



CITY OF LIVERMORE

ACTIVE TRANSPORTATION PLAN – INTERIM UPDATE

OCTOBER 2024

ACKNOWLEDGMENTS

CITY OF LIVERMORE

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CHAPTER 1

INTRODUCTION



INTRODUCTION

The City of Livermore is dedicated to fostering a community where people can easily walk, bicycle, and access trails for transportation and recreation. To retain eligibility for grant funding, plans outlining this vision must be up to date and have been adopted within the previous five years. This document is therefore a refreshment and strategic update of the Livermore Bicycle, Pedestrian, and Trails Active Transportation Plan adopted in 2018. The city plans to conduct a full-scale active transportation update following the adoption of the Imagine Livermore 2045 General Plan, currently anticipated for early 2026.

The refreshed plan builds on the previous document through ensuring the relevance of the previous needs, challenges, and implementation strategies. While the Vision and Goals of the 2018 ATP are carried forward, Existing Conditions have been updated, as have key elements of the Needs Analysis, including health and safety. In addition, the status of previously recommended projects has been updated and new project needs identified through the recently adopted Local Road Safety Plan have been incorporated. Finally, the planning level cost estimates presented in the Implementation Strategy have been inflated to current year dollars.

Although the following chapters summarize essential information from the 2018 ATP, the emphasis is on data that has changed since the plan's adoption. Further, it is not the intention for this interim update to take any credit for the extensive work that underlies the 2018 ATP. Therefore, the reader is directed to the 2018 ATP, available as Appendix C or [at the City of Livermore website](#)¹, for details on the adopted Vision and Goals, the methodology of the Needs Analysis, and other topics that are not repeated in this interim update.

KEY FINDINGS

Since 2018, significant progress has been made towards the vision of a safer, low stress active transportation network that supports a flourishing walking, bicycling, and rolling City of Livermore.

The City of Livermore has completed over 100 projects that contribute to a safer and lower stress active transportation network since 2018. Following the approval of the last Active Transportation Plan (ATP) in 2018, over 22 miles of bikeway upgrades have improved the safety and connectivity of the bikeway network, the active transportation mode share for school trips has been increased by almost 5%, bike involved crashes have been reduced by 18%, and pedestrian involved crashes have been reduced by 6% compared to the five-year total previously reported².

¹ <https://www.livermoreca.gov/departments/community-development/planning>

² *Transportation Injury Mapping System (TIMS), Safe Transportation Research and Education Center, University of California, Berkeley. 2023*

CHAPTER 2

VISIONS & GOALS



The City of Livermore reaffirms its commitment to the Vision, Goals, and Policies outlined in the 2018 Active Transportation Plan. For reference, the vision statement, goals, and policies are provided below.

VISION

“The City of Livermore envisions a city where people of all ages and abilities can comfortably access jobs, schools, recreation, shopping, and transit on foot or by bicycle as part of daily life in a healthy and active community.”

GOALS AND POLICIES

GOAL 1: SAFE & COMPREHENSIVE NETWORK

Provide a safe, efficient, and connected bicycle, pedestrian, and trail network that accommodates all users and abilities.

POLICIES

- 1.1 Develop and implement projects and improvements to address bicycle and pedestrian safety
- 1.2 Connect neighborhoods, schools, workplaces, transit facilities, and other destinations with on-street facilities and/or separated trails
- 1.3 Build cross town connections for the bicycle, pedestrian, and trail network
- 1.4 Improve the pedestrian and bicycle network to and through Downtown Livermore to increase access, safety, and mobility
- 1.5 Establish safe crossings of barriers including high volume roadways, freeway interchanges, railroads, arroyos, and other barriers
- 1.6 Coordinate with other agencies, adjacent jurisdictions, and regional partners to plan and implement projects that improve Livermore’s network and connections to the region

GOAL 2: DESIGN FOR ALL USERS

Build a well-designed and comfortable bicycle, pedestrian, and trail network with support services and facilities to serve users of all ages and abilities.

POLICIES

- 2.1 Incorporate best practices for the design of pedestrian facilities, bikeways, and trails that emphasize user safety and comfort
- 2.2 Incorporate sustainable and environmentally sensitive design for all facilities and amenities
- 2.3 Provide support facilities on public properties as appropriate, such as bicycle parking, rest areas, water fountains, and other facilities

2.4 Require private development to provide appropriate support facilities, such as shower/locker facilities and bicycle parking

2.5 Connect new development and public spaces to the active transportation network

2.6 Consider maintenance needs in the design of all new facilities

GOAL 3: ENGAGE & GROW THE ACTIVE TRANSPORTATION COMMUNITY

Increase bicycling and walking for transportation and recreation with education, awareness, and enforcement.

POLICIES

3.1 Educate the public on the benefits of bicycling and walking, the available bicycle and trail facilities, and their rights and responsibilities

3.2 Provide up-to-date information about the bicycle and trail network, bicycle parking, and program resources

3.3 Develop and implement strategies to encourage bicycling and walking to and through community events, including bicycle and pedestrian support facilities

3.4 Support and participate in Federal, State, Regional, and Local programs, such as countywide Safe Routes to School efforts

3.5 Coordinate with other agencies to promote, encourage, and implement active transportation programs

3.6 Continue and expand bicycle, pedestrian, and traffic enforcement programs to encourage proper use of facilities, increase safety, and improve the user experience

GOAL 4: MAINTAIN THE ACTIVE TRANSPORTATION NETWORK

Maintain roadways, sidewalks, and multi-use trails to provide safe and comfortable active transportation conditions for all users and abilities.

POLICIES

4.1 Develop and provide a maintenance program for pedestrian facilities, bikeways, and trails to provide continued safe and comfortable use of the network

4.2 Provide new facilities only where sufficient maintenance funding can be identified

4.3 Work with Federal, State, and Regional agencies to expand maintenance funding opportunities



CHAPTER 3

EXISTING CONDITIONS

EXISTING NETWORKS

ROADWAY NETWORK & MAJOR BARRIERS

Since 2018, infrastructure in Livermore has seen only incremental change. The roadway network in Livermore generally follows a traditional grid pattern in the city center and quickly expands outwards to residential, suburban cul-de-sacs with limited network connectivity. As a result, the few corridors that provide cross-town connectivity face enormous pressure to accommodate all modes of transportation.

Major east-west arterials include First Street, Jack London Boulevard, Stanley Boulevard, Concannon Boulevard, East Avenue, and Portola Avenue. Major north-south arterials include Livermore Avenue, Mines Road, Vasco Road, L Street/Arroyo Road, Isabel Avenue, and Murrieta Boulevard.

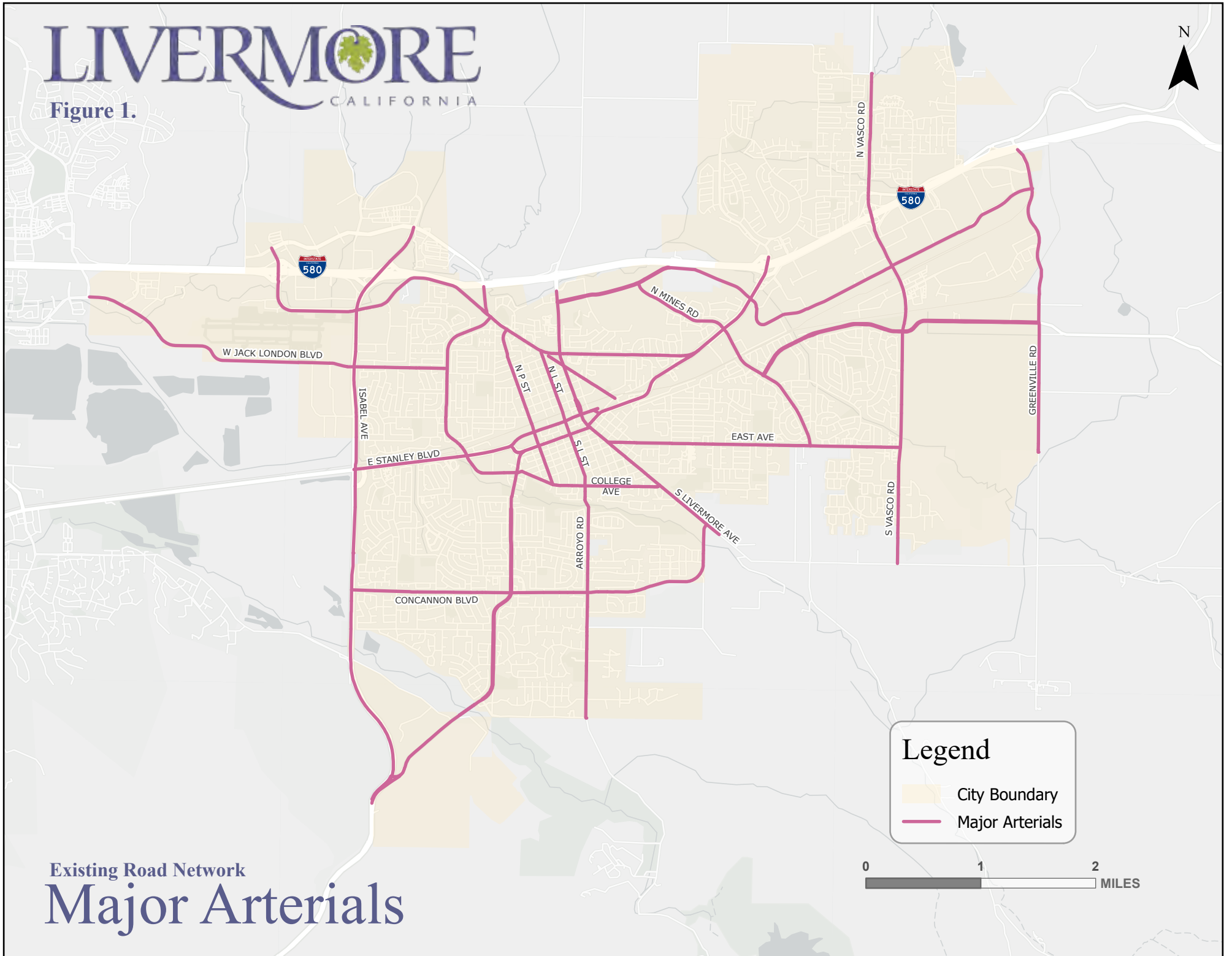
A defining feature of the Livermore roadway network is the Union Pacific Railroad tracks that bisect the city. The tracks create a physical barrier for people traversing the city from north to south since there are few grade-separated crossings and many streets do not cross the railroad or are blocked when trains are active. Existing at-grade crossings are found at L Street, Junction Avenue, and Vasco Road. Grade-separated crossings include Murrieta Boulevard, Livermore Avenue, First Street, P Street, Mines Road, Vasco Road, and Greenville Road.

The City of Livermore is connected to the rest of the Bay Area and Central Valley via I-580. The interstate crosses the northern part of the city and separates the northwest and northeast neighborhoods from the rest of the city due to sparse crossing options. There are eight existing streets which cross I-580 in Livermore. Most but not all these overcrossings have some bicycle and pedestrian access; however, most are high stress crossings due to the lack of comfortable bicycle and pedestrian facilities.

Arroyos crisscross Livermore followed by service roads that have been or could be converted to multi-use paths. The water courses are maintained by the Zone 7 Flood Control District and act as both barriers and opportunities for connection. The uncertain flows of the arroyos limit crossings, however the service roads provide low stress connections for cyclists and pedestrians throughout the city. Figure 1 illustrates the roadway network in Livermore.

The following sections focus on changes to the transportation system in Livermore since the last Active Transportation Plan was approved in 2018. Appendix A includes a more detailed list of active transportation projects completed since 2018.

Figure 1.



Existing Road Network
Major Arterials

Legend

- City Boundary
- Major Arterials

0 1 2 MILES

TRANSIT NETWORK

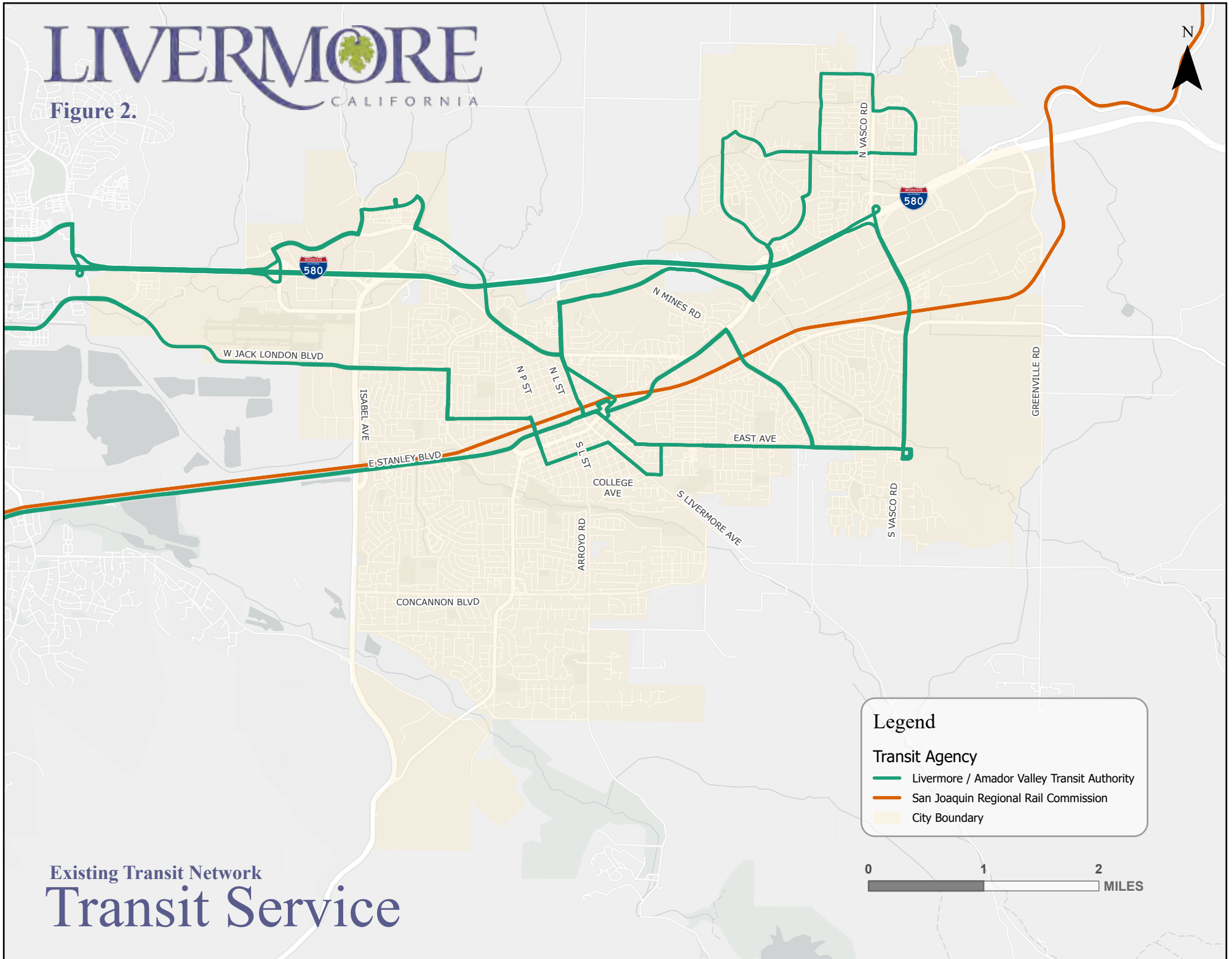
Since 2018 few changes have been made to the Livermore transit system. The Altamont Corridor Express (ACE) still operates from San Jose to Stockton and has two stops in Livermore. Wheels buses continue to be operated by the Livermore Amador Valley Transit Authority (LAVTA) and connect Livermore to San Ramon, Dublin, and Pleasanton. Proposed changes to LAVTA routes were recently open for public feedback and include adjustments to increase service and resume Route 2 which was paused during the COVID-19 pandemic.

In 2018, Bay Area Rapid Transit (BART) was proposed to extend to Livermore. However, BART decided not to move forward with this proposal. Instead, Valley Link Rail will connect the region from Dublin to Mountain House in the initial phase and ultimately to Stockton. The Valley Link service will stop in Livermore at the Isabel Avenue station and Southfront Road station. Figure 2 Illustrates current transit routes in Livermore.

LIVERMORE

CALIFORNIA

Figure 2.



Legend

Transit Agency

- Livermore / Amador Valley Transit Authority
- San Joaquin Regional Rail Commission
- City Boundary

0 1 2 MILES

Existing Transit Network
Transit Service

BICYCLE NETWORK

Table 1 summarizes the existing bikeway mileage in Livermore in 2001, at the time of the 2018 ATP, and today (please refer to the 2018 ATP for more definitions of the different types of bicycle facilities). As shown, the existing bikeway mileage has increased by 3% since 2018 and over 16 miles of bikeways have been upgraded with buffers. Figure 3 shows the existing and previously proposed bikeways and trails. Note that some previously proposed Class III E Bicycle Boulevard facilities have been implemented as Class III A Bicycle Routes (indicated by yellow dashed lines over orange solid lines), and some previously proposed Class IV Separated Bike Lanes have been implemented as Class II B Buffered Bike Lanes (indicated by red dashed lines over blue solid lines) as interim improvements.

TABLE 1: EXISTING BIKEWAY MILES

BIKEWAY CLASS	2001 MILES	2018 MILES	2023 MILES
Class I Shared Use Paths	22	40	41.6
Class II Bicycle Lanes	46	66	67.1 ^a
Class III Bicycle Boulevards	0	0	1.8
Class IV Separated Bike Lanes	0	0	0.6
Total	68	106	111.0

Source: Bicycle, Pedestrian, & Trails Active Transportation Plan (June 2018), City of Livermore.
 Notes: a) This total includes about 53 miles of Class IIa and 14 miles of Class IIb facilities.

PEDESTRIAN NETWORK

The pedestrian network in Livermore is composed of crosswalks, curb ramps, crossing enhancements, and features such as benches and lighting. Since 2018, these pedestrian facilities have been augmented with approximately 1.3 miles of additional sidewalks, Americans with Disabilities Act (ADA) compliant curb ramps at 67 locations, and new or improved crosswalks at 34 locations.

TRAIL NETWORK

Many trails weave through Livermore with over 40 miles of Class I paved shared use paths designed for bicycling, walking, and horseback riding across the city. Existing and proposed trails are illustrated in Figure 3.

LIVERMORE CALIFORNIA

Figure 3.

Legend

Previously Existing Bikeways/Trails

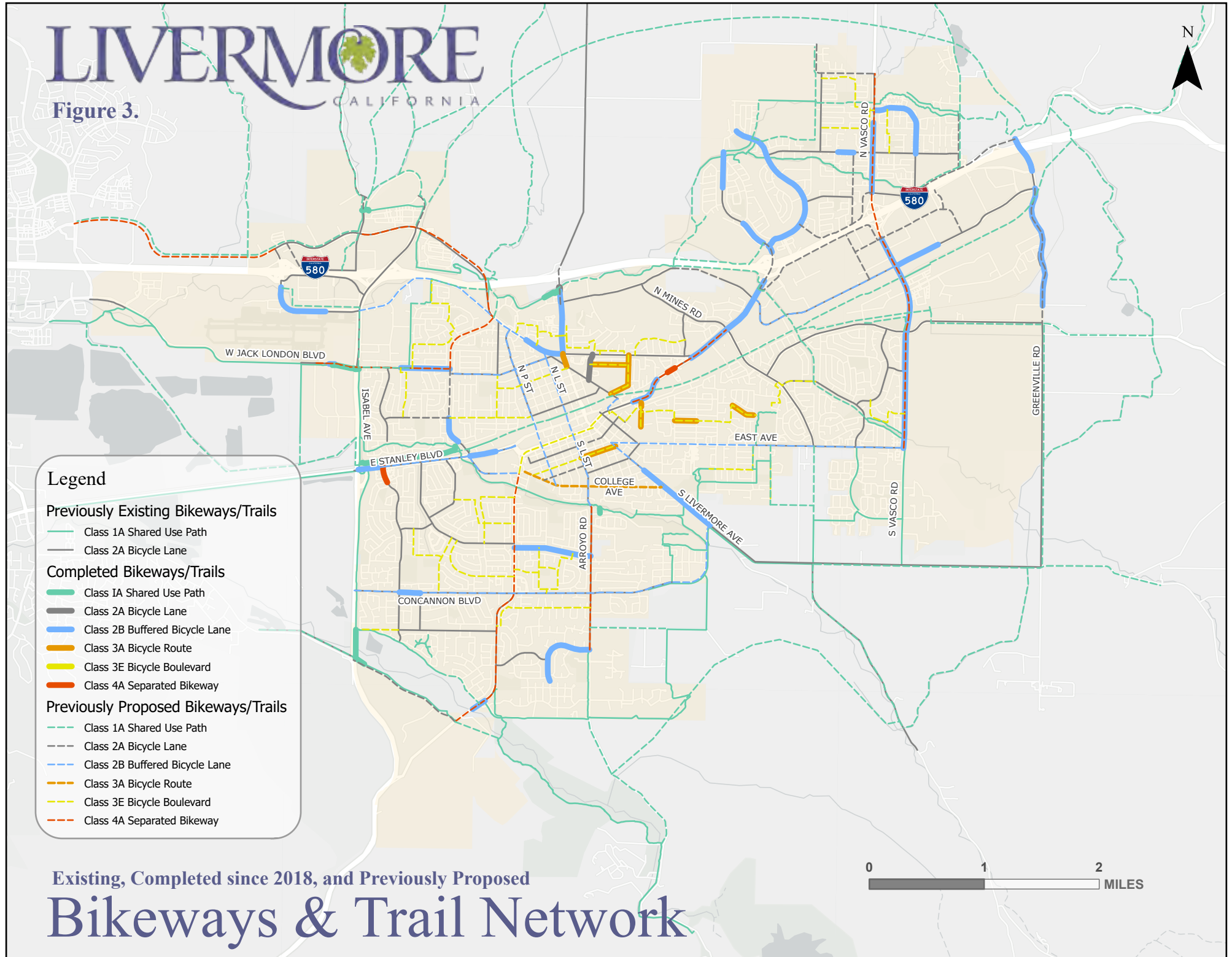
- Class 1A Shared Use Path
- Class 2A Bicycle Lane

Completed Bikeways/Trails

- Class 1A Shared Use Path
- Class 2A Bicycle Lane
- Class 2B Buffered Bicycle Lane
- Class 3A Bicycle Route
- Class 3E Bicycle Boulevard
- Class 4A Separated Bikeway

Previously Proposed Bikeways/Trails

- - - Class 1A Shared Use Path
- - - Class 2A Bicycle Lane
- - - Class 2B Buffered Bicycle Lane
- - - Class 3A Bicycle Route
- - - Class 3E Bicycle Boulevard
- - - Class 4A Separated Bikeway



Existing, Completed since 2018, and Previously Proposed Bikeways & Trail Network

0 1 2 MILES

ACTIVITY GENERATORS

Activity generators are destinations that are likely to attract walking or bicycling trips. Further information on how activity generators are defined can be found in the 2018 ATP. Since 2018, the largest shift in activity generators has been in the major employers in Livermore. The current major employers listed by the Livermore Chamber of Commerce are the Lawrence Livermore National Laboratory, Stanford Health Care ValleyCare, Livermore Joint Unified School District, ComCast Cable, the Sandia National Laboratory, Wente Vineyards, the Kaiser Permanente Regional Distribution Center, the City of Livermore, FormFactor, Las Positas College, US Foodservice, the Livermore Area Recreation and Park District, TopCon Positioning Systems, WalMart Stores, Costco Wholesale, McGrath RentCorp, and Target. The locations of the major employers and other activity generators can be found in Figure 4.

DEMOGRAPHICS

Understanding how the population of Livermore has changed since the last active transportation plan is essential to meeting the needs of residents. Knowing who lives in the city helps to guide projects, priorities, and programs and allows effective outreach to all groups of residents. The demographic data shown here is from the 2021 American Community Survey (ACS) 5-year estimates and is compared to the 2014 ACS 5-year estimates presented in the 2018 ATP.

POPULATION

In 2014 the population of the City of Livermore was 89,301; as of 2022, the population has decreased by 5%, contracting to 84,722. Livermore remains the sixth largest city in Alameda County, just behind San Leandro.












AGE

Livermore still has a large young population compared to Alameda County as a whole. Nearly a quarter of the people in Livermore are aged 19 or younger. At 24% of the population, there is a higher proportion of young people in Livermore compared to 22% in Alameda County as a whole. These younger residents are less likely to drive or have access to a car and have higher dependence on transit, walking, and bicycling to move around the city.

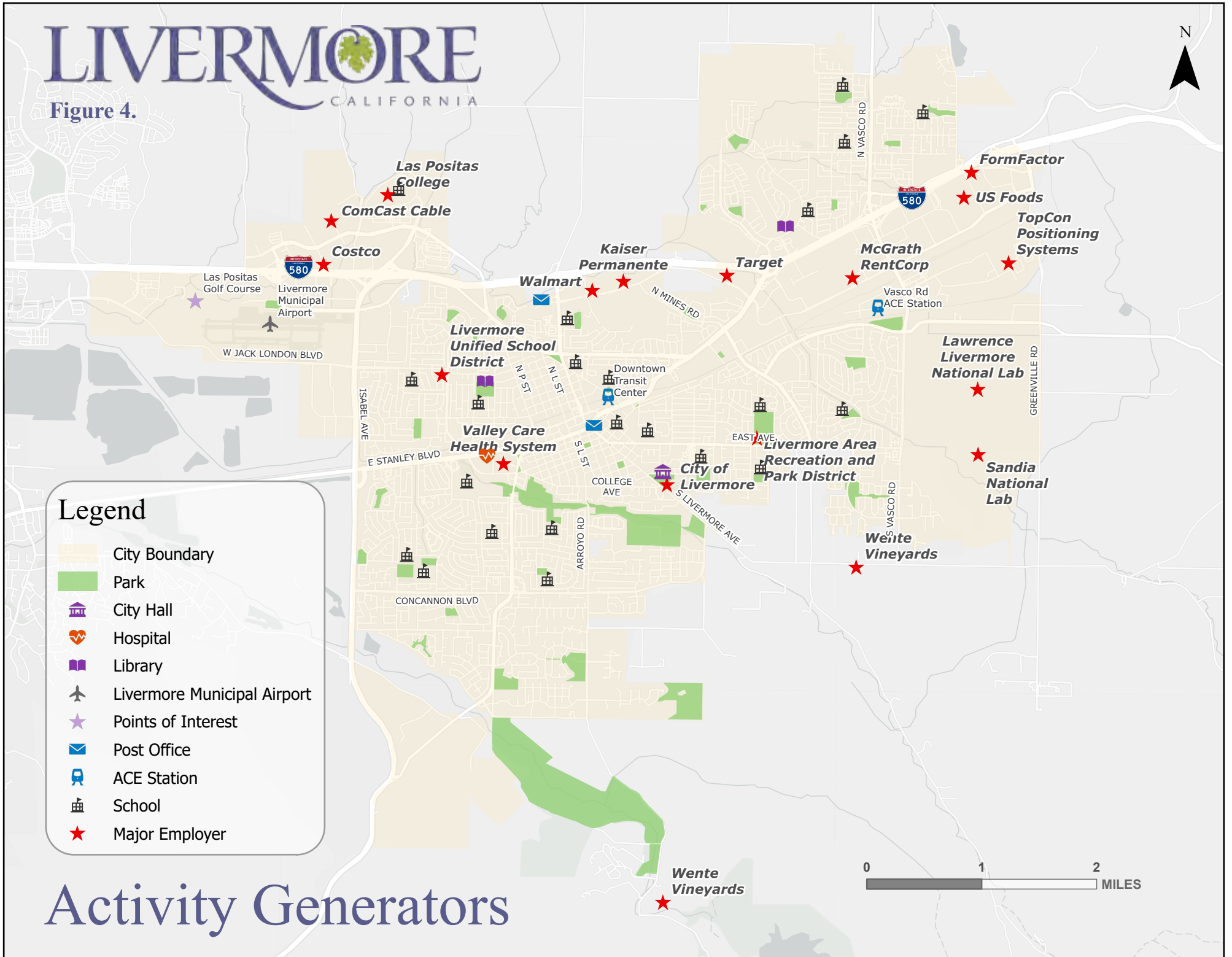
LIVERMORE CALIFORNIA

Figure 4.

Legend

-  City Boundary
-  Park
-  City Hall
-  Hospital
-  Library
-  Livermore Municipal Airport
-  Points of Interest
-  Post Office
-  ACE Station
-  School
-  Major Employer

Activity Generators



ACCESS TO CARS

Most households in Livermore (96%) still have access to a car with the other 4% likely relying on transit, walking, or bicycling. Based on household sizes this represents nearly 3,400 residents with no access to a car. In 2014, there were nearly 3,500 residents without access to a car for transportation. Additionally, 22% of households only have access to one vehicle compared to 23% in 2014. If these households have two or more workers, those without a car may rely on other modes of transportation for their commute.

INCOME

Median household income in Livermore has grown 46% since 2014 and sits at \$145,919 as of 2022. Residents of Livermore tend to earn more than Alameda County overall, which has a household median income of \$122,159.

TRAVEL PATTERNS

COMMUTE TRAVEL

As shown in Table 2, driving alone has remained the dominant commute to work mode share for Livermore residents. The driving alone mode share has decreased from nearly 80% in 2014 to 69% in 2021 based on American Community Survey 5-year Estimates. A significant share (44%) of the commute trips begin and end in Livermore, offering a major opportunity to shift residents from driving to active transportation and transit³. Since 2018, the commute mode shares for public transportation, bicycling, and walking have slightly decreased or remained constant while the share of residents working from home have nearly doubled. Note that the 2021 figures from the American Community Survey 5-year Estimate reflect data sampled from 2017 through 2021. As such, this data does not yet fully reflect post pandemic travel patterns.

Table 3 presents some commute mode share comparisons of Livermore to peer cities in the Bay Area and California. Statistics from Copenhagen, Denmark are also presented for informational purposes.

³ Replica Places, Fall 2022.

TABLE 2. COMMUTE TO WORK MODE SHARE FOR LIVERMORE RESIDENTS

COMMUTE MODE	MODE SHARE		
	2014	2018	2021
Drove Alone	79.14%	77.24%	69.37%
Carpooled	8.30%	8.86%	9.93%
Public Transit	3.75%	4.66%	3.09%
Bicycling	1.36%	1.14%	1.1%
Walking	0.87%	1.31%	1.31%
Work from Home	5.56%	5.64%	13.76%
Other	1.03%	1.15%	1.43%
Total Commuters	42,706	47,027	46,330

Sources: American Community Survey 5-year Estimates, Table B08301.

TABLE 3. COMMUTE MODES IN PEER COMMUNITIES

CITY	2014		2018		2021	
	BIKE	WALKING	BIKE	WALKING	BIKE	WALKING
Livermore	1.4%	0.9%	1.14%	1.31%	1.1%	1.3%
Dublin	0.4%	2.0%	0.4%	1.2%	0.3%	1.4%
Pleasanton	0.9%	2.4%	0.8%	2.3%	0.9%	2.4%
Rancho Cordova	1.4%	2.3%	0.8%	1.8%	0.5%	1.4%
Berkeley	9.7%	19.6%	7.8%	18.3%	5.9%	15%
Davis	23.2%	5.1%	19%	4.3%	13.8%	3%
Copenhagen	37%	6.0%	49%	6%	42%	10%

Sources: The 2014 statistics are taken from Bicycle, Pedestrian, & Trails Active Transportation Plan (June 2018). Statistics for California cities are from the American Community Survey 5-year Estimates. Copenhagen statistics are from Mobility Facts and Figures, City of Copenhagen 2021, The Bicycle Account 2018, Copenhagen City of Cyclists 2018.

SCHOOL TRAVEL

The Alameda County Safe Routes to School (SRTS) Program has been collecting data on trips to school since 2014. The program includes all the schools in the Livermore Valley Joint Unified School District. According to data published by the SRTS program, commuting to school via physically active modes has risen significantly, rising from a 25% mode share in the 2017- 2018 school year to a 30% active mode share for the 2021-2022 school year⁴. The increase shows that the changes in infrastructure and programming are effectively encouraging and supporting active travel to school. In comparison to Livermore’s active mode share, about 11% of children walk or bike to school in the United States, based on data from the National Household Travel Survey.

⁴ *Alameda County Safe Routes to Schools Program. 2021-2022 District Snapshot, published online at alamedacountysr2s.org.*

CHAPTER 4

NEEDS ANALYSIS



NEEDS ANALYSIS

Walking and bicycling are part of holistic environments that support community needs. Health, safety, and comfort are as much a part of the active transportation network as physical infrastructure and as such, the needs of the residents are informed by these factors. This chapter builds upon the 2018 Active Transportation Plan and includes updates to the following sections to capture the current state of Livermore as it relates to these topics:

- Health (Air Quality), and
- Safety (Pedestrian and Bicycle Collisions)

HEALTH

AIR QUALITY

CalEnviroScreen 4.0 is a tool developed by the Office of Environmental Health Hazard Assessment team that measures pollution factors to identify census tracts where adverse health effects are disproportionately distributed. Outputs from CalEnviroScreen 4.0, released in 2021, are compared to outputs from CalEnviroScreen 2.0 which was published in 2014. The pollution indicators are assigned a percentile for each geographic unit, based on the rank order of the value – the higher the percentile the worse the geography ranks in terms of impact (100th percentile would be the worst or highest ranked geography).

Exposure to traffic pollution can cause chronic illnesses such as asthma and heart and lung diseases. Reducing exposure to harmful emissions can make the residents of Livermore healthier and live longer. Since 2014, Livermore has become a significantly healthier place to live. In 2014, the pollution burden experienced by residents was in the 51st percentile. As of 2021, Livermore has risen to the 32nd percentile while Alameda County has fallen from the 34th to the 41st percentile. With regard to traffic related pollution, Livermore has risen from the 36th percentile to the 21st for exposure to PM2.5 but has fallen from the 45th to the 50th percentile for diesel emissions.

The 2018 ATP reported that residents of Livermore suffered from asthma at higher rates than the rest of California. Eighteen percent of Livermore residents over 18 had been diagnosed with asthma compared to 13% statewide. As of 2020, diagnoses in Livermore have decreased to 16.1% in adults and from 18.6% to 16.4% in children. Statewide, diagnoses in children have fallen from 13% to 12.3% and in adults have risen to 16.1%⁵.

⁵ *California Health Interview Survey Neighborhood Edition, 2014-2020*

Figure 5 illustrates the pollution burden percentile from CalEnviroScreen 4.0 in Livermore (the pollution burden percentile score is an average across several categories of pollution exposure). The map shows that large areas Livermore have a pollution burden higher than the state median value.

SAFETY

Safety and comfort inform how we travel to places. If a route or mode of travel is seen as too dangerous, safer options will generally take precedence. This section builds on the safety section developed in the 2018 Active Transportation Plan. The section covers the location and number of bicycle and pedestrian involved crashes in Livermore from 2017 - 2021 based on data acquired from the Transportation Injury Mapping System (TIMS)⁶. Crashes in Livermore are compared to nearby communities in Table 4 and collisions are mapped in Figure 6. Note that the TIMS likely underestimate the true number of crashes as not all incidents are reported to law enforcement.

Bicycle-Involved Collisions

There were a total of 103 bicycle collisions during the 2017-2021 study period representing 5.5% of all crashes in Livermore. Although the total number has decreased from the 122 bicycle-related crashes recorded for the 2010-2014 period, the percentage of all crashes that are bicycle-related has increased from the 2.3% observed earlier. One bicyclist fatality was recorded, and 12 bicyclists were severely injured.

