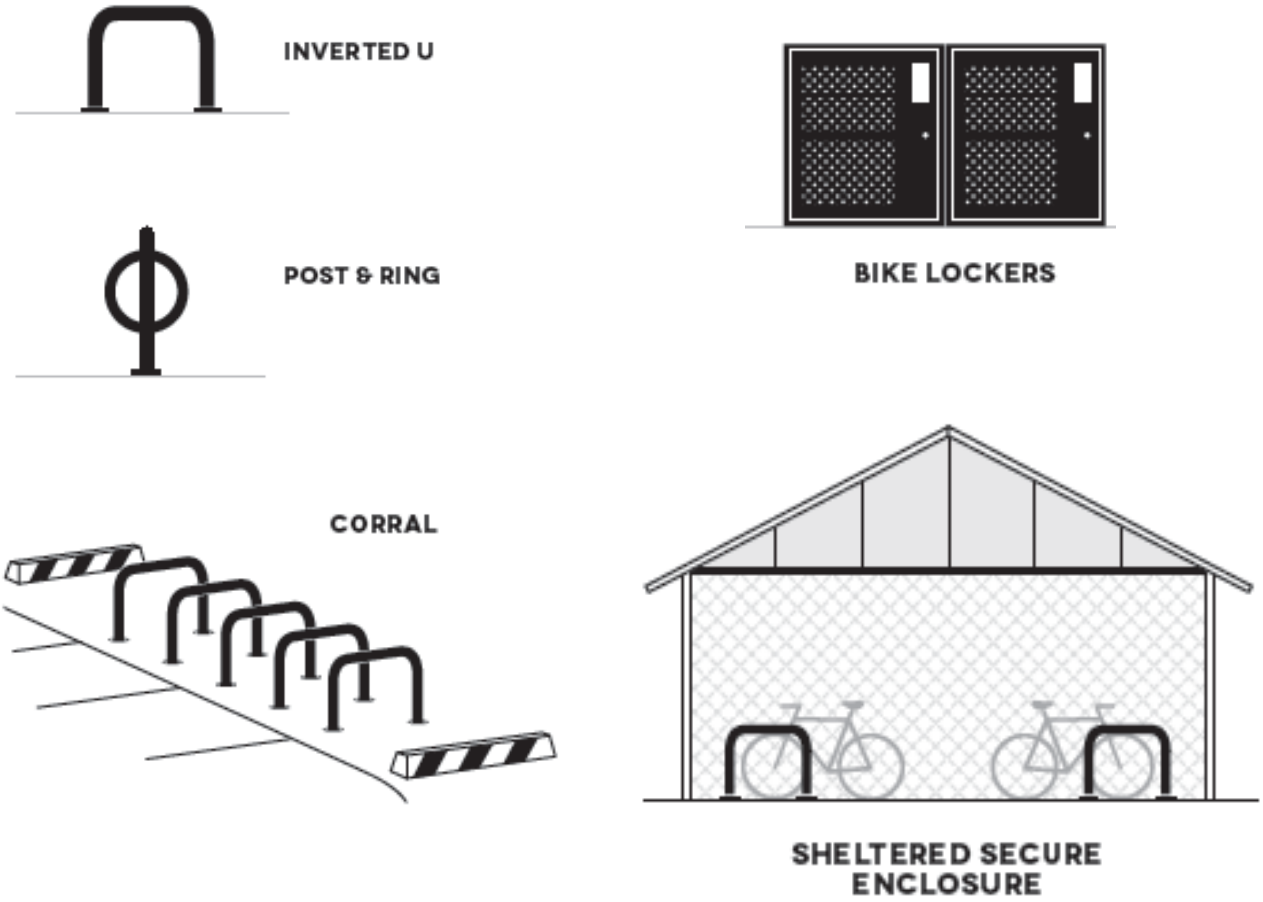
Bicycle Parking

Bicycle parking encourages ridership by supporting the final stage of a bicycle trip. Locations with high ridership are excellent candidates for bicycle parking, including civic, residential, commercial, and office spaces. At these locations, both short-term and long-term parking should be accommodated:

Short-term bicycle parking is temporary bicycle parking intended for visitors. Bicycle racks are a common form of short-term parking. Bicycle racks in front of stores and other destinations allow patrons to park their bike for short periods. Bike parking should be located in well-lit areas to discourage theft. Installing permanent bicycle racks near main entrances also helps bicyclists feel welcome and encourages them to ride their bicycle again on a return trip. Bicycle racks that allow at least two points of contact, such as the wheel and frame, provide the most protection against theft and accidental damage.

Long-term bicycle parking is intended for employees, students, commuters, and residents to protect bicycles for extended periods. Long-term facilities are more secure than short-term bicycle parking and should fully protect bicycles from theft and weather. Long-term bicycle parking includes bike lockers, bike cages, and bike rooms.

- Bike lockers are outdoor enclosures that accommodate one or two bicycles and are usually leased on a monthly basis or paid short-term use.
- Bike cages are fully enclosed, roofed shelters that house racks of bicycle parking, typically found at schools.
- Bicycle rooms are commonly found inside office or residential buildings, and provide secure indoor parking. Bicycle rooms may feature amenities such as bike pumps and quick-fix tools for employees and residents.



Source: APBP Essentials of Bike Parking: Selecting and Installing Bike Parking that Works (2015), pages 2-3, www.apbp.org, used with permission from the copyright holder.

Pedestrian Facilities

Pedestrian facilities include shared-use facilities, sidewalks, and crosswalks.

Shared-Use Facilities

Class I bikeways, frequently known as shared-use paths or trails, are shared by both pedestrians and bicyclists. These facilities are described earlier in this chapter.

Sidewalks

Sidewalks are paved areas immediately adjacent to the vehicular right-of-way for the exclusive use of pedestrians, and may be used by people riding bicycles unless prohibited. Unlike shared-use paths, they are directly adjacent to the main right-of-way.

Crosswalks

Marked crosswalks feature striping and other enhancements to delineate a street crossing for pedestrians. There are two types of marked crosswalks:

» Controlled crosswalks are located with stop signs or traffic signals.

» Uncontrolled crosswalks are located without stop signs or traffic signals. Under California law, drivers are legally required to yield to pedestrians at uncontrolled crosswalks.

Additional features can be added to crosswalks to increase visibility on busy streets:

» High-visibility crosswalk markings add additional striping to the pavement.

» Rectangular rapid flashing beacons allow the pedestrian to activate a flashing light when crossing.

» Pedestrian hybrid beacons require traffic to stop for pedestrians when activated, but allow vehicles to proceed with caution after the pedestrian crossing has been completed.

Pedestrian hybrid beacon, Sacramento

Trail Crossing Sign in Downtown Manteca

Emerging Trends and Opportunities

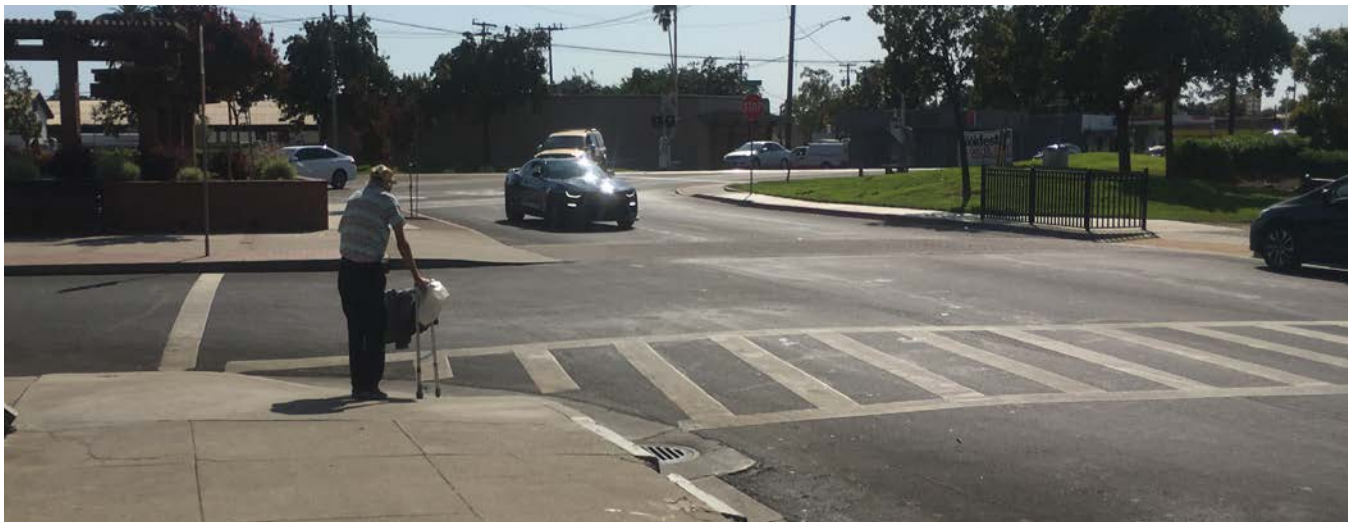
Electric bikes and electric scooters are two new developments related to active transportation that provide both new opportunities and challenges. These devices can be partially or fully powered but also share facilities with other users. There are a range of types of e-bikes, scooters, and other devices. These devices can be privately owned or rented for short periods ("shared"). State law governs where these devices may be used, but also allows local jurisdictions to enact more restrictive rules on where they may be used. A broader review of these new devices is included in Appendix H, Electric Mobility Devices.

Active Transportation and VMT Reduction

Senate Bill 743 is changing how the impact of land use and transportation projects and plans will be measured under the California Environmental Quality Act (CEQA). The State has determined that vehicle miles traveled (VMT) will be the metric used to determine these impacts. Projects and plans that increase VMT will thus have impacts under CEQA. Because active transportation can be an alternative to vehicle travel, increasing active transportation can be a way to reduce or offset increases in VMT and thus mitigate these impacts.

Robust active transportation networks are important to increasing walking and biking and making active transportation a viable option for accessing new development. A VMT impact fee is an option to ensure new development is paying its fair share for the improvements needed to create these networks. Such a fee could be based on vehicle trip generation, trip length, and the share of new trips per land use type. This fee could provide a local source of funding and contribute to the local match required for many funding sources. For some projects, alternatives to reduce VMT may be limited, and a fee benefiting active transportation projects would be a viable option to offset VMT increases.

Existing Conditions



High-visibility crosswalk near Library Park

This chapter describes the existing conditions for bicycling and walking in Manteca.

Climate and Settlement Patterns

Manteca's flat topography and relatively low rainfall are very suitable for walking and biking, as are mild winter temperatures. Summer temperatures are often hot and more challenging for walking and biking. Summer high temperature averages range from the upper 80s to mid 90s, and winter low temperatures average from the upper 30s to the mid 40s (degrees Fahrenheit). Summers are generally dry. In winter, rainfall averages less than three inches per month.

Manteca is generally suburban in character. The estimated population as of July 1, 2018, was 81,592, according to the U.S. Census Bureau (2019). Most residences are single-family homes. Most retail development is in shopping centers, though some traditional retail exists in the city's walkable downtown. While most of the city has been developed with sidewalks, there are gaps in some older areas. Additionally, curb ramps at some intersections are missing or do not meet current standards. Many areas have minimal dedicated bicycling facilities.

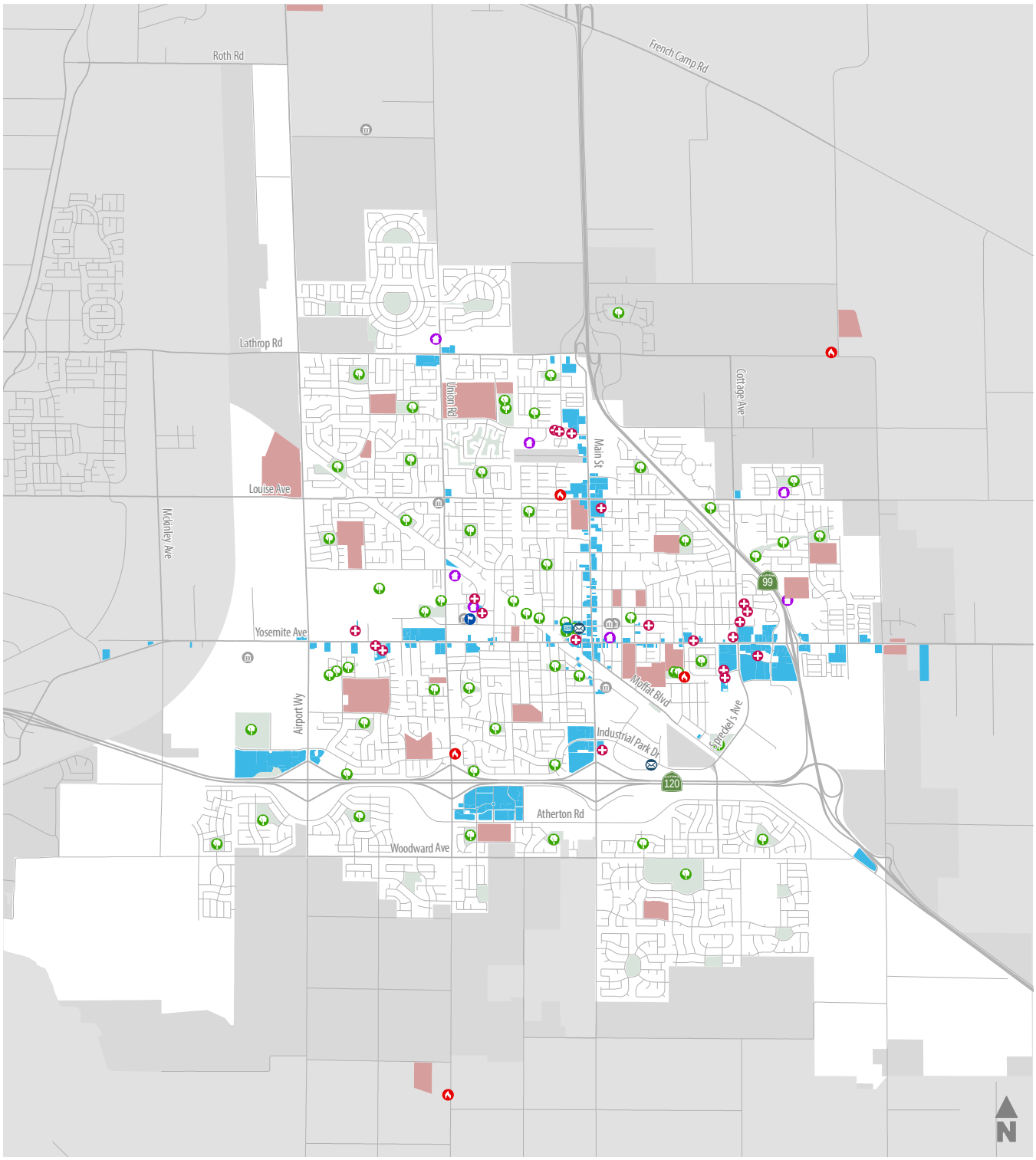
Key Destinations and Land Use

Figure 5 shows key destinations for bicyclists and pedestrians in Manteca. Destinations include:

- Schools
- Parks
- Public buildings, including libraries, post offices, city halls, and county offices
- Retail areas
- Hospitals and medical facilities
- Senior centers and senior housing

Appendix C also includes current zoning maps, identifying residential, commercial, and industrial areas.

Figure 5: Key Destinations



IN THE MAP

Key Destinations

- Medical Office/Hospital
- School
- Police Department
- Fire Department
- Post Office
- Library
- Senior Housing
- Park/Community Center
- Government/City Service
- School
- Retail
- City Limit
- Park
- Sphere of Influence

Connections With Transit and Carpooling

Figure 6 shows links to other transportation, specifically bus stops, park and ride lots, and the Lathrop/Manteca ACE station.

Manteca Transit operates fixed-route and Dial-a-Ride bus service with stops throughout Manteca. Each bus is equipped with a rack that can carry two bicycles. San Joaquin Regional Transit District (RTD) provides limited service to Manteca, with connections to the nearby communities of Ripon and Stockton.

Park-and-Ride lots are provided at the Manteca Transit Center, Big League Dreams Sports Park, and Walmart.

The Altamont Corridor Express (ACE) serves Manteca with commuter rail service across the Altamont Pass to the Bay Area. Bicycles are allowed on some train cars.

Disadvantaged Communities

Service to disadvantaged and underserved communities is a key factor in many grant funding programs such as California's Active Transportation Program. This plan presents four different indicators of disadvantaged communities, often referred to as environmental justice communities (Figure 7 to Figure 10):

- Household median income – census tracts with median household income less than 80% of the statewide median, or $56,982 (2014-2018 ACS).
- Free or reduced price meal eligibility – the share of students at a school who are eligible for subsidized meals. Schools with at least 75% eligible are considered disadvantaged by the ATP guidelines.
- CalEnviroScreen 3.0 score percentile – a measure of environmental health by census tract. Inputs include socioeconomic factors, population characteristics, pollution factors, and environmental factors. Tracts with higher percentiles are more disadvantaged. The worst scoring 25% are considered disadvantaged by the ATP guidelines.
- California Healthy Places Index – a measure of the community conditions shaping health outcomes. Factors include economics, education, transportation, social, neighborhood, housing, clean environment, and healthcare access. Census tracts in the worst scoring 25% are considered disadvantaged by the ATP guidelines.

Bicycle and Pedestrian Networks

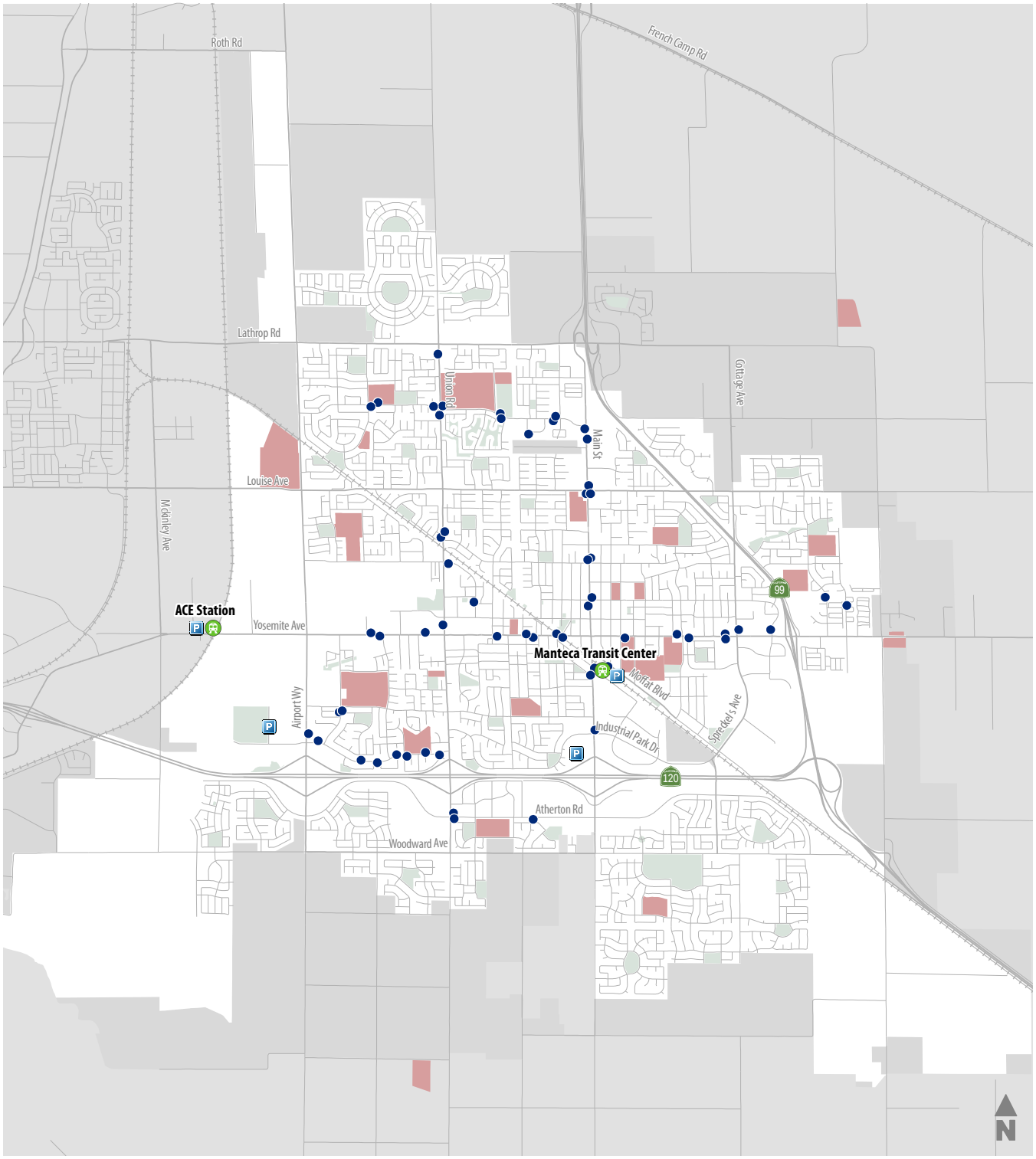
Currently there are 10.3 miles of shared-use paths, 45.2 miles of streets with bicycle facilities, and 557.1 miles of sidewalks within Manteca. These networks are summarized in Table 1 and depicted in Figure 11 and Figure 12.

Table 1: Existing Bicycle and Pedestrian Facilities

Type	Miles
Sidewalks[1]	557.1
Class I Bike Paths (Multi-Use)	10.3
Class II Bike Lanes	26.3
Class III Bike Routes	18.9

Note: [1]Per side of street. One mile of street with sidewalks on both sides is two miles of sidewalks.
Source: Fehr & Peers, 2020