The most commonly reported factors that contributed to these collisions included:

- Bicycles traveling on the wrong side of the road (33.98%)
- Improper turning by motorist or bicyclist (15.53%)
- Unsafe speeds by drivers (12.62%)

Pedestrian-Involved Collisions

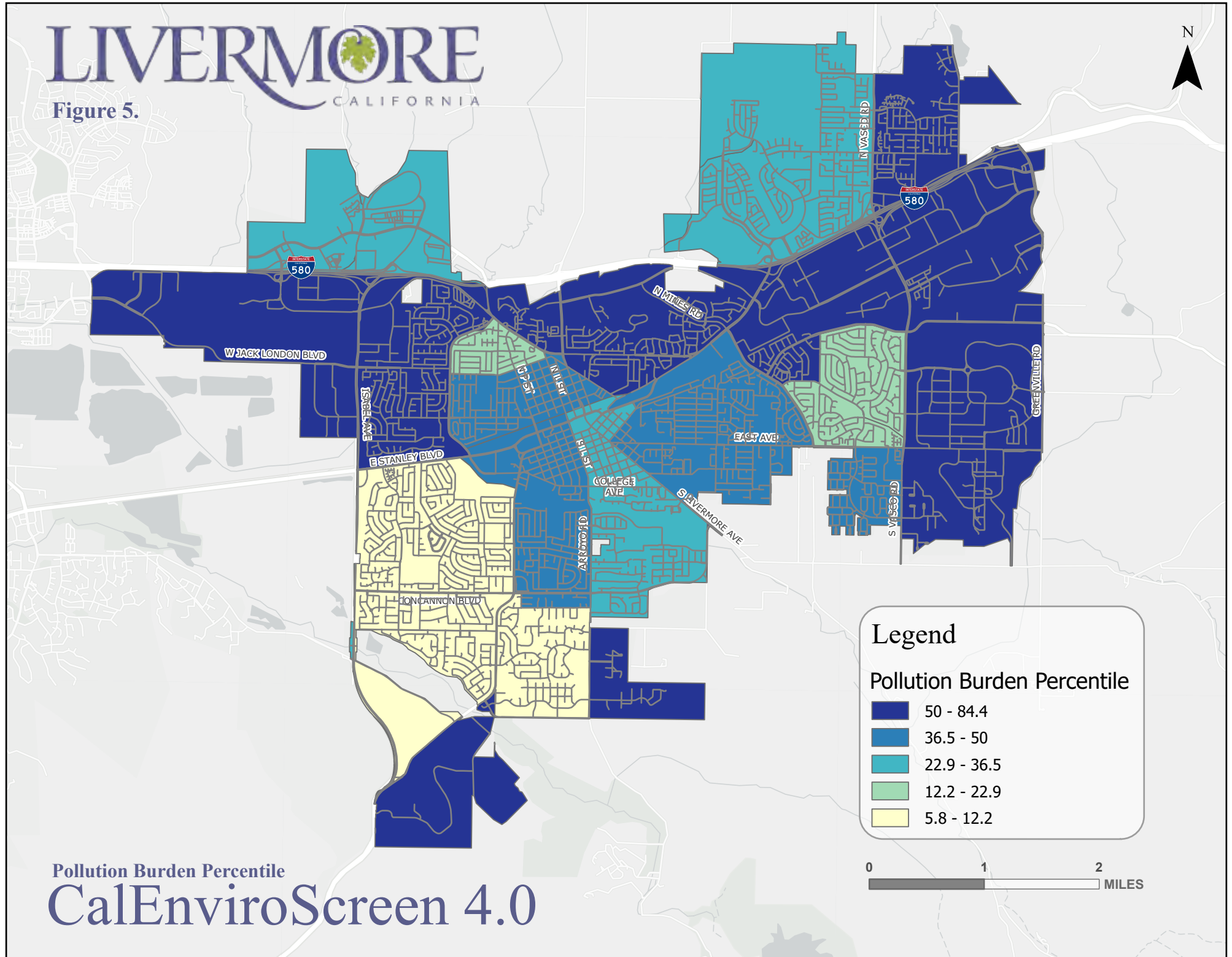
There were 68 pedestrian involved collisions during the study period representing 3.6% of the total crashes in Livermore. Again, while the absolute number of pedestrian-involved crashes has decreased from the 72 recorded for the 2010-2014 period, the percentage of all crashes that are pedestrian involved has more than doubled from the 1.4% that was previously recorded. There were seven pedestrians fatally injured and 14 were severely injured.

The most frequently reported factors contributing to these accidents included:

- Drivers failing to yield to pedestrians (30.88%)
- Pedestrians failing to yield to drivers (27.94%)
- Unsafe speeds by drivers (14.71%)

⁶ The Transportation Injury Mapping System (TIMS) presents the Statewide Integrated Traffic Records System (SWITRS) data in a geo-coded query-able format.

Figure 5.



Legend

Pollution Burden Percentile

Dark Blue	50 - 84.4
Medium Blue	36.5 - 50
Light Blue	22.9 - 36.5
Light Green	12.2 - 22.9
Yellow	5.8 - 12.2



Pollution Burden Percentile
CalEnviroScreen 4.0

Comparison To Surrounding Area

Compared to nearby cities, Livermore has a lower rate of bicycle collisions and higher rate of pedestrian collisions. Compared to Alameda County in total, Livermore is a lower risk city to ride a bike or walk in. Table 4 highlights this with crash data from TIMS and the American Community Survey with comparison to the numbers previously reported for 2014. As shown, the Livermore pedestrian collision rate has significantly dropped from 2014 to 2021.

TABLE 4: CRASHES COMPARED TO SURROUNDING AREA- 2021 (2014)


DATA	LIVERMORE	PLEASANTON	DUBLIN	ALAMEDA COUNTY
Bicycle collisions	103 (122)	136 (155)	49 (35)	2,445 (3,305)
Bicycle commuters	515 (580)	350 (293)	120 (99)	11,792 (13,812)
Collisions/100 bicyclists	20 (21)	38 (53)	41 (35)	20 (24)
Pedestrian collisions	68 (72)	57 (63)	41 (35)	3,348 (3,283)
Pedestrian commuters	608 (371)	953 (821)	484 (483)	25,916 (25,802)
Collisions/100 pedestrians	11 (19)	5 (8)	9 (7)	13 (13)

Source: American Community Survey 5-year Estimates (2017-2021), TIMS GIS Map, 2021

In Livermore, collisions generally take place near major streets and in the downtown core of the city. Figure 6 shows where collisions have occurred and their associated injury severity.

Figure 6.

Legend

 City Boundary

Pedestrian Collisions

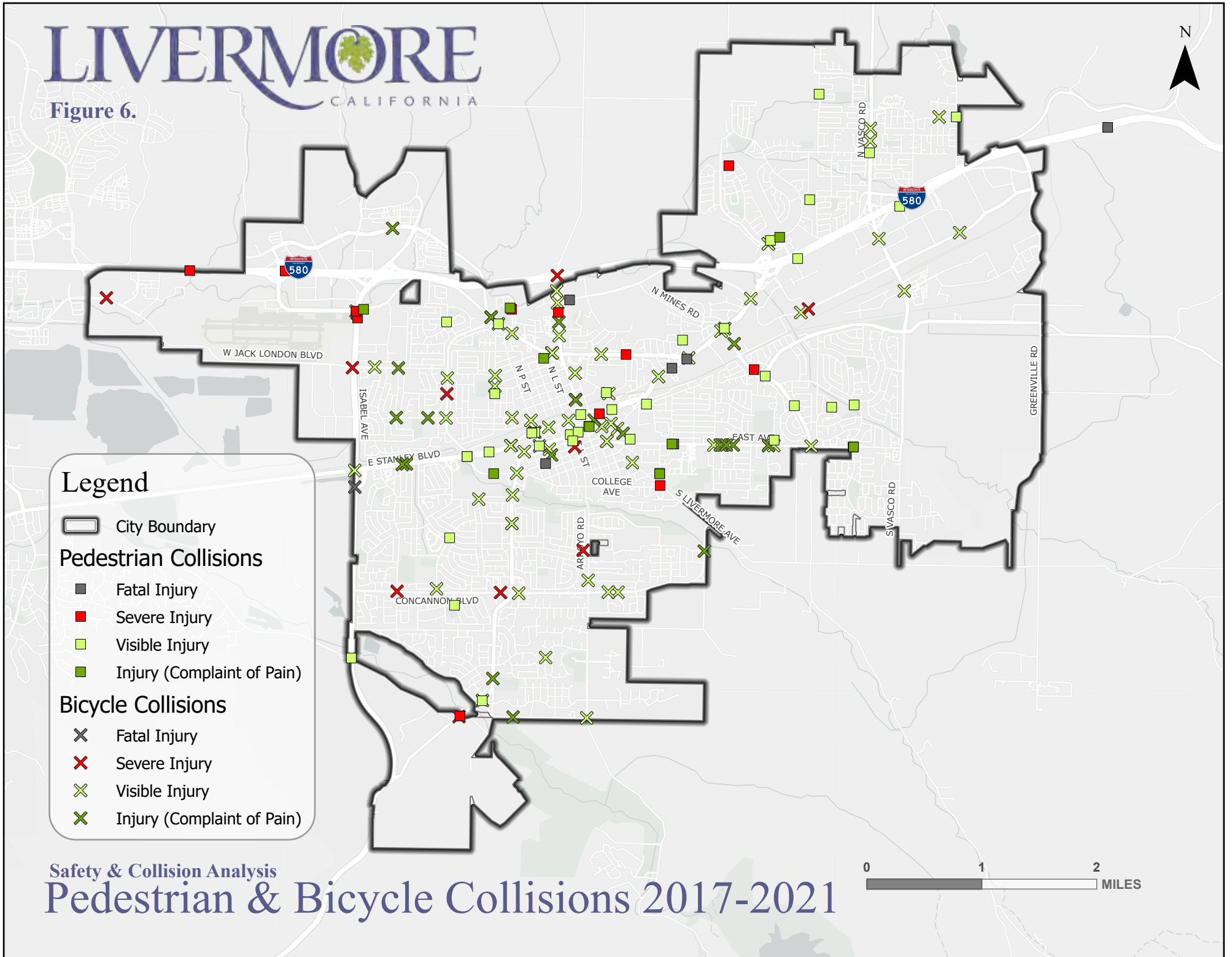
-  Fatal Injury
-  Severe Injury
-  Visible Injury
-  Injury (Complaint of Pain)

Bicycle Collisions

-  Fatal Injury
-  Severe Injury
-  Visible Injury
-  Injury (Complaint of Pain)

Safety & Collision Analysis Pedestrian & Bicycle Collisions 2017-2021

0 1 2 MILES



CHAPTER 5

PROJECTS & PROGRAMS



PROJECTS AND PROGRAMS

This section focuses on the projects the City of Livermore has completed since 2018 and changes to programs that the city offers or participates in. The goal of the proposed active transportation network is to provide the Livermore Community with safe, convenient, and healthy transportation choices. Since 2018, significant strides have been made in achieving this goal.

NETWORK IMPROVEMENTS

The previously proposed network improvements were intended to make walking and bicycling more comfortable, enjoyable, and safer when traveling along Livermore corridors. A number of these projects have been completed and offer bicyclists more roadway space and pedestrians safer more accessible crossings. More information on how projects were classified can be found in the 2018 ATP. Table 5 summarizes the projects completed since 2018. See Appendix A for more detailed information about projects completed since 2018.

TABLE 5. COMPLETED PROJECTS SINCE 2018

PROJECT TYPE	QUANTITY COMPLETED SINCE 2018
ADA Ramp Improvement	67 locations
Crossing Improvements	34 locations
Sidewalk Improvements	1.3 miles
Class I Shared Use Paths	1.6 miles
Class 2A Bicycle Lane	1.6 miles
Class 2B Buffered Bicycle Lanes or addition of buffer to Class 2A lanes	16.4 miles
Class 3A Bicycle Route	1.8 miles
Class 4A Separated Bikeway	0.6 mile

Source: City of Livermore

The completion of these projects has contributed to a safer, more connected active transportation network. Table 6 shows the previously existing (2018), currently existing (2023), and proposed mileage of network improvements. The projects completed since 2018 are mapped in Figure 7 alongside the previously proposed projects. Livermore examples of the bike lane classifications and crossing improvements are pictured in Appendix B.

TABLE 6. EXISTING AND PROPOSED NETWORK IMPROVEMENTS

FACILITY TYPE	EXISTING 2018	EXISTING 2023	REMAINING PROPOSED ^a	PROJECTED TOTAL ^b
Class 1A Shared Use Path	40	41.6	79.3	120.9
Class 2A Bicycle Lane	66	50.7 ^c	13.0	63.7
Class 2B Buffered Bike Lane	0	16.4	15.5	31.8
Class 3A Bicycle Route	0	1.8	1.2	3.0
Class 3E Bicycle Boulevard	0	0.0	19.2	19.2
Class 4A Separated Bikeway	0	0.6	12.8	13.4
Sidewalk	566	566.4	5.6	572.0

Source: City of Livermore
 Notes: a) Facilities proposed in the 2018 Active Transportation Plan. b) Projected total is calculated as Existing 2023 plus Remaining Proposed. However, some facilities currently implemented as Class 2B bicycle lanes may be ultimately planned as Class 4A separated bikeways. c) Some of the Class 2A facilities existing in 2018 have been converted to Class 2B facilities.

LIVERMORE CALIFORNIA

Figure 7.

Legend

Completed Projects

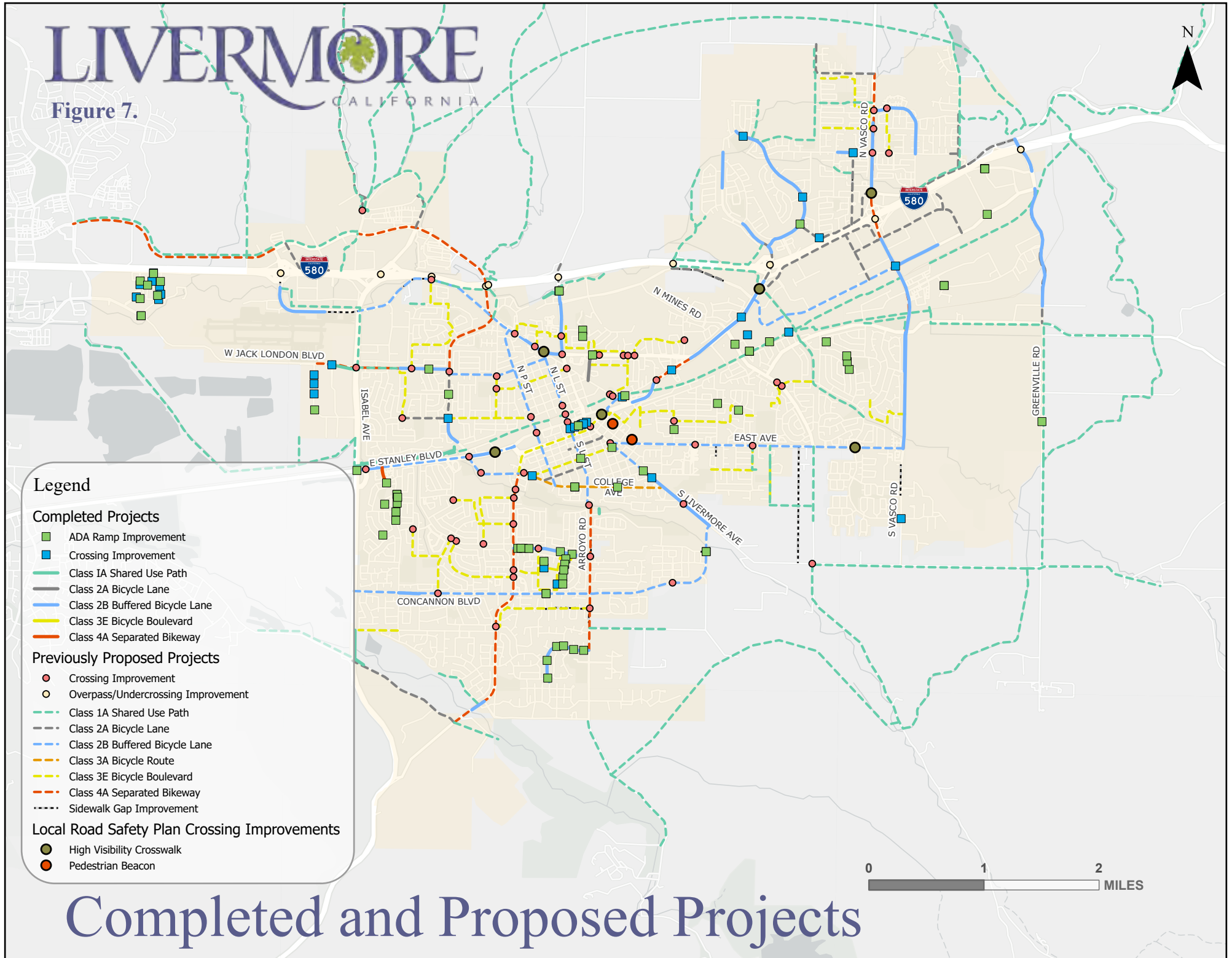
- ADA Ramp Improvement
- Crossing Improvement
- Class 1A Shared Use Path
- Class 2A Bicycle Lane
- Class 2B Buffered Bicycle Lane
- Class 3E Bicycle Boulevard
- Class 4A Separated Bikeway

Previously Proposed Projects

- Crossing Improvement
- Overpass/Undercrossing Improvement
- - - Class 1A Shared Use Path
- - - Class 2A Bicycle Lane
- - - Class 2B Buffered Bicycle Lane
- - - Class 3A Bicycle Route
- - - Class 3E Bicycle Boulevard
- - - Class 4A Separated Bikeway
- - - Sidewalk Gap Improvement

Local Road Safety Plan Crossing Improvements

- High Visibility Crosswalk
- Pedestrian Beacon



Completed and Proposed Projects

CROSSING IMPROVEMENTS

Crossing improvements are essential to provide low stress connections throughout the active transportation network. Since 2018, 34 crossing improvements were completed. The completed and proposed improvements are mapped in Figure 8. More information on how crossing improvements were categorized and prioritized can be found in the 2018 ATP.

PROJECT GROUPS

Project groups were developed through community input received during the development of the 2018 ATP. The five focus areas highlighted include:

- School Access,
- Downtown Access,
- Crosstown Routes,
- Trail Connections,
- Sidewalk Gap Closures,
- and I-580 crossings.

Figure 9 shows the remaining proposed projects by grouping. The 2018 ATP can be referenced for more information on the project groups.

CITYWIDE PROJECTS

In addition to location-specific capital projects, the 2018 ATP recommended a suite of citywide programs to support active transportation. These are listed in Table 7, along with updates on implementation and status. Many citywide projects are at least partially implemented via projects programmed in the Capital Improvement Plan (CIP) or concurrent with construction of adjacent development projects.

Figure 8.



Legend

Completed Projects

- ADA Ramp Improvement
- Crossing Improvement

Previously Proposed Projects

- Crossing Improvement
- Overpass/Undercrossing Improvement

Proposed Local Road Safety Plan Crossing Improvements

- High Visibility Crosswalk
- Pedestrian Beacon

Completed & Previously Proposed Crossing Improvements

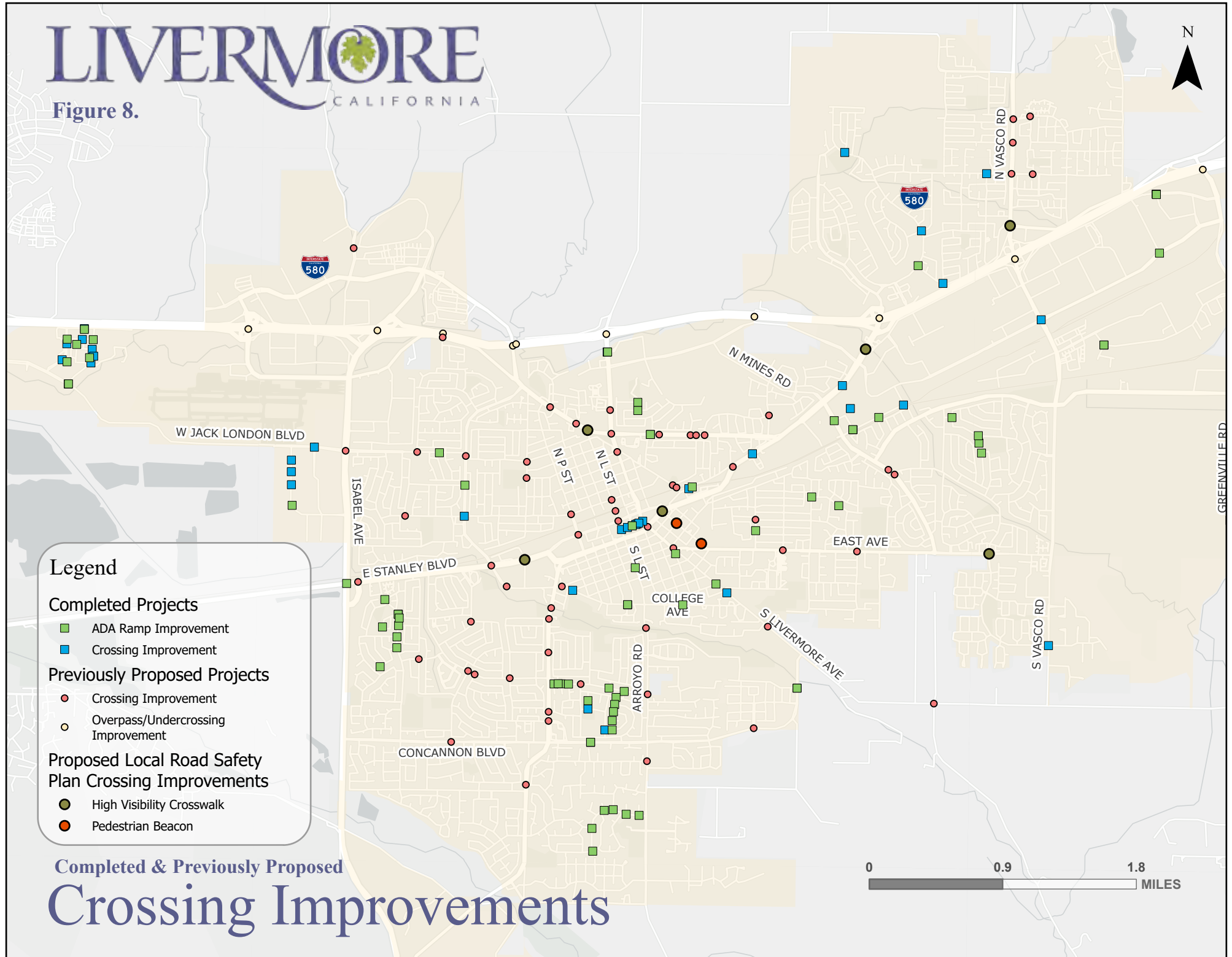


Figure 9.

Legend

Project Group

- Crosstown Routes Network Improvements
- Downtown Access Network Improvements
- School Access Network Improvements
- Sidewalk Gap Improvements
- Trail Connections Network Improvements

Project Group

- Crosstown Routes Network Improvements
- Downtown Access Network Improvements
- I-580 Crossing Improvements
- School Access Network Improvements
- Trail Connections Network Improvements

Proposed Projects by Group

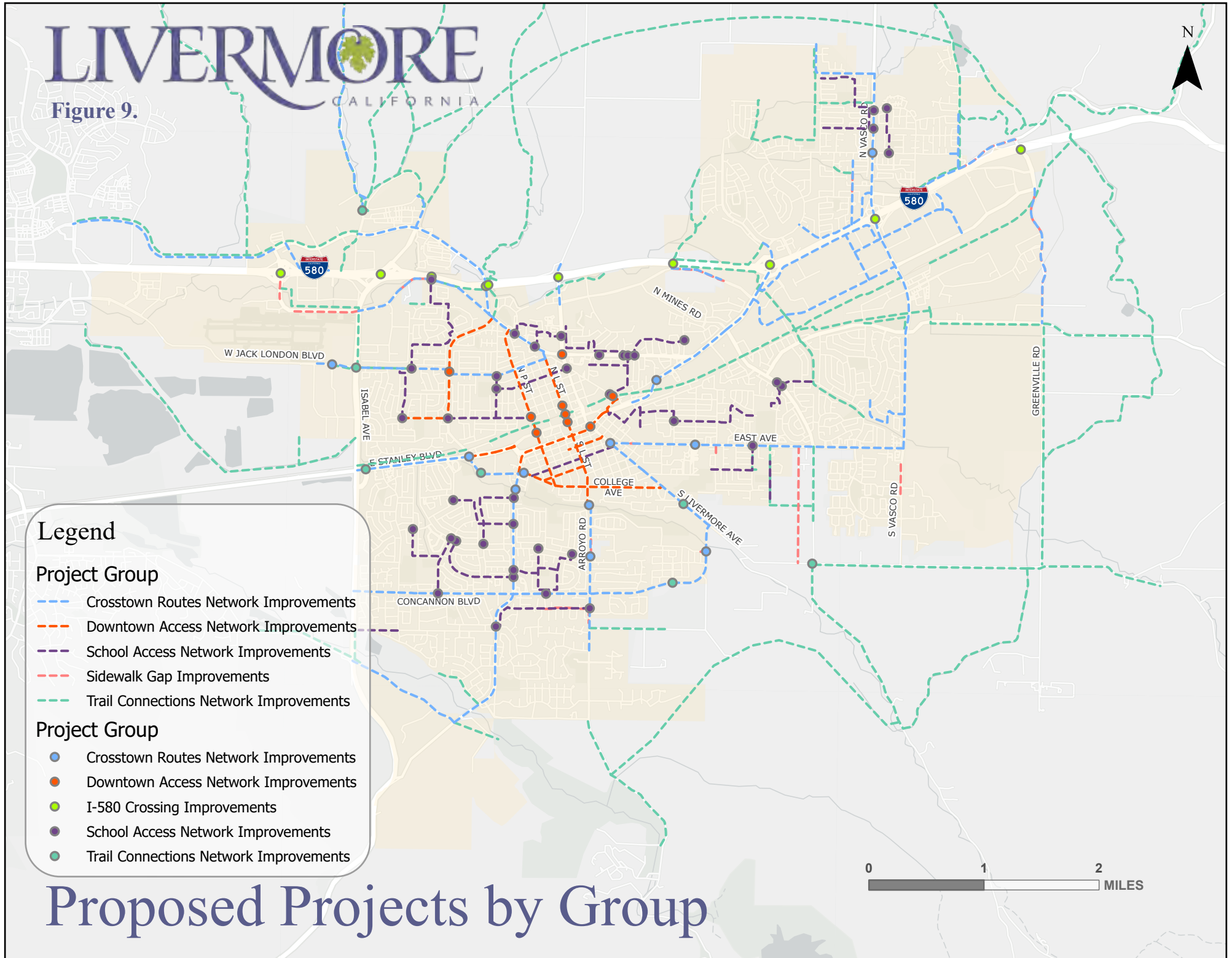


TABLE 7: CITYWIDE PROJECTS AND STATUS

PROJECT	RECOMMENDATION	STATUS/PROGRESS
Pedestrian-scale Lighting	Develop a method to evaluate and install pedestrian-scale lighting to enhance the pedestrian environment and improve visibility in and around activity generators in key locations such as schools, downtown, transit stops, and community facilities.	Pedestrian lighting is improved through annual CIP project to install, upgrade, and maintain street lighting, including decorative lighting
Development Review	Implement project and program recommendations in partnership with developers as part of development review.	City reviews proposed developments against planned active transportation improvements and requires developers to install adjacent ATP improvements.
Bicycle Parking	<ul style="list-style-type: none"> ▪ Provide bike parking at all city-related buildings, downtown, and at transit stations/stops. ▪ Review existing bicycle parking standards against best practices recommended by Association for Pedestrian and Bicycle Professionals. ▪ Remove bicycle parking maximums from the Livermore Development Code. 	Bicycle parking is provided at city-related buildings and at the Livermore Transit Center. Development code amendment is underway and staff will consider this change.
New Bicycle Technologies	Adopt e-bike regulations and consider regulations for additional types of electric vehicles.	Municipal code does not currently refer to e-bicycles or similar vehicles
Streetscape Amenities	Add streetscape amenities in the downtown core, along major corridors, and near transit stops to encourage multimodal transportation.	The Downtown Revitalization project (CIP #200827) included additional bike parking
Wayfinding	Develop wayfinding signage that reflect the character of the community.	Active transportation-specific wayfinding not yet implemented
Bike Share	Research options and develop a proposal for a bike share system in Livermore.	There are currently no active bike share programs in Livermore
Traffic Control Zones	Review standards for consideration of bicyclists and pedestrians during construction and maintenance activities.	City requires maintenance of bicycle and pedestrian access when reviewing Traffic Maintenance Plans (TMPs)

PROJECT	RECOMMENDATION	STATUS/PROGRESS
Waste Management	Require future development to provide convenient locations for trash and recycling collection that does not conflict with parking or with active transportation facilities.	Implemented through development review process
Green Bike Facilities	<p>Install green pavement within bike facilities in a consistent manner at key locations:</p> <ul style="list-style-type: none"> ▪ Portions of Class 2A Bicycle Lanes without buffers or other enhancement on arterial roads ▪ Driveway conflict zones in high-volume, auto oriented locations ▪ Intersections with conflicts on designated school routes 	Green bicycle facilities in conflict zones are implemented as a standard component of repaving projects

Source: *Bicycle, Pedestrian, & Trails Active Transportation Plan (June 2018), City of Livermore.*

PROGRAMS

The physical active transportation infrastructure is complemented with programs that increase walking and bicycling while improving safety and addressing maintenance needs. Programs may be organized into the so-called “Four E’s” categories:

- Education
- Encouragement
- Enforcement
- Evaluation

The 2018 ATP recommended that existing programs within the City of Livermore be continued and refined or expanded as resources become available. In addition, several new programs were recommended. Table 8 lists the previously existing and recommended programs and summarizes their current implementation status. As shown, programs existing at the time of the 2018 ATP implementation have largely continued but new programs are still being considered.

TABLE 8: EXISTING AND PROPOSED PROGRAMS

PROGRAM	2018 STATUS	CURRENT STATUS
Education		
Youth Bicycle Safety Education	Existing	School participation in Alameda County Safe Routes to School (SR2S) program. Annual youth bicycle rodeo offered by Police Department
Adult Bicycle Safety Education	Existing	Available through Bike East Bay and Alameda County Bicycle Safety Education Program
Pedestrian Safety Education	Existing	Available for students through participation in Alameda County SR2S program
Website	New	2018 Active Transportation Plan and other relevant documents are posted on the Transportation & Traffic web page
Share-the-Path Campaign	New	Not implemented
New Facility & Low Stress Route Rides	New	Bike East Bay hosts group rides
Bicycling & Walking Maps & Guides	Existing/New	The Bicycle, Pedestrian, & Trails Map will be updated as part of this Active Transportation Plan refresh and posted on City's website
Encouragement		
Safe Routes to School	Existing	Schools continue participation
Bike to Work Day	Existing	Ongoing through Metropolitan Transportation Commission/Bike East Bay and local businesses
City Bicycle & Pedestrian Coordination	New	City does not presently have a dedicated bicycle and pedestrian coordinator
Employer-Based Campaigns	New	Implemented at Oaks Business Park and San Francisco Premium outlets as part of ongoing Transportation Demand Management programs
Bicycle Friendly Business Program	New	Not implemented
Bicycle Friendly Community Awards	New	Not implemented

PROGRAM	2018 STATUS	CURRENT STATUS
Walking and Bicycle Ambassadors	New	Not implemented
Open Street Events	New	The Downtown Street Fest is one such annual event
Bicycle Tourism	New	Promoted through local business organizations such as Visit Tri-Valley
Group Social Rides	New	Not currently implemented
Enforcement		
Traffic Citation Diversion Program	Existing	Ongoing
Targeted Enforcement & Speed Trailer	Existing	Ongoing
Bicycle Patrol	Existing	No longer offered
Crossing Guard Program	Existing	Recently reprioritized to cover more locations
Traffic Calming	Existing	Current Neighborhood Traffic Calming program was adopted in 2020 and improvements are programmed in the CIP
Evaluation		
Community Survey	New	Not currently implemented
Expanded Bicycle & Pedestrian Counts	New	Not currently implemented
Expanded Collision Data Review	New	Not currently implemented
Annual Report Card	New	Not currently implemented
Pre/Post Studies of New Infrastructure	New	Not currently implemented

Source: *Bicycle, Pedestrian, & Trails Active Transportation Plan (June 2018), City of Livermore*

CHAPTER 6

IMPLEMENTATION STRATEGY



CONSTRUCTION COSTS

PROJECT COST ESTIMATES

Table 9 shows the estimated costs for the recommended projects from the 2018 ATP alongside the costs inflated to current dollars using the California Construction Cost Index published by the Department of General Services. *Note that the inflated costs have not been adjusted to account for the projects delivered since 2018.* Given the inflation of construction costs seen in recent years, success in obtaining grant funding will be essential to delivering the envisioned active transportation network in Livermore.

TABLE 9: ESTIMATED COSTS BY PROJECT GROUP

PROJECT GROUP	ESTIMATED COST (\$2017)	ESTIMATED COST (\$2023)
School Access Network	\$19,330,100	\$27,268,600
Downtown Access Network	\$4,791,300	\$6,759,000
Crosstown Routes Network	\$25,058,800	\$35,350,000
Trail Connections	\$129,450,600	\$182,613,700
Sidewalk Gap Closure	\$4,812,300	\$6,788,600
TOTAL	\$183,443,100	\$258,779,900

Sources: *Bicycle, Pedestrian, & Trails Active Transportation Plan (June 2018), DKS Associates*

PROJECT IMPLEMENTATION

All projects identified in the 2018 ATP were prioritized to arrive at a list of high-priority improvements to be pursued within the first few years. Additional detail on the prioritization process can be found in the 2018 ATP. These first phase projects along with their implementation status are listed in Table 10. The City of Livermore will work towards implementing the first phase projects until a full-scale update of its active transportation plan is completed.

One implementation strategy for delivering ATP projects will continue to be via the Capital Improvement Plan (CIP). Opportunities for delivering ATP projects can be found in the Street Maintenance (paving), Traffic Control (crosswalk safety improvements), and Trail, Bike, and Miscellaneous Street Projects categories of the CIP.

TABLE 10: FIRST PHASE IMPLEMENTATION PROJECTS

ID	PROJECT NAME	STATUS
L28	Sixth Street Bicycle Lane	Not yet implemented
S10	Hillcrest Sidewalk at East Avenue	Not yet implemented
BL3	Stanley Boulevard Buffered Bicycle Lane (Isabel to Murrieta)	Not yet implemented
BB37, BB26, BB24	Bicycle Route from Lawrence Livermore National Lab to Livermore High	Class 3 bicycle route constructed on: - School Street between Livermore High School and Pestana Way - Stanford Way between Jensen St and Estates St - Pomona Way between Lincoln Ave and Jefferson Ave
SL5	Jack London Boulevard Buffered Bicycle Lane (Discovery to Murrieta)	Class 2B buffered lanes constructed between Curlew Road and Murrieta Boulevard
P83	Crossing: Robertson Park and Concannon	High visibility crosswalk and RRFB installed
P26	Crossing: Concannon and Epson	Flashing beacon installation, high visibility crosswalk installed
SL7, BL14	First Street Buffered Bicycle Lane (Inman to Southfront)	Class 2B buffered lanes installed from Inman Street to Scott Street as well as along Auburn Grove town home project frontage on east side of First Street around Larch Lane.
SL2	Vasco Road Buffered Bicycle Lane (East to Preston)	Class 2B buffered lanes constructed from East Avenue to Preston Road
P75	Crossing: Murrieta and Stanley	Not yet implemented
P82	Crossing: First and Scott Street	Not yet implemented
BL2	Concannon Boulevard Buffered Bicycle Lane (Isabel to San Vincente)	Class 2B buffered lanes installed from Murdell Avenue to Altair Avenue
L34, BB14	Olivina Bicycle Lane/Bicycle Boulevard (Hagemann to Rincon)	CIP Project #202114
T13	Arroyo Road Trail (Wetmore to Veterans Park)	Segment B is CIP project #201955
BL1	East Avenue Corridor Study	Study underway as of November 2023 Improvements programmed as CIP Project 202222
	I-580 Crossings Study	Not yet implemented
	Programs (education, encouragement, and enforcement)	Several previously existing programs are ongoing, including Bike to Work Day and Neighborhood Traffic Calming
T6 SEGMENT E1	Las Colinas Trail – Support to LARPD	CIP Project #201945

Source: City of Livermore 5-Year Capital Improvement Plan Fiscal Years 2023-2028.

NEAR TERM UPCOMING PROJECTS

The City of Livermore has programmed funds and will complete several projects in the near future. Several multiuse trail segments are currently under construction or in design, including the Arroyo Road Trail, the Arroyo Mocho Trail and the Las Colinas Trail, for a total of three miles of new multiuse trail. These will supplement recently completed trail segments at Robertson Park, on the Arroyo Las Positas Trail, and the Montage Trail.