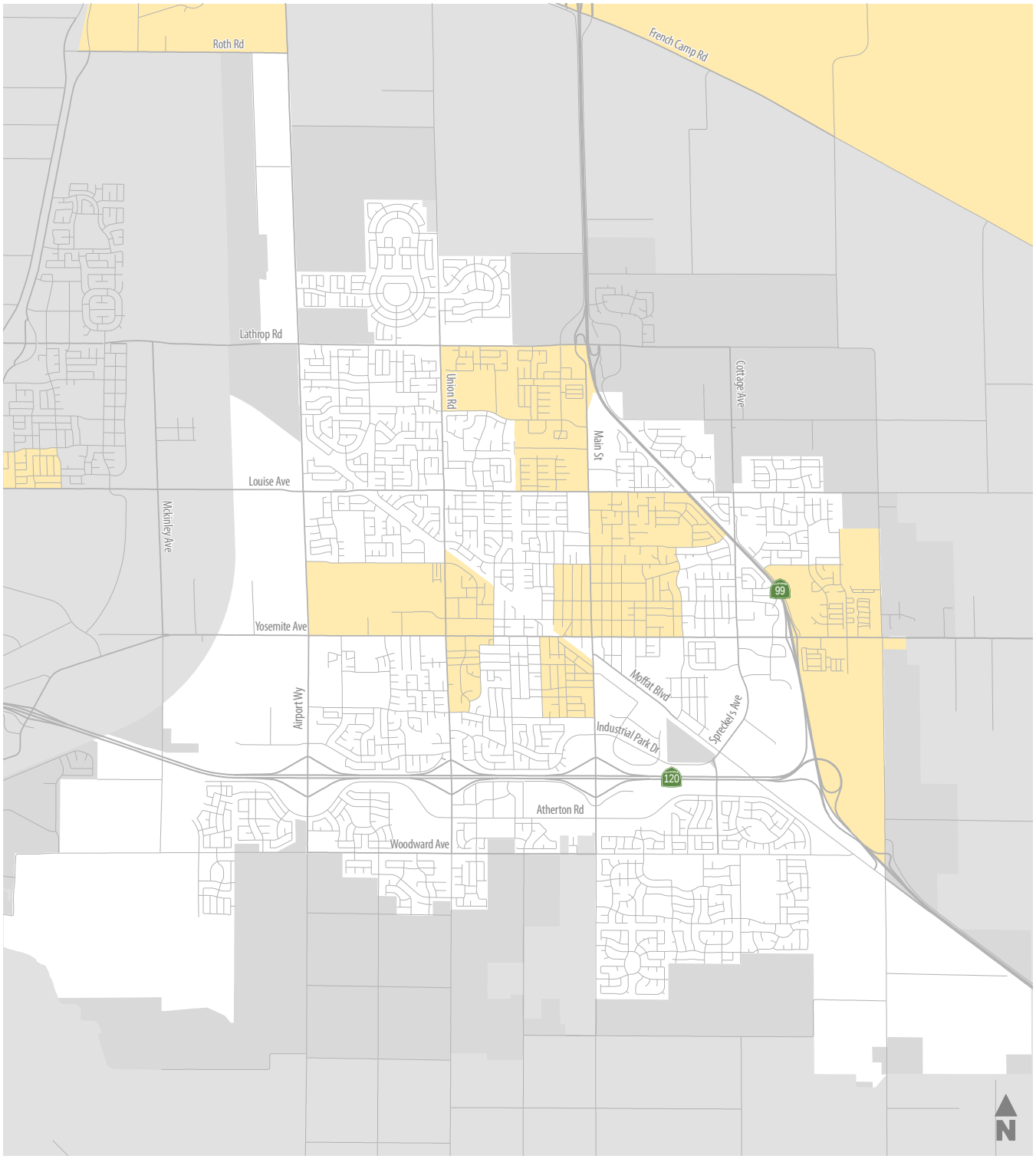
Figure 6: Links to Other Transportation



IN THE MAP

- Transit Station
- Park and Ride Lot
- Bus Stop
- School
- Park
- Sphere of Influence
- City Limit

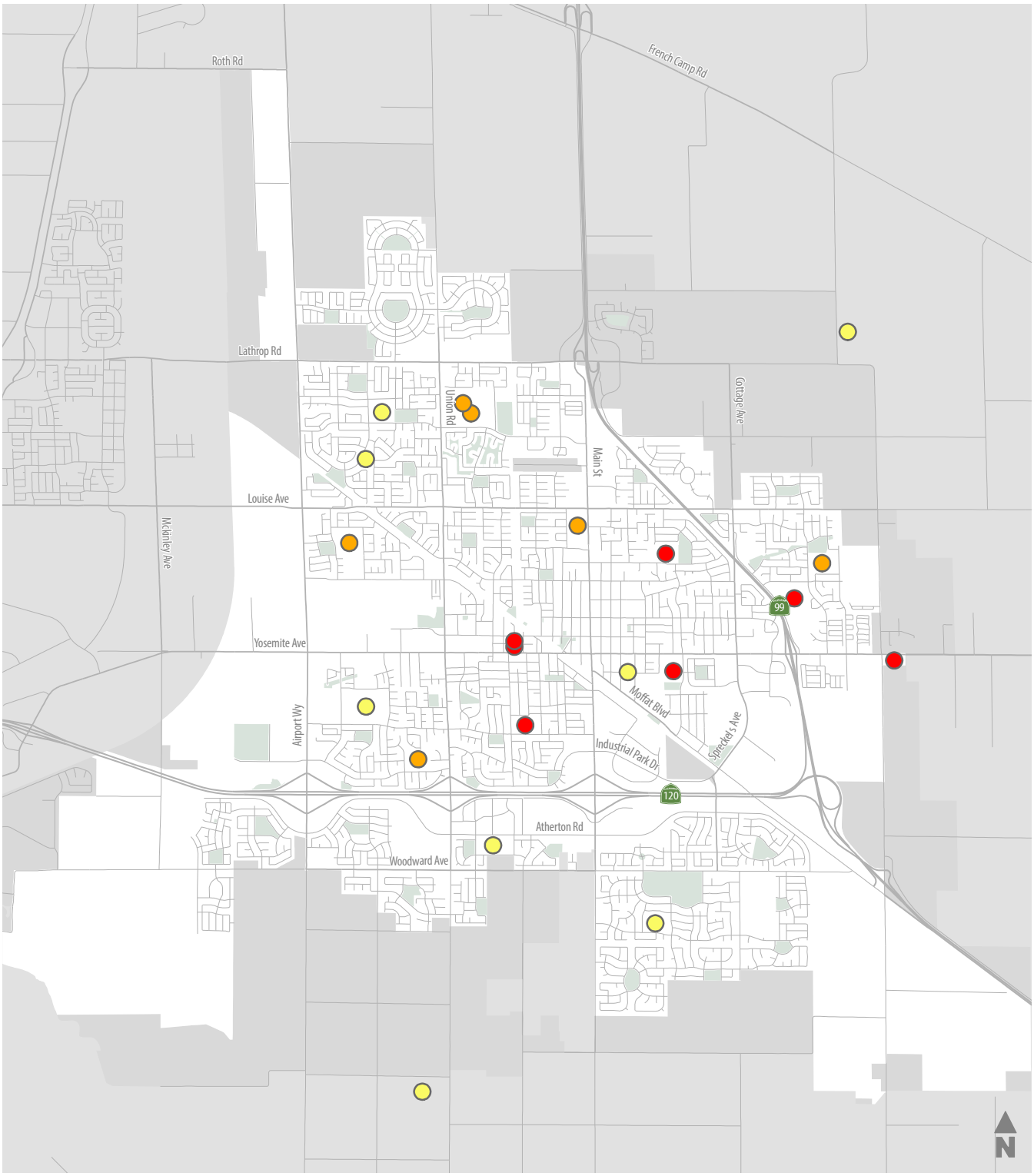
Figure 7: Household Median Income



IN THE MAP

- Block Groups Below 80% of Statewide Median Income (below $56,982)
- City Limit
- Sphere of Influence

Figure 8: Free or Reduced Price Meal Eligibility



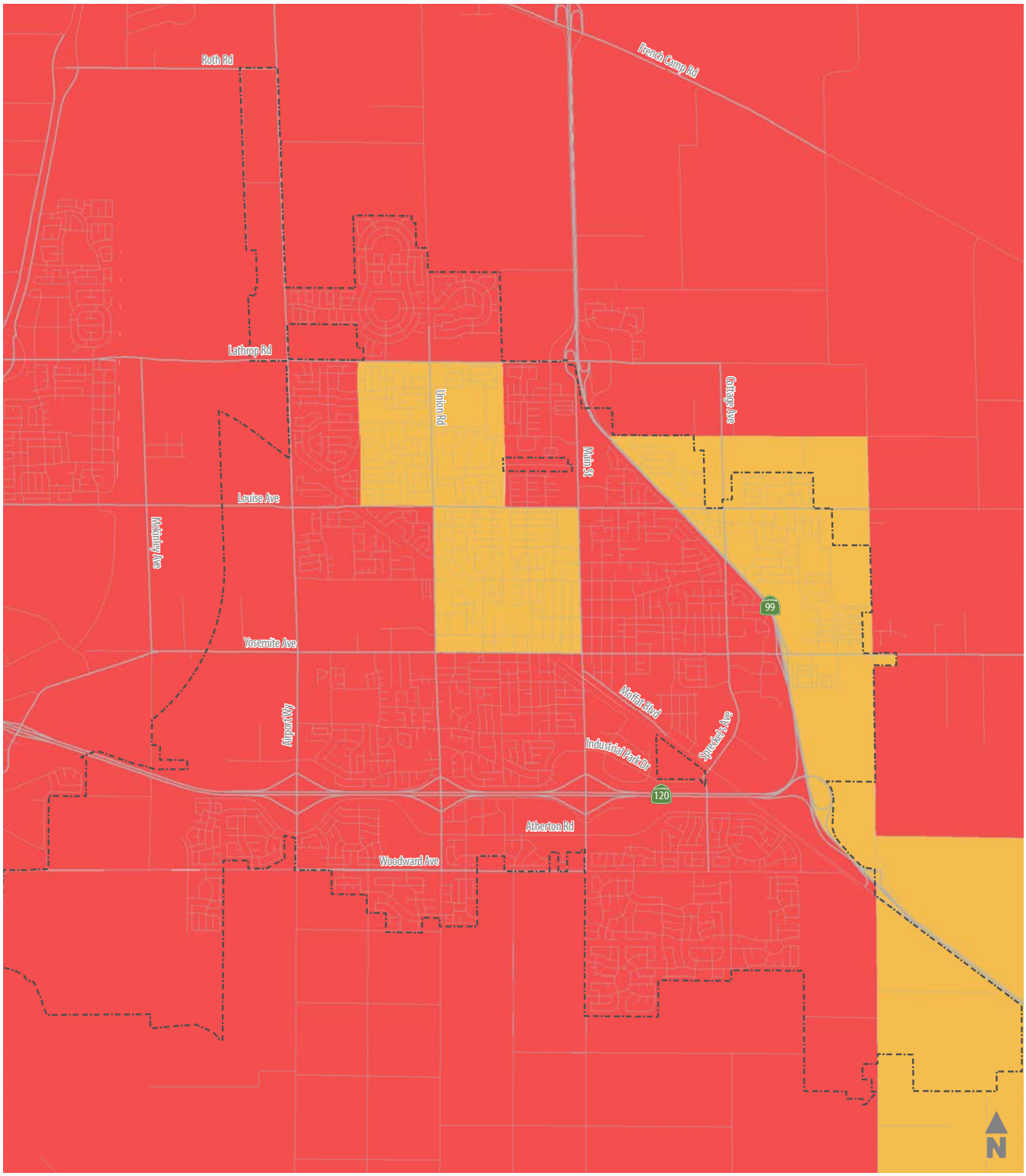
IN THE MAP

Percent (%) of Students Eligible for Free or Reduced Price Meal

- 0 - 25%
- 26 - 50%
- 51 - 75%
- > 75%

- Park
- City Limit
- Sphere of Influence

Figure 9: CalEnviroScreen 3.0 Percentile



N THE MAP

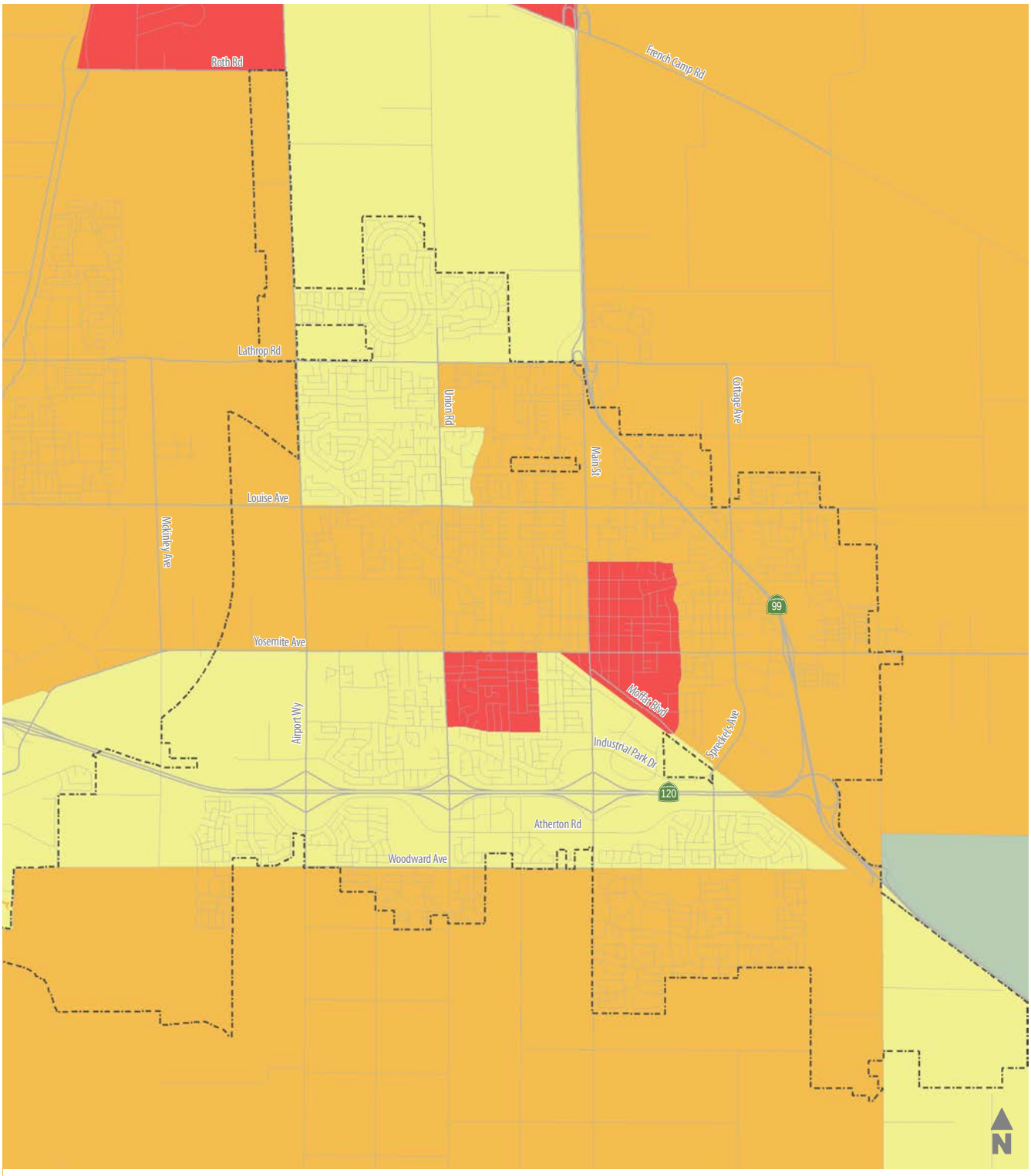
alEnviroScreen 3.0 Percentile

25 50 75 100

Park

City Limit

Figure 10: California Healthy Places Index



IN THE MAP

The California Healthy Places Index (HPI) Score Percentile

0 25 50 75 100

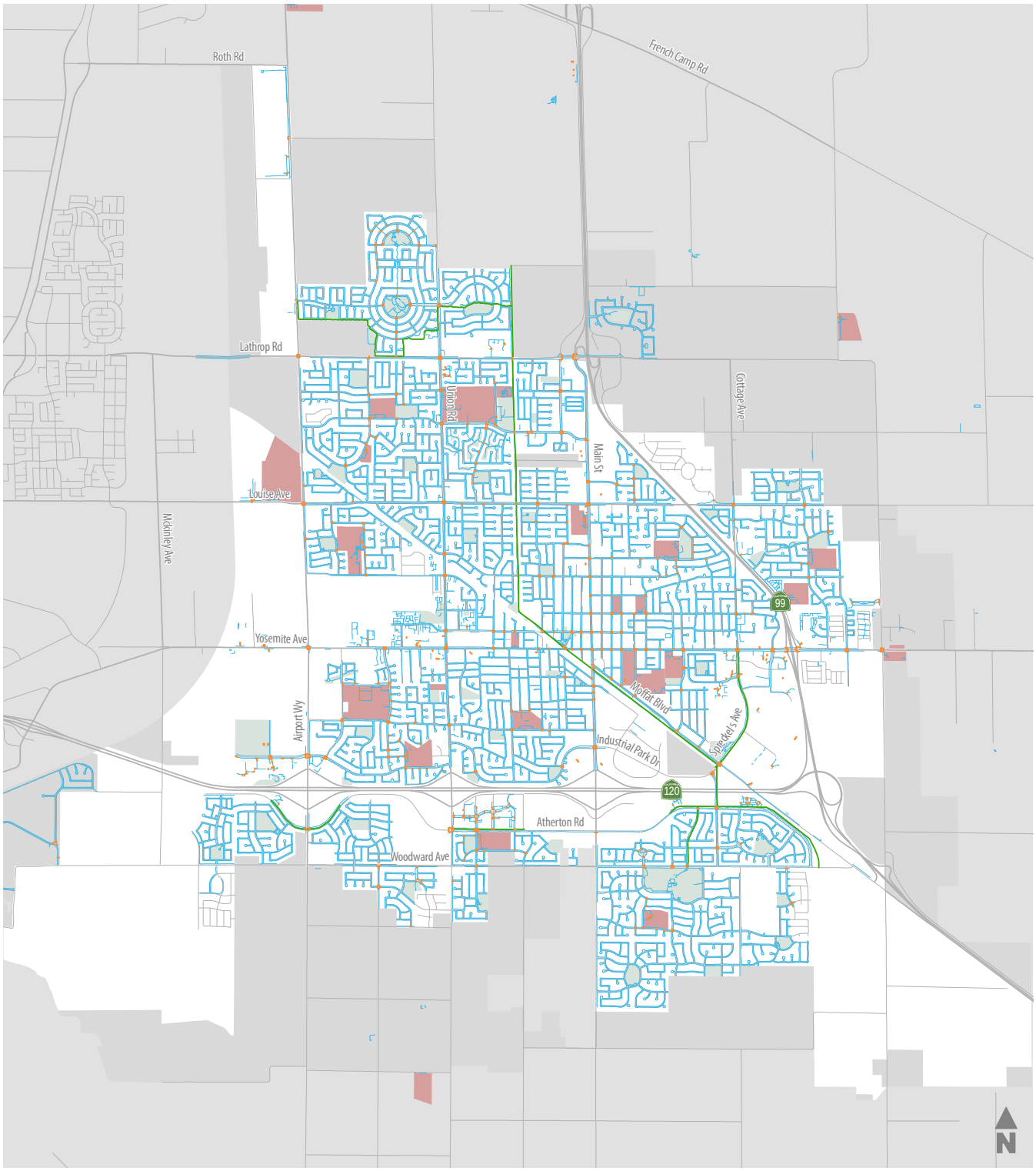
Less Healthy → More Healthy

Park

City Limit

Sphere of Influence

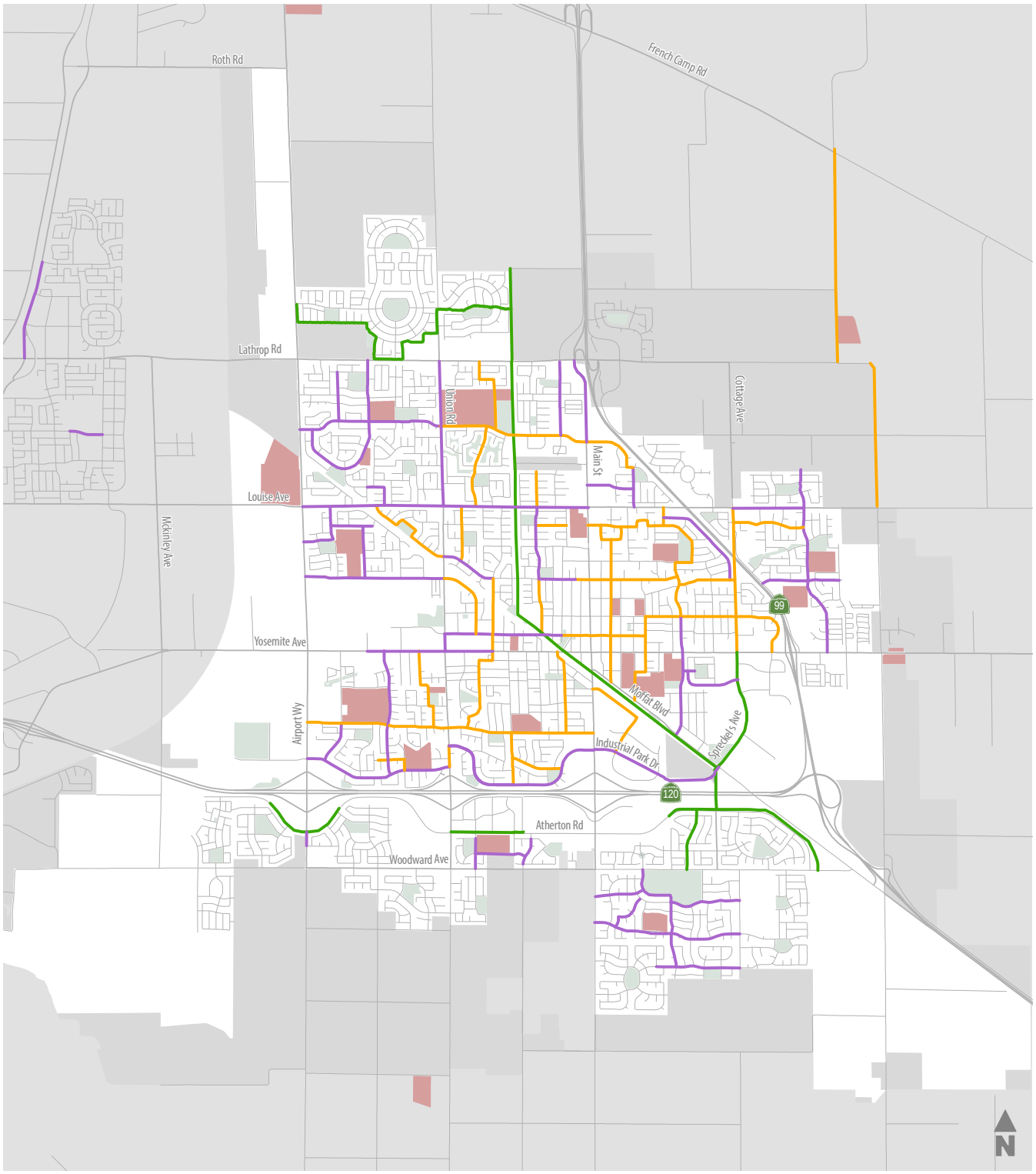
Figure 11: Existing Pedestrian Network



IN THE MAP

- Existing Crosswalk
- Class I - Multi-Use Path
- Existing Sidewalk
- School
- Park
- City Limit
- Sphere of Influence

Figure 12: Existing Bicycle Network



IN THE MAP

- Class I - Multi-Use Path
- Class II - Bicycle Lane
- Class III - Bicycle Route
- School
- Park
- City Limit
- Sphere of Influence

Shared Bike and Parking Lanes

Many streets in Manteca have shared bike and parking lanes, where a stripe separates a space against the curb for biking and vehicle parking. Such facilities should be a minimum of 13 feet wide to accommodate parked vehicles while allowing space for the bicyclist to travel without venturing in to the vehicle travel lane. However, in Manteca, many of these facilities are less than 13 feet wide. These streets should be restriped to create a shared bike and parking lane at least 13 feet wide.

Bicycle Parking

The City of Manteca municipal code states that bicycle parking shall be provided for all multi-family projects and nonresidential uses within the city. The ratio for the required bicycle spaces per number of parking spaces is shown in Table 2.

In addition to these requirements, the California Green Building Standards Code, Part 11 of the California Building Standards Code, also includes requirements for bicycle parking. Additional details are provided in Appendix E, Other Plans and Policies.

Table 2: Bicycle Parking Requirements

Total Parking Spaces	Minimum Number of Bicycle Spaces Required
1 to 29	2
30 to 59	4
60 to 74	5
75 to 99	6
100 to 199	7
200 to 299	8
300 to 399	9
≥400	10

Source: City of Manteca, 2020

Wayfinding Signage

Trail signage currently exists along the Tidewater Bikeway that names the trail and outlines the rules for use. Many of the existing signs are in poor repair, with information missing, faded, or painted over. Directions and distances to key destinations are not currently provided.

Collisions

Table 3 and Table 4 summarize collisions involving bicycles or pedestrians. Table 3 shows that although bicyclist and pedestrian collisions are a relatively small share of all collisions, they comprise a relatively large share of fatal and severe injury collisions. Table 4 indicates a higher number of collisions in the two most recent years for which data was collected. However, the large changes from year to year may not indicate an actual change in collisions, but may reflect changes in data collection or coding.

Figure 13 and Figure 14 depict maps of these collisions, indicating locations where past collisions involving bicyclists and pedestrians occurred.