Additionally, plans are underway to install 2.1 miles of Class 2B buffered bike lane and pedestrian crossing improvements are planned for 10 locations. The pedestrian crossing improvements include new/modified signals, protected intersections, Rapid Flashing Rectangular Beacons (RRFBs), and high visibility crosswalks. All of these upcoming improvements are shown in Figure 10.

Finally, new bicycle facilities continue to be added as part of land use development projects. Almost a mile of Class 4 separated bikeway will be constructed on North Canyons Parkway/Portola Avenue and Isabel Avenue as part of the adjacent residential projects. Another 0.4 miles is planned for Isabel Avenue between Portola Avenue and the I-580 ramps. Additionally, a recently approved project will be providing a pedestrian/bicycle bridge over Highway 84/Isabel Avenue and an associated new trail segment linking the Arroyo Mocho trail with the Jack London trail.

Figure 10.



Legend

Planned Trails & Bike Facilities

- Class 1A Shared Use Path
- Class 2B Buffered Bicycle Lane
- Class 4A Separated Bikeway

Upcoming Crossing Improvements

- New or Modified Signal/Protected Intersection
- Pedestrian Beacon
- High Visibility Crosswalks

Near Term Projects

CHAPTER 7

COMMUNITY OUTREACH



This chapter describes stakeholder and community outreach activities for the draft interim ATP update, feedback received, and resulting changes made to the plan.

STAKEHOLDER OUTREACH

An administrative draft copy of the Interim ATP Update was circulated to the following stakeholders and community groups:

- Livermore Valley Joint Unified School District
- Bike East Bay
- Livermore Amador Valley Transit Authority (LAVTA)
- Livermore Police Department
- Livermore-Pleasanton Fire Department
- Livermore Area Recreation and Park District (LARPD)

VIRTUAL WORKSHOP

The City of Livermore conducted a virtual public workshop to showcase the Livermore ATP Update, provide information on completed and upcoming projects, and answer questions from the greater Livermore community. The public outreach event was held on the evening of April 25, 2024. Twenty-seven people registered for the event and 15 attended. The event included a 30-minute presentation about the Livermore ATP from the project team and was followed by an hour of open question/comment time for the public.

The virtual workshop was promoted digitally and in-print. Several promotional flyers (digital and print) and social media posts about the plan and virtual workshop were sent out to various stakeholders in the community. Stakeholders were requested to share this information within their own distribution lists to further expand promotional efforts. In addition to online promotional efforts, phone calls were made to the entire stakeholder list to let community members know about the virtual workshop and encouraged to share it with others. The presentation given at the public workshop is included in Appendix B.

SUMMARY OF INPUT RECEIVED

Participants at the public workshop asked a number of questions and City staff responded with the best available information. The importance of maintaining a state of good repair, enforcement of traffic and parking laws, and questions about plans for specific facilities emerged as the major themes. A summary of questions and responses along with the slide presentation that was given by staff may be found in Appendix B.

Bike East Bay also provided input in written format. The ATP was revised in response to some of the comments. However, many of the comments were proposals for new or revised policies. While these proposals were found to be thoughtful and reasonable, this interim update of the ATP was intended to reaffirm goals and policies from the 2018 plan. Proposed new policies will be given full consideration when the ATP undergoes a full update after the comprehensive General Plan amendment is completed in early 2026. A summary of comments received from Bike East Bay and responses may be found in Appendix B.

LIVERMORE

CALIFORNIA



APPENDIX

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APPENDIX A. PROJECTS COMPLETED SINCE 2018

APPENDIX B. PUBLIC OUTREACH SUMMARY AND RESPONSE TO COMMENTS

APPENDIX C. BICYCLE, PEDESTRIAN, & TRAILS ACTIVE TRANSPORTATION PLAN

APPENDIX A. PROJECTS COMPLETED SINCE 2018

ACTIVE TRANSPORTATION PLAN IMPLEMENTATION TRACKING

Trails and Bicycle Lanes

Street/Intersection	From	To	CIP# / Development Project	Project Description	Existing facility	New facility	Mileage
North Livermore Ave	120' N/O Arroyo Plaza (SB)	Arroyo Plaza	Parcel #10720	Painted Bike Lane	Class II bike lane	Painted green bike lane on North Liverm	0.02
School St	Fourth St	Silver Oaks Wy	2018-01	Painted Sharrows	None	Bicycle Route	0.03
North Livermore Ave	150' N/O Arroyo Plaza (NB)	Arroyo Plaza		Painted Bike Lane	Class II bike lane	Painted green bike lane on North Liverm	0.03
Springtown Blvd	Bluebell Dr	603' N/O Freeway	2020-04	Painted Buffered Bike Lanes	Class II bike lane	Class II bike lane with buffer	0.04
S Vasco Rd	Naylor Ave	Las Positas Rd	CB180009	Bike Lane, Bike Lane Buffer	Existing Bike Lane	New Bike Lane, Bike Lane Buffer	0.06
First St	Bellmawr Dr	N Mines Rd	CB190019	Bike Lane Buffer Installation	Class II bike lane	Class II bike lane with buffer	0.07
North Livermore Ave	Arroyo Plaza	Las Positas Rd		Painted Buffered Bike Lanes	Class II bike lane	Class II bike lane with buffer	0.08
First Street	221' W/O Larch Ln	209' E/O Larch Ln	Tract 8168	Bike Lanes	None	Class IV separated bikeway	0.09
North Livermore Ave	Portola Ave	Junction Ave	2018-46	Painted Sharrows	None	Bicycle Route	0.10
Vallecitos Road	Bridge	Holmes	2019-04	Painted Buffered Bike Lanes	Class II bike lane	Class II bike lane with buffer	0.11
School St	Pestana Wy	End	2018-01	Painted Sharrows	None	Bicycle Route	0.13
South Vasco Rd	East Ave	Mesquite Wy	2021-04	Painted Buffered Bike Lanes	Class II bike lane	Class II bike lane with buffer	0.14
North Livermore Ave	Cromwell Ave	Portola Ave	2018-46	Painted Buffered Bike Lanes	Class II bike lane	Class II bike lane with buffer	0.16
South Vasco Rd	Patterson Pass Rd	Daphne Rd	2021-04	Painted Buffered Bike Lanes	Class II bike lane	Class II bike lane with buffer	0.16
Springtown Blvd	Lassen Rd	Rhododendron Dr	2019-01	Painted Buffered Bike Lanes	Class II bike lane	Class II bike lane with buffer	0.16
Ladd Ave	Junction Ave	Lee Ave	2018-04	Painted Sharrows	None	Bicycle Route	0.16
Portola Ave	N L St	N Livermore Ave	2018-01	Painted Buffered Bike Lanes	Class II bike lane	Class II bike lane with buffer	0.16
North Livermore Ave	Las Positas Rd	745' S/O Las Positas Rd	2019-01	Painted Buffered Bike Lanes	Class II bike lane	Class II bike lane with buffer	0.17
N Vasco Rd	Scenic Ave	227' S/O Crestmont Ave	2018-01	Painted Buffered Bike Lanes	Class II bike lane	Class II bike lane with buffer	0.17
Concannon Blvd	Murdell Ave	Altair Ave	2018-01	Painted Buffered Bike Lanes	Class II bike lane	Class II bike lane with buffer	0.18
Stanford	Jensen St	Estates St	2018-04	Painted Sharrows	None	Bicycle Route	0.19
East Stanley Blvd	Bridge	Murdell Lane	2019-04	Painted Buffered Bike Lanes	Class II bike lane	Class II bike lane with buffer	0.19
Portola Ave	100' W/O Woodhaven Com	N L St	2018-04	Painted Buffered Bike Lanes	Class II bike lane	Class II bike lane with buffer	0.19
First Street	Las Positas Rd	956' N/O Las Positas Rd	2020-04	Painted Buffered Bike Lanes	Class II bike lane	Class II bike lane with buffer	0.19
South Vasco Rd	Naylor Ave	Preston Rd	2021-04	Painted Buffered Bike Lanes	Class II bike lane	Class II bike lane with buffer	0.21
Pomona St	Lincoln Ave	Jackson Ave	2018-01	Painted Sharrows	None	Bicycle Route	0.21
Greenville Rd	Southfront Rd	Altamont Pass Rd	CB180008	Bike Lane Buffer Installation	Class II bike lane	Class II bike lane with buffer	0.22
East Stanley Blvd	Murrietta Blvd	Fenton	2018-01	(Eastbound only) Painted Buffered Bike Lanes	Class II bike lane	Class II bike lane with buffer	0.23
Scenic Ave	85' E/O Mt Diablo Wy	Central Av	2021-01	Painted Buffered Bike Lanes	Class II bike lane	Class II bike lane with buffer	0.25
Lee Ave	Ladd Ave	Portola Ave	2018-04	Painted Sharrows	None	Bicycle Route	0.26
First Street	Inman St	Scott St		Painted buffered bike lanes from Inman St to Scott St	Class II bike lane	Class II bike lane with buffer	0.30
North Vasco Rd	Northfront Rd	Scenic Ave	2021-04	Painted Buffered Bike Lanes	Class II bike lane	Class II bike lane with buffer	0.32
Springtown Blvd	1578' N/O Oleander St	Oleander St	2021-04	Painted Buffered Bike Lanes	Class II bike lane	Class II bike lane with buffer	0.33
Kelly St	Enos Wy	Lee Ave	2018-04	Painted Sharrows	None	Bicycle Route	0.33
S Vasco Rd/Las Positas Rd	S Vasco Rd	Pullman St	CB190012	Bike Lane Buffer Installation	Class II bike lane	Class II bike lane with buffer	0.35
Fifth Street	L St	South Livermore Ave	2020-04	Painted Sharrows	None	Bicycle Route	0.35
North Livermore Ave	Cromwell Ave	745' S/O Las Positas Rd	2021-01	Painted Buffered Bike Lanes	Class II bike lane	Class II bike lane with buffer	0.35
Voyager St/W Jack London Blvd	150' W/O Voyager St	75' E/O Voyager St	CB190001	Install bike lane buffer	Class II bike lane	Class II bike lane with buffer	0.37

*Projects under design or construction

ACTIVE TRANSPORTATION PLAN IMPLEMENTATION TRACKING

Trails and Bicycle Lanes

Street/Intersection	From	To	CIP# / Development Project	Project Description	Existing facility	New facility	Mileage
Vancouver Way	Holmes St	Arroyo Rd	2019-04	Painted Buffered Bike Lanes	Class II bike lane	Class II bike lane with buffer	0.40
North Murrietta Blvd	450' S/O Northwood Comm	Olivina Av	2021-01	Painted Buffered Bike Lanes	Class II bike lane	Class II bike lane with buffer	0.43
E Jack London Blvd	Curlew Rd	N Murrieta Blvd	2018-04	Painted Buffered Bike Lanes	Class II bike lane	Class II bike lane with buffer	0.43
Murdell Ln	Albert Wy	Stanley Blvd	2021-04	Construct Class IV separated bikeway	Class II bike lane	Class IV separated bikeway	0.51
Superior Drive	Arroyo Road	End	2019-04	Painted Buffered Bike Lanes	Class II bike lane	Class II bike lane with buffer	0.63
Bluebell Dr	Springtown Blvd	Sunflower Ct	2021-01	Painted Buffered Bike Lanes	Class II bike lane	Class II bike lane with buffer	0.65
Airway Blvd	220' S/O Kitty Hawk Rd	Pavement Change	2018-01	Painted Buffered Bike Lanes	Class II bike lane	Class II bike lane with buffer	0.66
S Vasco Rd	Patterson Pass Rd	Naylor Ave	2018-01/2018-04	Painted Buffered Bike Lanes	Class II bike lane	Class II bike lane with buffer	0.69
S Vasco Rd	Emily Wy	Patterson Pass Rd	2018-01	(Northbound only) Painted Buffered Bike Lanes	Class II bike lane	Class II bike lane with buffer	0.71
South Livermore Ave	Palm Ave	Concannon Blvd	2018-46	Painted Buffered Bike Lanes	Class II bike lane	Class II bike lane with buffer	0.75
Garaventa Ranch Rd	North Vasco Rd	Scenic Ave	2019-01	Painted Buffered Bike Lanes	Class II bike lane	Class II bike lane with buffer	0.83
Bluebell Dr	Galloway St	Sunflower Ct		Painted Buffered Bike Lanes	Class II bike lane	Class II bike lane with buffer	1.10
S Greenville Rd	320' S/O National Dr	Pave Change (N/O RRX)	2018-01	Bike Lanes	None	Class II Bike Lane	1.35
First Street	Portola Ave	Las Positas Rd	2020-28	Painted Buffered Bike Lanes	Class II bike lane	Class II bike lane with buffer	1.47
Greenville Rd	Marathon Dr	Las Positas Rd		Bike Lane, Bike Lane Buffer	Class II bike lane	Class II bike lane with buffer	0.05
Greenville Rd	Southfront Rd	Northfront Rd	CB190020	Bike Lane, Bike Lane Buffer	Class II bike lane	Class II bike lane with buffer	0.37
Dalton Ave	Approx 100' west of Broadmoor St	Pasatiempo St	2022-01	Bike lanes on both sides	Class II bike lane	Class II bike lane with buffer	0.62
Greenville Rd	Southfront Rd	Las Positas Rd	2022-01	Bike lanes on both sides	Class II bike lane	Class II bike lane with buffer	0.26
Las Positas Blvd	North Livermore Ave	Hilliker Place	2022-01	Bike lanes on both sides	Class II bike lane	Class II bike lane with buffer	0.46
East Airway Blvd	200' west of Sutter St	1800' east of Sutter St	2022-01	Bike lanes on both sides	Class II bike lane	Class II bike lane with buffer	0.76
Robertson Park Bypass Trail				Construct Class I multiuse path	None	Class I multiuse path	0.06
Arroyo Las Positas Trail				Construct Class I multiuse path	None	Class I multiuse path	0.14
Jack London Trail	Voyager St	Isabel Avenue		Construct Class I multiuse path	None	Class I multiuse path	0.17
Isabel Trail	Alden Ln	E Vineyard Ave		Construct Class I multiuse path	None	Class I multiuse path	0.35
Enos Way	Portola Ave	Junction Ave		Construct Class II A	None	Class II Bike Lane	0.21
Montage Trail	College Trail	Collier Canyon Trail		Construct Class I multiuse path	None	Class I multiuse path	0.06
Arroyo Mocho Trail	Isabel Avenue	Arroyo Mocho/EI Charro Road Trail		Construct Class I multiuse path	None	Class I multiuse path	0.85
Portola Avenue/N Canyons Pkwy*	550' e/o Comcast Pl	Tranquility Circle		Class IV lane to be installed on north side	Class II	Class IV	0.92
Arroyo Road Trail*	Wetmore Road	City Limit		Construct Class I multiuse path		Class I multiuse path	1.44
Arroyo Mocho Trail*	Existing trailhead	Isabel Avenue		Construct Class I multiuse path		Class I multiuse path	1.00
Las Colinas Trail*				Construct Class I multiuse path		Class I multiuse path	0.50
Isabel Avenue*	Portola Ave	I-580 Ramps		Class IV lanes to be installed on both sides		Class IV	0.36

*Projects under design or construction

ACTIVE TRANSPORTATION PLAN IMPLEMENTATION TRACKING

Sidewalk Installation

Street/Intersection	From	To	CIP# / Development Project	Project Description	Existing facility	New facility	Mileage
First Street	221' W/O Larch Ln	209' E/O Larch Ln	Tract 8168	Sidewalk replacement	10' sidewalk with no landscape in between	Sidewalk divided by landscape. One sidewalk path for bicyclists (class 4 - separated bikeway)	0.09
Southfront Rd/Longard	N/A	N/A	CB180001	Sidewalk Installation	No curb ramps or sidewalk	Sidewalk installation	0.03
Livermore Outlets Dr/W	N/A	N/A	CB180002	Sidewalk Installation	No curb ramps	Installed sidewalk near south parking lot	0.61
Greenville Rd	Southfront Rd	Altamont Pass Rd	CB180008	Sidewalk Installation	Curb Ramps (2) and Traffic Lights	Installed sidewalk west of property	0.16
S Vasco Rd	Naylor Ave	Las Positas Rd	CB180009	Sidewalk Installation	Existing Sidewalk	Installed sidewalk path to property	0.00
Voyager St/W Jack Lon	N/A	N/A	CB190001	Sidewalk Installation	Existing Sidewalk	Installed sidewalk north of property	0.03
Southfront Rd/Longard	N/A	N/A	CB190015	Sidewalk Installation	No sidewalks	Installed sidewalk south of property	0.05
N Livermore Ave	15' S/O Arroyo Plaza	117' N/O Arroyo Plaza	Parcel #10720 (CB210001)	Sidewalk Installation	No sidewalks	Installed sidewalk near driveway entrance	0.04
Veterans Way	S L St	S Livermore Ave	CB220003	Sidewalk Installation	No sidewalks	Installed sidewalk between parking lots	0.25

*Projects under design or construction

ACTIVE TRANSPORTATION PLAN IMPLEMENTATION TRACKING

Crossing Improvements

Street/Intersection	CIP# / Development Project	Project Description	Existing facility	New facility
Portola Ave/Enos Way	2022-06	Safety improvements at Crosswalk	One diagonal continental crosswalk, standard crosswalk	RRFB installation, high visibility crosswalk (2)
College Ave/5th St	2022-06	Safety improvements at Crosswalk	No crosswalks	RRFB installation, high visibility crosswalk (2)
College Ave/Kingsbury Dr	2022-06	Safety improvements at Crosswalk	No crosswalks	high visibility crosswalk (2)
Concannon Blvd/Robertson Park Rd	2021-35	Safety improvements at Crosswalk	standard crosswalks (2)	RRFB installation, high visibility crosswalk (1)
Concannon Blvd/Epson St	2021-35	Safety improvements at Crosswalk	standard crosswalks (2)	flashing beacon installation, high visibility crosswalk (1)
Bluebell Dr/Shetland Rd		Safety improvements at Crosswalk	Standard crosswalk	Continental crosswalk
Bluebell Dr/Heather Ln		Safety improvements at Crosswalk	Standard crosswalk	Continental crosswalk
Bluebell Dr/Sunflower Ct		Safety improvements at Crosswalk	Standard crosswalk (2)	Continental crosswalk (2)
S Vasco Rd/Charlotte Way		Safety improvements at Crosswalk	No RRFB	RRFB
N Mines Rd/Technology Dr	EN200342	Safety improvements at Crosswalk	2 way stop-controlled	Signalized intersection
W Jack London Blvd/Shops		Safety improvements at Crosswalk	No traffic signal	Installed traffic signal
W Jack London Blvd/Wolf House Dr	Parcel #1052	Safety improvements at Crosswalk	No signalized intersection	Signalized intersection, standard crosswalks (2)
Livermore Outlets Dr/ Republic Square Dr	Parcel #1052	Safety improvements at Crosswalk	No signalized intersection	Signalized intersection, texture concrete paving crosswalks (2)
First Street/Larch Ln		Safety improvements at Crosswalk	No signalized intersection	Signalized intersection
Olivina Ave/North Murrieta blvd	2021-01	Safety improvements at Crosswalk	standard crosswalks (4)	Continental crosswalks (4)
Scenic Ave/Central Ave	2021-01	Safety improvements at Crosswalk	Standard crosswalks (2)	Continental crosswalks (2)
Naples Way/Kingsport Ave	2021-01	Safety improvements at Crosswalk	Standard crosswalks (2)	Continental crosswalk (2)
Frankfurt Way/Warsaw Ave	2021-01	Safety improvements at Crosswalk	Standard crosswalks (2)	Continental crosswalk (2)
North Livermore Ave/Arroyo Plaza	Parcel #10720	Safety improvements at Crosswalk	No crosswalk on south side of North Livermore Ave	Standard Crosswalk, new driveway on Arroyo Plaza
Old First Street/Kalapaki Common	Tract #8173	New development	Concrete driveway to car wash	Texture Concrete Paving crosswalk
Freisman Road/Republic Square (North entry near North Parking Lot)	Parcel #1052	New development	All dirt	Texture Concrete Paving crosswalk
Wolf House Drive/Republic Square (East Entry of Hotel)	Parcel #1052	New development	Concrete driveway to car wash	Texture Concrete Paving crosswalk
Wolf House Drive/Republic Square (between retails A & B)	Parcel #1052	New development	Concrete driveway to car wash	Texture Concrete Paving crosswalk
Wolf House Drive/Republic Square (East Entry of North Parking Lot)	Parcel #1052	New development	Concrete driveway to car wash	Texture Concrete Paving crosswalk
Wolf House Drive/Freisman Park Parking Lot	Parcel #1052	New development	Concrete driveway to car wash	Texture Concrete Paving crosswalk

*Projects under design or construction

ACTIVE TRANSPORTATION PLAN IMPLEMENTATION TRACKING

Crossing Improvements

Street/Intersection	CIP# / Development Project	Project Description	Existing facility	New facility
Discovery Dr (from Atlantis Ct to W Jack London Blvd)	CB180010	Sidewalk Driveway Crosswalk Installation	Existing Sidewalk	Installed driveway crosswalk for sidewalk
Voyager St/W Jack London Blvd	CB190001	Sidewalk Driveway Crosswalk Installation	Existing Sidewalk	Installed driveway crosswalk for sidewalk
Exchange Ct/National Dr	CB190011	Sidewalk Driveway Crosswalk Installation	Existing Sidewalk	Installed driveway crosswalk for sidewalk
Las Positas Rd/S Vasco Rd	CB190012	Sidewalk Driveway Crosswalk Installation	Existing Sidewalk	Installed driveway crosswalk for sidewalk
Southfront Rd/Longard Rd	CB190015	Sidewalk Driveway Crosswalk Installation	No sidewalks	Installed crosswalk for sidewalk
Contractors Pl (from Contractors St to Technology Dr)	CB190017	Sidewalk Driveway Crosswalk Installation	Existing Sidewalk	Installed driveway crosswalk for sidewalk
Contractors Pl (from Contractors St to Technology Dr)	CB190018	Sidewalk Driveway Crosswalk Installation	Existing Sidewalk	Installed driveway crosswalk for sidewalk
First St (from Bellmawr Dr to N Mines Rd)	CB190019	Sidewalk Driveway Crosswalk Installation	Existing Sidewalk	Installed driveway crosswalk for sidewalk
Veterans Way (from S L St to N Livermore Ave)	CB220003	Sidewalk Driveway Crosswalk Improvement	Existing driveway crosswalk	Improved driveway crosswalk (9)
Dalton Ave/Pasatiempo St*	2022-01	Safety improvements at Crosswalk	One standard crosswalk, one zebra crosswalk	Two ladder crosswalks
First St @ Scott St*		Install RRFB		
Stanley Blvd @ Isabel Ave on-off Ramp Connector*		Install curb bulb-outs		
Concannon Blvd @ San Vicente*		Install RRFB		
Arroyo Rd @ Hansen Rd*		Install RRFB		
Arroyo Rd @ Ascalano Ln*		Install RRFB		
S Livermore Ave @ College Ave*		Install RRFB		
East Ave @ Mitra St*		Install RRFB		
N P St & Elm St*		Install high visibility crosswalk		
L St & 3rd St*		Install high visibility crosswalk		
Portola Avenue & Lam Research Driveway*		New/modified signal; protected intersection	None	New/modified signal; protected intersection
Isabel Avenue & Portola Avenue*		New/modified signal; protected intersection	Existing signal	New/modified signal; protected intersection
Isabel Avenue & A Street*		New/modified signal; protected intersection	None	New/modified signal; protected intersection
Isabel Avenue and Gateway Avenue*		New/modified signal; protected intersection	None	New/modified signal; protected intersection

*Projects under design or construction

ACTIVE TRANSPORTATION PLAN IMPLEMENTATION TRACKING

ADA Curb Ramp Improvements

Street/Intersection	CIP# / Development Project	Project Description	Existing facility	New facility
Garnet Dr/Emerald St	2018-01	ADA improvements	No curb ramp	New ADA curb ramp (2)
Jensen St/Leahy Wy	2018-01	ADA improvements	No curb ramp	New ADA curb ramp (2)
Quartz Cir	2018-01	ADA improvements	No curb ramp	New ADA curb ramp (2)
Quartz Cir/Murdell Ln	2018-01	ADA improvements	No curb ramp	New ADA curb ramp (2)
Hillcrest Ave/Pomona Wy	2018-01	ADA improvements	No curb ramp	New ADA curb ramp (2)
Pomona Ct/Pomona Wy	2018-01	ADA improvements	No curb ramp	New ADA curb ramp (2)
E Jack London Blvd/Troy St	2018-04	ADA improvements	No curb ramp	New ADA curb ramp (2)
S Livermore Ave/Palm Ave	2018-46	ADA improvements	No curb ramp	New ADA curb ramp
Felicia Ave/Kirsten Wy	2019-01	ADA improvements	No curb ramp	New ADA curb ramp (2)
Lambeth Road/Westminster Wy	2019-01	ADA improvements	No curb ramp	New ADA curb ramp (2)
Lambeth Road/Farnsworth Dr	2019-01	ADA improvements	No curb ramp	New ADA curb ramp (2)
Geraldine St/Francine Wy	2019-01	ADA improvements	No curb ramp	New ADA curb ramp
Geraldine St/Joan Wy	2019-01	ADA improvements	No curb ramp	New ADA curb ramp (2)
Geraldine St/Felicia Ave	2019-01	ADA improvements	No curb ramp	New ADA curb ramp
Las Positas Road/Lawrence Dr	2019-01	ADA improvements	No curb ramp	New ADA curb ramp
N Murrieta Blvd/Cedar Dr	2019-01, 2021-0	ADA improvements	No curb ramp	New ADA curb ramp
E Stanley Blvd/Isabel Blvd	2019-04	ADA improvements	No curb ramp	New ADA curb ramp
Superior Dr/Regent Dr	2019-04	ADA improvements	No curb ramp	New ADA curb ramp (2)
Superior Dr/Lexington Wy	2019-04	ADA improvements	No curb ramp	New ADA curb ramp (3)
Superior Dr/Pillsbury Dr	2019-04	ADA improvements	No curb ramp	New ADA curb ramp (2)
Superior Dr/Pyramid St	2019-04	ADA improvements	No curb ramp	New ADA curb ramp (2)
Superior Dr/Walker Pl	2019-04	ADA improvements	No curb ramp	New ADA curb ramp (2)
Superior Dr/Almanor Ct	2019-04	ADA improvements	No curb ramp	New ADA curb ramp (2)
Vancouver Wy/Accra Ct	2019-04	ADA improvements	No curb ramp	New ADA curb ramp (2)
Vancouver Wy/Athens St	2019-04	ADA improvements	No curb ramp	New ADA curb ramp (2)
Vancouver Wy/Belfast Ct	2019-04	ADA improvements	No curb ramp	New ADA curb ramp (2)
Vancouver Wy/Calais Ave	2019-04	ADA improvements	No curb ramp	New ADA curb ramp (2)

ACTIVE TRANSPORTATION PLAN IMPLEMENTATION TRACKING

ADA Curb Ramp Improvements

Street/Intersection	CIP# / Development Project	Project Description	Existing facility	New facility
Vancouver Wy/Halifax Rd	2019-04	ADA improvements	No curb ramp	New ADA curb ramp (2)
Vancouver Wy/Jaffa Rd	2019-04	ADA improvements	No curb ramp	New ADA curb ramp (3)
Fifth St	2020-04	ADA improvements	No curb ramp	New ADA curb ramp
Fifth St/S H St	2020-04	ADA improvements	No curb ramp	New ADA curb ramp (2)
South I St/College Ave	2021-01	ADA improvements	No curb ramp	New ADA curb ramp (2)
Naples Way/Naples Ct	2021-01	ADA improvements	No curb ramp	New ADA curb ramp (2)
Genoa St/Genoa Ct	2021-01	ADA improvements	No curb ramp	New ADA curb ramp (2)
Genoa St/Helsinki Way	2021-01	ADA improvements	No curb ramp	New ADA curb ramp (1)
Genoa St/Heidelberg Dr	2021-01	ADA improvements	No curb ramp	New ADA curb ramp (2)
Genoa St/Warsaw Ave (north side)	2021-01	ADA improvements	No curb ramp	New ADA curb ramp (2)
Warsaw Ave/Genoa St (south side)	2021-01	ADA improvements	No curb ramp	New ADA curb ramp (1)
Bluebell Dr/Sunflower Ct	2021-01	ADA improvements	No curb ramp	New ADA curb ramp
Murdell Ln/Cinnabar Dr	2021-04	ADA improvements	No curb ramp	New ADA curb ramp (2)
Murdell Ln/Amber Way	2021-04	ADA improvements	No curb ramp	New ADA curb ramp (2)
Murdell Ln/Alice Way	2021-04	ADA improvements	No curb ramp	New ADA curb ramp (2)
Murdell Ln/Jillana Ave	2021-04	ADA improvements	No curb ramp	New ADA curb ramp
Murdell Ln/Quartz Cir		ADA improvements	No curb ramp	New ADA curb ramp (2)
Murdell Ln/Albert Way	2021-04	ADA improvements	No curb ramp	New ADA curb ramp
North Livermore Ave/Arroyo Plaza	Parcel #10720 (CB210001)	ADA improvements	No curb ramps	New ADA curb ramp (3)
Old First Street/Kalapaki Common	Tract #8173	ADA improvements	No curb ramps	New ADA curb ramp (2)
W Jack London Blvd/Wolf House Dr	Parcel #10525	ADA improvements	No curb ramp	New ADA curb ramp (4)

ACTIVE TRANSPORTATION PLAN IMPLEMENTATION TRACKING

ADA Curb Ramp Improvements

Street/Intersection	CIP# / Development Project	Project Description	Existing facility	New facility
Livermore Outlets Dr/Republic Square Dr	Parcel #10525	ADA improvements	No curb ramps	New ADA curb ramp (4)
N Mines Rd/Technology Dr	EN200342	ADA improvements	No curb ramp	New ADA curb ramp (4)
Portola Ave/Enos Way	2022-06	ADA improvements	No curb ramp	New ADA curb ramp (4)
College Ave/Kingsbury Dr	2022-06	ADA improvements	No curb ramp	New ADA curb ramp (1)
Concannon Blvd/Robertson Park Rd	2021-35	ADA improvements	No curb ramp	New ADA curb ramp (1)
Concannon Blvd/Epson St	2021-35	ADA improvements	No curb ramp	New ADA curb ramp (2)
Freisman Road/Republic Square (North entry near North Parking Lot)	Parcel #10525	ADA improvements	No curb ramps	New ADA curb ramp (2)
Wolf House Drive/Republic Square (East Entry of Hotel)	Parcel #10525	ADA improvements	No curb ramps	New ADA curb ramp (2)
Wolf House Drive/Republic Square (between retails A & B)	Parcel #10525	ADA improvements	No curb ramps	New ADA curb ramp (2)
Wolf House Drive/Republic Square (East Entry of North Parking Lot)	Parcel #10525	ADA improvements	No curb ramps	New ADA curb ramp (2)
Wolf House Drive/Freisman Park Parking Lot	Parcel #10525	ADA improvements	No curb ramps	New ADA curb ramp (2)
Southfront Rd/Longard Rd	CB180001	ADA Installation	No curb ramps or sidewalk	New ADA curb ramp (2)
Greenville Rd	CB180008	ADA Improvement	Existing Curb Ramp (1) and Traffic Lights	New ADA Curb Ramp Compliant (1)
Discovery Dr	CB180010	ADA Installation	No Curb Ramps	New ADA Curb Ramps (2)
Exchange Ct/National Dr	CB190011	ADA Installation	Existing Sidewalk	New ADA Curb Ramps (2)
Southfront Rd/Longard Rd	CB190015	ADA Installation	No sidewalks	New ADA Curb Ramps (2)
Contractors Pl	CB190017	ADA Installation	Existing Sidewalk	New ADA Curb Ramps (2)
Contractors Pl	CB190018	ADA Installation	Existing Sidewalk	New ADA Curb Ramps (2)
Veterans Way	CB220003	ADA Installation	No curb ramps	New ADA Curb Ramps (20)

APPENDIX B. PUBLIC OUTREACH SUMMARY AND
RESPONSE TO COMMENTS

TABLE B.1. RESPONSE TO WRITTEN COMMENTS FROM BIKE EAST BAY (LETTER RECEIVED APRIL 22, 2024)

QUESTION/COMMENT	RESPONSE
1. Add a policy to track, coordinate, and use all roadway repaving opportunities to reduce traffic stress and increase safety	
2. Add a policy to track, coordinate, and use all development opportunities, including bus stops	
3. Add a policy to select roadway repaving boundaries in order to provide logical safety improvement connections	
4. Update policies under Goal 2 to provide an all-ages-and-abilities network (LTS 2 or better) that connects all points in town with less than 0.5 mile of path diversion	All proposed policy revisions will be considered for the full Active Transportation Update after the comprehensive General Plan update is completed in early 2026.
5. Update policy 3.5, specifically referencing creation of continuous and direct bike/ped/transit routes of travel	
6. Remove Policy 4.2 regarding sufficient maintenance funding and replace with something more nuanced	
7. Add a policy to optimize designs to reduce maintenance costs where they can be made without reductions in comfort or safety (i.e. tree selection and placement, reasonable but not overdone lighting requirements)	
8. Add a policy to update design guidelines to follow best national standards no later than 2025	
9. Fix the existing conditions map	Map has been updated.
10. Fix an incorrect statement regarding Vasco Overpass on page 12 (there is no pedestrian access)	Report has been edited to reflect the lack of pedestrian facilities on the Vasco Road overpass of I-580.
11. Remove the reference to bicycle boulevards implemented	These facilities have been relabeled as bike routes.

QUESTION/COMMENT	RESPONSE
<p>12. Specify that best practice bicycle boulevard design standards must be updated no later than 2025</p>	<p>All proposed policy revisions will be considered for the full Active Transportation Update after the comprehensive General Plan update is completed in early 2026.</p>
<p>13. Table 7 says the city reviews proposed developments against planned improvements but does not specifically require them and has failed to require them in certain instances (Legacy development, Brighton 2 development). Implement policy to ensure such review is not missed, specific checkbox within development application (reviewed by staff and approving bodies)</p>	<p>The City does generally require a developer to pay for and install any ATP planned improvement (or the INSP planned ped/bike improvements) along their frontage. Some exceptions can be made through a negotiated Development Agreement, which allows the City to require developers to make ATP improvements beyond their frontage or allow developers to pay for the cost of ATP frontage improvements that can then be used by city as part of a CIP project with a larger scope for ped/bike improvements.</p>
<p>14. Table 8, there are open street events such as downtown street fest</p>	<p>Table 8 has been updated to reflect this event.</p>
<p>15. Re-evaluate first phase projects for relevance in 2024, in light of unplanned opportunity projects delivered since 2018 and expected development projects coming online in the future.</p>	<p>The interim ATP update is simply reporting on the status of the first phase projects from the 2018 ATP. Projects will be re-prioritized as part of the next full ATP update.</p>
<p>16. Provide CIP funding to facilitate opportunity improvements.</p>	<p>The report has been updated to clarify that the City continues to fund opportunity improvements through Capital Improvement Program (CIP) funding programs: repaving, annual crosswalk improvements, trail projects, and ATP implementation.</p>

TABLE B.2. COMMENTS AND QUESTIONS FROM PUBLIC WORKSHOP

QUESTION/COMMENT	RESPONSE
<p>1. Are high stress 580 crossing into Springtown still planned? The crossing along S Vasco Rd is pretty dangerous. To get to Springtown it is relatively stressful to get from downtown Livermore.</p>	<p>City staff are working on the Vasco Rd Interchange project. In addition, the developer of the adjacent Lassen townhome development is required to construct the Las Colinas bike ped trail on the west side of Springtown to the Las Colinas overcrossing of I-580, which should be less stressful.</p>
<p>2. Does the plan include increased enforcement by Livermore Police of traffic/parking laws related to pedestrian and cyclist safety?</p>	<p>City staff will definitely consider this in the next full-scale update for the ATP. Staff will respond to specific requests as City and Police resources allow.</p>
<p>3. Will the presentation be available to use after?</p>	<p>Yes, they will be on the website.</p>
<p>4. Are you planning to install more leading pedestrian signal intervals?</p>	<p>Yes, the City is planning on installing more.</p>
<p>5. Is repair and maintenance part of this plan? In particular around Arroyo Place.</p>	<p>Yes, Goal #4 is to maintain the active transportation network.</p>
<p>6. On the Arroyo Mocho Trail, there are some tree roots that have uprooted the path.</p>	<p>Comment noted and will be considered in the future trail repair project.</p>
<p>7. Flooding destroyed an important transportation facility under Arroyo Bridge near Robertson Fields. Will the City work with LARPD to provide a permanent solution for pedestrians, scooters and cyclists?</p>	<p>Comment noted and will be considered in the future trail repair project.</p>
<p>8. Plans for improvements for the bike path from First St and Holmes St? Currently this is a double lane and it is over capacity. It is difficult for pedestrians to navigate through the plaza and the drivers try to cross through the double lanes.</p>	<p>Comment noted. This intersection will be evaluated in the full Active Transportation Update.</p>
<p>9. Parking in bike lanes and cars opening doors is problematic. Without change in drivers' behavior and more respect for cyclists, it can only go so far. Having an increased focus on rules and laws designed to protect active transportation users is important.</p>	<p>Comment noted. Possible policy revision will be considered in the full Active Transportation Update.</p>
<p>10. How will the ATP deal with construction signs and trash cans blocking bike lanes? This is a critical safety issue.</p>	<p>Construction signs: the engineering departments are reviewing the traffic control plan so that the signs do not block the bike lane. Or City staff will put on a sign to "share the road" for cyclists and drivers.</p>

11. Will homeowners be fined for homeowners for blocking the bike lanes with trash cans?	Currently not. The City Community Development Department will work with Police Department in the full Active Transportation Update to consider a policy to address this issue.
12. How are you publicizing the projects that you complete and provide updates?	On the city website: https://www.livermoreca.gov/departments/community-development/engineering/captial-improvement-plan-project
13. I live in East Dublin and I know that El Charro Road interchange there is no connection over the highway 580.	This interchange is owned by three different jurisdictions.
14. City of Pleasantville is doing a plan and they are not doing anything for El Charro Rd Interchange.	This interchange is owned by three different jurisdictions.
15. Can you talk about the Springtown Low Stress Pathway?	There is a new shared use path coming that leads to Las Colins Road that is going to be constructed by the developer. That is going to be a great connection for our Springtown residents.