Additional Data

Additional data describing the existing conditions for bicycling and walking in Manteca is provided in the following appendices:

Appendix C, Existing Conditions Supporting Data

- Current Zoning: Current land use in the City.
- Existing Trips: Presents U.S. Census data describing the number and share of trips made by bicycling and walking.
- Past Expenditures: Presents data on recent expenditures on bicycle and pedestrian facilities in the city.
- Maintenance Policies: Maintenance policies and procedures for bicycle and pedestrian facilities in the city. Maintaining facilities is important to encourage bicycling and walking and keeping bicyclists and pedestrians safe.
- Non-Infrastructure Programs: Supporting programs to increase biking and walking and to improve safety for pedestrians and bicyclists.

Appendix E, Other Plans and Policies

- A summary of local, regional, state, and federal plans and other documents reviewed in development of this ATP. These plans and documents contain goals and policies as well as specific requirements related to active transportation.

Table 3: Collisions by Mode and Location, 2008-2017

Severity	Pedestrian		Bicyclist		Motor Vehicle	
	Number	Share	Number	Share	Number	Share
Fatalities	9	18%	3	6%	38	76%
Severe injuries	16	14%	10	9%	88	77%
All collisions[1]	111	6%	105	5%	1,697	89%

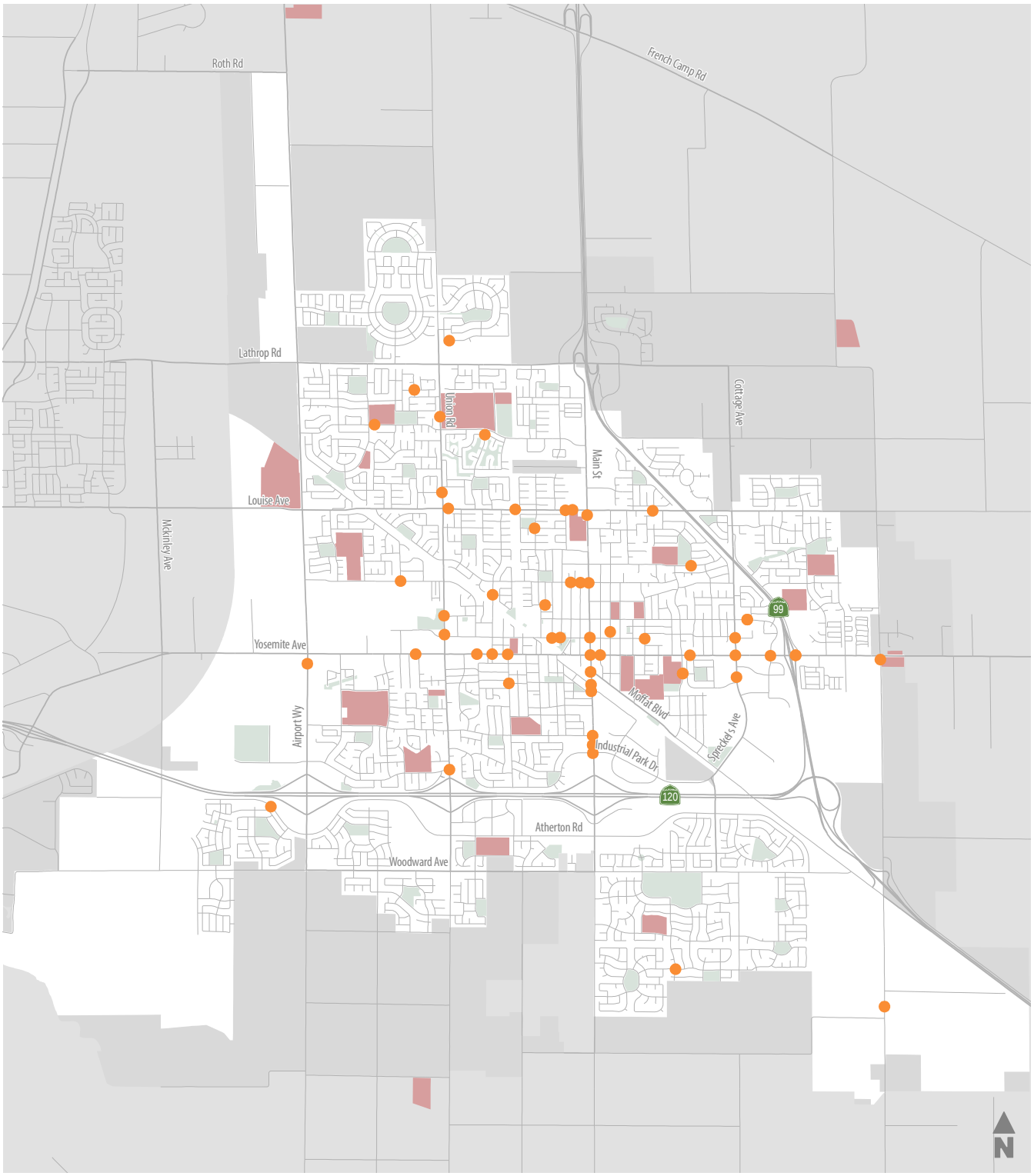
Notes: Most recent years for which final data is available, 2008-2017, are included.
[1]All collisions includes fatalities, severe injuries, other visible injuries, complaints of pain, and no injuries
Source: Transportation Injury Management System, 2020; SWITRS, 2020; Fehr & Peers, 2020

Table 4: Collisions by Year, 2008-2017

Year	Pedestrian	Bicyclist	Motor Vehicle
2008	14	17	191
2009	12	10	175
2010	9	16	154
2011	24	11	184
2012	7	15	136
2013	1	0	87
2014	1	0	96
2015	6	5	135
2016	19	16	278
2017	18	15	261
Total	111	105	1697

Notes: Most recent years for which final data is available, 2008-2017, are included.
Source: Transportation Injury Management System, 2020; SWITRS, 2020; Fehr & Peers, 2020

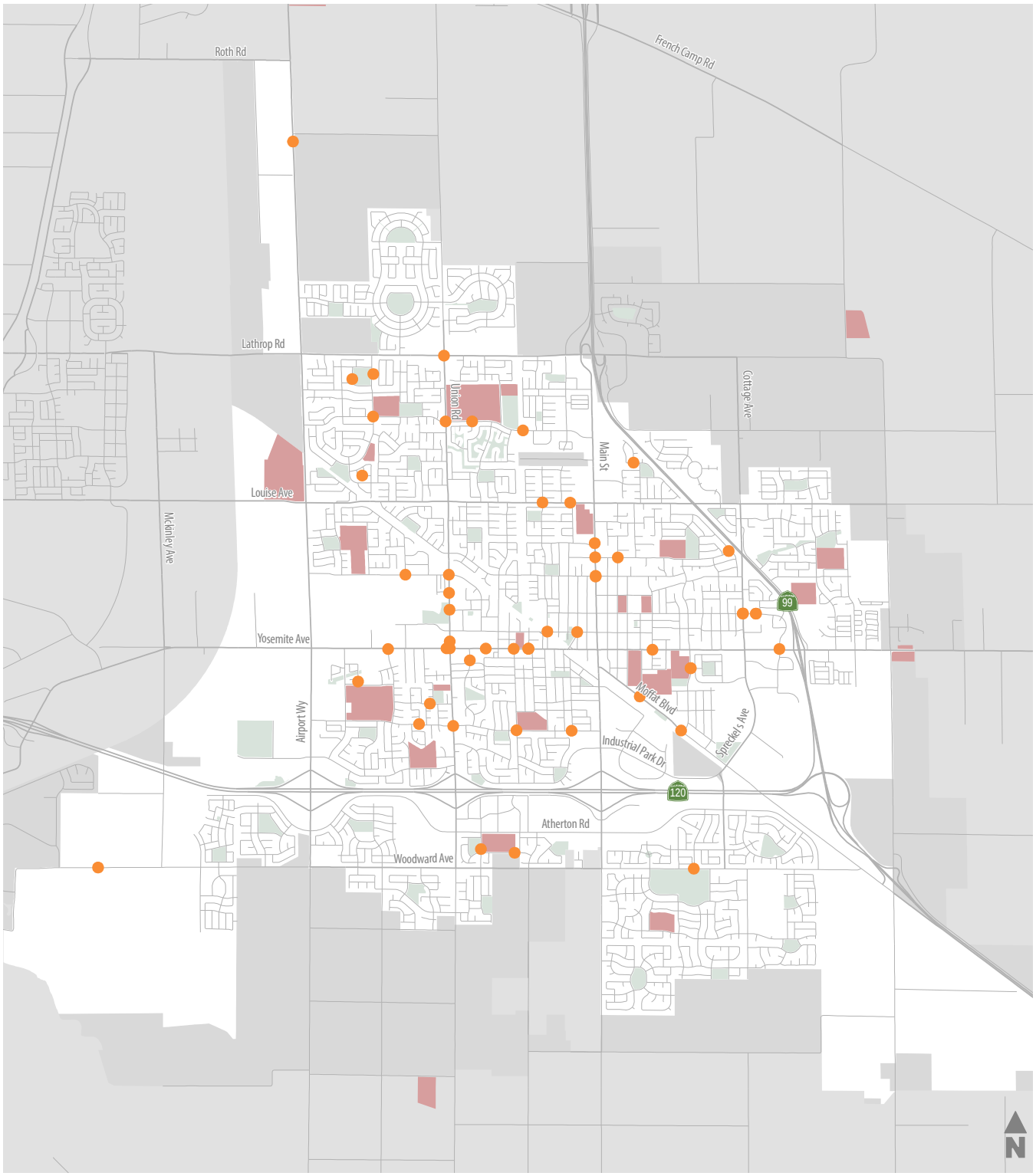
Figure 13: Collisions Involving Bicyclists



IN THE MAP

- Bicycle Collision (2015-2018)
- School
- Park
- City Limit
- Sphere of Influence

Figure 14: Collisions Involving Pedestrians



IN THE MAP

- Pedestrian Collision (2015-2018)
- School
- Park
- City Limit
- Sphere of Influence

Pop-up workshop in Downtown Manteca

Planned Networks and Programs

This chapter discusses the planned bicycle networks, pedestrian networks, and supporting facilities and programs for the City of Manteca. The plan was developed to improve connectivity to key destinations, close gaps in the existing network, and to improve the safety and comfort of pedestrians and bicyclists. Plans were developed based on previous bicycle and pedestrian plans; local general plans and community plans; and discussion and input from the public, local jurisdiction staff, and school district staff.

Bicycle and Pedestrian Networks

Planned bicycle and pedestrian facilities are summarized in Table 5 and presented in Figure 15 and Figure 16. These build-out pedestrian and bicycle networks are the long-term vision of the active transportation facilities for the region. The networks include shared-use paths, bike lanes and routes, separated bikeways, sidewalks, and crosswalk improvements. The proposed networks are designed to connect neighborhoods in each community to key destinations and to serve as recreational assets.