APPENDIX C. BICYCLE, PEDESTRIAN, & TRAILS ACTIVE
TRANSPORTATION PLAN



Bicycle, Pedestrian, & Trails Active Transportation Plan

JUNE 11, 2018

Prepared by Alta Planning + Design



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ACKNOWLEDGMENTS

CITY COUNCIL 2016-2018

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Vice Mayor Bob Woerner
Robert W. Carling
Bob Coomber
Steven Spedowski

CITY COUNCIL 2015-2016

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Vice Mayor Lauren Turner
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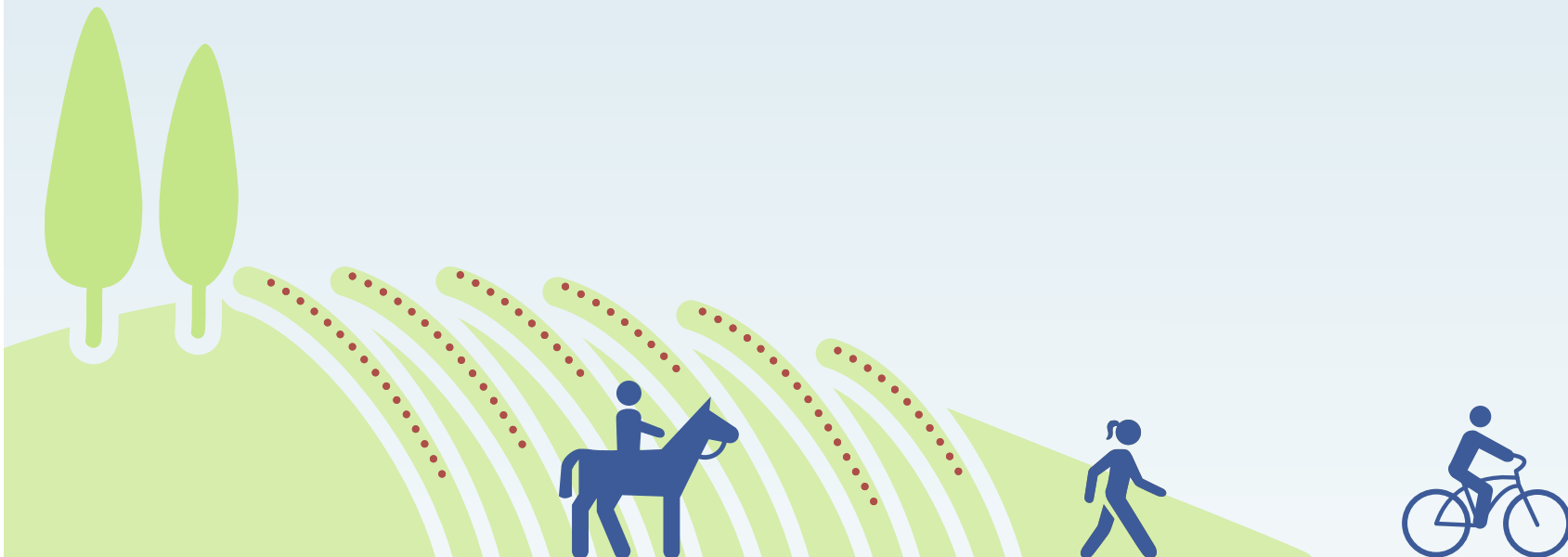
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01 Introduction



CHAPTER 1 INTRODUCTION

The City of Livermore envisions a vibrant community where people can comfortably walk, bicycle, and access trails for transportation and recreation. The Livermore Bicycle, Pedestrian, and Trails Active Transportation Plan (Plan) carries this vision forward with a strategy to realize a safer, more comfortable active transportation environment with a thriving walking and bicycling culture.

The Plan identifies challenges and recommends implementation strategies to improve walking, biking, and trails in Livermore. The Plan analyzes existing conditions, incorporates community objectives, implements current policies, and recommends network improvements and programs that address limitations and challenges to active transportation. The Plan proposes enhancements to the existing network to close gaps and increase safety, comfort, connectivity. The Plan prioritizes network and programmatic improvements, explores options for project phasing, and identifies funding opportunities.

WHAT IS ACTIVE TRANSPORTATION?

Active Transportation refers to all human-powered modes of transportation, from walking and bicycling to scooting, skateboarding, or rollerblading. These active modes of transportation are not only fun, affordable, and environmentally friendly, they support public health by incorporating physical activity into daily life.

In this document, “pedestrian” and “walking” are intended to include people walking as well as those using wheelchairs (whether manual or motorized), skateboards, scooters, or any other human-powered transportation other than a bicycle. These modes of transportation all primarily use sidewalks and are considered “pedestrians” by the vehicle code, which dictates the rules and traffic signals or signs that each mode must abide by.

PLANNING AREA

The Active Transportation Planning Area for this Plan (Planning Area) is aligned with the City’s Planning Area as described in the General Plan, and encompasses land in Alameda County. The Planning Area extends beyond Livermore City limits to the north, east, and south to allow for bicycle, pedestrian, and trail access within the City to connect to regional and local open space and parks, schools, job centers, and other recreation opportunities. See Figure 3-1 in Chapter 3 for a map of the planning area.

PLANNING PROCESS

WHAT WE LEARNED

Using a data-driven approach, multiple analyses highlighted areas of strong demand for walking and bicycling facilities near downtown, schools, and parks; gaps in the existing network; and community partners who support walking and bicycling related programs in the city. They also showed areas where improvements to safety or comfort of people walking and bicycling are needed, and where freeways and other features create barriers to connectivity.

WHAT WE HEARD

A significant amount of community input provided throughout the planning process at key milestones contributed to the development of this Plan. The Plan is the result of a contiguous feedback loop with the community throughout the entire process, which took on many forms including workshops, online engagement tools, surveys, pop up events, and Advisory Committee meetings.

More than 250 people attended events to share their thoughts, and over 500 people provided input with the online tools. In responses to the community survey, 75 percent of people said they would like to walk or bicycle more for daily transportation, but concerns prevent them from feeling comfortable on the current networks. Bicycling and walking facilities that increase comfort by providing additional separation from vehicle traffic would encourage this group of residents to use active transportation more often.

Across all feedback opportunities, community members expressed a strong appreciation for the walking and bicycling trails in Livermore, and identified a need for improvements. When input from all outreach events was reviewed, five overarching themes coalesced into focus areas that guided development of the project and program lists in this Plan:

- Improved school access
- Improved access to and throughout the downtown area
- Crosstown routes that improve connectivity on longer corridors
- Increased connections within the existing trail network, as well as between the trail network and on-street bicycle and pedestrian networks
- I-580 crossing improvements to reduce the impact of this barrier

THE ACTION PLAN

The programs, policies, and projects in this Plan are informed by the extensive community outreach, current best practices in bicycle and pedestrian planning, and key findings from the assessment of existing conditions and needs.

The project list was then reviewed and prioritized to create a strategic plan for implementation based on the cost, complexity, and anticipated benefit of each project.

PURPOSE OF THE PLAN

This Plan replaces the City’s 2001 Bikeways and Trails Master Plan. It adds a pedestrian emphasis and has been updated to reflect the current physical environment and public policy conditions. Based on this updated assessment of conditions, this Plan establishes a long-term vision to improve the active transportation network and enhance connections to transit facilities, employment, retail and commercial centers, and public facilities.

This document is a comprehensive framework to guide decisions to implement network improvements, which will result in quality bicycle and pedestrian facilities to improve mobility, connectivity, public health, physical activity, and recreational opportunities. Using this Plan, the City aims to increase transportation options, reduce environmental impacts of the transportation system, and enhance the overall quality of life for the Livermore community. Overall, the Plan will create a system that enables people to use a variety of modes to achieve daily needs.

Development of the Plan ultimately resulted in a programmed system of improvements consistent with State, regional, and local planning policies. This Plan complies with the State of California Active Transportation Program (ATP) guidelines, making Livermore more competitive for the ATP and other sources of grant funding.

In addition, the Plan is consistent with or provides further guidance for regional plans and policies including the Livermore Area Recreation and Park District Master Plan, the East Bay Regional Park District Master Plan, Alameda Countywide Bike

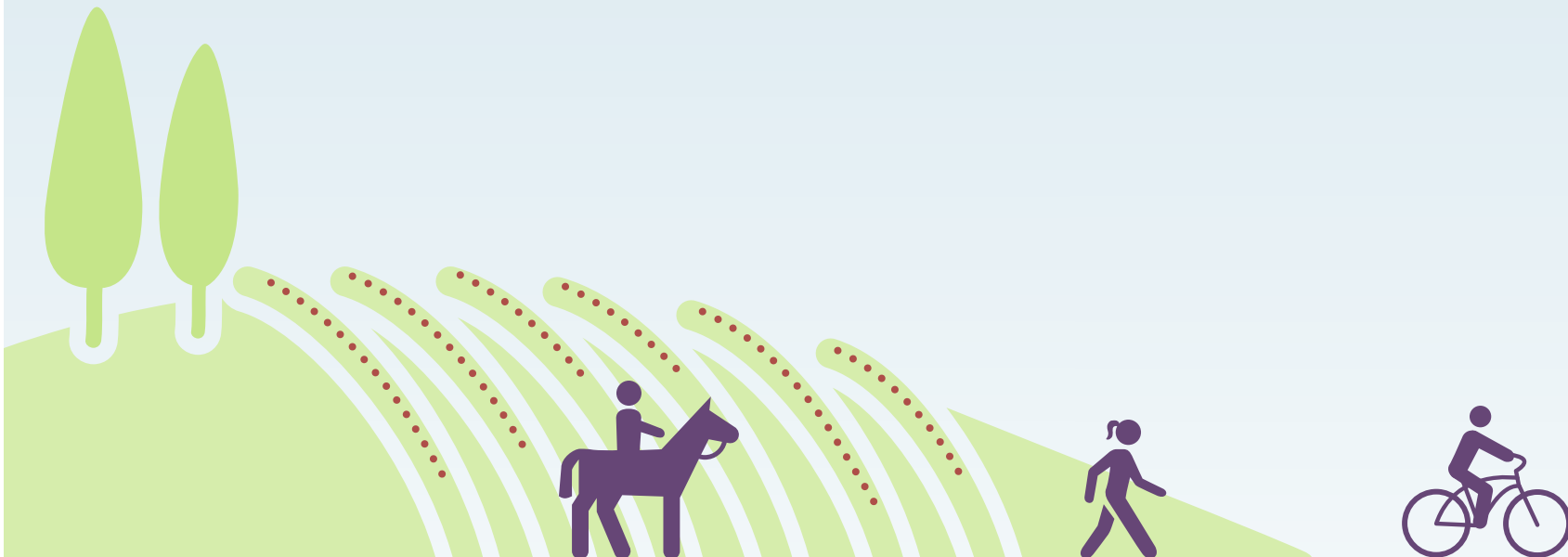
Plan and Pedestrian Plan, and Unincorporated Alameda County’s Bike Plan and Pedestrian Plan. It also complies with the “Alameda County Transportation Commission Bicycle Master Plan Guidelines” and the “Toolkit for Improving Walkability in Alameda County.” See Appendix A for a review of relevant plans and policy documents.

Further, this Plan implements the City’s Complete Street Policies set forth in the Livermore General Plan, and is consistent with or provides further guidance for the City’s Climate Action Plan, South Livermore Valley Specific Plan, El Charro Specific Plan, Downtown Specific Plan, Iron Horse Trail Feasibility Study, Arroyo Vista Neighborhood Plan, Development Code, Municipal Code, Design Guidelines, and Standard Details.

ORGANIZATION OF THE PLAN

The Plan is organized into seven chapters. In addition, appendices include more detailed background data and analyses used to support the project recommendations, and an attachment provides documentation of public input and events.

02 Vision & Goals



CHAPTER 2 VISION & GOALS

The vision, goals, and policies of the Plan will guide City decisions to prioritize and implement recommended active transportation network improvement projects and programs.

In this Plan, Goals and Policies are defined as follows:

Goals are broad statements of what the City hopes to achieve for the bicycle, pedestrian, and trail network. These represent the most important priorities and attitudes of the community.

Policies address City priorities, direct the way that public improvements are made, where resources are allocated, and how programs are operated. These include actions with measurable outcomes to be evaluated regularly.

VISION

The City of Livermore envisions a city where people of all ages and abilities can comfortably access jobs, schools, recreation, shopping, and transit on foot or by bicycle as part of daily life in a healthy and active community.

GOALS

GOAL 1: SAFE & COMPREHENSIVE NETWORK

Provide a safe, efficient, and connected bicycle, pedestrian, and trail network that accommodates all users and abilities.

POLICIES

- 1.1 Develop and implement projects and improvements to address bicycle and pedestrian safety
- 1.2 Connect neighborhoods, schools, work places, transit facilities, and other destinations with on-street facilities and/or separated trails
- 1.3 Build cross town connections for the bicycle, pedestrian, and trail network
- 1.4 Improve the pedestrian and bicycle network to and through Downtown Livermore to increase access, safety, and mobility
- 1.5 Establish safe crossings of barriers including high-volume roadways, freeway interchanges, railroads, arroyos, and other barriers
- 1.6 Coordinate with other agencies, adjacent jurisdictions, and regional partners to plan and implement projects that improve Livermore's network and connections to the region

GOAL 2: DESIGN FOR ALL USERS

Build a well-designed and comfortable bicycle, pedestrian, and trail network with support services and facilities to serve users of all ages and abilities.

POLICIES

- 2.1 Incorporate best practices for the design of pedestrian facilities, bikeways, and trails that emphasize user safety and comfort
- 2.2 Incorporate sustainable and environmentally sensitive design for all facilities and amenities
- 2.3 Provide support facilities on public properties as appropriate, such as bicycle parking, rest areas, water fountains, and other facilities
- 2.4 Require private development to provide appropriate support facilities, such as shower/locker facilities and bicycle parking
- 2.5 Connect new development and public spaces to the active transportation network
- 2.6 Consider maintenance needs in the design of all new facilities

GOAL 3: ENGAGE & GROW THE ACTIVE TRANSPORTATION COMMUNITY

Increase bicycling and walking for transportation and recreation with education, awareness, and enforcement.

POLICIES

- 3.1 Educate the public on the benefits of bicycling and walking, the available bicycle and trail facilities, and their rights and responsibilities
- 3.2 Provide up-to-date information about the bicycle and trail network, bicycle parking, and program resources
- 3.3 Develop and implement strategies to encourage bicycling and walking to and through community events, including bicycle and pedestrian support facilities
- 3.4 Support and participate in Federal, State, Regional, and Local programs, such as countywide Safe Routes to School efforts
- 3.5 Coordinate with other agencies to promote, encourage, and implement active transportation programs
- 3.6 Continue and expand bicycle, pedestrian, and traffic enforcement programs to encourage proper use of facilities, increase safety, and improve the user experience

GOAL 4: MAINTAIN THE ACTIVE TRANSPORTATION NETWORK

Maintain roadways, sidewalks, and multi-use trails to provide safe and comfortable active transportation conditions for all users and abilities.

POLICIES

- 4.1 Develop and provide a maintenance program for pedestrian facilities, bikeways, and trails to provide continued safe and comfortable use of the network
- 4.2 Provide new facilities only where sufficient maintenance funding can be identified
- 4.3 Work with Federal, State, and Regional agencies to expand maintenance funding opportunities

03 Existing Conditions



CHAPTER 3 EXISTING CONDITIONS

This chapter describes the existing transportation environment in Livermore, with a focus on conditions that affect the bikeway, pedestrian, and trail networks. Conditions were evaluated under six broad categories, including:

- Community Setting and Context
- Existing Networks
- Existing Programs
- Activity Generators
- Demographics
- Travel Patterns

These existing conditions serve as the basis for the needs analysis in Chapter 4.

COMMUNITY SETTING AND CONTEXT

Livermore is in eastern Alameda County, in the Tri-valley region of the San Francisco Bay Area which includes Pleasanton, Dublin, San Ramon, and Danville. The Livermore Valley, oriented east to west, is formed by the Diablo Range of the coastal mountains, and joins the Amador and Sunol Valleys on its west side. The City of Livermore is predominantly flat on the valley floor, while the northern, eastern, and southern valley edges are composed of rolling hills, vineyards, and ridge lines.

Interstate 580 (I-580) aligns east to west through the Valley and bisects the Planning Area. Similarly, the Union Pacific Railroad parallels I-580 to the south through the downtown core. Livermore's historic downtown is located in the geographic center of Livermore, in an area roughly bounded by the railway to the north, Fourth Street to the south and east, and Murrieta Boulevard to the west.

Livermore is crossed by several arroyos, including Arroyo Seco, Arroyo Mocho, Arroyo Las Positas, and Arroyo del Valle, which form the natural drainage for the area. These watercourses support vegetation and wildlife habitat; provide opportunities for human and wildlife connectivity, and recreation; and add visual interest to the community. The diverse open spaces and trails provide a suitable environment for outdoor activity and opportunity to increase bicycling, walking, and horseback riding.

EXISTING NETWORKS

ROADWAY NETWORK & MAJOR BARRIERS

Streets in downtown Livermore generally follow a traditional grid network. The majority of the City is comprised of suburban streets with cul-de-sacs and limited connections between neighborhoods. As a result, the few corridors that provide cross-town connectivity face enormous pressure to accommodate all modes of transportation.

Major east-west arterials include:

- First Street
- Jack London Boulevard
- Stanley Boulevard
- Concannon Boulevard
- East Avenue

Major north-south arterials include:

- Livermore Avenue
- Mines Road
- Vasco Road
- L Street/Arroyo Road
- Isabel Avenue

The Union Pacific Railroad tracks that bisect the city create a barrier to north-south travel for motor vehicles, bicycle traffic, and trail users since many streets do not cross the railroad tracks and there are few grade-separated crossings. Existing at-grade crossings include:

- L Street
- Junction Avenue
- Vasco Road

Grade separated crossings include:

- Murrieta Boulevard
- Livermore Avenue
- First Street
- P Street
- Mines Road
- Vasco Road
- Greenville Road

In addition, I-580 separates the Northwest and Northeast neighborhoods from the rest of the City due to limited crossing options. There are eight existing crossings of I-580 in Livermore. All allow bicycle and pedestrian crossings, but most are not ideal because they lack pedestrian and bicycle facilities that provide a comfortable experience.

Finally, several arroyos weave through Livermore, creating both opportunities and constraints. Many of these arroyos are under the jurisdiction of the Zone 7 Flood Control District and have service roads, which have been or could be converted to multi-use trails. However, the arroyos can also act as barriers with limited crossing opportunities.

TRANSIT NETWORK

The Altamont Corridor Express (ACE) rail service runs from San Jose to Stockton and has two stops in Livermore, one in downtown and one at Vasco Road. ACE service provides pedestrian and bicycle commuters and visitors who live outside of Livermore with an alternative mode of transportation into the City.

The Livermore Amador Valley Transit Authority (LAVTA) operates a fleet of its Wheels buses within Livermore and provides connecting access to and from San Ramon, Dublin, and Pleasanton. The Livermore Transit Center in downtown Livermore serves as a major hub for LAVTA bus service as well as the downtown Livermore ACE station.

BICYCLE NETWORK

The California Department of Transportation (Caltrans) classifies and defines bicycle facilities. Caltrans designates four classes of bicycle facilities: Classes I, II, III, and IV. In addition, the Alameda County Transportation Commission (Alameda CTC) has adopted a set of sub-classifications for each Caltrans classification. These sub-classifications were designed to harmonize previously existing local classification systems within Alameda County and to incorporate emerging bikeway typologies.

The following sections describe the classes of bikeways that currently exist in Livermore, followed by a description of the additional bikeway classes identified by Caltrans and Alameda CTC.

EXISTING BIKEWAYS IN LIVERMORE

Table 3-1 summarizes existing bikeway mileage in Livermore in 2001 and today, and Figure 3-1 shows existing and previously proposed bikeways and trails.

Table 3-1: Existing Bikeway Miles

BIKEWAY CLASS	2001 MILES	2018 MILES
Class I Shared Use Paths	22	40
Class II Bicycle Lanes	46	66
Total	68	106



An existing shared use path in Livermore

Class I Shared Use Paths are completely separated, exclusive rights-of-way for two-way bicycling, walking, and other non-motorized uses.

- Class IA for paved paths
- Class IB for unpaved paths

Equestrians are permitted to use all paths in Livermore.



An existing Class II bicycle lane in Livermore

Class II Bicycle Lanes are striped, preferential lanes on roadways for one-way bicycle travel. All existing bicycle lanes in Livermore are Class IIA conventional bicycle lanes, consisting of a single stripe to delineate the lane, stenciled pavement markings, and signs to identify it as a bicycle lane. Where a bicycle lane is adjacent to on-street parking, the lane may be striped on both sides.

ADDITIONAL BICYCLE FACILITIES

In addition to Class I shared use paths and Class IIA conventional bicycle lanes, there are several additional classes of bikeways designated by Caltrans and Alameda CTC and intersection treatments that do not yet exist in Livermore but were considered in development of this Plan and recommended where appropriate.



A typical buffered bicycle lane

Class II bicycle lanes can be upgraded from conventional striping to include striped buffers that add a few feet of separation between the bicycle lane and traffic lane or parking aisle, or other features that improve bicyclist comfort. The additional Alameda CTC designations for bicycle lanes are:

- Class IIB for upgraded bicycle lanes, either with a striped buffer between the bicycle lane and traffic lane, or with green conflict markings in the bicycle lane
- Class IIC for climbing bicycle lanes, which have a dedicated bicycle lane in the uphill direction and a Class III bicycle route in the downhill direction
- Class IID for contraflow bicycle lanes, which allow for bicycling in the opposite direction of motor vehicle traffic (typically used to support two-way bicycle travel on one-way streets)



speeds that prioritize convenient and safe bicycle travel through traffic calming, wayfinding signs, and traffic control adjustments

Because they are mixed-traffic facilities, Class III bicycle routes are only appropriate for very low-volume streets with slow travel speeds. Designating Class III bicycle routes can support bicycling beyond the actual facility provided. Signed bicycle routes can help people riding bicycles navigate quiet streets and identify which streets connect. The City may also choose to adopt related policies or practices to maintain designated streets at a level that is comfortable for people bicycling, which may include sweeping more frequently or maintaining a higher quality pavement surface than non-designated streets.



Typical bicycle boulevard features, clockwise from top left: sharrows, wayfinding, speed hump, and traffic circle

Class III Bicycle Routes are signed routes where people riding bicycles share a travel lane with people driving motor vehicles.

- Class IIIA for signage-only routes
- Class IIIB for wide curb or shoulder lanes, that may or may not include signage
- Class IIIC for routes with shared lane markings (“sharrows”) or other pavement stenciling, and may also include signage
- Class IIID for routes with green-backed sharrows, also called “super sharrows”
- Class IIIE for bicycle boulevards, which are signed, shared travelways with low motor vehicle volumes and



Typical separated bikeway with bollards

Class IV Separated Bikeways are on-street bicycle lanes that are physically separated from motor vehicle traffic by a vertical element or barrier such as a curb, bollards, or parking aisle. They may allow for one- or two-way traffic.

- Class IVA for one-way separated bikeways
- Class IVB for two-way separated bikeways

Bike boxes at signalized intersections provide a designated space for bicyclists to queue ahead of vehicle traffic, increasing visibility, reducing signal delay for bicyclists, and helping to prevent right-hook conflicts with turning vehicles. Bike boxes also benefit pedestrians as they reduce vehicles encroaching into the crosswalk.



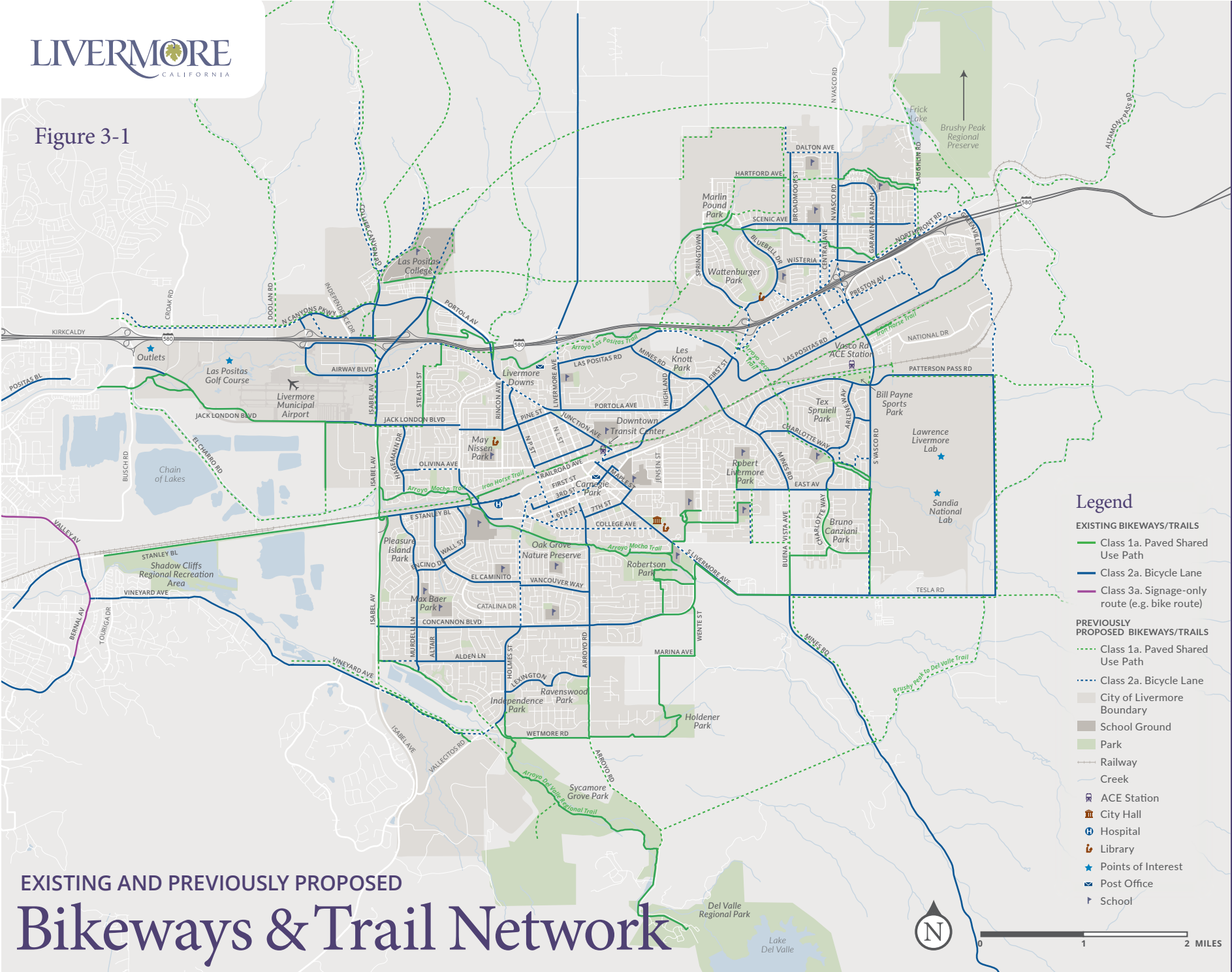
Typical bicycle box

Two-stage turn boxes help bicyclists make left turns at signalized intersections with multiple travel lanes from a bicycle lane or separated bikeway. They may also be used at unsignalized locations to facilitate turns from one facility type to another, such as the transition from a bike lane to a bike boulevard. The turn boxes separate turning bicyclists from those continuing through, reduce turning conflicts between vehicles and bikes, and provide a formal queuing space in the intersection.



Two-stage turn box

Figure 3-1



Legend

- EXISTING BIKEWAYS/TRAILS**
- Class 1a. Paved Shared Use Path
 - Class 2a. Bicycle Lane
 - Class 3a. Signage-only route (e.g. bike route)

- PREVIOUSLY PROPOSED BIKEWAYS/TRAILS**
- Class 1a. Paved Shared Use Path
 - Class 2a. Bicycle Lane

- City of Livermore Boundary
- School Ground
- Park
- Railway
- Creek
- ACE Station
- City Hall
- Hospital
- Library
- Points of Interest
- Post Office
- School

EXISTING AND PREVIOUSLY PROPOSED
Bikeways & Trail Network



PEDESTRIAN NETWORK

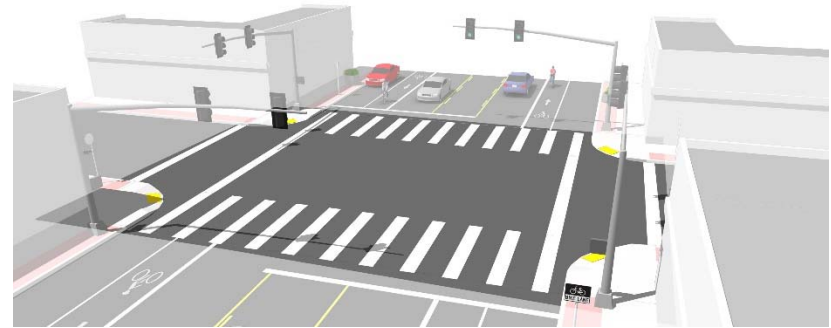
The pedestrian network is composed of sidewalks, pathways, crosswalks, curb ramps, crossing enhancements, and amenities like benches and lighting.

EXISTING PEDESTRIAN NETWORK IN LIVERMORE



A typical sidewalk

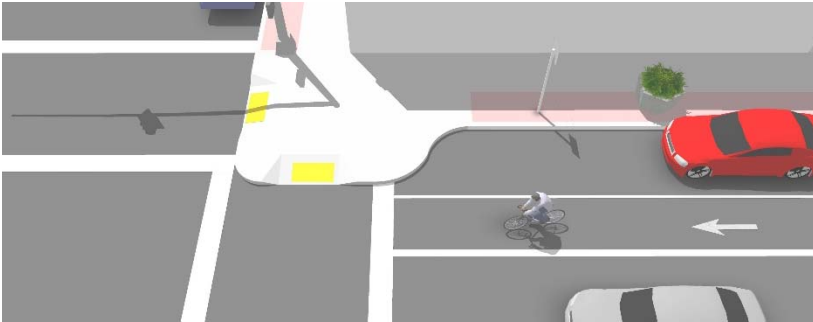
Sidewalks are smooth, even surfaces for pedestrian use that are separated from vehicle travel lanes. Some sidewalks are buffered from the roadway by landscaped areas or other features. Sidewalks throughout Livermore vary in width from five to ten feet wide, depending on the adjacent land use. Livermore currently has approximately 566 miles of sidewalks, covering 93 percent of the street network. There are 44 miles of roadways that have sidewalk on only one side, and 32 miles that lack sidewalks entirely. Small sidewalk gaps that exist sporadically throughout the planning area impede or discourage pedestrian activity.



Transverse and high visibility crosswalk markings

Marked crosswalks guide pedestrians to a preferred path of travel across a street, and alert motorists that pedestrians are likely to be crossing at that location. Standard or “transverse” crosswalks consist of two parallel lines, while high visibility crosswalks add horizontal stripes or other markings. Crosswalks near schools may be marked in yellow.

Marked crossings should always include advance warning signage and advance yield lines, and can be enhanced with curb extensions to shorten the crossing distance and increase visibility. On streets with one lane in each direction and moderate traffic volumes, the addition of a median refuge may be necessary to improve safety and comfort of people crossing.



Curb ramps

Curb ramps help pedestrians with mobility impairments, those using assistive devices, and children transition from the sidewalk to a crosswalk. They also support pedestrians with strollers and children riding scooters or skateboards on the sidewalk. At corners with two crosswalks, two perpendicular curb ramps should be installed to lead directly into the crosswalk on a straight path. While a single diagonal ramp is acceptable under certain constrained conditions, two perpendicular ramps are the preferred design option because of the benefits they offer to people with disabilities. People with vision impairments are aligned from a ramp directly into the crosswalk, and people using wheelchairs or other assistive devices do not travel diagonally into the street before turning back into one of the crosswalks.

The City has an estimated 8,000 curb ramps. Based on an inventory and condition assessment of a sample of the City's curb ramps, it is estimated that 28 percent of ramps comply with current ADA standards, 59 percent require updates, and 13 percent are locations where a curb ramp would traditionally be located but has not been installed.



A typical median refuge

Median refuges, also known as pedestrian refuge islands, provide a safe waiting area for pedestrians in the median of wide, busy streets. Median refuges also allow pedestrians to focus on one direction of vehicle traffic, stop and wait in the median, and then focus on the other direction of vehicle traffic to finish crossing.

The median refuge should have a physical barrier on either side, which can be curbs or plantings, to separate pedestrians from vehicle traffic. Median refuges should be combined with other crossing treatments, such as Rectangular Rapid Flashing Beacons (RRFBs) or other beacons.



A typical RRFB

Rectangular Rapid Flashing Beacons (RRFBs) are user-actuated amber LEDs that supplement warning signs at uncontrolled intersections and mid-block crosswalks. They can be activated by people bicycling and walking by manually pushing a button or passively by remote detection.

For crossings of roadways with one lane in each direction and higher traffic volumes, or on four-lane streets with medium volumes, both a median refuge island and RRFB are typically provided to improve safety and comfort.

ADDITIONAL PEDESTRIAN FACILITIES

In addition to the previously described pedestrian facilities and amenities that exist in Livermore today, one additional type of pedestrian beacon was considered in development of this Plan and may be recommended for intersection improvements as appropriate.

Pedestrian Hybrid Beacons, also known as high-intensity activated crosswalk (HAWK) beacons, are traffic control devices used to stop roadway traffic and allow people to walk or bike across an intersection. People walking and bicycling activate the beacon by manually pushing a button or passively by video detection or a detector loop system. A PHB creates the lowest level of stress (LTS 1) for people crossing major streets as it functions as a traffic signal, requiring vehicles to stop at a red light when activated. It is designed for intersections that may not meet requirements for a traffic signal, but have volumes high enough that a beacon is needed to provide adequate breaks in traffic for pedestrians and bicyclists to get through the intersection.



A typical pedestrian hybrid beacon

TRAIL NETWORK

Livermore currently has approximately 40 miles of Class I paved shared use paths designed for bicycling, walking, and horseback riding. While equestrians are allowed on all existing trails, trails constructed in South Livermore Valley generally provide a separate unpaved path for horses.

The existing trail network is partially developed throughout portions of the City. The previous Bikeways and Trails Master Plan proposed a network of trails throughout Livermore, along the railroad tracks, linkages to cross I-580, and along the arroyos. Figure 3-2 shows existing and previously proposed trails in Livermore.

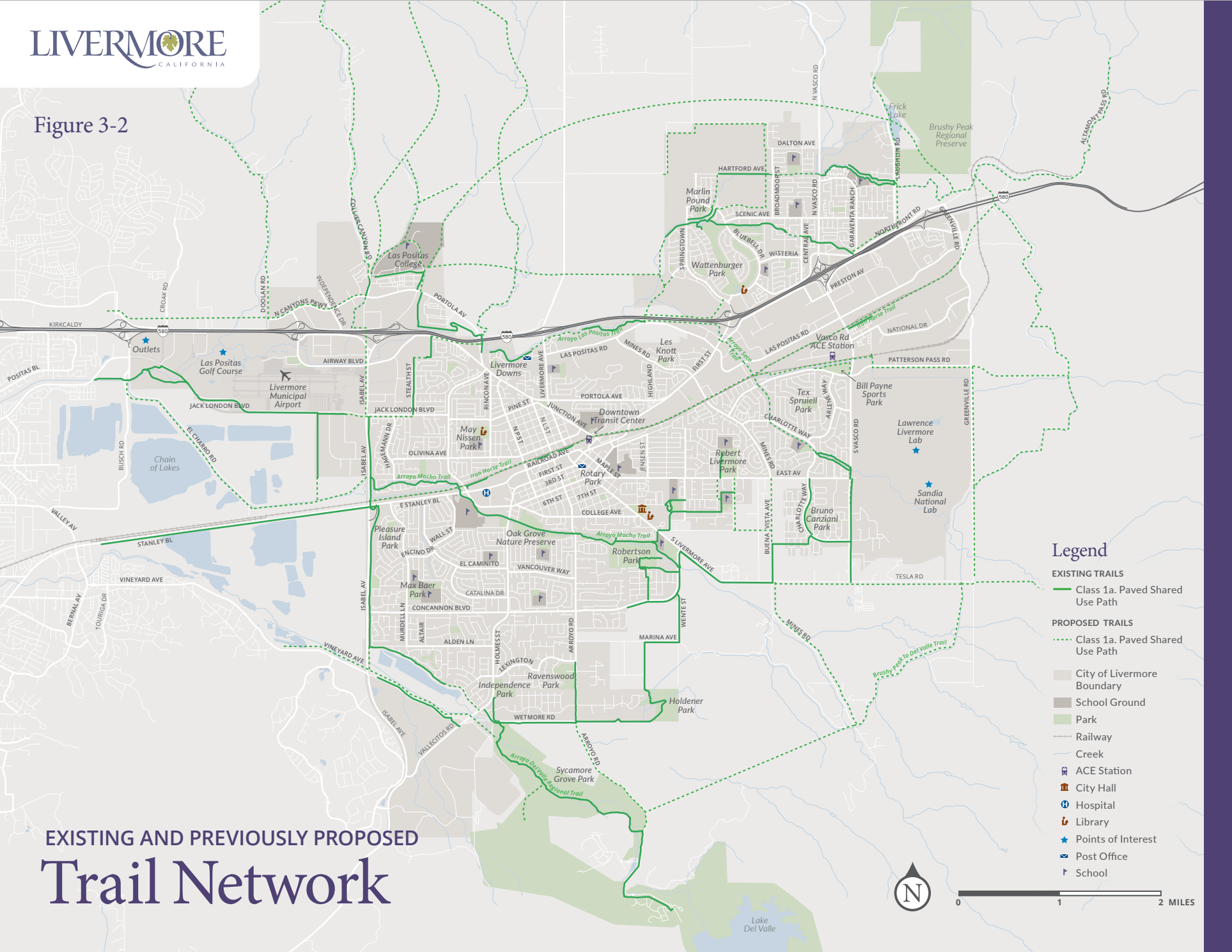
The existing and proposed trail network is intended to provide separated and comfortable access to community facilities, schools, and transit. The trail network also provides recreational opportunity and connection to neighborhood and regional parks.

TRAILHEADS

There are several existing trailheads that serve the network and provide access for equestrians, including:

- Robertson Park (Robertson Park Rd)
- Sycamore Grove Park (Wetmore Rd access from Sycamore Grove Park Parking Lot)
- Del Valle Regional Park (Arroyo Rd Del Valle Arroyo Rd Staging Area (EBRPD))
- Brushy Peak (Laughlin Rd – Laughlin Ranch Staging Area)

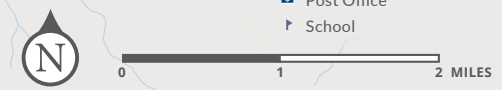
Figure 3-2



Legend

- EXISTING TRAILS**
 - Class 1a. Paved Shared Use Path
- PROPOSED TRAILS**
 - - - Class 1a. Paved Shared Use Path
- City of Livermore Boundary
- School Ground
- Park
- Railway
- ~ Creek
- Ⓜ ACE Station
- Ⓜ City Hall
- Ⓜ Hospital
- Ⓜ Library
- ★ Points of Interest
- ✉ Post Office
- 📍 School

EXISTING AND PREVIOUSLY PROPOSED
Trail Network



EXISTING PROGRAMS

Bicycle and pedestrian education, encouragement, enforcement, and evaluation programs are an integral part of supporting active transportation and increasing users.

Programs are generally described by four E's: education, encouragement, enforcement, and evaluation. Livermore has a strong history of supporting and participating in active transportation programs, which are listed briefly below. These programs are described in greater detail, along with recommendations for new and expanded program efforts, in Chapter 5 and Appendix K.

EDUCATION

- **Bicycle Safety Education Classes** for youth are offered by Livermore police to students in Kindergarten through 8th grade, and through the Alameda County Safe Routes to School (SR2S) program to elementary, middle, and high school students
- **Adult Bicycle Safety Education** is offered by Bike East Bay, and teaches riders the rules of the road and how to safely bicycle in a variety of scenarios, including both classroom lessons and on-bike practice
- **Youth Pedestrian Safety Education** provided to Kindergarten through second graders by the Alameda County SR2S program includes practicing safe walking and crossing behaviors
- **Bike Maps** provide information about the City's existing bikeways and trails in addition to information on key destinations, routes, and distances between points

ENCOURAGEMENT

- **Safe Routes to School (SR2S) Program** operated by Alameda County Transportation Commission includes numerous activities to promote walking and bicycling to school, including school site audits, evaluation activities, education efforts, and fun encouragement events
- **Bike to Work Day** activities in Livermore, which include energizer stations, giveaways for commuters, and an outreach campaign, are led by the City in partnership with the Metropolitan Transportation Commission and Bike East Bay
- **Bicycle and Pedestrian Coordination** for the City is currently incorporated into the responsibilities of two staff members in the Planning department who manage bicycling and walking plans and projects for the City, including coordinating with partner agencies to implement programs and events

ENFORCEMENT

- **Ticket Diversion Classes for Bicyclists** operated by the Livermore Police Department and Bike East Bay allow youth bicyclists to attend a bicycle safety course instead of paying a fine for a citation
- **Crossing Guards** hired by the Livermore Police Department are stationed at key locations near schools to assist students and enforce safe driving behavior at crosswalks
- **Speed Feedback Trailers** deployed by the Livermore Police Department are used for short-term enforcement to target areas where speeding is a concern

- **Bicycle Patrol** officers and volunteers with the Livermore Police Department patrol trails in addition to streets and other areas of the community, and may notice challenges or hazards specific to bicyclists during their shifts
- **Traffic Calming** consists of engineering treatments designed and implemented to reduce traffic speeds and improve safety and comfort along key corridors, often coupled with enforcement campaigns to educate the community on the new features

EVALUATION

The City currently does not formally evaluate bicycling and walking programs or projects on an annual or routine basis.

ACTIVITY GENERATORS

Existing activity generators are destinations that are likely to attract walking or bicycling trips, including:

- Parks and community facilities
- Commercial retail centers
- Schools
- Major employers

A map of activity generators can be seen in Figure 3-3.

PARKS & COMMUNITY FACILITIES

Three libraries and one community center in Livermore provide space for recreational activities, classes, and community gatherings. These include the Civic Center, Rincon Branch, and Springtown Branch libraries and the Robert Livermore Community Center.

Parks are distributed throughout the community and vary in size, intensity and design. The Livermore Area Recreation and Park District (LARPD) is an independent special district that owns and/or manages parks in and around Livermore. LARPD provides:

- 29 neighborhood parks
- Three community parks
- Seven dog parks
- Four open space areas totaling 1,360 acres
- 10 special-use parks

East Bay Regional Park District (EBRPD) owns or manages approximately 6,500 acres of regional park land in the Livermore area, offering a variety of recreational opportunities. In addition, EBRPD owns or manages several miles of regional trails in Livermore including the Iron Horse Regional Trail and the Shadow Cliffs to Del Valle Regional Trail. There is high demand for improved access to these regional park amenities.

Zone 7 Water Agency serves the Livermore-Amador Valley, and controls several arroyos and access roads within Livermore. Some maintenance roads on levees are currently open for bicycle and pedestrian use, and the Agency has expressed a willingness to discuss opening additional levee trails for transportation and recreation.

COMMERCIAL RETAIL CENTERS

Commercial uses in Livermore are concentrated downtown and in neighborhood shopping centers along arterials in the community. Providing improved bicycle and pedestrian access to shops, restaurants, services, and other businesses will support residents who want to socialize or run errands without using a car.

Wineries are also a major commercial activity and destination in Livermore. Many vineyards and tasting rooms are clustered just southeast of the City, and form a transition between the developed area and the surrounding open space. Some wineries are served by existing shared use paths, and opportunities exist to connect additional wineries and promote the area as a wine trail.

SCHOOLS

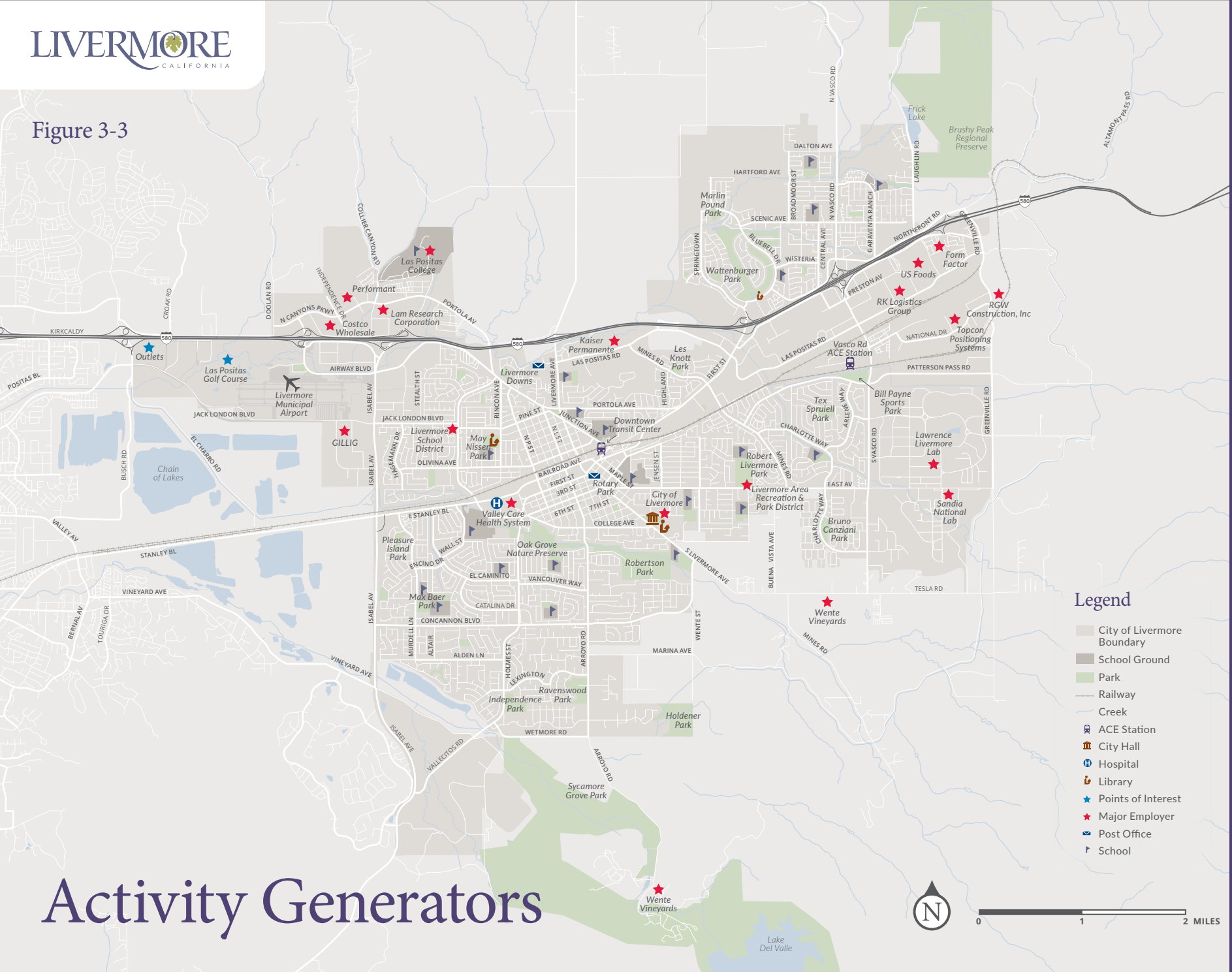
Livermore schools are distributed throughout the city's neighborhoods. They include:

- Livermore Valley Unified School District: nine elementary schools, two K-8 schools, three middle schools, and three high schools
- Las Positas Community College
- Private schools and pre-schools

MAJOR EMPLOYERS

According to the Livermore Office of Innovation and Economic Development, the largest employers in Livermore are the Lawrence Livermore National Laboratory, Valley Care Health Systems, Sandia National Lab, Livermore Valley Joint Unified School District, Kaiser Permanente, GILLIG, Lam Research, Form Factor, Wente Vineyards, US Foods, the RK Logistics Group, Livermore Area Recreation and Parks District, the City of Livermore, Las Positas College, Topcon Positioning Systems, Costco, and Performant.

Figure 3-3



Activity Generators



0 1 2 MILES

DEMOGRAPHICS

Understanding the demographics of the Livermore community not only informed the projects, programs, and priorities reflected in this Plan, but also informed a strategic outreach and community engagement plan to reach the diverse residents. All demographic data reflects 2014 5-year estimates from the American Community Survey.

POPULATION

Livermore is home to 89,301 residents, and has grown by 22 percent since 2000. It is the sixth-largest city in Alameda County.

AGE

There are many young people in Livermore, with just over 24 percent of residents under 18 years of age compared to 22 percent in Alameda County. This 24 percent are likely to be unable to drive, which increases their dependence on walking, bicycling, and taking transit to reach their destinations.

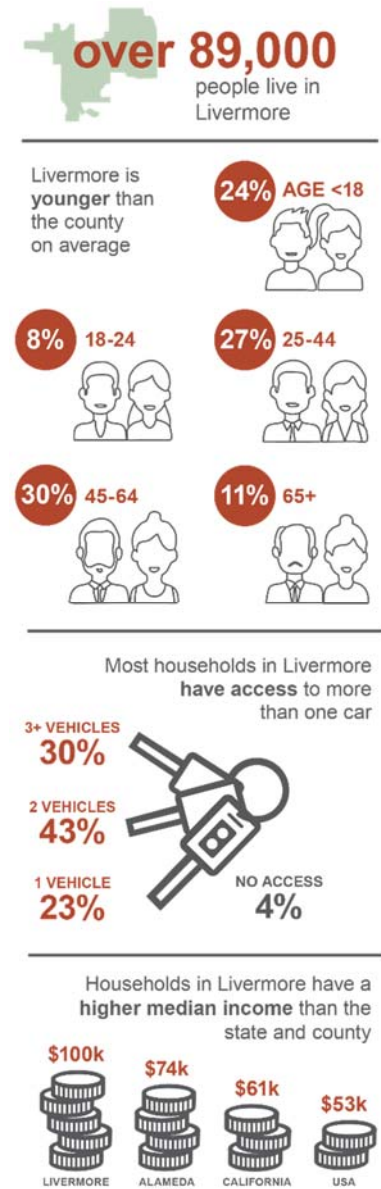
ACCESS TO CARS

More than 95 percent of Livermore households have access to a car. Just four percent do not have access to a car, suggesting they rely on walking, bicycling, or transit. Based on Livermore’s average household size, this represents nearly 3,500 residents who may not have access to a car for transportation.

An additional 23 percent of households have access to only one vehicle. If these households have two workers, one or more of them may rely on other modes of transportation for their commute.

INCOME

Median household income in Livermore is \$99,683 in 2014 dollars, representing a 32 percent increase from the 2000 median of \$75,322. On average, Livermore residents earn more than Alameda County overall, which has a median income of \$73,775.



American Community Survey 2014 5-year estimates

TRAVEL PATTERNS

COMMUTE TRAVEL

Almost 80 percent of Livermore residents drive alone to work. Bicycling and walking together make up just two percent of all commute trips, based on 2014 5-year estimates from the American Community Survey. Bicycling and walking is likely higher than this overall, as the American Community Survey does not count recreational trips or trips where commuters use more than one mode, such as taking a bus and then bicycling to their final destination. Thirty-nine percent of the Livermore residents also work in Livermore, which provides an opportunity to shift commute trips within the city from driving to other modes. Compared to communities listed in Table 3-2, Livermore has a higher bicycling commute mode share and a lower walking commute mode share than some Bay Area peers.

Table 3-2: Commute Modes in Peer Communities

CITY	BIKE COMMUTE SHARE	WALK COMMUTE SHARE
Livermore	1.4%	0.9%
Dublin	0.4%	2.0%
Pleasanton	0.9%	2.4%
Rancho Cordova	1.4%	2.3%
Berkeley	9.7%	19.6%
Davis	23.2%	5.1%
Copenhagen	37.0%	6.0%

SCHOOL TRAVEL

The Alameda County Safe Routes to School program collects data on trips to school, including several schools in Livermore. From 2013 to 2015, 6.6 percent of Livermore students bicycled and 17.4 percent of students walked to school. Bicycling to school in Livermore is higher than the national average of 2.2 percent, which suggests the bicycle network in Livermore currently supports some trips to school. If the bicycling network along routes to school is improved, bicycling to school rates are likely to increase.

6.6% OF LIVERMORE STUDENTS BIKE TO SCHOOL



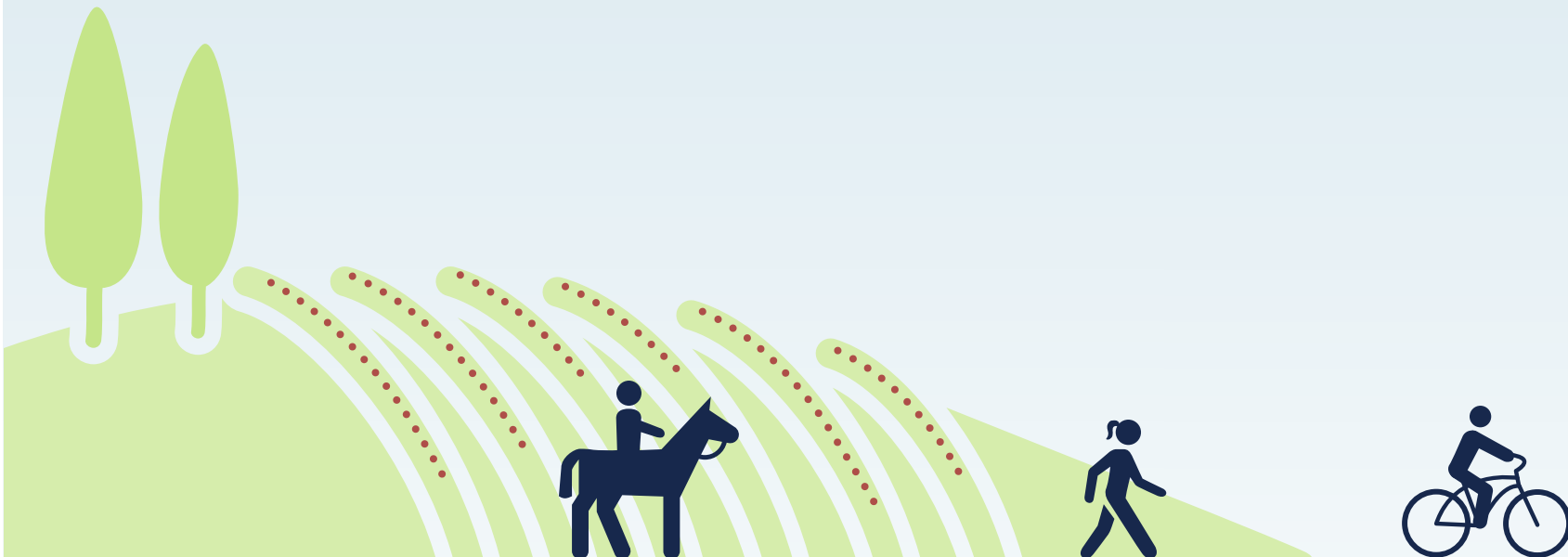
17.4% OF LIVERMORE STUDENTS WALK TO SCHOOL



Alameda County Safe Routes to Schools Program counts taken between 2013 and 2015

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04 Needs Analysis



CHAPTER 4 NEEDS ANALYSIS

The walking and bicycling needs of the Livermore community are diverse, influenced by the quality of the networks—both the physical condition of the infrastructure and the perceived comfort of people walking and bicycling—community demographics, trip purposes, and many other factors.

This chapter includes an overview of active transportation needs identified through the following analyses:

- Public Input
- Health
- Safety
- Data-driven Analysis

PUBLIC INPUT

Throughout the planning process, the City held multiple workshops, tours, and other events to gather input for this Plan. Opportunities to inform existing conditions and help identify and prioritize needed improvements were offered throughout development of the Plan, with a priority on reaching a broad cross section of Livermore residents. This continuous feedback loop resulted in a project list, evaluation strategy, and programs suite that truly reflects community values and priorities. Opportunities for public input included:

- Two public workshops
- Survey and interactive map
- 14 pop-up events
- Walking and bicycling tours
- Advisory committee meetings
- Planning Commission and City Council meetings

Activities and key outcomes are summarized in the following sections. For detailed information, see Appendix C.

WORKSHOPS

COMMUNITY WORKSHOP 1

The first public open house, held in April 2016, was attended by 76 people. Participants reviewed and provided comments on the existing conditions information, including suggesting Plan goals and desired improvements. Hard copies of the community survey were also distributed for participants to complete.



COMMUNITY WORKSHOP 2

A second workshop was held in January 2017 to gather feedback from the community on draft network, crossing, and program recommendations, and provide an opportunity for input on project prioritization criteria. The workshop, which included Spanish and Vietnamese interpretation, was attended by 110 people. Feedback themes included:

- Support for green bicycle lanes or boxes at key conflict points
- Need for additional bicycle parking
- Improved bicycle detection at signalized intersections
- Improved lighting citywide
- Additional amenities along trails
- Improved connectivity between bikeways
- Preference for accommodating on-street bikeways through travel lane narrowing or removal rather than on-street parking removal



SURVEY AND INTERACTIVE MAP

A community survey gathered input on active transportation challenges and opportunities throughout Livermore. The survey was available online in English and Spanish from March 28 through May 30, 2016, and collected 524 responses.

An interactive mapping tool was also included online, which allowed residents and stakeholders to draw routes and make comments to help identify locations that need improvements, routes they are currently using, and barriers to walking and bicycling.

Survey respondents expressed an appreciation for the walking and bicycling paths in Livermore, and a desire for a more connected network and improved safety and comfort. Mapped input is shown in Figure 4-1. The majority of survey respondents also reported a desire to walk (76 percent) or bicycle (81 percent) more often for their daily commute, errands, and other trips. In addition, 34 percent of respondents reported they are interested in bicycling but have concerns, representing an opportunity for mode shift and behavior change if improvements to bicyclist safety and comfort are implemented.

Additional themes from the feedback received include:

WALKING NEEDS

- Close sidewalk gaps
- Improve street lighting
- Improve crossings and curb ramps
- Traffic calming

Key locations identified as needing improvements include:

- Downtown Livermore
- Livermore Avenue
- Vasco Road/I-580 crossing

BICYCLING NEEDS

- Improve safety for on-street bikeways
- Create dedicated space for bicycling
- Design ramps and bollards to accommodate bicycles with trailers
- Improve crossings

Key locations identified as needing improvements include:

- Arroyo Mocho Trail
- East Avenue
- Vasco Road/I-580 crossing

Additional bicycle parking was also identified as a need, including along First Street in the downtown, and near parks, grocery stores, and other destinations.

TRAIL NEEDS

- Improve connectivity of separated trails
- Address personal safety concerns
- Complete trail gaps



Explore the comments we received about walking, bicycling and trails in Livermore on the Interactive Map

EXISTING

- Existing Trail
- - - Previously Proposed Trail*
- Existing Bike Lane
- - - Previously Proposed Bike Lane*
- Livermore City Limit

ROUTES

- Route I like and currently use as a bicyclist
- Route I like and currently use as a pedestrian
- Route that could be improved for bicyclists
- Route that could be improved for pedestrians

POINTS

- Destination
- Bike parking need
- Barrier to walking (ex: no sidewalk)
- Barrier to bicycling (ex: bike lane ends)

*Previously proposed facilities based on the 2001 City of Livermore Bikeways and Trails Master Plan, 2015 Draft Livermore Area Park and Recreation Department Parks, recreation and Trails Master Plan and 2013 East Bay Regional Park District Master Plan. Physical conditions may have changed and the City will determine new feasible alignments for some trail segments based on public feedback and staff analysis.

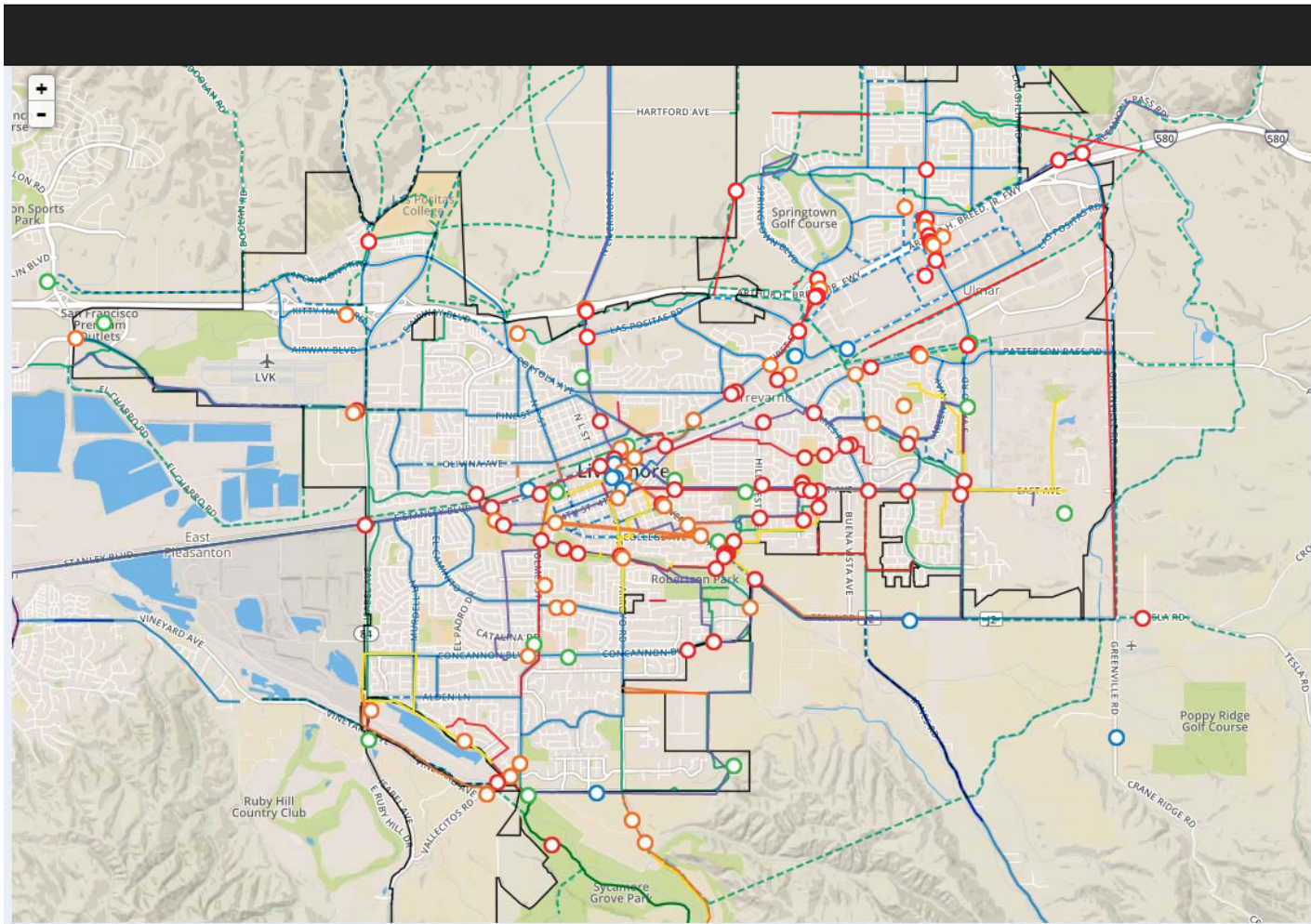


Figure 4-1: Public Mapping Input

POP-UP EVENTS

To gather input from residents who may not have attended a traditional workshop, the City of Livermore planned and facilitated 14 diverse community events to share information and talk with attendees about the project. These pop up events were conducted at:

- Parent Club Information Council – April 26, 2016
- Senior Services – Living with Purpose – May 2, 2016
- Youth Advisory Commission – May 2, 2016
- Las Positas Junior College – May 4, 2016
- Livermore Farmer’s Market – May 19, 2016
- WHEELS Disabled Advisory Committee – January 4, 2017
- Marylin Elementary – English Learner Advisory Committee – March 29, 2017
- Livermore Wine Country Downtown Street Fest – May 2016 and May 2017
- Bike to Work Day Energizer Stations at Sandia and Lawrence Livermore Labs and at My Buddy’s Bike Shop – May 2016 and May 2017
- Hook and Ladder Run – June 4, 2017
- Equestrian Focus Group – June 25, 2017
- Livermore Trailblazers Focus Group – July 10, 2017

WALKING AND BICYCLING TOUR

A walking and bicycling tour of Livermore was attended by four people walking and five people bicycling in March 2017. The groups were led by project staff and visited locations to discuss proposed projects and document challenges.

ADVISORY COMMITTEES

ACTIVE TRANSPORTATION PLAN CITIZEN ADVISORY COMMITTEE

Development of this Plan was guided by an Active Transportation Plan Citizen Advisory Committee composed of six members appointed by the City Council. The group met seven times throughout the planning process to set project goals, review key deliverables, and inform community outreach processes.

TECHNICAL ADVISORY COMMITTEE

A technical advisory committee of thirteen subject area experts met four times throughout the process to provide in-depth input into project development and prioritization. Member agencies included:

- Alameda County Public Works
- Alameda CTC
- Bike East Bay
- City of Dublin
- City of Livermore Police Department
- City of Livermore Public Works Department
- City of Pleasanton
- East Bay Regional Parks District
- Las Positas Community College
- Livermore Amador Valley Transit Authority/Wheels
- Livermore Area Recreation and Parks District
- Livermore Valley Joint Unified School District
- Zone 7 Water Agency

PLANNING COMMISSION & CITY COUNCIL MEETINGS

Two rounds of presentations were made to the Planning Commission and City Council at key project milestones. The first round of meetings, held in Fall of 2016, presented information on the existing conditions, needs analysis, and goals chapters of the Plan.

The second round of meetings, held in Summer of 2018, presented the completed draft Plan for review and comments before adoption.

HEALTH

Bicycling and walking are closely tied to health, and a review of physical activity and air quality can illuminate the need for active transportation improvements in a community. A growing number of studies show how communities and transportation systems have a profound impact on health and quality of life issues. Fostering conditions where bicycling and walking are accepted and encouraged can increase the health and livability of a city through increased physical activity and improved air quality. For detailed data on health in Livermore, see Appendix D.

PHYSICAL ACTIVITY

The Centers for Disease Control and Prevention (CDC) recommends adults get 150 minutes of physical activity each week. According to the California Health Interview Survey Neighborhood Edition, only 36 percent of adults in Livermore meet this recommendation. While this is a small sample of the population, the rate is consistent with county and statewide rates at 37 and 33 percent respectively.

The Department of Education, which collects physical fitness data for students, reports approximately 75 percent of students in the Livermore Valley Joint Unified School District are in the Healthy Fitness Zone for aerobic capacity. Similar to adult activity rates, this is on par with county and state levels.

The Department of Education also reports slightly lower rates of obese or overweight youth in Livermore compared to state and county data, while California Health Interview Survey Neighborhood Edition data shows Livermore adults are slightly more likely to be obese or overweight than their peers in Alameda County or California.

Improving walking and bicycling networks can improve physical activity and reduce obesity in both children and adults. The CDC has found increasing opportunities for activity can result in 25 percent more residents exercising at least three times per week.



OF ADULTS
in Livermore meet the CDC's recommendation for weekly physical activity



OF STUDENTS
in Livermore are in the Healthy Fitness Zone for aerobic capacity



Increasing opportunities for activity can result in **MORE RESIDENTS** exercising at least three times per week

California Health Interview Survey Neighborhood Edition; California Department of Education; and Centers for Disease Control and Prevention

AIR QUALITY

CalEnviroScreen 2.0 is a tool developed by the Office of Environmental Health Hazard Assessment team that measures pollution and population factors to identify census tracts where adverse health effects are disproportionately distributed. According to CalEnviroScreen 2.0, Livermore residents experience a greater pollution burden than Alameda County as a whole. Livermore ranks in the 51st percentile, while Alameda County ranks in the 34th percentile. With regards to traffic related pollution, Livermore census tracts rank in the 36th percentile on average for exposure to PM2.5 and in the 45th percentile for diesel emissions. Exposure to traffic pollution can have adverse health effects, such as respiratory issues, heart and lung disease, and asthma.

Livermore residents also disproportionately suffer from asthma compared to the rest of California, which may be related to increased air pollution exposure in the City. The California Health Interview Survey Neighborhood Edition reports 18 percent of Livermore residents have been diagnosed with asthma, compared to 15 percent of youth and 13 percent of adults statewide.

Livermore residents experience a



GREATER POLLUTION BURDEN

than Alameda
County as a whole.



of Livermore
residents have been
**DIAGNOSED
WITH ASTHMA,**
compared to just
13 percent of adults
statewide.

CalEnviroScreen 2.0; California Health Interview Survey Neighborhood Edition

SAFETY

Safety and comfort play a significant role in the decision to walk or bicycle instead of some other mode of transportation. While these two factors are closely related, safety refers to the real risk of injury or fatality due to a collision, while comfort refers to a person's perception of the bicycle or pedestrian facility provided on a particular street. This section discusses safety in Livermore; comfort is addressed in the following data-driven analysis section.

Identification of locations and behaviors involved in bicycle and pedestrian related crashes informed this Plan's recommendations. A summary is presented in this section, and Appendix E contains a detailed analysis. Collisions are mapped in Figure 4-2.

Bicycle and pedestrian related collisions in Livermore were analyzed using the most recent five years of available data, from 2010 to 2014, accessed through the Statewide Integrated Traffic Records System (SWITRS). SWITRS is likely an underestimate of crashes, as not all incidents are reported to law enforcement—especially those that do not result in property damage.

BICYCLE-INVOLVED COLLISIONS

There were a total of 122 bicycle-related collisions during the study period, representing 2.3 percent of all collisions in Livermore. No bicyclist fatalities were recorded, but four bicyclists were severely injured.

The most commonly reported factors that contributed to these collisions included:

- Traveling on the wrong side of the road
- Improper turning
- Failure to yield to a motor vehicle

PEDESTRIAN-INVOLVED COLLISIONS

There were 72 pedestrian-related collisions during the study period, representing 1.4 percent of all collisions in Livermore. Three collisions resulted in pedestrian fatalities, and nine pedestrians were severely injured.