Table 5: Planned Bicycle and Pedestrian Facilities

Type	Total Miles
Sidewalks[1]	29.2
Class I Bike Paths (Multi-Use)	9.2
Class II Bike Lanes	60.4
Class II Buffered Bike Lanes	11.0
Class III Bike Routes	7.9
Class IV Separated Bikeways	1.5

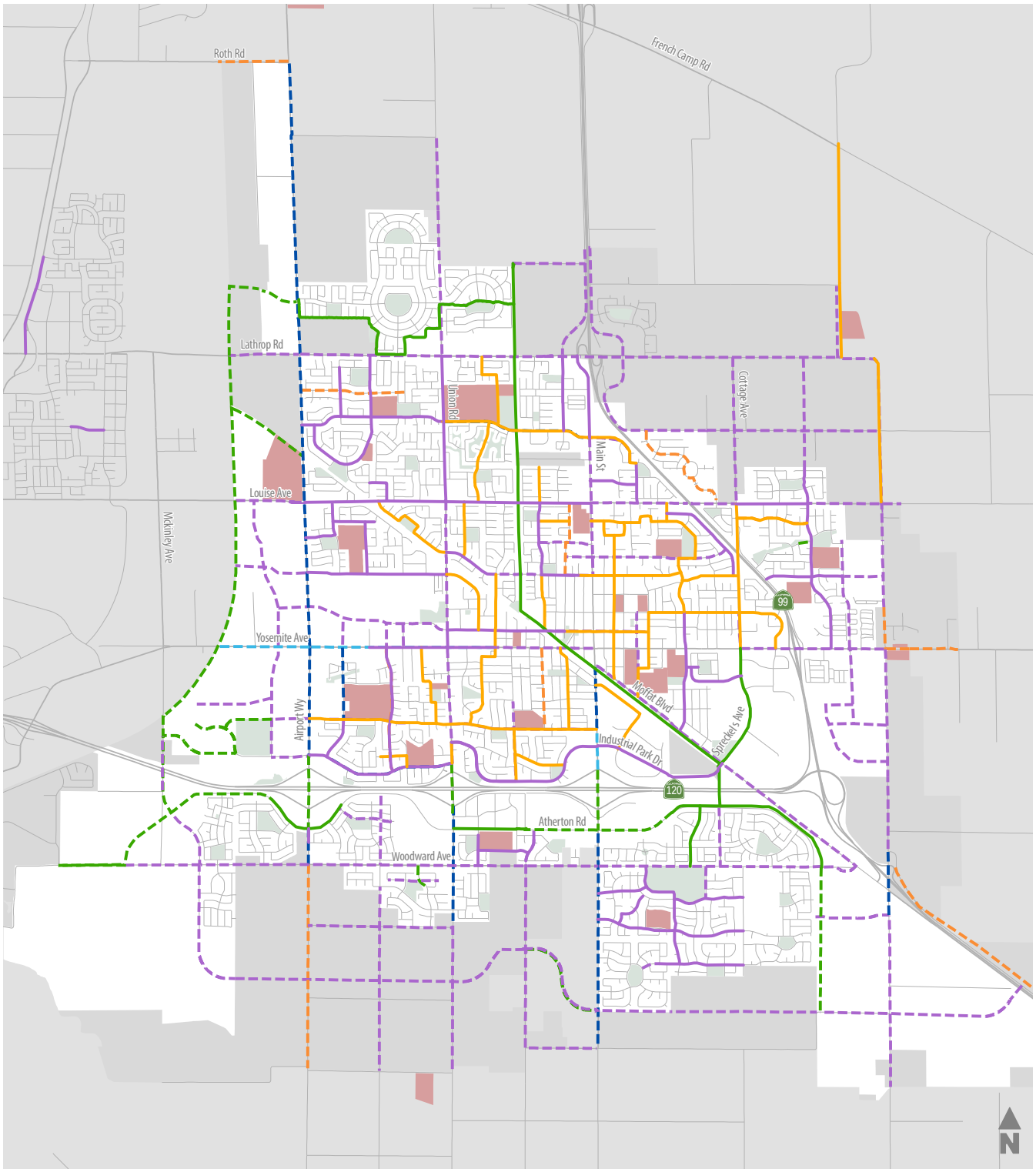
Note: [1]Per side of street. One mile of street with sidewalks on both sides is two miles of sidewalks.
Source: Fehr & Peers, 2020

Crossing and Intersection Improvements

Many crossing improvement projects are included (as shown in Figure 16) to increase pedestrian comfort and safety. The decision to install a marked crosswalk or other crosswalk enhancement should be based on good engineering judgment, engineering study, and/or other necessary considerations as appropriate for each individual case. Some of these considerations include:

- Pedestrian travel demand, typically 20 pedestrians/hour or more.
- Service of a facility or use that generates higher pedestrian travel or serves a vulnerable population (e.g., children, elderly, persons with disabilities). This may include schools, hospitals, senior centers, recreation/community centers, libraries, parks, or trails. Service of such facilities can justify pedestrian improvements to areas of less demand than 20 pedestrians/hour.
- Sight distance requirements, using appropriate stopping sight distance guidance from AASHTO's A Policy on Geometric Design for Highways and Streets or Caltrans' Highway Design Manual.
- Delay to pedestrian movements.
- Distance to nearest crossing.
- Guidance of the California Manual on Uniform Traffic Control Devices (MUTCD).

Figure 15: Planned Bicycle Networks

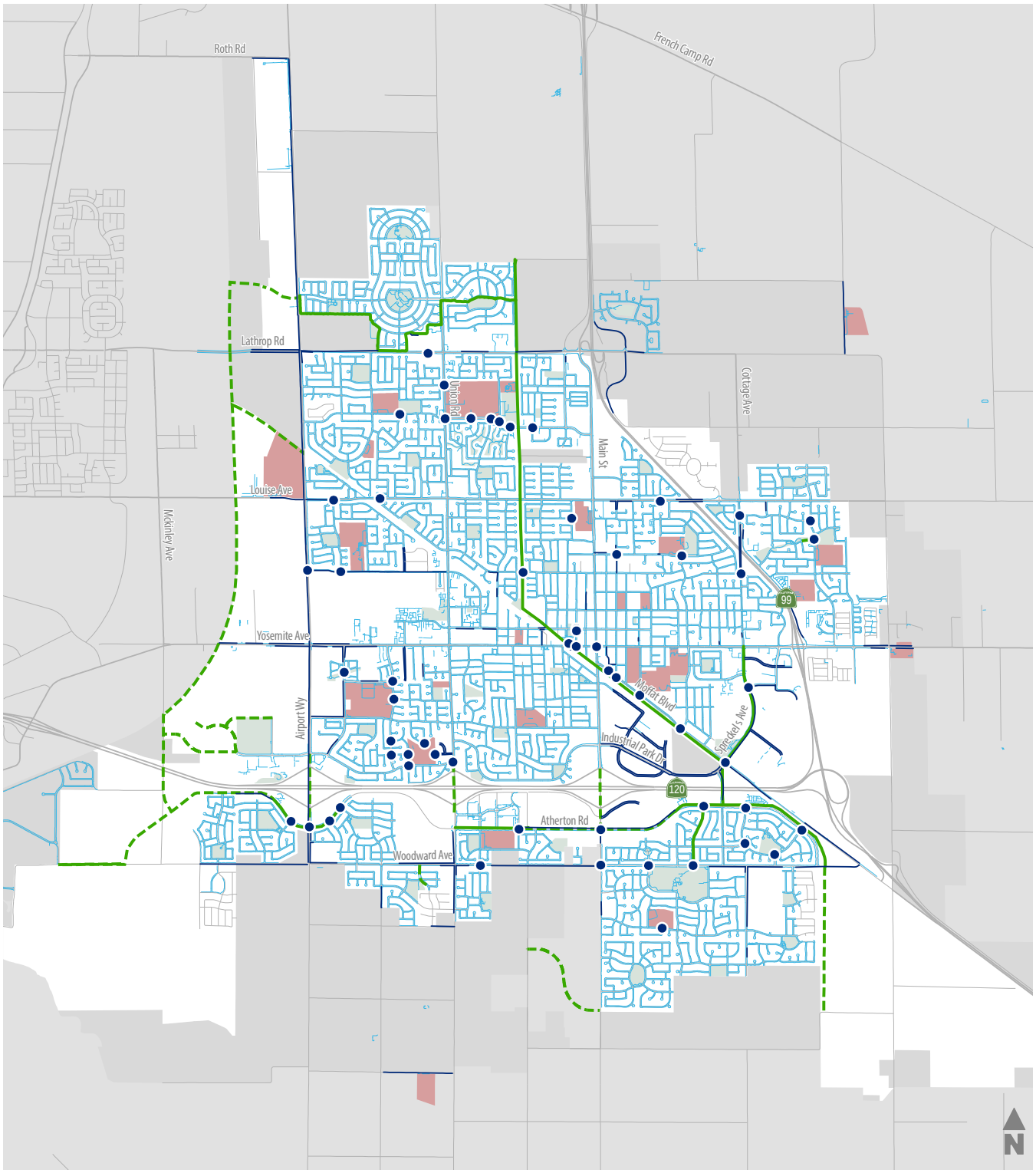


IN THE MAP

Existing Bicycle Facilities
- Class I Bike Path
- Class II Bike Lane
- Class III BikeRoute

Proposed Bicycle Facilities
- Class I Bike Path
- Class II Bike Lane
- Class II Buffered Bike Lane
- Class III Bike Route
- Class IV Separated Bikeway
- School
- Sphere of Influence
- Park
- City Limit

Figure 16: Planned Pedestrian Networks



IN THE MAP

- Existing Sidewalk
- Planned Sidewalk
- School
- Existing Class I Bike Path
- Planned Class I Bike Path
- Park
- Planned Crossing Improvement
- City Limit
- Sphere of Influence

Bicycle Parking

New bicycle parking should meet the standards discussed in the Introduction section of this document. Both short- and long-term bicycle parking should be supplied where appropriate, including destinations in the City. Business owners should be encouraged to work with the City to provide bicycle parking in visible areas in commercial districts to entice riders to stop and frequent local businesses.

Wayfinding

Wayfinding signage can be used on both bicycle and pedestrian facilities to direct users to connecting facilities and key destinations. Good wayfinding signs can also encourage pedestrians and bicyclists to visit local business. These signs provide the most value at trail junctions and at intersections of key bicycling and walking routes. Chapter 9B of the 2014 California MUTCD provides guidance on sign design and installation. Manteca currently uses a limited number of these signs to provide direction on the Tidewater Bikeway. However, many of these signs are in poor condition. These standard signs may be augmented by signs depicting distances in miles to encourage walking and bicycling. An example of this type of wayfinding signage is in Figure 17.

Wayfinding signage along the Tidewater Bikeway

Figure 17: Example Wayfinding Signage

Lighting

Sufficient lighting on bicycle and pedestrian facilities reduces the fear of crime and prevents collisions that occur due to decreased visibility. Pedestrian walkways should have lighting that allows people to identify faces from a distance of about 30 feet. Figure 18 depicts locations where lighting may be added to streets in Manteca, based on a review of City streetlight location data. In some locations, lighting fixtures were observed that were not in the City data. These locations were excluded when developing recommendations for new lighting fixtures.

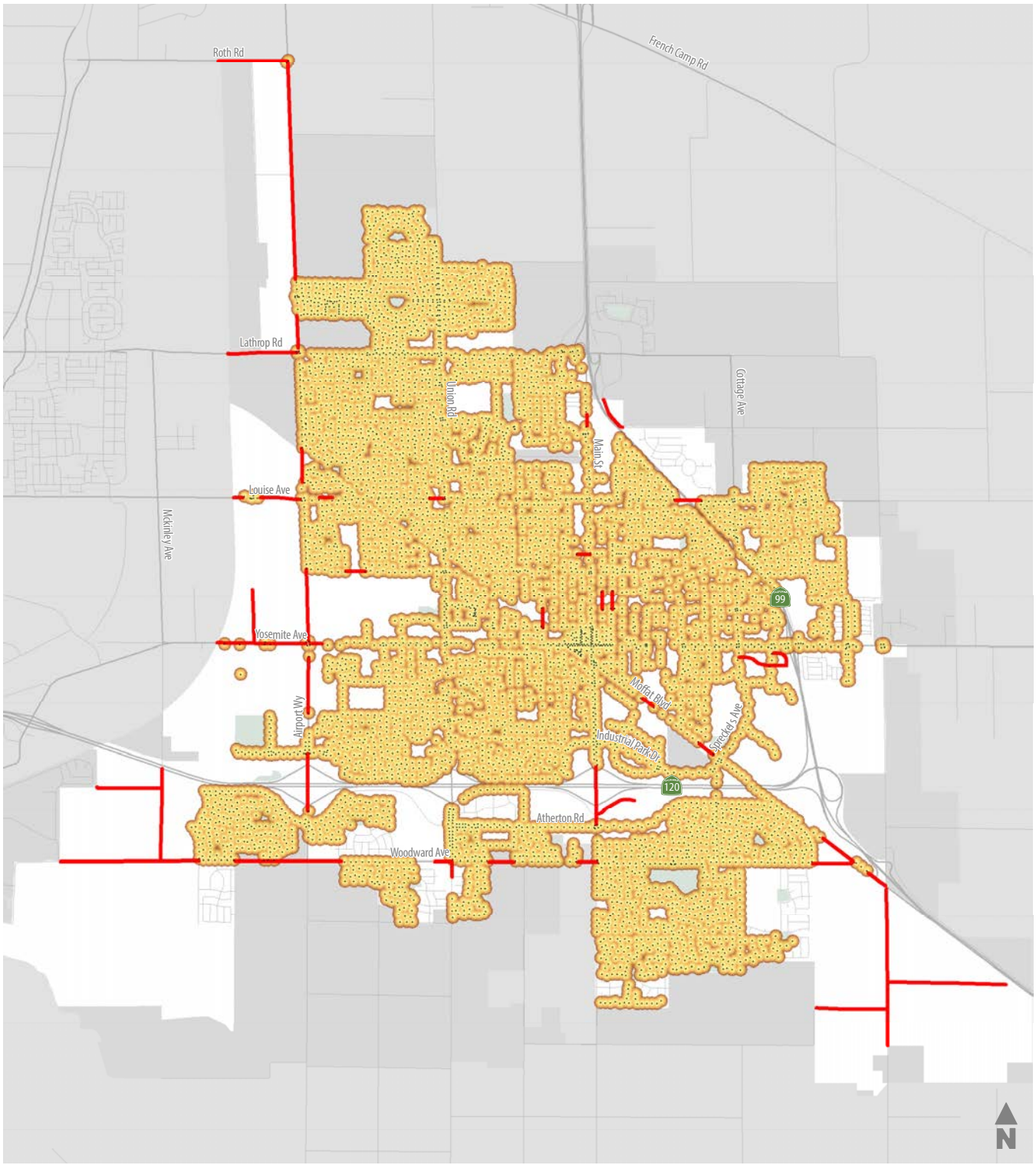
Non-Infrastructure Programs

Several improvements to other supporting programs are also recommended for the jurisdictions covered by this plan. The California Office of Traffic Safety also provides grants for education, encouragement, and enforcement efforts aimed at improving pedestrian and bicyclist safety. Appendix B, Funding Sources, provides more details on these grants.

Education

Manteca schools, in partnership with local law enforcement, have held bike rodeos and offered a limited number of bicycle educational programs. These programs should be made a regular part of the curriculum at the elementary school and middle school level. Safe walking programs should also be included at the elementary level.

Figure 18: Locations for Additional Lighting Fixtures



IN THE MAP

Streetlight Coverage
0' 240'

Streetlight
Streetlight Project

Park
Sphere of Influence
City Limit

Encouragement

Local schools have encouraged biking and walking through bike rodeos, fun runs, walkathons, and walk to school events. Bike and walk to school events have also been held some years at some locations. These programs should continue and should be held regularly at all schools. Programs such as "walking school buses," a program where kids and families walk to school in groups, are other good opportunities for neighborhood schools to encourage walking.

Many local running, walking, hiking, and biking events encourage active engagement for adults. Adding activities for bike to work events and increasing the number of casual walking events could expand this effort.

Enforcement

Local law enforcement partners well with local schools to step up enforcement of good motor vehicle behaviors around pedestrians and bicyclists at the beginning of the school year. Reports of speeding near school zones was a frequent concern heard from the community throughout the plan process. Continuing enforcement efforts periodically throughout the school year, and expanding to other places frequented by pedestrians, can further help pedestrians and bicyclists. Periodic enforcement actions along trails, including the Tidewater Bikeway, can also help alleviate concerns expressed during the project about personal safety along trails.

Evaluation

Evaluation data has not been routinely collected within the city. Creating a citywide counter program to count bicyclists and pedestrians using on-street facilities as well as Class I paths would allow the collection of data to support future grant applications and direct future improvement efforts. Bicycle and pedestrian counts, frequently included as part of traffic counts that are often performed when developing roadway improvements, could be collected centrally.

Maintenance

Manteca has informal maintenance policies for bicycle and pedestrian facilities, and often relies on citizen reports for issues. While this is acceptable for some maintenance issues, such as pedestrian signals and other facilities that need infrequent maintenance, more formal policies would provide benefit for other issues. Implementing a formal maintenance policy that addresses both incidental and periodic maintenance for bicycle and pedestrian facilities would systemize existing good practices, ensuring that they carry forward, and address other ongoing or periodic maintenance issues.

One concern heard from the public was that sidewalks, bike lanes, and shoulders may be obstructed by debris or overgrown vegetation. This is particularly problematic for wheelchair users who may be unable to use some facilities due to these obstructions. These conditions may require bicyclists to move into vehicle traffic or deter them from riding.

To address these concerns, Manteca could add policies for regular shoulder or bike lane sweeping on corridors frequently used by bicyclists or other users, especially where there are no sidewalks, and incidental sweeping policies to address debris that may accumulate. Similarly, a regular program of vegetation maintenance would reduce these concerns on bikeways, sidewalks, and trails.

Sidewalk maintenance is frequently the responsibility of the property owner. Adding or increasing assistance or advisory programs for sidewalk and vegetation maintenance would also help improve pedestrian conditions.

Homelessness and Active Transportation

Transportation infrastructure, including bicycle facilities and trails, is sometimes the site of temporary encampments and shelter locations for those experiencing homelessness. In Manteca, this has occurred at different locations along the Tidewater Bikeway. This situation can lead to concerns regarding accessibility and personal safety on paths and trails. At the same time, a lack of access to affordable transportation options is often a challenge to upward mobility within vulnerable populations.

While homelessness is a multi-faceted issue, a few approaches can assist with addressing concerns and removing transportation as a barrier to upward mobility. Transitional and temporary housing locations, when possible, should be co-located near service providers to allow bicycling and walking as a viable access option. Programs that repair or refurbish used bicycles for donation can aid in providing transportation to work and services. Partnerships should be cultivated or continued with appropriate agencies and community-based organizations, such as the Central Valley Low Income Housing Corporation, Catholic Charities, HOPE Family Shelter, San Joaquin County, and others.

Bike Route at the Manteca Transit Center

Implementation

Temporary Cycletrack at the Manteca Pumpkin Festival

Implementation of the planned bicycle and pedestrian networks is anticipated to occur:

- through active transportation projects pursued to implement this plan
- in conjunction with adjacent land development projects
- in conjunction with maintenance and capacity enhancement projects, such as slurry seals, pavement reconstruction, roadway widening, or sidewalk rehabilitation projects

Implementation will require many years to complete. Implementation of priority projects will be targeted for completion in the next five to ten years. Implementation of each project is dependent upon availability and acquisition of funding. Projects requiring land acquisition or utility relocation will require extra time to implement. Improvements associated with work on adjacent roadways or development of adjacent land uses will provide opportunities for implementation relatively easily or at lower cost than if implemented separately. In these cases, lower priority improvements may be implemented before higher-priority improvements, depending on the location of these land development and roadway projects. Implementation of each project is also dependent on detailed feasibility and design studies based on local conditions.

Completion of projects in this plan will be reported by staff to the City Council and on the City's website. The City of Manteca will periodically update this plan to reflect evolving needs and progress toward completion.

Prioritization

The projects identified to create these networks were prioritized as high, medium, or low based on several criteria:

- proximity to key destinations, including schools, parks, medical facilities, and activity centers
- collision locations
- disadvantaged community indicators
- population density
- location along a high-priority corridor
- public comment
- judgement of local jurisdiction staff

Lists of projects with priorities and further explanation of the prioritization process are provided in Appendix A, Project Priorities and Cost Estimates.

Costs

The estimated costs to implement each type of facility are provided in Appendix A and summarized in Table 6. If utilities must be relocated or land acquired to implement any of these facilities, costs will increase. However, many of these facilities may be implemented during development of adjacent land uses or in conjunction with other projects. Therefore, some of these costs will not be directly borne by the jurisdiction.

Project cost estimates are based on local unit cost estimates. These estimates were developed based on relevant project experience in the area. Assumptions for each bikeway type and details of these estimates are described in Appendix A, Project Priorities and Cost Estimates. Note that these cost estimates are high-level, therefore more detailed study and design of individual project will be required to refine them.

Funding

Federal, state, regional, county, and local organizations provide funding for pedestrian and bicycle projects and programs. A summary of funding sources is provided in Appendix B, Funding Sources.

Table 6: Cost Estimate Summary

Type	Priority			Total
	High	Medium	Low	
Sidewalks	$12,163,300	$12,617,700	$10,274,700	$35,055,700
Class I Bike Paths (Multi-Use)	$314,200	$2,018,200	$1,698,500	$4,030,900
Class II Bike Lanes	$3,538,600	$4,388,900	$5,104,800	$13,032,300
Class III Bike Routes	$1,269,100	$106,200	$2,239,100	$3,614,400
Class II Buffered Bike Lanes	$223,200	$1,139,400	$240,800	$1,603,400
Class IV Separated Bikeways	$380,700		$170,900	$551,600
Intersection Improvements	$1,219,300	$1,370,800	$742,000	$3,332,100
Total	$6,945,100	$9,023,500	$10,196,100	$26,164,700

Source: Fehr & Peers, 2020

Potential Outcomes

Following implementation of the planned networks and supporting programs, substantial improvements may be achieved in active transportation use and safety of pedestrians and bicyclists.

By increasing the facilities available to users, mode share may increase to levels seen in other comparable cities. Table 7 presents the expected future mode share and increase in number of biking and walking trips used for commuting. Because these numbers do not include shopping, school, recreational, or other non-work trips, the actual number of future trips may be higher than these estimates. These estimates are further explained in Appendix G, Mode Share Increase.

By implementing this plan, pedestrian and bicyclist safety will be improved and the number of collisions involving pedestrians and bicyclists will also be reduced. A 50% or greater reduction in injuries and fatalities is a reasonable expectation if all aspects of this plan, including supporting programs, are implemented. In addition to these direct health improvements due to collision reduction, implementation will also support increased physical activity by region residents, improving community health by reducing incidence of heart disease, high blood pressure, Type 2 diabetes, mental illness, and obesity.

Priority Projects

Through the prioritization process, five groups of projects were identified as near-term priorities for implementation. Each project will contribute to growing the backbone network of bicycle and pedestrian facilities for the city and/or remedy important deficiencies or needs in the bicycle and pedestrian networks.