The most commonly reported contributing factors included:

- Motorist failing to yield to a pedestrian
- Pedestrian failing to yield to a motor vehicle
- Unsafe starting or backing up by a motorist

COMPARISON TO SURROUNDING AREA

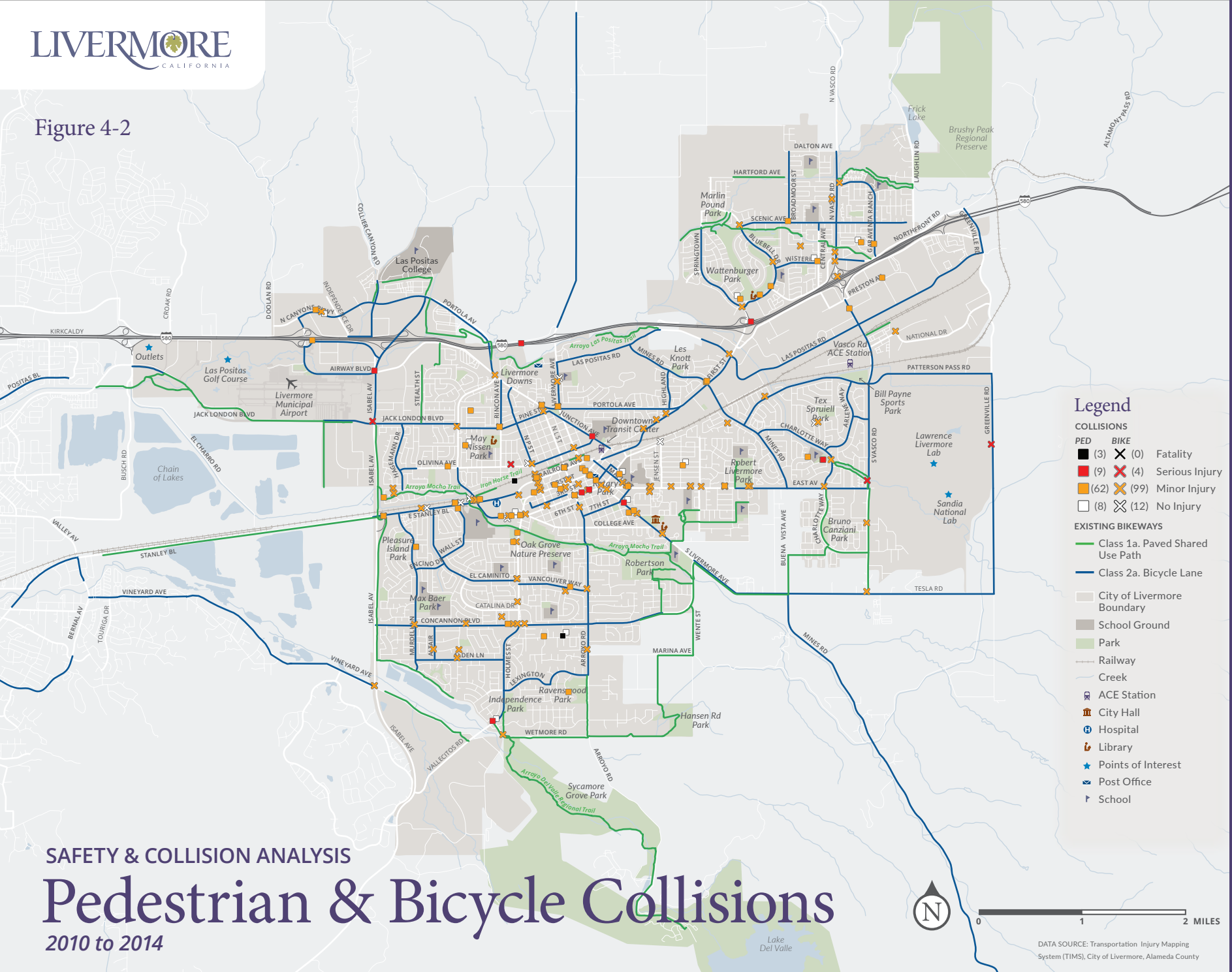
Compared to nearby cities and Alameda County, Livermore has a lower rate of bicycle collisions and a higher rate of pedestrian collisions, as shown in Table 4-1. This table uses commute to work modes as reported in American Community Survey 2014 5-year estimates.

Table 4-1: Crashes Compared to Surrounding Area

DATA	LIVERMORE	PLEASANTON	DUBLIN	ALAMEDA COUNTY
Bicycle collisions	122	155	35	3,305
Bicycle commuters	580	293	99	13,812
Collisions/100 bicyclists	21	53	35	24
Pedestrian collisions	72	63	35	3283
Pedestrian commuters	371	821	483	25,802
Collisions/100 pedestrians	19	8	7	13

This table shows the risk of a bicyclist or pedestrian being exposed to a collision while accounting for walking and bicycling rates in the community. For example, Livermore has nearly four times as many bicycle collision than Dublin, but it has nearly six times as many bicycle commuters. Therefore the exposure rate is lower in Livermore than Dublin.

Figure 4-2



Legend

- COLLISIONS**
- | | | |
|------------|-------------|----------------|
| PED | BIKE | |
| ■ (3) | ✕ (0) | Fatality |
| ■ (9) | ✕ (4) | Serious Injury |
| ■ (62) | ✕ (99) | Minor Injury |
| □ (8) | ✕ (12) | No Injury |
- EXISTING BIKEWAYS**
- Class 1a. Paved Shared Use Path
 - Class 2a. Bicycle Lane
- Other Symbols:**
- City of Livermore Boundary
 - School Ground
 - Park
 - Railway
 - Creek
 - Ⓜ ACE Station
 - 🏛 City Hall
 - 🏥 Hospital
 - 📖 Library
 - ★ Points of Interest
 - ✉ Post Office
 - 🎓 School

SAFETY & COLLISION ANALYSIS

Pedestrian & Bicycle Collisions

2010 to 2014



0 1 2 MILES

DATA SOURCE: Transportation Injury Mapping System (TIMS), City of Livermore, Alameda County

DATA-DRIVEN ANALYSIS

Data-driven analyses help document current conditions, projected demand, and opportunities to improve the bicycling and walking environment in Livermore. Four analyses were completed during development of this Plan, described at right.

DEMAND ANALYSIS

The first data-driven analysis used is the Bicycle and Pedestrian Composite Demand Model. This process identifies dense activity areas most likely to have high demand for walking and biking by quantifying factors such as where people live, work, learn, play, shop, and access transit—many of the activity generators identified in Chapter 3. This analysis does not reflect current levels of walking and bicycling activity, but instead captures latent demand—the potential for walking and bicycling.

Results of the composite demand model are used to identify areas of higher demand within Livermore and prioritize locations for improvements. The model results, illustrated in Figure 4-3, show high demand areas in orange. Areas that yielded highest demand include the confluence of schools, retail, transit, and higher density residential areas. Areas with potential high walking and bicycling demand include:

- Downtown Livermore, including the Transit Station
- Schools, especially Mendenhall Middle School and Livermore High School
- Parks
- Las Positas College

See Appendix F for a detailed description of the Demand Model process.



DEMAND ANALYSIS

Identifies dense activity areas where there is likely to be high demand for walking and bicycling facilities



BICYCLE LEVEL OF TRAFFIC STRESS

Identifies street segments where people are unlikely to be comfortable bicycling due to stressful factors like speeding cars, high traffic volumes, or bicycle facilities that do not provide enough separation from moving cars



PEDESTRIAN LEVEL OF SERVICE

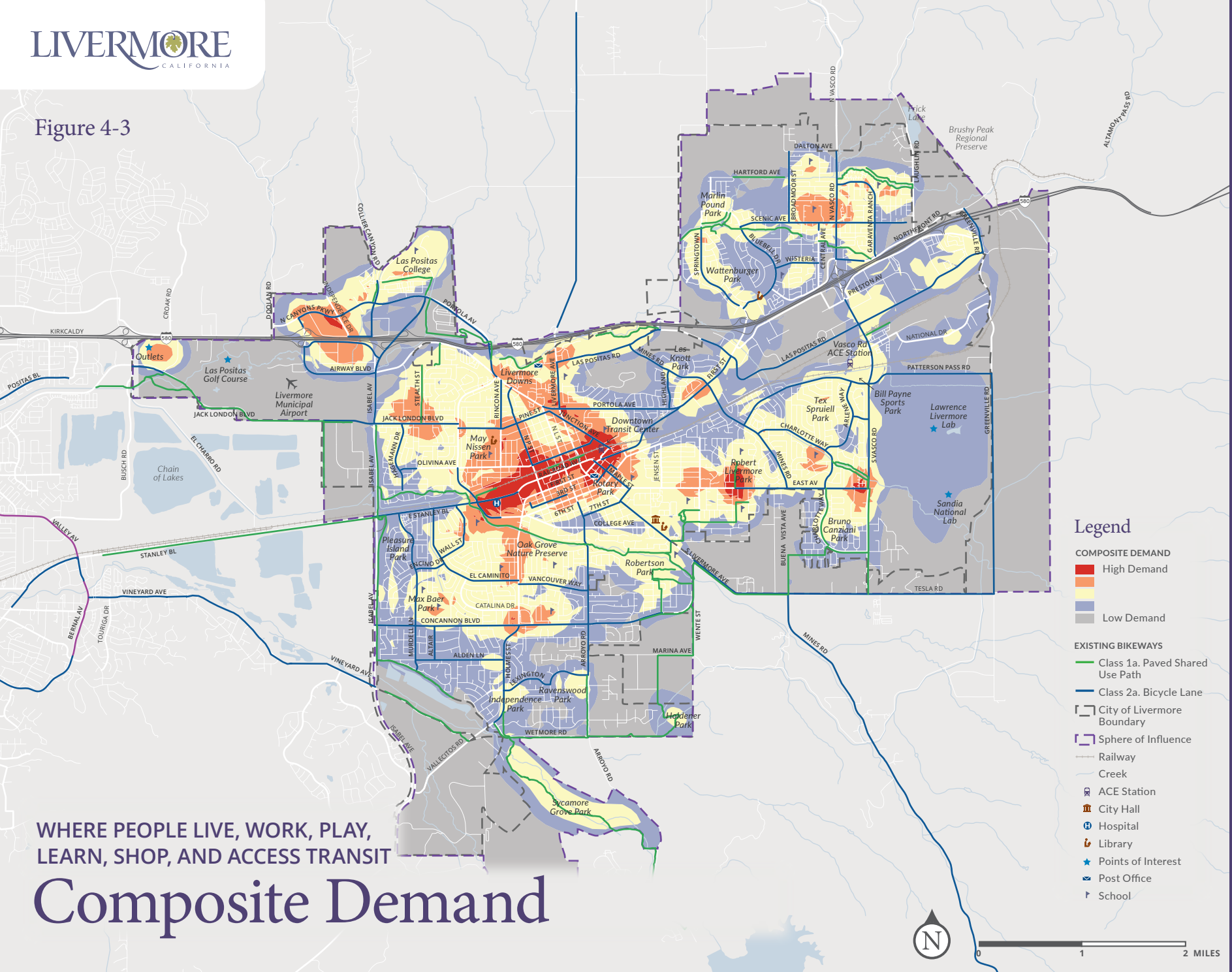
Identifies street segments where people are unlikely to be comfortable walking due to sidewalk gaps, challenging crossings, or speed of traffic



NETWORK CONNECTIVITY

Identifies gaps and barriers in the current bicycling and walking environments

Figure 4-3



BICYCLE LEVEL OF TRAFFIC STRESS

The second analysis completed for this Plan was the Bicycle Level of Traffic Stress (BLTS) model. BLTS models score street segments and intersections based on characteristics of the roadway and the bicycle facility provided. The analysis is based on a number of factors, including:

- Posted speed limit
- Roadway width and number of travel lanes
- Intersection conditions
- Presence and character of bicycle facilities
- Land use context

BLTS models measure the perceived discomfort associated with bicycling in or adjacent to motor vehicle traffic. Higher-stress facilities provide little comfort for bicyclists, and are likely to be used only by the most confident and fearless riders. Lower-stress facilities offer higher comfort, and are likely to be attractive to a broad group of riders. This analysis classifies road segments and intersections into four categories, with BLTS 1 being the least stressful and BLTS 4 being the most stressful.

For a bicycle network to attract the broadest segment of the population, it must provide a continuous and comfortable experience for users. A continuous and comfortable network will allow citizens of all ages and abilities to better consider bicycling as a viable and safe form of transportation.

Results of the BLTS model are shown in Figure 4-4. Just over 60 percent of the roadway network in Livermore was rated BLTS 1 or 2, meaning they are relatively low-stress environments for bicycling. The remaining segments, rated BLTS 3 or 4, are primarily higher speed arterials and other streets comfortable only for the most experienced bicyclists.

For additional detail on the BLTS model, see Appendix G.

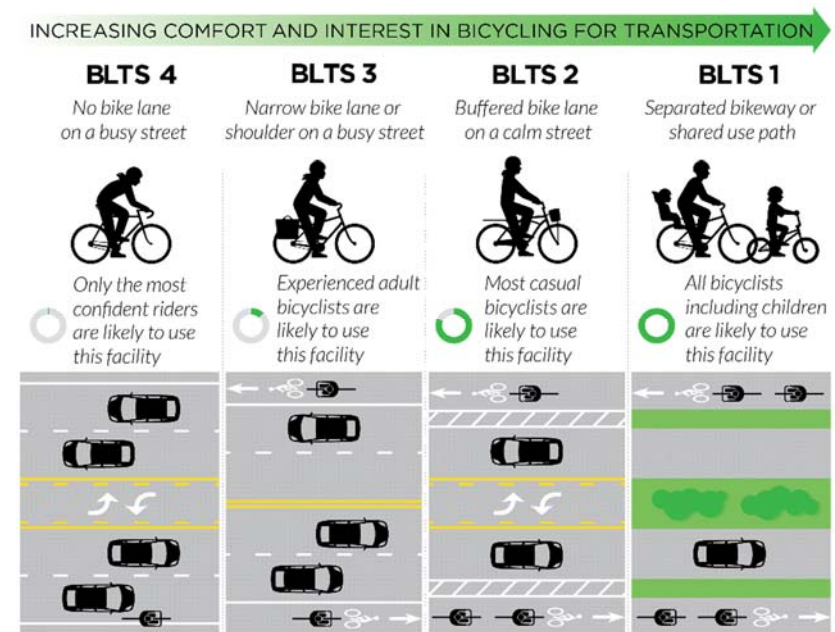
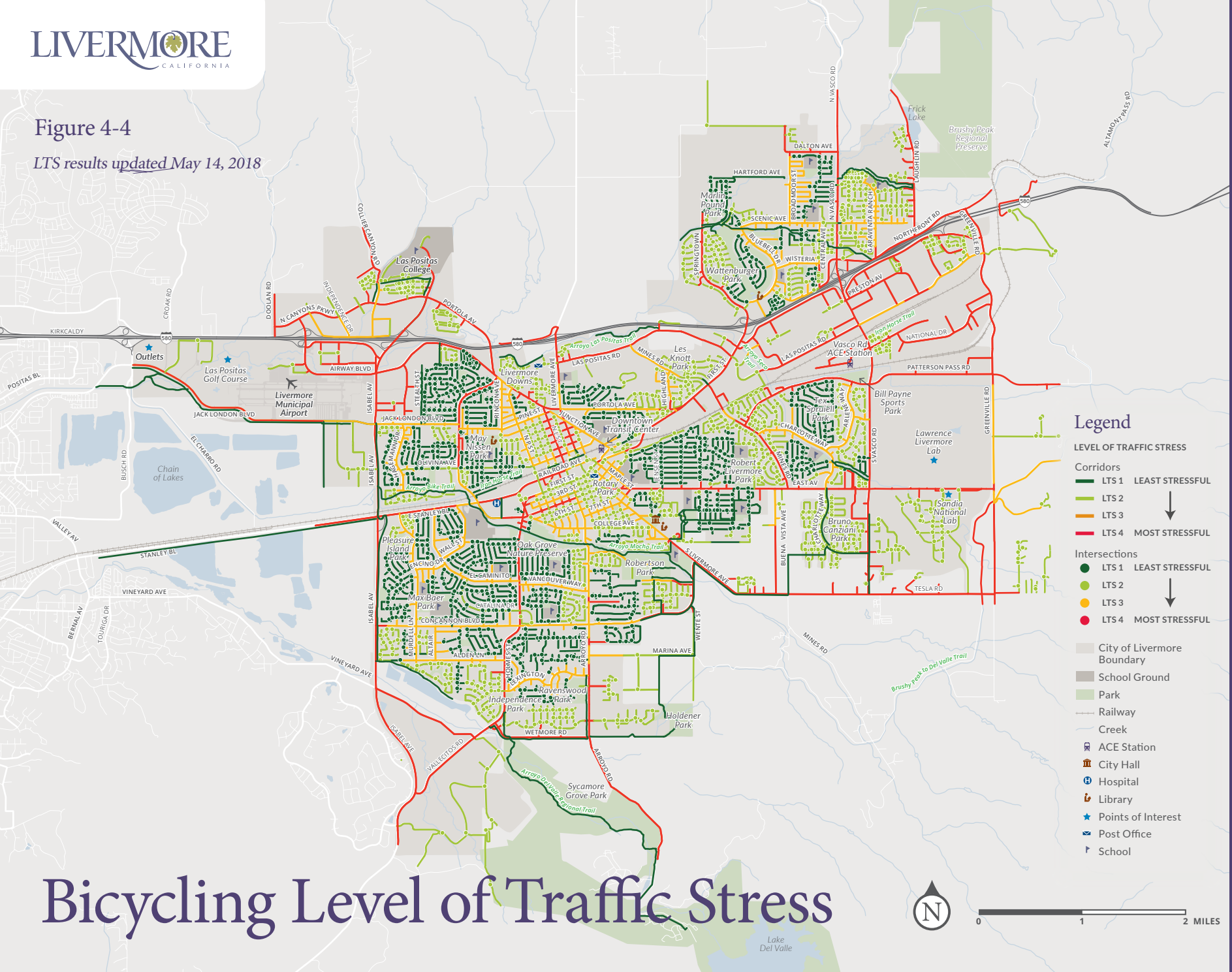


Figure 4-4

LTS results updated May 14, 2018



Bicycling Level of Traffic Stress



0 1 2 MILES

PEDESTRIAN LEVEL OF SERVICE

The third data-driven analysis completed was a Pedestrian Level of Service (PLOS) model. Similar to the BLTS process, a PLOS model helps identify where pedestrian improvements could improve comfort, and where they may have the greatest impact given the existing conditions and the anticipated demand.

The model scores street segments and intersections based on characteristics that impact pedestrian safety, comfort, and ease of movement. The PLOS analysis is based on four factors:

- Presence of sidewalks
- Posted speed limit
- Roadway width (number of travel lanes)
- Pedestrian buffers (sidewalk is separated from travel lanes by bicycle lanes, on-street parking, and/or landscaping)

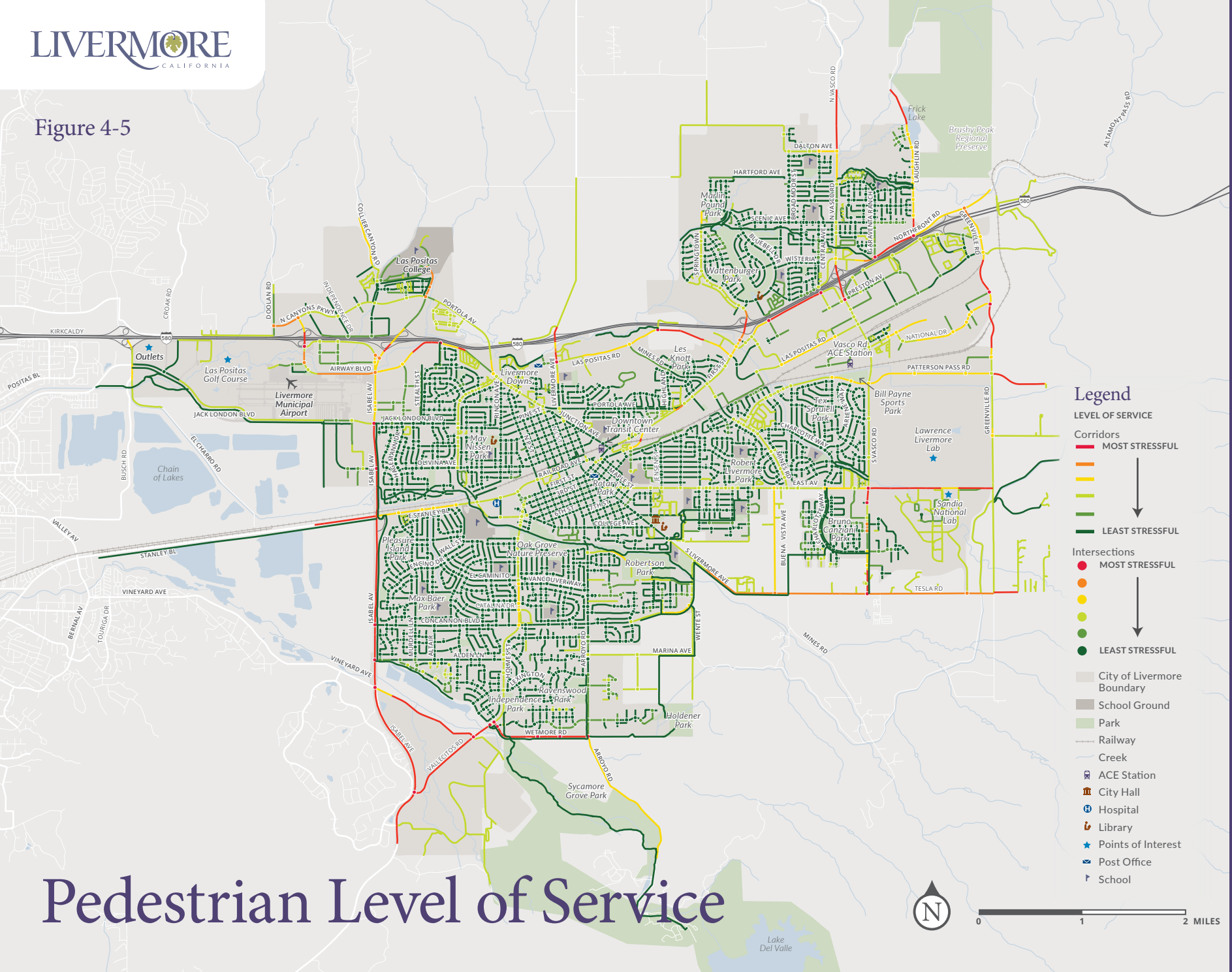
Results of the PLOS model are shown in Figure 4-5. Key outcomes of the analysis include:

- High levels of pedestrian comfort were found on roughly 90 percent of roadways in Livermore, generally on low-speed residential streets and in the downtown core
- Low levels of pedestrian comfort were found on the remaining 10 percent of roadways, primarily on higher-speed arterials, collectors, and state routes, which generally lack sidewalks

While the overwhelming majority of roadways are relatively comfortable for walking, these roadways tend to be islands isolated by arterials or other barriers that make it challenging to reach meaningful destinations. Improving access along and across these key roadways will be vital to creating an inviting walking environment.

For additional detail on the PLOS model, see Appendix H.

Figure 4-5



Pedestrian Level of Service



0 1 2 MILES

NETWORK CONNECTIVITY ANALYSIS

This fourth data-driven analysis evaluates connectivity of the low-stress bicycling and walking networks in Livermore. On an effective bicycle and pedestrian network, people must be able to travel to their destinations without encountering barriers that discourage them from choosing active transportation. These barriers, including high speed or wide streets, railroads, waterways, or other features that do not have comfortable and convenient crossings or parallel paths.

Figure 4-6 and Figure 4-7 show the low-stress network islands for bicycling and walking in Livermore, illustrating how these isolated pockets are separated by high stress segments or crossings that make it challenging for people to reach their destinations.

The bicycling network analysis shows relatively small islands of high comfort suggesting most bicyclists would be uncomfortable riding beyond their neighborhood due to stressful crossings or route segments. Downtown Livermore is surrounded by high-stress network segments, which makes it challenging to access.

The pedestrian network analysis shows fewer barriers, by comparison. With the exception of a few key routes and crossings, walking is likely to be a comfortable option for many residents. This analysis does not take lighting into account, which can affect both visibility and personal security for pedestrians, so walking at night may be more challenging.

COMBINED ANALYSIS RESULTS

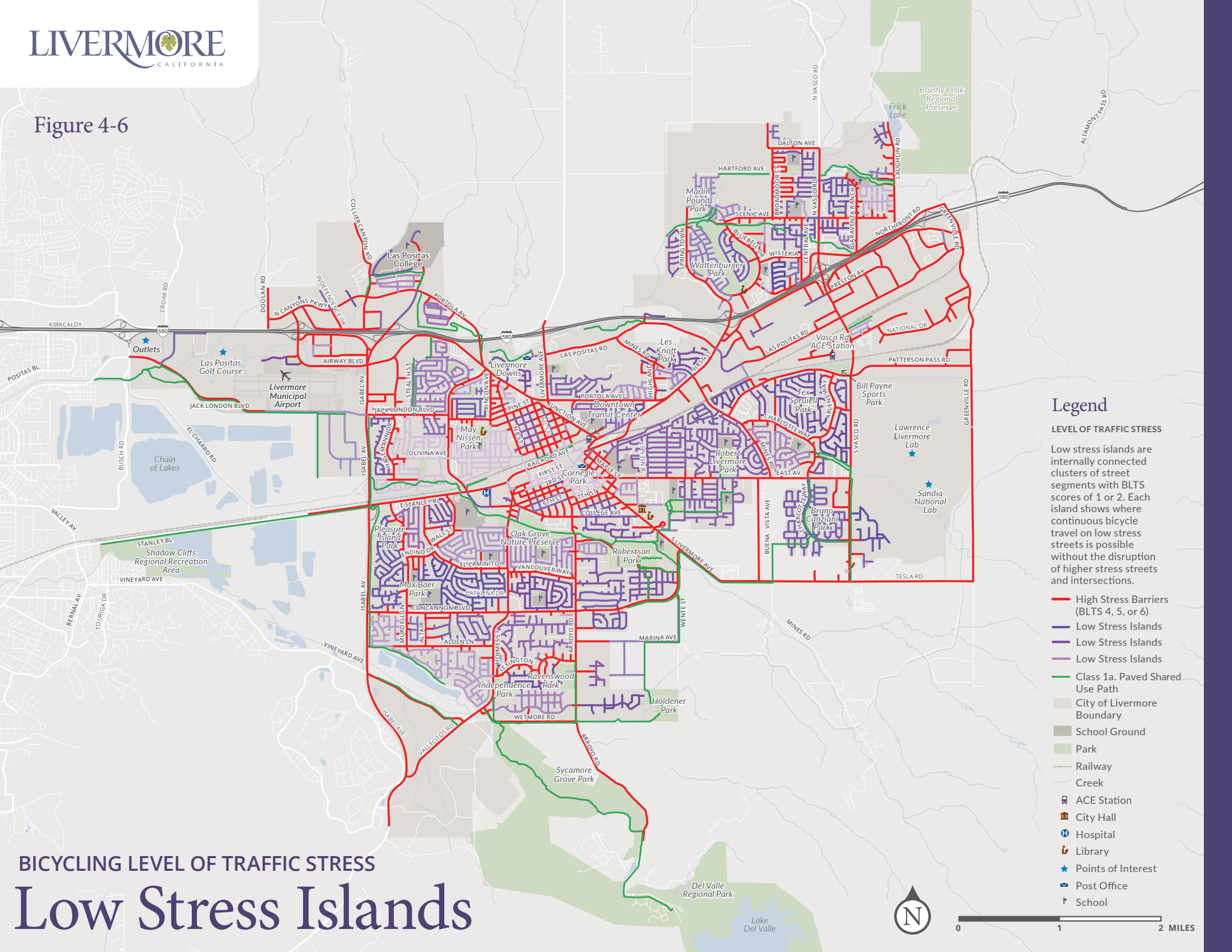
The synthesis of the Demand Analysis, the Bicycle Level of Traffic Stress (BLTS), Pedestrian Level of Service (PLOS), and the Network Connectivity Analysis informed the Plan's recommended infrastructure and programmatic improvements. Each of these analyses are strong and useful tools for understanding both current conditions and projected demand for bicycle and pedestrian facilities in Livermore.

By overlaying the analysis results, locations where high demand coincides with high-stress or disconnected networks are identified and can be prioritized for improvements. These are locations where projects are likely to have the greatest benefit for walking and bicycling comfort and connectivity.

Figure 4-8 illustrates the LTS network results over the composite demand analysis. The downtown core and surrounding areas, which have high composite demand, are intersected by high stress roadways for bicyclists. These roadways may be significant barriers for the bicyclists who wishes to travel in and around the downtown area.

Figure 4-9 illustrates the PLOS network results over the composite demand analysis. As shown on the map, high demand areas throughout the city are complemented by high supply pedestrian roadways. In fact, there are very few low supply pedestrian roadways in high demand areas of the city. Key connecting streets in high demand areas like E Stanley Blvd, Las Positas Road, East Ave, and Holmes St could benefit from network and crossing improvements so that pedestrians can more easily traverse the high supply pedestrian network.

Figure 4-6



Legend

LEVEL OF TRAFFIC STRESS

Low stress islands are internally connected clusters of street segments with BLTS scores of 1 or 2. Each island shows where continuous bicycle travel on low stress streets is possible without the disruption of higher stress streets and intersections.

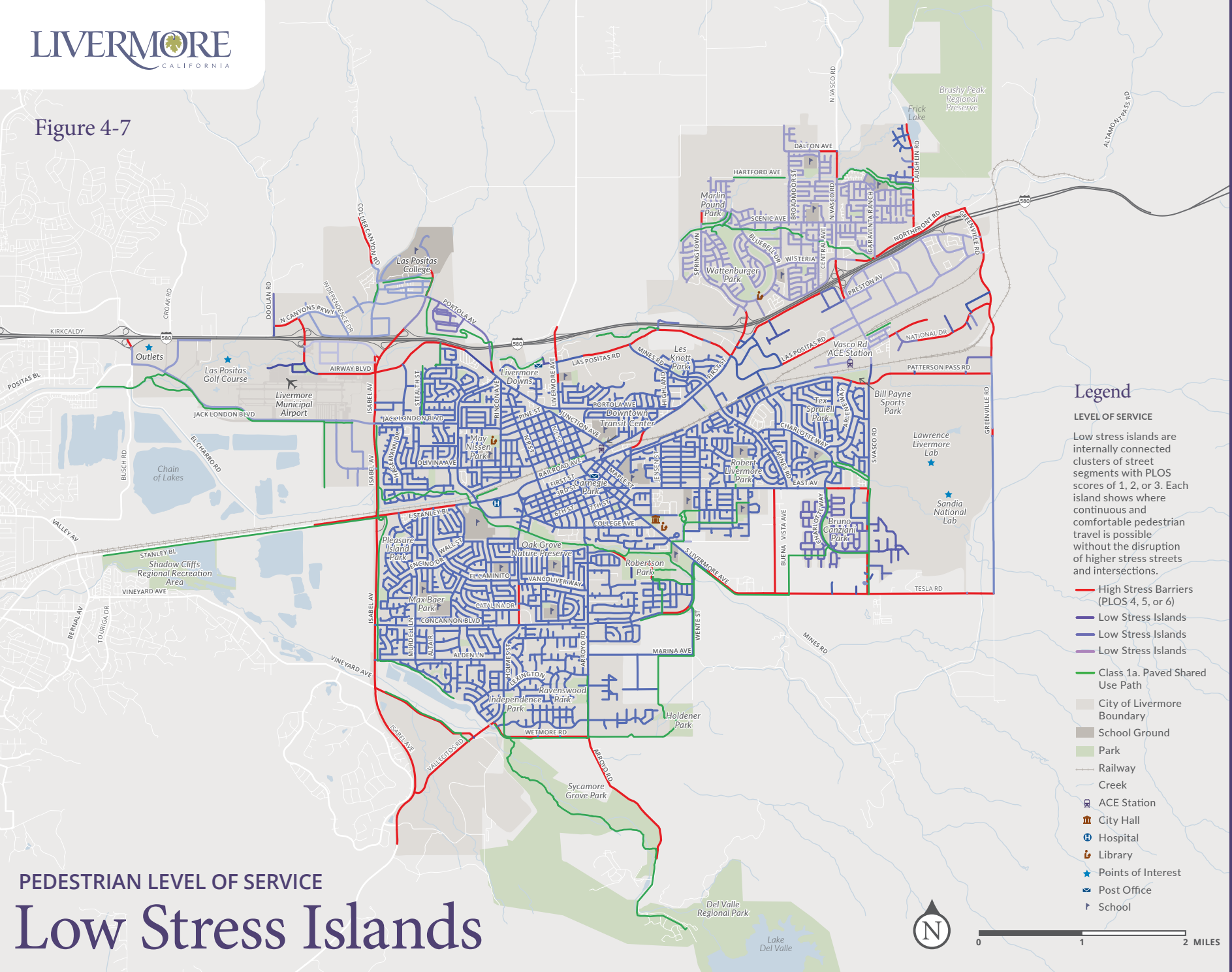
- High Stress Barriers (BLTS 4, 5, or 6)
- Low Stress Islands
- Low Stress Islands
- Low Stress Islands
- Class 1a. Paved Shared Use Path
- City of Livermore Boundary
- School Ground
- Park
- Railway
- Creek
- + ACE Station
- H City Hall
- H Hospital
- L Library
- ★ Points of Interest
- ✉ Post Office
- 🏫 School

BICYCLING LEVEL OF TRAFFIC STRESS
Low Stress Islands



0 1 2 MILES

Figure 4-7



Legend

LEVEL OF SERVICE

Low stress islands are internally connected clusters of street segments with PLOS scores of 1, 2, or 3. Each island shows where continuous and comfortable pedestrian travel is possible without the disruption of higher stress streets and intersections.

- High Stress Barriers (PLOS 4, 5, or 6)
- Low Stress Islands
- Low Stress Islands
- Low Stress Islands
- Class 1a. Paved Shared Use Path
- City of Livermore Boundary
- School Ground
- Park
- Railway
- Creek
- ACE Station
- City Hall
- ⚕ Hospital
- 📖 Library
- ★ Points of Interest
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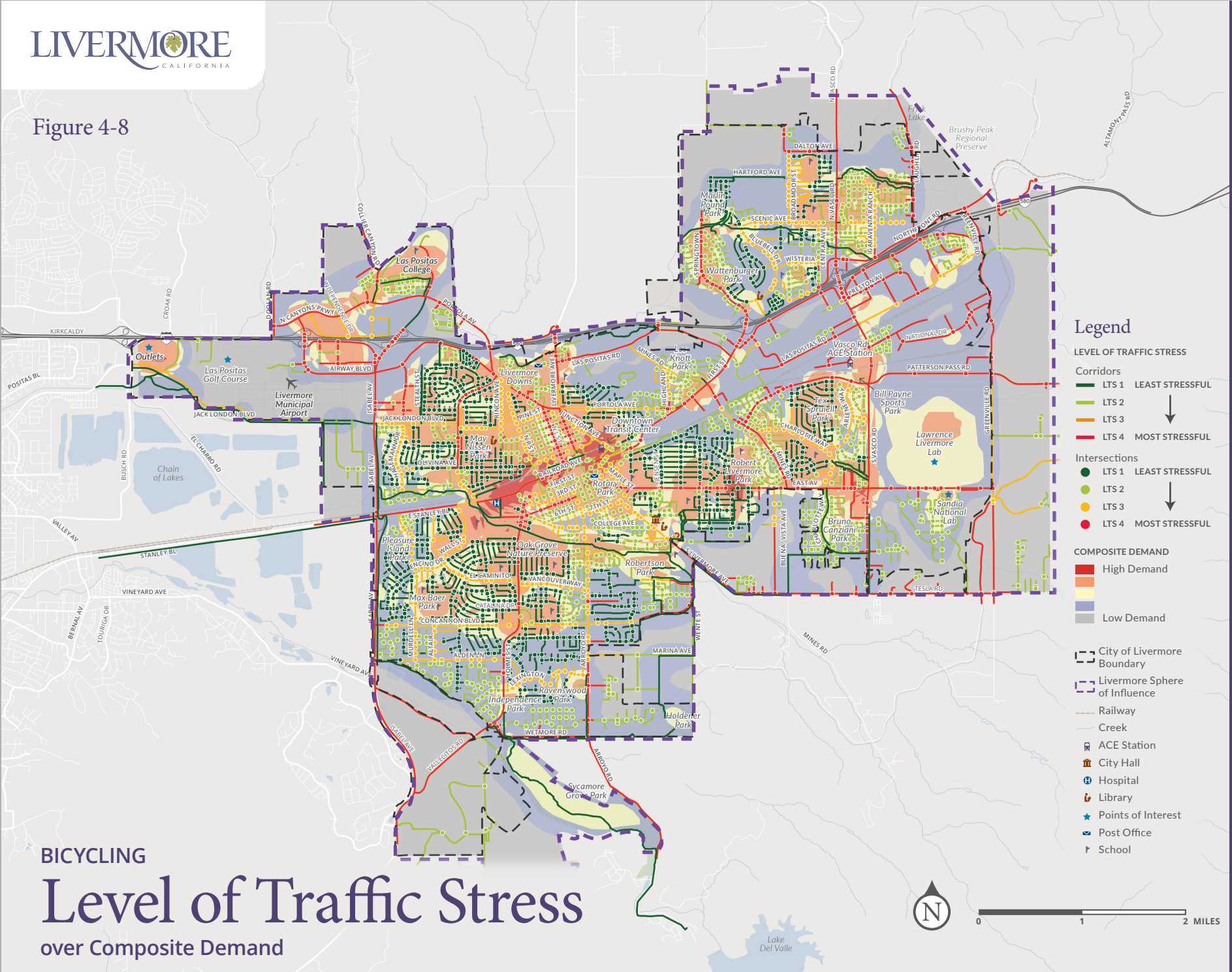
PEDESTRIAN LEVEL OF SERVICE

Low Stress Islands



0 1 2 MILES

Figure 4-8



BICYCLING

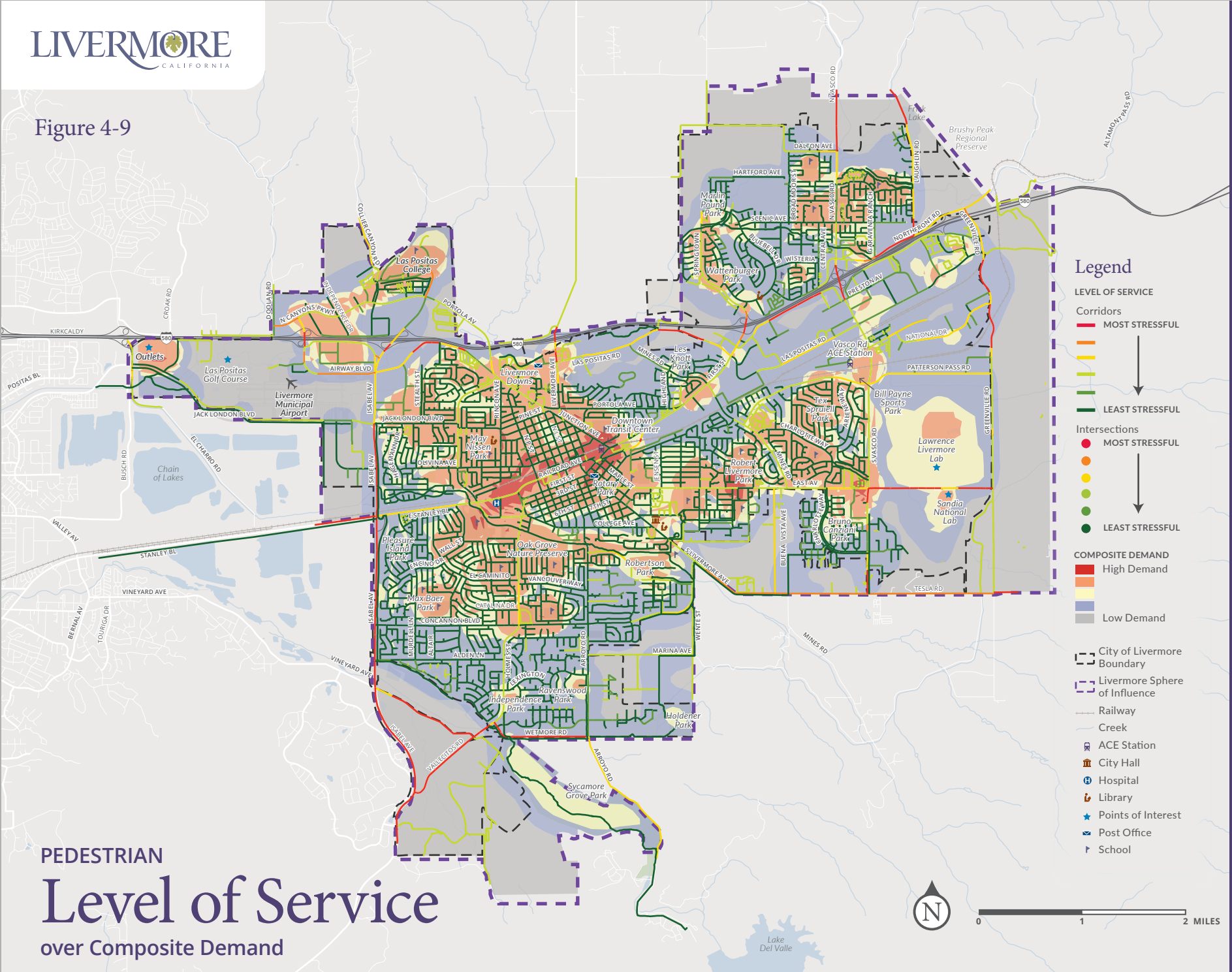
Level of Traffic Stress

over Composite Demand



0 1 2 MILES

Figure 4-9



PEDESTRIAN
Level of Service
 over Composite Demand

FOCUS AREAS

After reviewing existing conditions, listening to community needs and completing the data-driven analyses described in this chapter, five overarching themes for needs and opportunities emerged. To achieve the Plan's vision and goals, the recommended improvements are structured to provide or enhance access to these focus areas.

SCHOOL ACCESS

Many students must cross major arterial roadways to get to school. This Plan includes recommendations to increase the safety and comfort of students accessing their schools.

DOWNTOWN ACCESS

High stress streets surround the downtown area, making it difficult to comfortably access downtown on foot or by bike. Improving routes and intersections into and throughout the downtown area will encourage more active transportation in the community.

CROSTOWN ROUTES

The city's major arterial streets carry multiple lanes of high speed vehicle traffic, creating high stress corridors and crossings for bicyclists and pedestrians. This Plan recommends increasing safety and comfort for active transportation users along and across these corridors, enabling more people to reach their destinations on foot or by bicycle.

TRAIL CONNECTIONS

Livermore's extensive trail network is a community asset cherished by residents and visitors alike, but gaps between the trail system and the street network create connectivity challenges. This Plan emphasizes closing key gaps to provide a seamless active transportation network, while also improving trail access to regional parks, downtown Livermore, transit, and other destinations.

I-580 CROSSINGS

Residents expressed a strong desire for improved access across I-580, including connections to Las Positas College, Northeast Livermore neighborhoods, and downtown. This Plan identifies opportunities to improve existing I-580 crossings as well as provide new crossings.

05 Projects & Programs



CHAPTER 5 PROJECTS & PROGRAMS

This Plan's proposed active transportation network seeks to provide the Livermore community with safe, convenient, and healthy transportation choices. The network also enhances regional connectivity to adjacent communities, regional parks, and other destinations through an extensive trail network and connected bicycling and walking facilities.

Building on the needs and opportunities identified through the evaluation of existing conditions, community input, health, safety, and data-driven analyses, this chapter summarizes the projects, programs, and citywide efforts. These improvements address network gaps informed by the needs analysis, goals identified through community input, and best practices in active transportation planning. For a detailed list of projects, see Appendix I. Detailed trail improvements are described in Appendix J. Proposed and continuing programs are described in Appendix B.

Recommendations are considered planning-level, meaning they should be used as a guide when implementing projects. In some cases, traffic impact analysis and more detailed design analysis will be required to evaluate specific site conditions and develop designs that reflect conditions and constraints.

This chapter is divided into sections that describe the proposed walking, bicycling, and trail improvements. Proposed infrastructure projects are separated into two categories: network improvements and crossing improvements. Additionally, proposed citywide projects include policies or standards for bicycle and pedestrian amenities that should be implemented as development occurs or opportunities arise.

Finally, programs include current and proposed new activities to support active transportation, organized into four groups: education, encouragement, enforcement, and evaluation.

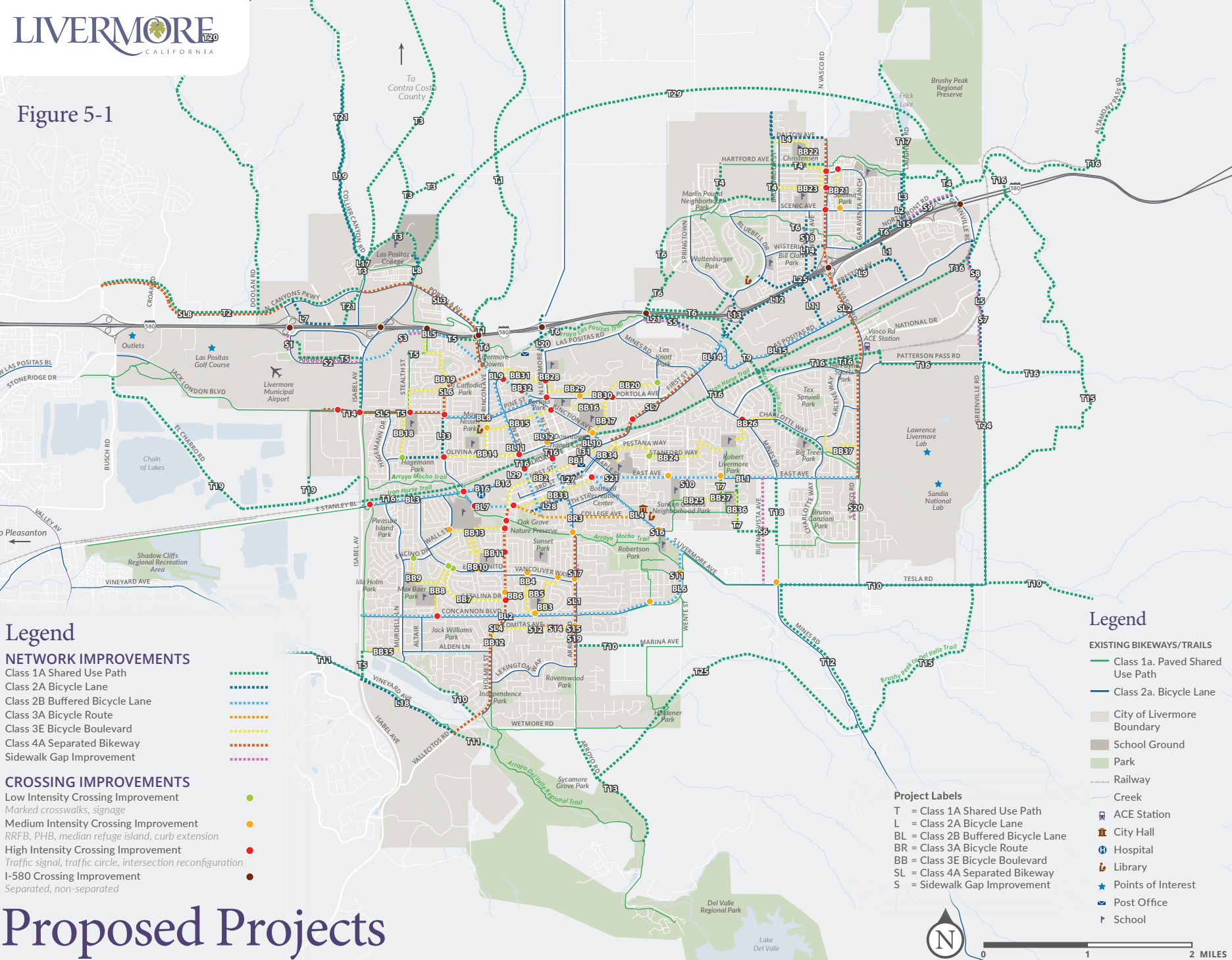
NETWORK IMPROVEMENTS

Proposed network improvements are intended to make walking and bicycling more comfortable, enjoyable, and safer when traveling along Livermore corridors. Network projects include a variety of bikeway facilities and sidewalk projects. Bikeways are categorized based on the four classes recognized by Caltrans, with subdivisions unique to Alameda County. These classes are described in detail in Chapter 3. A summary of existing and proposed network improvements is provided in Table 5-1, and mapped in Figure 5-1. Network project maps by facility type are included in Appendix I.

Table 5-1: Summary of Proposed Network Improvements (Mileage)

FACILITY TYPE	EXISTING	PROPOSED	TOTAL
Class 1A Shared Use Path	40	80.8	120.8
Class 2A Bicycle Lanes	66	16.3	82.3
Class 2B Buffered Bicycle Lanes	0	16.8	16.8
Class 3A Bicycle Route	0	1.2	1.2
Class 3E Bicycle Boulevard	0	19.2	19.2
Class 4A Separated Bikeway	0	13.4	13.4
Sidewalk	566	6.0	572.0
TOTAL MILES	672	153.7	825.7

Figure 5-1



Legend

NETWORK IMPROVEMENTS

- Class 1A Shared Use Path
- Class 2A Bicycle Lane
- Class 2B Buffered Bicycle Lane
- Class 3A Bicycle Route
- Class 3E Bicycle Boulevard
- Class 4A Separated Bikeway
- Sidewalk Gap Improvement

CROSSING IMPROVEMENTS

- Low Intensity Crossing Improvement
- Marked crosswalks, signage
- Medium Intensity Crossing Improvement
- RRFB, PHB, median refuge island, curb extension
- High Intensity Crossing Improvement
- Traffic signal, traffic circle, intersection reconfiguration
- 1-580 Crossing Improvement
- Separated, non-separated

Legend

- EXISTING BIKEWAYS/TRAILS
- Class 1a. Paved Shared Use Path
- Class 2a. Bicycle Lane
- City of Livermore Boundary
- School Ground
- Park
- Railway
- Creek
- ACE Station
- City Hall
- Hospital
- Library
- Points of Interest
- Post Office
- School

Project Labels

- T = Class 1A Shared Use Path
- L = Class 2A Bicycle Lane
- BL = Class 2B Buffered Bicycle Lane
- BR = Class 3A Bicycle Route
- BB = Class 3E Bicycle Boulevard
- SL = Class 4A Separated Bikeway
- S = Sidewalk Gap Improvement

Proposed Projects

CROSSING IMPROVEMENTS

Crossing improvements are an essential complement to the network improvements, as they connect routes at intersections. For Livermore, crossing improvements are classified as low, medium, or high intensity based on the complexity of facilities required. High intensity crossings are further divided into low and high cost categories. Typical improvements in each category are described in the following sections, and summarized in Table 5-2. Crossing improvements are mapped in Figure 5-2.

Table 5-2: Summary of Crossing Improvements

CROSSING INTENSITY	NUMBER
Low	6
Medium	25
High/Low	24
High/High	11
I-580 Crossings	10
TOTAL	76

Crossing projects were classified based on five factors:

- Existing conditions at the intersection to categorize each location as affecting bikes and/or pedestrians
- Number of travel lanes at the intersection
- Average daily traffic volumes (ADT)
- Bicycle Level of Traffic Stress (BLTS) scores, ranging from 1 (low stress) to 4 (high stress); see Chapter 4 and Appendix G

- Pedestrian Level of Service (PLOS) scores, ranging from 1 (low stress) to 6 (high stress); see Chapter 4 and Appendix H

LOW INTENSITY CROSSINGS

The intersections receiving low-intensity crossing improvements primarily provide access to schools and are local on small, local streets. These crossing improvements primarily affect pedestrians.

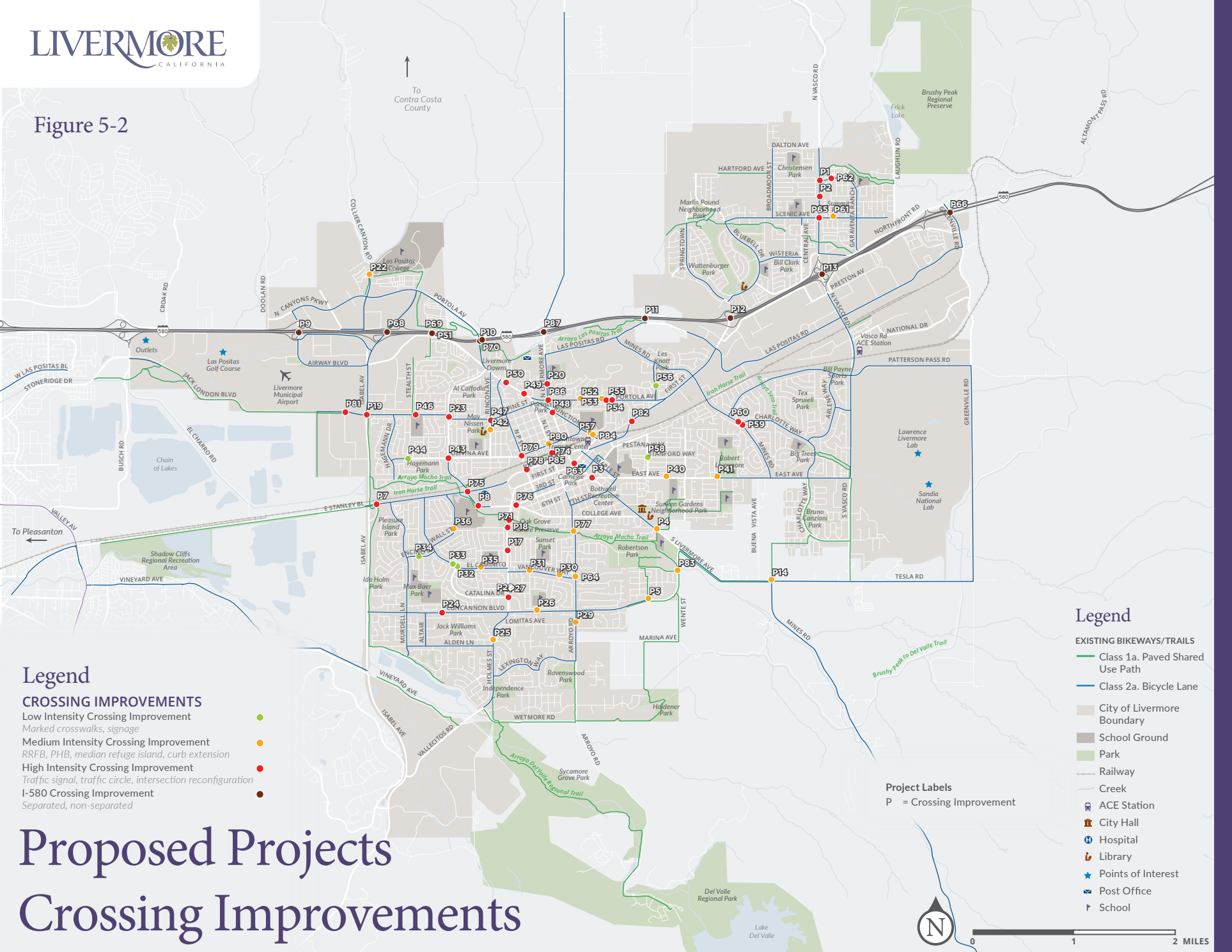
Existing conditions for bicyclists at these crossing locations generally already have low BLTS scores and do not require additional bicycle-specific treatments.

Treatments for pedestrians at these crossings could include installing marked crosswalks, signage warning vehicles of an upcoming pedestrian crossing location, curb ramps, and minor sidewalk repairs. These locations typically have low enough volumes that pedestrians can find a break in traffic to cross with the presence of a marked crosswalk.

MEDIUM INTENSITY CROSSINGS

Intersections that have medium traffic volumes, generally defined as less than 12,000 ADT, and two to four travel lanes need a more intensive treatment in order to become a low-stress crossing for bicyclists and pedestrians because the higher traffic volumes make it more difficult to find a break in traffic to cross. With higher traffic volumes, these intersections are typically on larger streets, such as Holmes Street and Mines Road.

Figure 5-2



Legend

CROSSING IMPROVEMENTS

Low Intensity Crossing Improvement
 Marked crosswalks, signage

Medium Intensity Crossing Improvement
 RRFB, PHB, median refuge island, curb extension

High Intensity Crossing Improvement
 Traffic signal, traffic circle, intersection reconfiguration

I-580 Crossing Improvement
 Separated, non-separated

Legend

EXISTING BIKEWAYS/TRAILS

- Class 1a. Paved Shared Use Path
- Class 2a. Bicycle Lane

City of Livermore Boundary

School Ground

Park

Railway

Creek

ACE Station

City Hall

Hospital

Library

Points of Interest

Post Office

School

Project Labels

P = Crossing Improvement

Proposed Projects

Crossing Improvements

Medium intensity crossings may also include more moderate improvements such as curb extensions, refuge islands, and pedestrian beacons or rectangular rapid-flashing beacons (RRFBs). Where traffic signals already exist, bicycle-specific intersection treatments may include bike boxes or two-stage turn boxes. Where traffic signals do not exist, bicycle-specific intersection treatments may include signage, improved intersection crossing markings, and/or two-stage turn boxes.

HIGH INTENSITY CROSSINGS

Intersections in the high-intensity crossing treatment group affect either bicyclists, primarily at signalized locations, or both bicyclists and pedestrians, primarily at unsignalized locations. The intersections in this group have high traffic volumes (12,000+) and scored LTS 3 or 4 for bicyclists, indicating high intensity treatments are needed to increase safety and comfort.

High intensity crossings include more complex improvements, including new traffic signal configurations, relocating curbs, adding pedestrian actuation buttons, intersection crossing markings, stop control, signalization, intersection reconfiguration, median refuge islands, two-stage turn boxes, bike boxes, or bicycle signal heads. High intensity crossings are further divided into high and low cost efforts, indicating whether traffic signals require major pole relocation and signal modification work (high intensity, high cost), or whether only minor adjustments are required (high intensity, low cost).

I-580 CROSSINGS

In addition to crossings of local streets, ten crossings of I-580 were identified. Because these grade-separated crossings will require significant investment and coordination between the

City and Caltrans, these projects were not included in the prioritization process in this Plan. Rather, this Plan recommends studying interchanges for possible short-term improvements. Additionally, the projects will be moved forward with Caltrans as funding and opportunities become available. In the interim, the City may apply for funding to study the existing crossings and develop design concepts to improve walking and bicycling access across the highway.

PROJECT GROUPS

Community input received throughout development of this Plan highlighted five focus areas for infrastructure: school access, downtown access, crosstown routes, trail connections, and I-580 crossings. Sidewalk gap closures, while they support many of these focus areas, have been presented as a separate group due to the process for implementation.

Therefore, the network and crossing projects recommended in this plan are organized into six project groups to reflect local priorities.

School Access projects improve safety and comfort for students walking and bicycling to school, considering safe access points for each school to maintain a separation between students walking and bicycling and vehicles picking up and dropping off.

Downtown Access projects create a more welcoming bicycling and walking environment to and throughout the Downtown area.

Crosstown Routes seek to provide meaningful access to destinations by creating longer-distance corridors that increase

safety and comfort for active transportation along major arterial streets with multiple lanes of high speed vehicle traffic.

Trail Connections provide recreation, access to jobs, housing, regional parks, transit, shopping, and other major destinations, as well as integrate Livermore’s off-street network with on-street bikeways and pedestrian facilities.

Sidewalk Gap Improvements fill in the pedestrian network to provide uninterrupted connectivity to destinations.

I-580 Crossing Improvements provide improved access across I-580, including connections to Las Positas College, Northwest and Northeast Livermore neighborhoods, and downtown. As noted previously, these improvements will be advanced through separate efforts with Caltrans and are not included in the implementation strategy for this Plan.

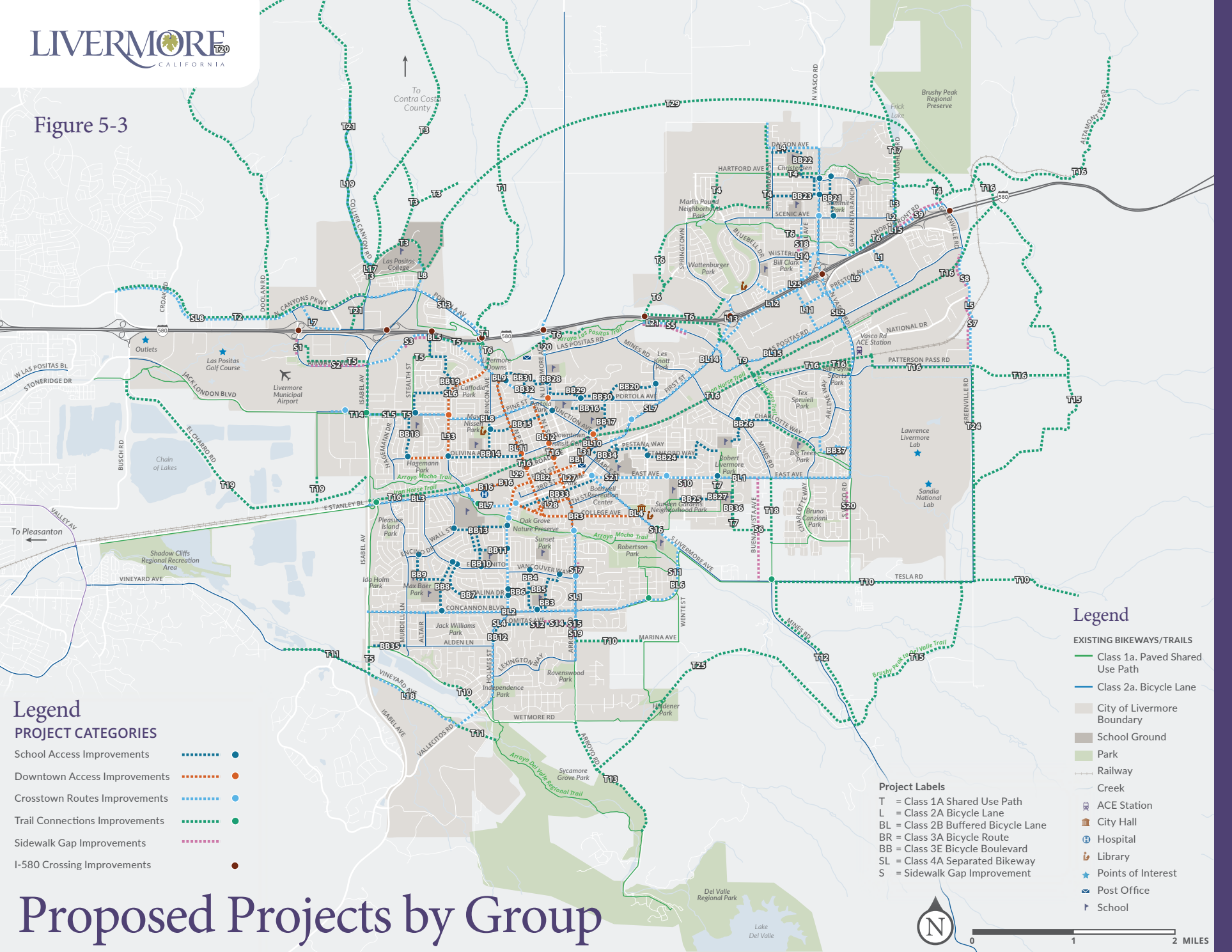
Projects by group are summarized in Table 5-3 and mapped in Figure 5-3.

Table 5-3: Proposed Projects by Group

PROJECT GROUP AND FACILITY	SEGMENTS	MILES
School Access	73	18.2
Class 3E Bicycle Boulevard	34	18.2
Low Intensity Crossing	6	--
Medium Intensity Crossing	15	--
High/Low Intensity Crossing	10	--
High/High Intensity Crossing	8	--
Downtown Access	22	7.8
Class 2A Bicycle Lane	6	2.0

PROJECT GROUP AND FACILITY	SEGMENTS	MILES
Class 2B Buffered Bicycle Lane	3	2.9
Class 3A Bicycle Route	1	1.2
Class 3E Bicycle Boulevard	2	1.0
Class 4A Separated Bikeway	1	0.7
Medium Intensity Crossing	2	--
High/Low Intensity Crossing	6	--
High/High Intensity Crossing	1	--
Crosstown Routes	54	40.9
Class 2A Bicycle Lane	22	14.7
Class 2B Buffered Bicycle Lane	12	13.4
Class 4A Separated Bicycle Lane	9	12.7
Medium Intensity Crossing	4	--
High/Low Intensity Crossing	6	--
High/High Intensity Crossing	1	--
Trail Connections	75	80.8
Class 1A Paved Shared Use Path	68	80.8
Medium Intensity Crossing	4	--
High/Low Intensity Crossing	2	--
High/High Intensity Crossing	1	--
Sidewalk Gap Closure	19	6.0
Sidewalk	19	6.0
I-580 Crossing Improvements	10	--
I-580 Crossing Improvements	10	--

Figure 5-3



Legend
PROJECT CATEGORIES

- School Access Improvements ⋯ ●
- Downtown Access Improvements ⋯ ●
- Crosstown Routes Improvements ⋯ ●
- Trail Connections Improvements ⋯ ●
- Sidewalk Gap Improvements ⋯ ●
- I-580 Crossing Improvements ●

- Legend**
- EXISTING BIKEWAYS/TRAILS
 - Class 1a. Paved Shared Use Path
 - Class 2a. Bicycle Lane
 - City of Livermore Boundary
 - School Ground
 - Park
 - Railway
 - Creek
 - ACE Station
 - City Hall
 - Ⓜ Hospital
 - 📖 Library
 - ★ Points of Interest
 - ✉ Post Office
 - 🏫 School

- Project Labels**
- T = Class 1A Shared Use Path
 - L = Class 2A Bicycle Lane
 - BL = Class 2B Buffered Bicycle Lane
 - BR = Class 3A Bicycle Route
 - BB = Class 3E Bicycle Boulevard
 - SL = Class 4A Separated Bikeway
 - S = Sidewalk Gap Improvement

Proposed Projects by Group

CITYWIDE PROJECTS

In addition to specific infrastructure projects and related programmatic efforts, key amenities are needed citywide to complete the active transportation network. These amenities should be installed as a matter of policy in conjunction with any City project as opportunities arise, or in conjunction with development. The citywide amenities recommended in this Plan include:

- Pedestrian-scale lighting
- Development review
- Bicycle parking
- New bicycle technologies
- Streetscape amenities
- Wayfinding
- Bike share
- Traffic control zones
- Waste management
- Green bike facilities

The following sections describe these citywide projects in further detail.

PEDESTRIAN-SCALE LIGHTING

Pedestrian-scale lighting provides illumination of walking areas by installing frequent lampposts at a low height, typically around 12-15 feet tall. Pedestrian-scale lighting increases pedestrian visibility to drivers, increases pedestrian comfort and perceived sense of safety, and helps to create an inviting and vibrant streetscape for those walking. Some major arterials and trails in Livermore do not currently have pedestrian-scale lighting, deterring walking in the early morning hours and at night.

RECOMMENDATION

This Plan recommends the City develop a method to evaluate and install pedestrian-scale lighting to enhance the pedestrian environment and improve visibility in and around activity generators in key locations such as schools, downtown, transit stops, and community facilities.

DEVELOPMENT REVIEW

As new development is proposed in Livermore, the City reviews projects for compliance with the Municipal Code, Development Code, Design Standards and Guidelines, and existing plans.

RECOMMENDATION

This Plan recommends that as the City reviews new development proposals for compliance with this Plan, it seeks opportunities to implement project and program recommendations in partnership with developers.

BICYCLE PARKING

Bicycle parking needs vary by land use and demand, and whether bikes will be stored for short trips or long-term. Depending on the need, bicycle parking can take many forms, from a simple bicycle rack to storage in a locker or secure area. Livermore currently has bicycle parking at key locations in the city, including some downtown businesses and public buildings.

Bicycle parking can be categorized into short-term and long-term parking. Bicycle racks are the preferred device for short-term bike parking. These racks serve people who leave their bicycles for relatively short periods of time, typically for shopping, errands, or recreational trips. Bicycle racks provide a high level of convenience and moderate level of security.

Long-term bike parking includes bike lockers and secure parking areas (SPAs) and serve people who leave their bicycles for longer periods of time. Long-term bike parking is typically needed at destinations such as transit stations, multifamily residential buildings, and commercial buildings. These facilities provide a higher level of security than racks.

RECOMMENDATIONS

This Plan includes recommendations for installing bicycle parking in locations within the public right-of-way, identified through public input, and locations likely to have high demand. Bike parking should be provided at the following locations on public property or in the public right-of-way, at minimum:

- All city-related buildings, such as city hall, community centers, and libraries
- Downtown, in front of local businesses
- Transit stations, including ACE Stations and bus stops

This Plan also recommends evaluating existing bicycle parking standards in light of best practices recommended by the Association for Pedestrian and Bicycle Professionals (APBP), including bicycle parking ratios tied to land uses rather than automobile parking rates, and differentiation between the provision of short-term and long-term bicycle parking. Updates to the City's standards could include providing additional details regarding requirements for land uses such as transit centers, retail, and office space, among others. Additionally, this Plan recommends removing bicycle parking maximums from the Livermore Development Code.

NEW TECHNOLOGIES

New legislation in California has provided new guidance for the operation of electric bicycles, while still providing flexibility for local jurisdictions to regulate their operations as needed. As electric bicycle use grows, it will be important to craft regulations meeting the needs of Livermore's residents. As electric bicycles become more prevalent, charging locations and parking that accommodates e-bikes should be considered.

In addition, electrified modes of transportation including electric scooters, Segways, and others are becoming increasingly popular. While these electric vehicles provide improved mobility for some people, care should be taken that they do not create challenges or decrease comfort for people walking or bicycling due to their comparatively higher operating speeds.

RECOMMENDATION

This Plan recommends the City of Livermore work with the Livermore Police Department and Alameda County to adopt e-bike regulations for their use in Livermore, and consider regulations for additional types of electric vehicles.

STREETSCAPE AMENITIES

Sidewalk furnishings like benches, shade structures, restrooms, water fountains and pedestrian signals can contribute to a safer, cleaner, and more pedestrian-oriented public realm. These elements encourage the activation of Livermore’s sidewalk and trail system.

Litter and debris removal is a concern on all walking and bicycling facilities, including the trail network and on paths through private developments. Providing waste receptacles for trash and recycling can reduce litter, support the environment, and make walking and bicycling more convenient and attractive. Receptacles should be placed near the travelway without impeding the path of a person bicycling or walking, and without requiring a bicyclist to dismount or a person to detour significantly from their path.

RECOMMENDATION

This Plan recommends streetscape amenities in the downtown core, along major corridors, and near transit stops to encourage multimodal transportation within Livermore.

WAYFINDING

Wayfinding signs direct bicyclists or pedestrians along the existing network and to key community destinations. Signs typically include distance and direction (using an arrow) to key destinations. In Livermore, there is no consistent wayfinding signage program implemented throughout the City.

The California Manual on Uniform Traffic Control Devices (CA MUTCD) includes standard bicycle wayfinding signage, but it is the also the Class 3A Bicycle Route sign, which may cause confusion. Cities have modified the standard sign to change

bike route to bikeway, and others have developed and installed non-standard enhanced wayfinding signs. The non-standard option provides flexibility for wayfinding to reflect community character.

RECOMMENDATION

This Plan recommends the City of Livermore develops wayfinding signs that reflect the character of the community. These can be used by pedestrians walking downtown and while accessing trails, and by bicyclists along the bicycle network throughout the city and to access trails. Wayfinding signage should be provided directing bicyclists and pedestrians to trailheads, downtown, community centers, libraries, and other key community destinations.

BIKE SHARE

Bike share programs are becoming increasingly popular in North America, and allow people to rent bicycles for short periods of time. Several different models of bike share programs exist, including programs with kiosks at fixed locations; programs that allow bicycles to be locked at any public bicycle rack; programs that allow bicycles to be reserved, located, or paid for using mobile apps; and programs that offer electric-assist bicycles.