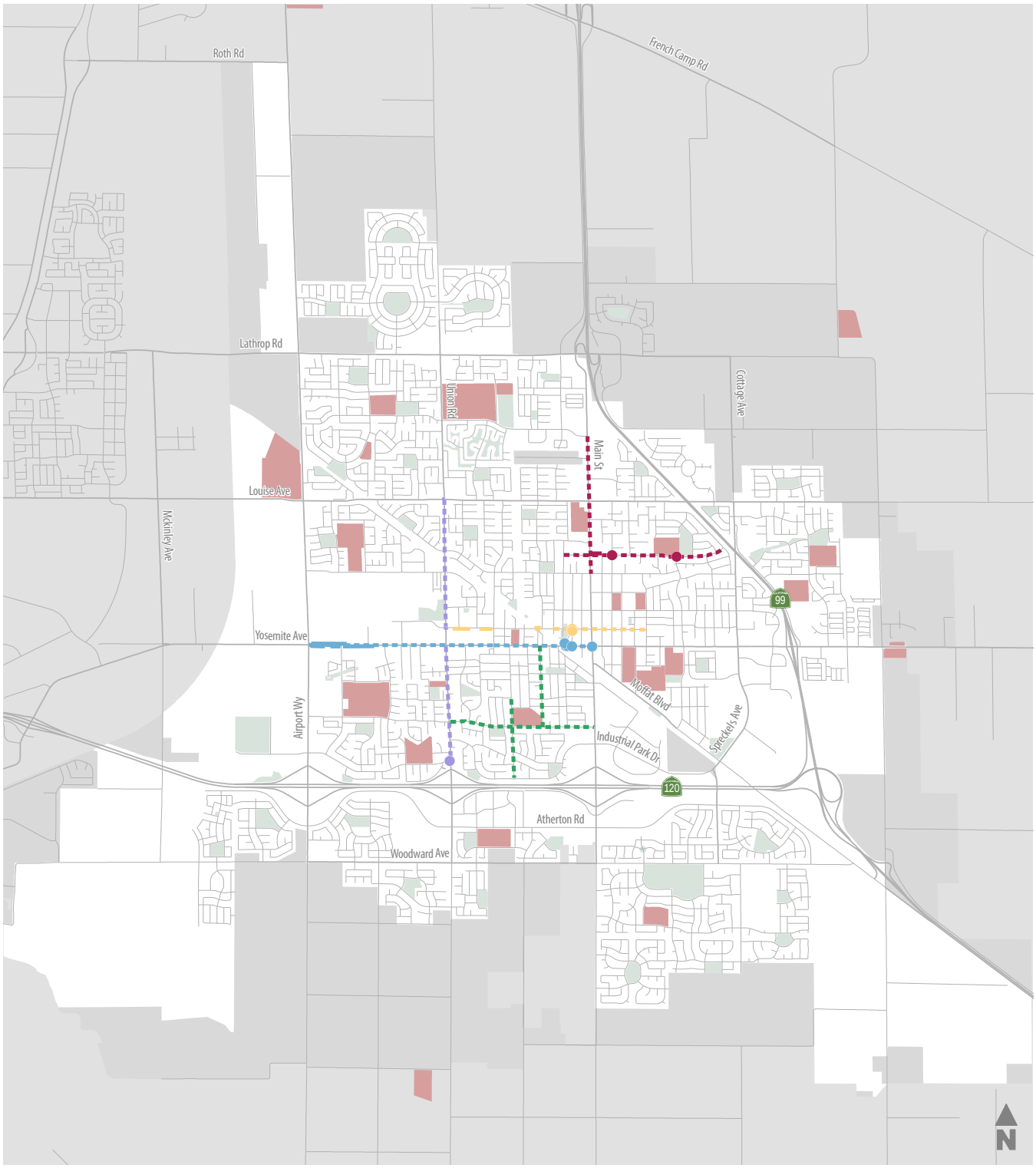
Locations of these projects are shown in Figure 19. Each priority project is summarized in the following pages. Additional details for each project, along with conceptual drawings and the estimated cost of implementation, are provided in Appendix A.

Table 7: Potential Increase in Manteca Biking and Walking Commuters

Mode	2018		2035		Increase	
	Mode Share	Commuters	Mode Share	Commuters	Mode Share	Commuters
Bicycling	0.2%	59	1.2%	507	1.0%	423
Walking	1.7%	501	2.3%	973	0.6%	254

Source: Fehr & Peers, 2020

Figure 19: Priority Projects



IN THE MAP

Project Type

- Crossing Improvement
- Bicycle Facility Improvement
- Sidewalk Improvement

Prioritized Project Group

- Center Street
- Edison and Main
- Sequoia Elementary
- Union Road
- Yosemite Avenue
- School
- Park
- City Limit
- Sphere of Influence

Union Road

Union Road is a major north-south arterial within the City of Manteca. This project would close gaps between existing sections of Class II bike lanes along Union Road from Louise Avenue to Daniels Street, making Union Road a viable north-south option for travel by bicycle throughout the city.

Union Road as it exists today offers two travel lanes in each direction and a center turn lane along most of the corridor. Parking is prohibited on both sides of the roadway for most of the project corridor, with the exception of the east side of the roadway from just north of Center Street to just south of Cherry Lane. A Class II bike lane is provided for a brief section from Center Street to Yosemite Avenue, but no other bicycle facilities currently exist along the corridor.

This project will remove one lane of travel in each direction along the roadway to allow for the installation of Class II bicycle lanes. The bicycle lanes will connect to existing Class II facilities north of Louise Avenue. It will also connect on the southern end to the proposed Class I shared path being constructed as part of the diverging diamond interchange (DDI) at State Route (SR) 120, providing connection to the southern portion of the city. The new bicycle lanes will provide bicycle connectivity to numerous multifamily residential developments along Union Road, create access to Downtown and City Hall through proposed projects on Yosemite Avenue and Center Street, respectively, and provide a continuous north/south bicycle route from the Del Webb senior community in the North of Manteca to the residential developments south of SR 120.

A signalized crossing will be added at the T-intersection of Daniels Street and Union Road. This is the first opportunity to cross the street north of the DDI at Union Road and SR 120, and will facilitate access to the existing Class II bike lanes on Daniels Street.

Schools located within a half mile of the project include Sequoia Elementary, Brock Elliot Elementary, and Sierra High School. Numerous parks are located near Union Road, including direct access to the Union Road Park, including the municipal tennis courts and golf course. Many of the communities bordering the pro tracts bordering the project.

Adjoining neighborhoods meet the California Healthy Places Index, CalEnviroScreen, and Median Household Income criteria for disadvantaged communities.

Estimated costs for this project, excluding a 30 percent contingency, are approximately $1,340,000. Cost estimate details are provided in Appendix A.

Yosemite Avenue

The Yosemite Avenue Complete Streets project extends from Airport Way to Main Street. Currently, Yosemite Avenue is four lanes with a center turn lane, narrowing to one travel lane in each direction at Walnut Avenue and through Downtown to Main Street. A short section of existing Class II bike lane extends from Walnut Avenue east to St. Dominic's Drive. Parking is provided on both sides of the roadway for most of the corridor, with some restrictions near intersections.

This corridor will provide a backbone facility across the center of Manteca, providing access to the downtown commercial district and the Tidewater Bikeway. Class II bike lanes will be installed between Main Street and Walnut Avenue, closing a gap between the existing bicycle lanes along the project corridor and the Class II facility on Yosemite Avenue east of Main Street to Cottage Avenue. A Class IV separated bikeway will be installed along the remainder of the corridor, from Walnut Avenue to Airport Way. When completed, this will provide a continuous corridor for bicycle travel along Yosemite Avenue through most of the city.

The project will also close sidewalk gaps and install crossing enhancements for a safer pedestrian experience, identified as a community need during the mobile workshop conducted as part of the outreach process. New sidewalk will be installed to close a gap on the eastern frontage between Airport Way and Winters Drive. Crossing enhancements will include the restriping of crosswalks and the installation of pedestrian signage in the downtown area, along with improvements to the trail crossing with the Tidewater Bikeway at Pierce Avenue.

The project will provide access to key destinations including the commercial businesses along Yosemite Avenue, the Kaiser Permanente Medical Center, and Sierra High School. Improvements to Yosemite Avenue to create connections to these destinations were one of the most frequent requests heard during public outreach.

Yosemite Avenue serves neighborhoods which meet the California Healthy Places Index, CalEnviroScreen, and Median Household Income criteria for disadvantaged communities. The project corridor passes within one block of Manteca Community Day School, where more than 75 percent of students are eligible for free or reduced price meals, an additional disadvantaged community indicator.

Estimated costs for this project, excluding a 30 percent contingency, are approximately $1,740,000. Cost estimate details are provided in Appendix A.

Sequoia Elementary Bicycle Access

The Sequoia Elementary Bicycle Access project will improve conditions for students and residents in the vicinity of this school while closing gaps and enhancing the active transportation network grid in central Manteca. The project will install bicycle facilities along three roadways (Wawona Street, Locust Street, and Sequoia Avenue) and address multiple concerns heard during community outreach regarding speeding and the lack of safe routes to school for students.

All three roadways are residential in nature, with sidewalks and street parking provided along both sides. Sequoia Avenue does not have a striped centerline, while Wawona Street and Locust Street both offer one lane of travel in each direction.

Along Wawona Street, proposed improvements include the addition of Class II bike lanes from Main Street to Union Road, providing a connection to facilities proposed on both roadways, and connecting to existing Class II bike lanes on the section of Wawona Street east of Union Road. Class II bike lanes will also be installed along Locust Street from El Dorado Street and Mission Ridge. A Class III bicycle boulevard will be created on Sequoia Avenue from Yosemite Avenue to Wawona Street, with the addition of traffic calming elements to facilitate a low-stress connection to the elementary school.

Multiple neighborhood parks are in the project vicinity, including Sequoia Park, which is located on Wawona Street. Nearby destinations include the commercial districts along Yosemite Avenue and Main Street. This project will also facilitate easier connection to the Tidewater Bikeway for residents of the neighborhood, by way of Yosemite Avenue and Main Street.

The surrounding neighborhood falls within the California Healthy Places Index, CalEnviroScreen, and Median Household Income criteria for disadvantaged communities, and will serve Sequoia Elementary, where more than 75 percent of students are eligible for free or reduced price meals, an additional disadvantaged community indicator.

Estimated costs for this project, excluding a 30 percent contingency, are approximately $346,000. Cost estimate details are provided in Appendix A.

Edison Street and Main Street

The Edison Street and Main Street connectivity project combines investments in bicycle infrastructure on one of Manteca's main arterials, with expanding safety and access to numerous destinations. Main Street currently offers two travel lanes in each direction with a center turn lane and no on-street parking, while Edison Street is a two-lane residential roadway with parking on both sides. No bicycle facilities currently exist on either roadway.

The project will add Class II bike lanes on Main Street from Northgate Drive to Alameda Street and on Edison Street from Poplar Avenue, across Main Street, to Alpine Avenue. Multiple pedestrian enhancements will also be added to facilitate safer travel to Shasta Elementary, including a rectangular rapid flashing beacon (RRFB) at Edison Street and Powers Avenue, the addition of marked crosswalks and bulbouts at Lincoln Avenue, a sidewalk gap closure near the intersection of Edison and Main Streets, and a short sidewalk gap closure on Edison Street at the western edge of the Shasta Elementary campus.

In addition to Shasta Elementary on Edison Street, these projects will also increase access to Shasta Park, Golden West School, one.Charter Academy of Visual and Performing Arts, the Boys and Girls Club of Manteca, and the numerous commercial destinations along Main Street. Numerous wishes for better pedestrian and bicycle facilities on Main Street were heard during public outreach, along with requests for safety improvements along Edison Street, where a student pedestrian fatality occurred at Lincoln Avenue.

Both Edison Street and Main Street serve neighborhoods which meet the California Healthy Places Index, CalEnviroScreen, and Median Household Income criteria for disadvantaged communities. Greater than 75 of students at Shasta Elementary are eligible for free or reduce price meals, an additional disadvantaged community indicator.

Estimated costs for this project, excluding a 30 percent contingency, are approximately $787,000. Cost estimate details are provided in Appendix A.

Center Street

The Center Street project will provide multiple improvements on Center Street from Union Road to Fremont Avenue. This project will provide an important increase in bicycle and pedestrian connectivity to downtown Manteca.

Center Street currently offers one travel lane in each direction, with center turn pockets provided at most intersections. Class II bike lanes are provided from Acacia Avenue west to Union Road. On-street parking is allowed on both sides of the roadway for most of the corridor.

The project will complete the Class II bike lanes on Center Street, adding new lanes from Acacia Avenue to Fremont Avenue. Sidewalk will be added to fill gaps on the south side of the roadway between Union Road and Walnut Avenue, as well as from Goodale Court to Elm Avenue. An RRFB will be added to the intersection of Center Street and Sycamore Avenue. ADA improvements are also recommended for the merge point of Sycamore Avenue and Manteca Avenue, just south of Center Street.

The recommended improvements will increase access to the downtown Manteca commercial district and multiple municipal amenities, including the Manteca Public Library, Library Park, and City Hall, while also increasing access to the Tidewater Bikeway and nearby Manteca Skateboard Park.

The Center Street project will also provide greater active transportation access to neighborhoods which meet the California Healthy Places Index, CalEnviroScreen, and Median Household Income criteria for disadvantaged communities. It will also benefit Manteca Community Day School, where greater than 75 percent of students are eligible for free or reduced price meals.

Estimated costs for this project, excluding a 30 percent contingency, are approximately $790,000. Cost estimate details are provided in Appendix A.

Temporary parking protected bike lane on Yosemite Avenue