RECOMMENDATION

This Plan recommends the City research bike share program options and develop a proposal for a bike share system in Livermore.

TRAFFIC CONTROL ZONES

When bicycling or walking facilities are affected by construction activities, people walking or bicycling must often travel a significant distance to detour around the interrupted segment. More often than not, these detours are not marked or signed the way motor vehicle detours are identified. This lack of consideration discourages walking and bicycling, and can impact safety when a reasonable alternative path is not clearly provided.

RECOMMENDATION

This Plan recommends the City review its standards for consideration of bicyclists and pedestrians during construction or maintenance activities to ensure they require adequate temporary traffic control. These standards should require a reasonable detour for walking and/or bicycling be maintained throughout the duration of the project, including for long-term capital projects, short-term maintenance activities, and emergency repairs. In addition, enforcement schedules and practices should be reviewed to encourage compliance with the City's policy.

WASTE MANAGEMENT

On-street collection of trash and recycling totes can create challenges for people bicycling and walking when totes are placed in the bicycle lane or on the sidewalk. The City currently requires residential and commercial customers to place totes in the street with their wheels against the curb. In areas with on-street parking, however, totes are often incorrectly placed outside of parked cars where they may obstruct the bicycle lane.

RECOMMENDATION

This Plan recommends the City require future development to provide convenient locations for trash and recycling tote collection that does not conflict with parking or with active transportation facilities.

In existing neighborhoods where on-street parking constrains available space for curbside tote placement, the City should consider implementing parking restrictions to allow for waste collection without blocking bicycle lanes. These parking restrictions may be permanent (red painted curbs where parking is never allowed) or time-limited (parking is prohibited only on trash collection days).

Citywide, the City should consider adding reflective markings to totes to increase their visibility at night and reduce the risk of a bicyclist colliding with a misplaced tote, or stenciling "Do not place in bicycle lane" on totes to remind residents of proper placement.

Educational campaigns or other programmatic efforts, including incorporating messaging into SRTS efforts, should be paired with other improvements to encourage and enforce good behavior.

GREEN BICYCLE FACILITIES

Green pavement within bike facilities increases visibility of the facility, identifies potential conflict zones, and reinforces space for bicyclists. The colored pavement can be used along a corridor, such as a bike lane, or as a spot improvement, such as a bike box at an intersection. The City of Livermore has not installed any colored pavement for bike facilities.

The National Association of City Transportation Officials' Urban Bikeway Design Guide provides design guidance for colored bike facilities, including required, recommended, and optional treatment specifications.

RECOMMENDATION

This Plan recommends the City of Livermore develop a method to evaluate and install green pavement within bike facilities in a consistent manner at key locations to address potential conflict areas and promote common understanding among all road users. The practice of installing green pavement in Livermore may be to install it under the following conditions:

- Portions of Class 2A Bicycle Lanes on arterial roads without additional enhancement, such as a buffer from vehicle traffic
- Driveway conflict zones in high-volume, auto-oriented locations, such as major shopping centers
- Intersections with conflicts on a designated school route

Green pavement design specifications can be found in the companion Design Guidelines.

PROGRAMS

Bicycle and pedestrian education, encouragement, enforcement, and evaluation programs are an integral part of supporting active transportation and increasing users. The physical network should be supplemented by programs and policies focused on increasing walking and bicycling in the City while improving safety and addressing maintenance needs of the network.

Programs are organized into four E's: education, encouragement, enforcement, and evaluation.

Education programs are designed to increase safety by raising awareness and teaching pedestrian and bicycle skills to youth and adults.

Encouragement programs promote walking and bicycling through a variety of mechanisms, such as user friendly maps, incentives for walking or bicycling, and social gatherings.

Enforcement programs are designed to increase safety by increasing compliance with traffic laws by pedestrians, bicyclists, and motorists.

Evaluation programs help the City track progress toward achieving the goals outlined in this Plan and inform any necessary adjustments.

This Plan recommends the City continues its existing programs listed in Chapter 3 and refine or expand those programs as resources become available. The City should also pursue strong partnerships with stakeholder organizations and relevant agencies to effectively implement programs, and identify opportunities for community organizations to take the lead on program implementation as appropriate.

Along with the continued implementation of existing programming, this Plan identifies the following programs, based on national best practices. Implementation of these programs will depend on available funding, resources, and community support. New and continuing programs are listed in Table 5-4, and explained in detail in Appendix K.

New programs are listed as low, medium, or high effort based on the amount of staff and volunteer time typically required to implement the program.

Table 5-4: Existing and Proposed Programs

PROGRAM	STATUS	LEVEL OF RESOURCES	AUDIENCE
Education			
Youth Bicycle Safety Education	Existing		Youth
Adult Bicycle Safety Education	Existing		Adults
Pedestrian Safety Education	Existing		Youth
Website	New	Low	All
Share-the-Path Campaign	New	Low	All
New Facility & Low Stress Route Rides	New	Low	All
Bicycling & Walking Maps & Guides	Existing/ New	Low	All
Encouragement			
Safe Routes to School	Existing		Youth
Bike to Work Day	Existing		Adults
City Bicycle & Pedestrian Coordination	Existing		All
Employer-Based Campaigns	New	Low	Adults
Bicycle Friendly Business Program	New	Low	All
Bicycle Friendly Community Award	New	Low	All

PROGRAM	STATUS	LEVEL OF RESOURCES	AUDIENCE
Walking & Bicycling Ambassadors	New	Medium	All
Open Streets Events	New	High	All
Bicycle Tourism	New	Low	All
Group Social Rides	New	Low	All
Enforcement			
Traffic Citation Diversion Program	Existing		All
Targeted Enforcement & Speed Trailer	Existing		All
Bicycle Patrol	Existing		All
Crossing Guard Program	Existing		Youth
Traffic Calming	Existing		All
Evaluation			
Community Survey	New	Medium	All
Expanded Bicycle & Pedestrian Counts	New	Low	All
Expanded Collision Data Review	New	Low	All
Annual Report Card	New	Medium	All
Pre/Post Studies of New Infrastructure	New	Medium	All

Resource levels for existing programs are not provided because they are already included in City budgeting efforts

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06 Implementation Strategy



CHAPTER 6 IMPLEMENTATION STRATEGY

This Plan includes projects and programs intended to create an active, vibrant, safer, and connected Livermore community. The network and crossing improvements seek to increase comfort and safety and improve bicycle and pedestrian connections to transit facilities, major employers, commercial centers, schools, regional parks, and other public facilities.

The Implementation Strategy described in this chapter reflects a systematic approach to determine each project's community benefit and connection to key destinations in a manner that is feasible, fundable, and sustainable. Many linear projects are broken into smaller segments based on the realities of implementation, allowing each segment to be evaluated independently.

The strategy used a set of geographic and community based criteria to rank bicycle, pedestrian, and trail improvements, considered limited City resources, and evaluated tradeoffs. The result is a list of projects that the City will work to implement in the near-term, and a framework for reevaluating and recalibrating projects in the future to address changes.

This chapter outlines the strategy used to evaluate the proposed network, including:

- Planning level cost estimates for implementation and maintenance
- Funding opportunities and assumptions
- Benefit and feasibility evaluation
- First phase of projects identified for implementation
- Guiding principles for implementation of the entire project list

This logical approach starts with an understanding of the cost of implementing and maintaining each project, paired with a realistic snapshot of the funding that is likely to be available. This cost and feasibility information was then reviewed in conjunction with the anticipated benefits of each project, which informed the list of projects to be implemented in a first phase. This first phase project list includes some interim treatments as a first phase for more complex improvements, such as buffered bicycle lanes that will later be converted to separated bikeways, as well as pilot projects or corridor studies where more information is needed before final design can be completed.

Finally, a set of guiding principles is based on this strategy and all the community input and analyses completed in this Plan. These principles will assist in prioritizing the remaining projects over time as the City implements some projects, or as opportunities for implementation arise.

PLANNING LEVEL COST ESTIMATES

CONSTRUCTION COST ASSUMPTIONS

Table 6-1 presents the planning level unit cost assumptions used to develop project construction cost estimates. For linear projects, the unit cost method uses a single functional unit (per mile) that serves as a multiplier. Each unit cost is multiplied for each improvement to calculate a project cost estimate.

Cost estimates were developed based on recent local project costs. The cost estimates include assumed costs for mobilization, traffic control, earthwork, utility coordination, and grading. In addition, the cost estimates include 30 percent soft costs including engineering design, administration, and construction management, as well as a 15 percent contingency.

At the planning level, cost assumptions do not consider project-specific or location specific factors that may affect actual costs, including acquisition of right-of-way. For some projects, actual costs may differ significantly from the planning level estimates.

Cost estimates for projects in this plan have been rounded to the nearest \$100, are in 2017 dollars, and do not include cost escalation.

For a detailed breakdown of unit cost assumptions, see Appendix K.

Table 6-1: Unit Cost Assumptions

FACILITY	UNIT	UNIT COST
Class 1A Shared Use Path	MI	\$1,579,500
Class 1A Shared Use Path (Unpaved)	MI	\$1,133,400
Class 2A Bicycle Lane	MI	\$75,100
Class 2B Buffered Bicycle Lane	MI	\$137,800
Class 3A Bicycle Route	MI	\$54,100
Class 3E Bicycle Boulevard	MI	\$539,700
Class 4A Separated Bicycle Lane	MI	\$1,751,600
Sidewalk (one side of street)	MI	\$794,100
Sidewalk (both sides of street)	MI	\$1,588,200
Pilot Project	EA	\$75,000
Corridor Study	MI	\$175,500
Low-Intensity Intersection Crossing	EA	\$35,600
Medium-Intensity Intersection Crossing	EA	\$172,300
High-Intensity Intersection Crossing (Low)	EA	\$312,300
High-Intensity Intersection Crossing (High)	EA	\$447,900

Unit costs include assumed costs for mobilization, traffic control, earthwork, utility coordination, and grading; 30 percent soft cost for engineering design, administration, and construction management; and 15 percent contingency. Costs are 2017 dollars rounded to the nearest \$100 and do not include cost escalation.

PROJECT COST ESTIMATES

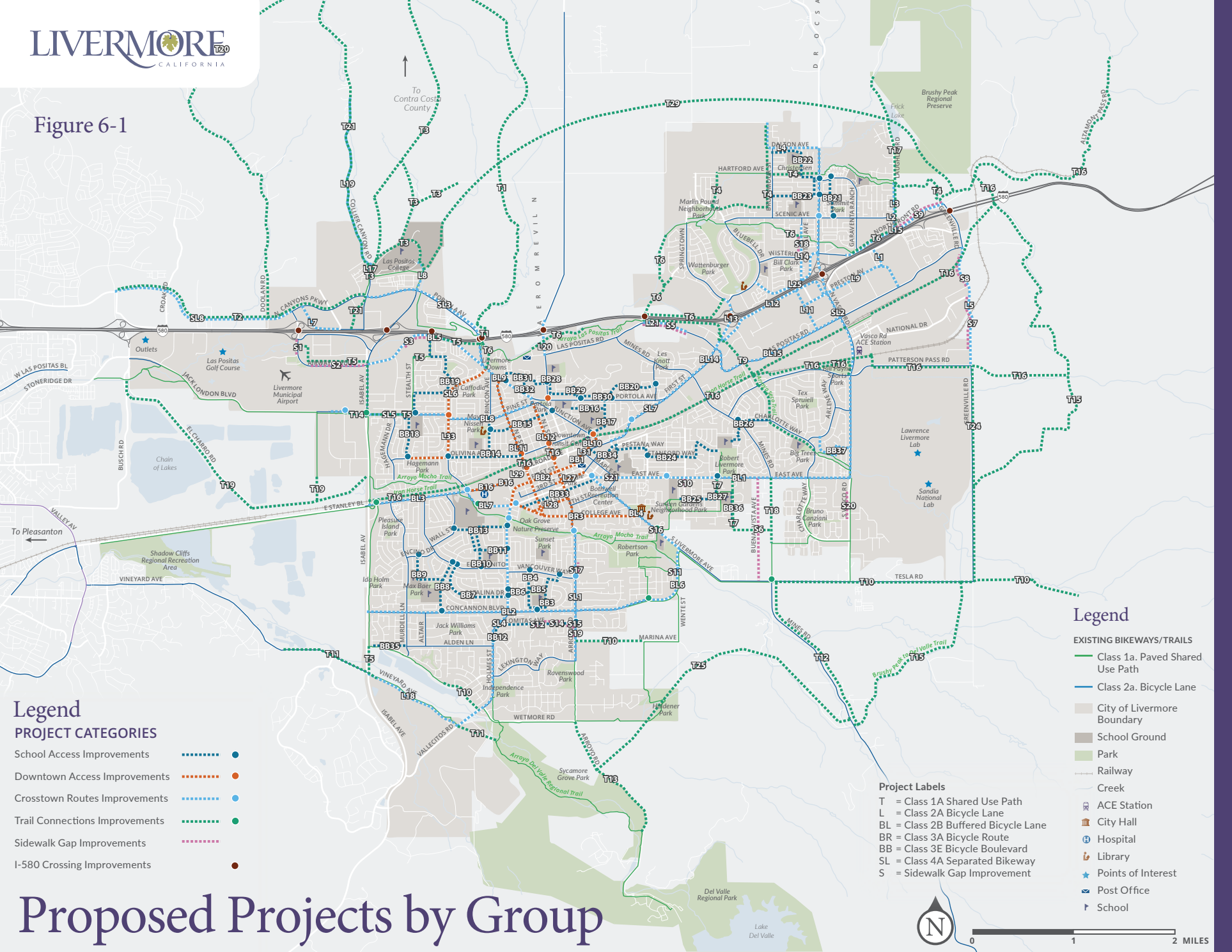
Table 6-2 presents the total estimated costs by project group. The total cost estimate to realize the envisioned network for all projects presented in this Plan is approximately \$183 million. A significant amount of project costs are shared use paths, bicycle boulevards, and separated bikeways. Projects are mapped by project group in Figure 6-1. For a complete list of all projects, see Appendix I.

Table 6-2: Estimated Costs by Project Group

PROJECT	NO.	MI	EST. COST
School Access Network	73	18.2	\$19,330,100
Class 3E Bicycle Boulevards	34	18.2	\$9,827,000
Low Intensity Crossings	6		\$213,000
Medium Intensity Crossings	15		\$2,584,500
High Intensity Low Cost Crossings	10		\$3,123,000
High Intensity High Cost Crossings	8		\$3,582,400
Downtown Access Network	22	7.8	\$4,791,300
Class 2A Bicycle Lanes	6	2.0	\$151,600
Class 2B Buffered Bicycle Lanes	3	2.9	\$404,000
Class 3A Bicycle Routes	1	1.2	\$66,400
Class 3E Bicycle Boulevards	2	1.0	\$518,100
Class 4A Separated Bikeways	1	0.7	\$985,000
Pilot Projects	1		\$75,000
Corridor Studies	1	1.4	\$237,400
Medium Intensity Crossings	2		\$344,600

PROJECT	NO.	MI	EST. COST
High Intensity Low Cost Crossings	6		\$1,873,800
High Intensity High Cost Crossings	1		\$447,800
Crosstown Routes Network	54	40.9	\$25,058,800
Class 2A Bicycle Lanes	22	14.7	\$1,105,700
Class 2B Buffered Bicycle Lanes	12	13.4	\$1,852,300
Class 4A Separated Bikeways	9	12.7	\$19,090,000
Pilot Projects	1		\$75,000
Corridor Studies	3	6.8	\$1,197,200
Medium Intensity Crossings	4		\$689,200
High Intensity Low Cost Crossings	6		\$1,873,800
High Intensity High Cost Crossings	1		\$447,800
Trail Connections	75	80.8	\$129,450,600
Class 1A Shared Use Paths	68	80.8	\$127,689,000
Medium Intensity Crossings	4		\$689,200
High Intensity Low Cost Crossings	2		\$624,600
High Intensity High Cost Crossings	1		\$447,800
Sidewalk Gap Closure	19	5.0	\$4,812,300
Sidewalk	19	5.0	\$4,812,300
TOTAL	253	152.8	\$183,443,100

Figure 6-1



Legend
PROJECT CATEGORIES

- School Access Improvements ●
- Downtown Access Improvements ●
- Crosstown Routes Improvements ●
- Trail Connections Improvements ●
- Sidewalk Gap Improvements ●
- I-580 Crossing Improvements ●

- Legend**
- EXISTING BIKWAYS/TRAILS
 - Class 1a. Paved Shared Use Path
 - Class 2a. Bicycle Lane
 - City of Livermore Boundary
 - School Ground
 - Park
 - Railway
 - Creek
 - ACE Station
 - City Hall
 - Hospital
 - Library
 - Points of Interest
 - Post Office
 - School

- Project Labels**
- T = Class 1A Shared Use Path
 - L = Class 2A Bicycle Lane
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 - BB = Class 3E Bicycle Boulevard
 - SL = Class 4A Separated Bikeway
 - S = Sidewalk Gap Improvement

Proposed Projects by Group

MAINTENANCE COST ASSUMPTIONS

Maintaining the walking and bicycling network protects the public's investment, ensures adequate safety levels, and supports a high quality of life for the Livermore community. Maintenance generally refers to the operations, repair, and eventual replacement of a facility. Due to limited resources and high level of service standards, maintenance costs are a concern for most cities, including Livermore. Most grant programs offer funds to construct projects but not to maintain them.

Maintenance activities are typically funded through the City's General Fund. The cost of maintaining the City's assets, including bicycle and pedestrian facilities, is higher than the current budget allocated. Livermore must continually evaluate tradeoffs and make decisions whether to spend limited funds on new construction and/or maintain existing assets.

The Plan assumes that on-street bikeways would be maintained as part of the normal roadway maintenance program, while separated facilities will require additional maintenance considerations. Emphasis should be placed on keeping bicycle and pedestrian facilities clear of debris and obstruction, clearly delineated, and ensuring adequate visibility. Crossing, sidewalk, and trail maintenance should be conducted according to current City policy.

Table 6-3 lists typical annual maintenance costs for bikeways based on City Public Work's Department staff evaluations and actual operations experience. All costs are rounded to the nearest \$100, in 2017 dollars, and do not include cost escalation. For a breakdown of maintenance cost assumptions, see Appendix K.

Table 6-3: Maintenance Cost Assumptions

FACILITY	UNIT	ANNUAL COST
Class 1A Shared Use Path	MI	\$26,400
Class 2A Bicycle Lane	MI	\$2,700
Class 2B Buffered Bicycle Lane	MI	\$3,600
Class 3A Bicycle Route	MI	\$1,300
Class 3E Bicycle Boulevard	MI	\$2,900
Class 4A Separated Bicycle Lane	MI	\$20,800
Sidewalk (one side)	MI	\$8,100
Low Intensity Crossing	EA	\$500
Medium Intensity Crossing	EA	\$3,900
High Intensity Low Cost Crossing	EA	\$7,600
High Intensity High Cost Crossing	EA	\$10,300

All costs are rounded to the nearest \$100 in 2017 dollars, and do not include cost escalation

FUNDING OPPORTUNITIES

A variety of bicycle and pedestrian funding sources exist. As stated previously, some bicycle and pedestrian funding sources are eligible for maintenance of existing facilities. Others are limited to new construction. The Plan assumes that any funds eligible for maintenance, the City will use for maintenance.

Local and Regional funding sources that can be used for construction or maintenance of bicycle and pedestrian improvements, along with competitive grant programs, are described below.

LOCAL & REGIONAL FUNDING SOURCES

MEASURE B/BB

Measure B and Measure BB are Alameda County one-cent sales tax measures for transportation projects. The total revenue is anticipated to be nearly \$8 billion over 30 years, from 2014 to 2045. Livermore receives \$420,000 annually for bicycle and pedestrian projects, and an additional \$1.74 million annually for local streets and roads projects. These funds will be used by the City for maintenance.

TRANSPORTATION FUNDS FOR CLEAN AIR

The Transportation Funds for Clean Air program, established by AB 434, are generated by a \$4 surcharge on vehicle registration in the nine Bay Area counties. The funds may be used on projects that reduce vehicle emissions, including bicycle and pedestrian projects, and can also be used as a local match for state or federal grant programs.

TRANSPORTATION DEVELOPMENT ACT

Transportation Development Act Article III funds are generated by a sales tax on gasoline, and are returned to the source county to be used on transportation projects—including a two percent set-aside for bicycle and pedestrian projects. Alameda County allocates these funds to cities based on population. Eligible uses for the funds include projects in an adopted plan approved by a local Bicycle Advisory Committee, such as this Plan, or as a local match for state or federal grant programs.

PARK FACILITY FEES

All new residential and commercial development in Livermore must pay a Park Facility Fee to the City. This fee is used for the design and construction of parks and trails, including purchasing land and constructing shared use paths.

COMPETITIVE GRANT PROGRAMS

CALIFORNIA ACTIVE TRANSPORTATION PROGRAM

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

TRANSPORTATION PLANNING GRANTS

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

HIGHWAY SAFETY IMPROVEMENT PROGRAM

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

BENEFIT AND FEASIBILITY EVALUATION

All network and crossing improvements were reviewed based on a two-faceted benefit evaluation:

- **Benefit Criteria:** Projects were evaluated based on a set of ten benefit criteria.
- **Project Feasibility and Readiness:** Projects were evaluated based on feasibility and complexity of implementation.

First, each project was evaluated based on the following 10 benefit criteria:

- Whether the improvement location is within one-quarter mile of five types of activity generator:
 - Transit
 - School
 - Employment
 - Retail
 - Public Facilities
- Safety data
- Whether the improvement closed a gap
- Whether the project was identified by the community
- Whether the project increases comfort
- Whether the project is consistent with existing planning documents.

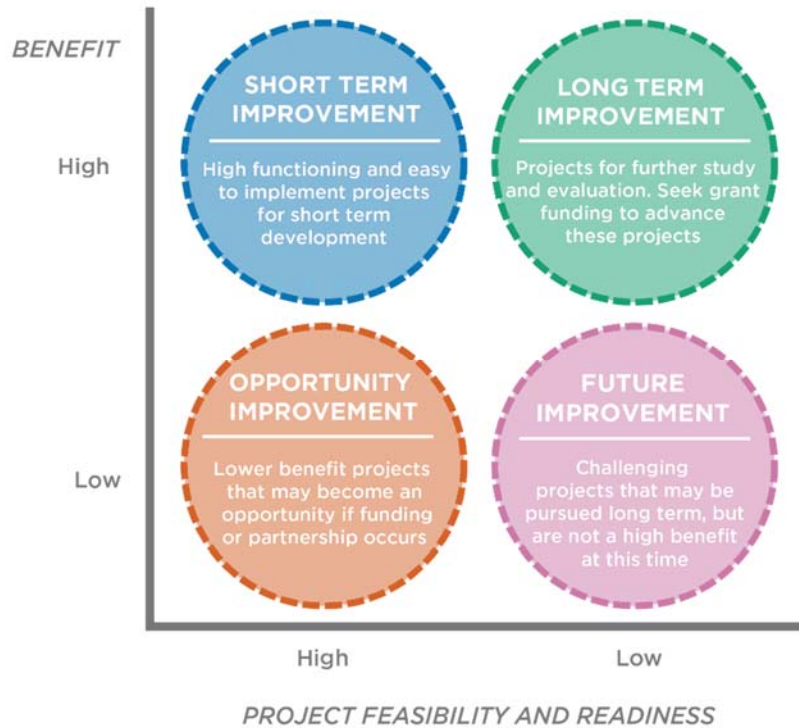
The evaluation process weighted the criteria evenly and designated projects as higher or lower benefit.

Following the benefit evaluation, projects were evaluated for implementation readiness based on feasibility and construction complexity. Feasibility was evaluated based on right-of-way ownership, the facility type, and the significance of any required roadway modifications. For example, significant modifications to the roadway such as removal of parking or traffic lanes received a low readiness. Similarly, trail segments that require right-of-way acquisition received a low readiness. Less significant alterations, such as reduction of travel lane widths within acceptable standards received a high feasibility rating.

The feasibility evaluation considered existing conditions, travel speeds, and average daily trips. Because all intersections (except for the I-580 Crossings) are located within the City right-of-way, the Implementation Strategy primarily ranked them by their intensity. Based on two factors, the Implementation Strategy assigns a high or a low designation for improvement readiness.

Together, the results from the benefit and readiness evaluations created groups of projects categorized by their implementation potential, illustrated in Figure 6-2, and explained in detail in Appendix K.

Figure 6-2: Implementation Strategy

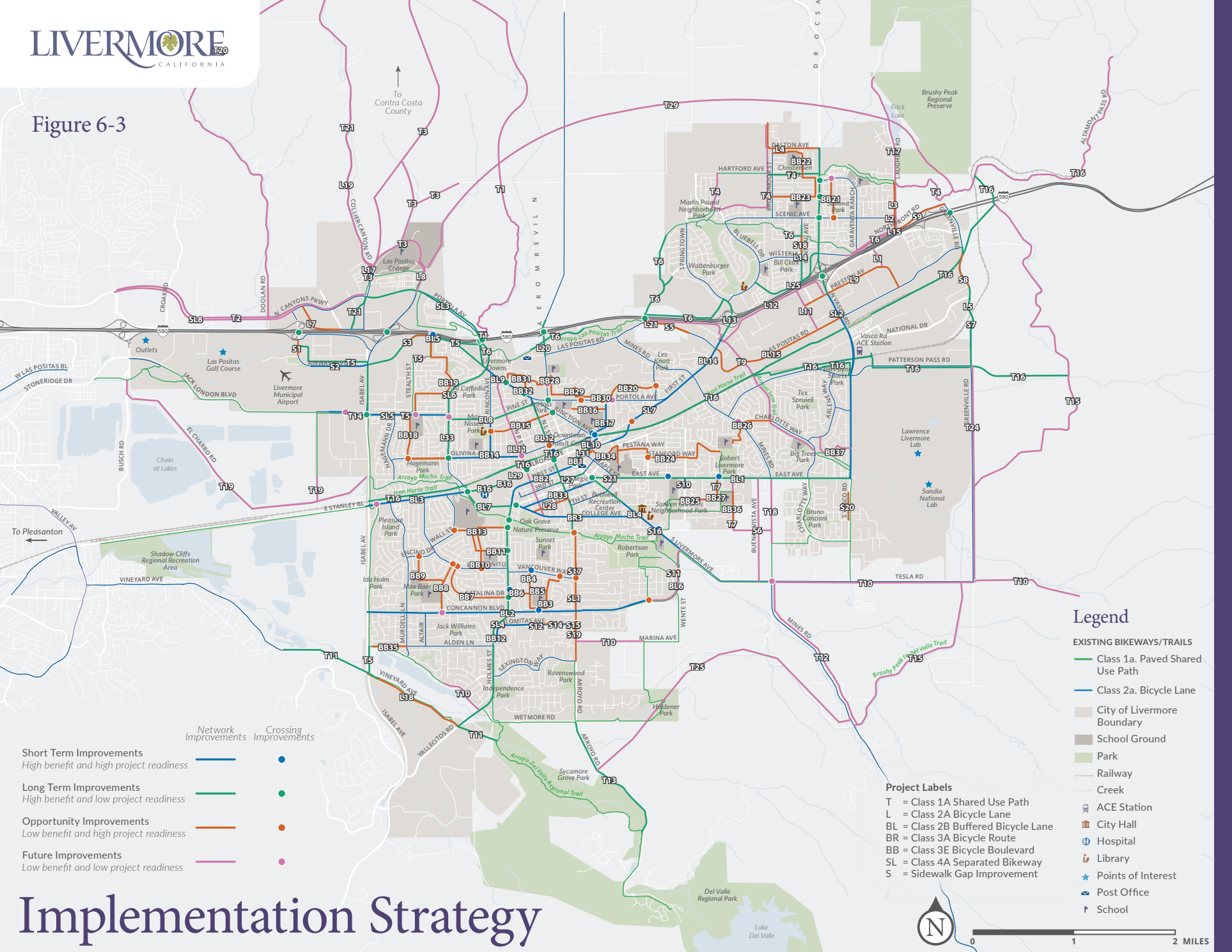


Short Term Improvements are those projects that provide a high benefit and are ready to be implemented. In contrast, Future Projects have a lower benefit and lower readiness.

Improvements that receive a high benefit and high readiness ranking are those that the City could choose to implement in the near term. In addition to these viable improvements, there are several longer term improvements that the Plan recommends pursuing either as a project phase to provide some level of enhancement, a corridor or feasibility study to identify and resolve any potential issues, or a temporary pilot to sample the facility type and gain further public input.

For a map of projects by implementation strategy, see Figure 6-3.

Figure 6-3



- | | | |
|--|---------------------------------------|---------------------------------------|
| Short Term Improvements
High benefit and high project readiness | — | ● |
| Long Term Improvements
High benefit and low project readiness | — | ● |
| Opportunity Improvements
Low benefit and high project readiness | — | ● |
| Future Improvements
Low benefit and low project readiness | — | ● |
| Network Improvements | — | |
| Crossing Improvements | | ● |

- ### Legend
- EXISTING BIKEWAYS/TRAILS
- Class 1a. Paved Shared Use Path
 - Class 2a. Bicycle Lane
- City of Livermore Boundary
 School Ground
 Park
 Railway
— Creek
■ ACE Station
■ City Hall
■ Hospital
■ Library
★ Points of Interest
■ Post Office
■ School
- ### Project Labels
- T = Class 1A Shared Use Path
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Implementation Strategy

FIRST PHASE

The Plan compared project costs against the project benefits to develop an implementation strategy that is effective and efficient. The Implementation Strategy refined the total project list to focus on the 50 highest benefit network and intersection improvements and applicable programs. This list included short-term projects, projects determined by the Advisory Committee to have significant importance, and those evaluated by the City, for overall connectivity and improvement to the existing system. The total project costs on this list is approximately \$35 million. See Table I-1 in Appendix I.

Even at that level of cost, the Implementation Strategy required further refinement based on available funding. A short list of first phase projects was then developed for the City to pursue over the next five years, totaling approximately \$5.8 million. This is the approximate funding anticipated to accrue within five years from the City's previously identified funding sources.

The Plan establishes a long-term, aspirational vision for a robust bicycle and pedestrian network. However, given limited resources and volume of improvements, the City will focus efforts towards the highest benefit improvements and those that provide the greatest connectivity as listed in Table 6-4.

These projects are those that the City may be able to implement in a five-year window. Some of the projects will be constructed to full build out, while others will be phased due to cost, limited right of way, or to introduce a facility type, and determine community support. First phase projects are mapped in Figure 6-4.

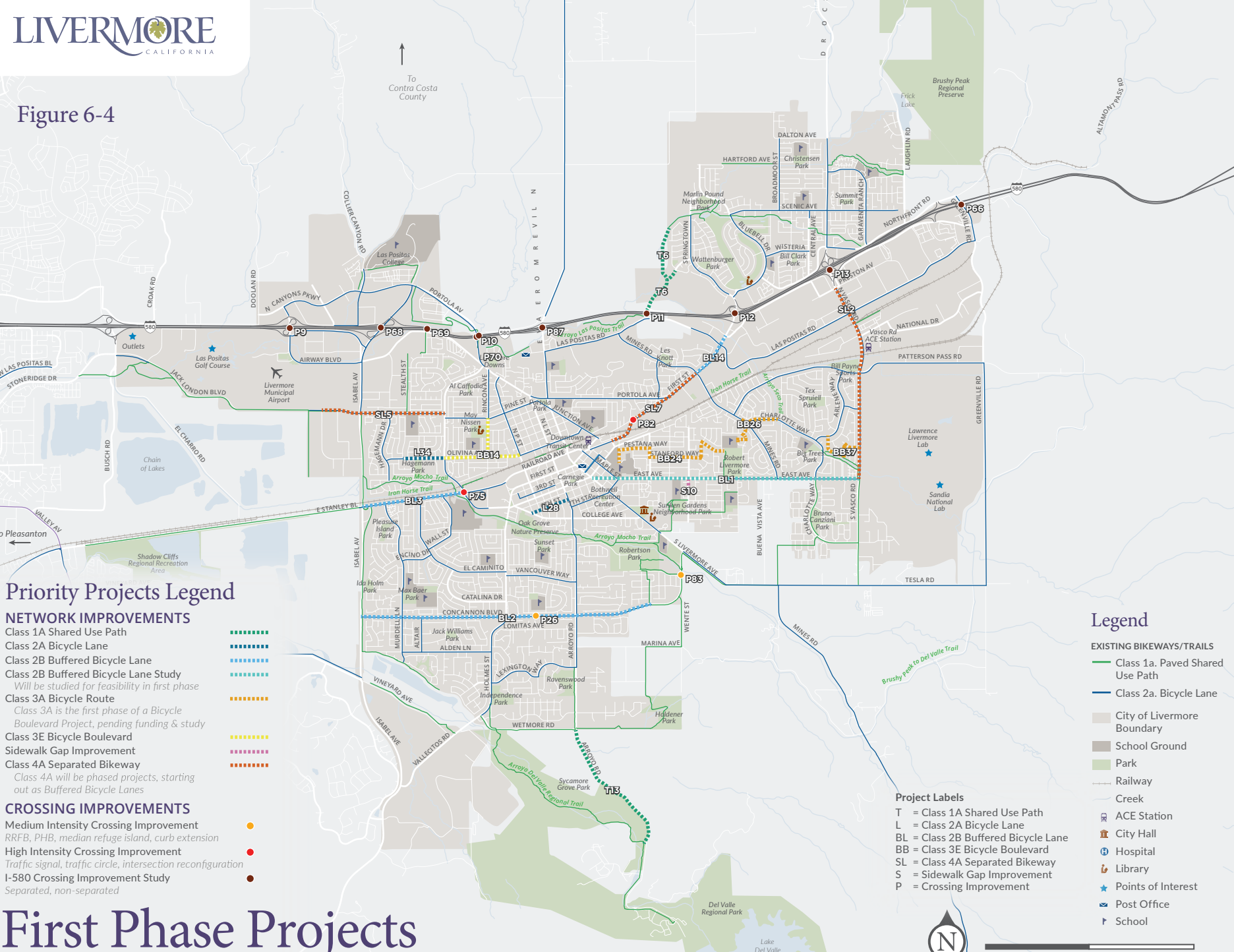
In addition, the Implementation Strategy proposes allocating funds towards programs to direct cyclists and pedestrians to the existing network, such as mapping and wayfinding, and conduct education, enforcement, and encouragement efforts.

Table 6-4: First Phase Implementation Projects

ID	PROJECT NAME	CONSTRUCTION	ONGOING ANNUAL MAINTENANCE
L28	Sixth Street Bicycle Lane	\$27,800	\$1,000
S10	Hillcrest Sidewalk at East Avenue	\$68,900	\$700
BL3	Stanley Boulevard Buffered Bicycle Lane (Isabel to Murrieta)	\$134,900	\$3,500
BB37, BB26, BB24	Bicycle Route from Lawrence Livermore National Lab to Livermore High*	\$140,100	\$3,400
SL5	Jack London Boulevard Buffered Bicycle Lane (Discovery to Murrieta)*	\$162,300	\$1,600
P83	Crossing: Robertson Park and Concannon	\$172,300	\$3,900
P26	Crossing: Concannon and Epson	\$172,300	\$3,900
SL7, BL14	First Street Buffered Bicycle Lane (Inman to Southfront)	\$209,300	\$5,500
SL2	Vasco Road Buffered Bicycle Lane (East to Preston)*	\$259,100	\$5,500
P75	Crossing: Murrieta and Stanley	\$312,000	\$7,600
P82	Crossing: First and Scott Street	\$312,000	\$7,600
BL2	Concannon Boulevard Buffered Bicycle Lane (Isabel to San Vincente)	\$383,900	\$10,100
L34, BB14	Olivina Bicycle Lane/Bicycle Boulevard (Hagemann to Rincon)	\$716,000	\$4,100
T13	Arroyo Road Trail (Wetmore to Veterans Park)	\$2,160,700	\$36,100
BL1	East Avenue Corridor Study*	\$175,000	-
	I-580 Crossings Study*	\$175,000	-
	Programs (education, encouragement, and enforcement)	\$250,000	-
T6 segment E1	Las Colinas Trail – Support to LARPD	\$25,000	-
	TOTAL	\$5,856,600	\$94,500

*Phased improvement is an interim treatment to be implemented in the near-term while a more complex facility is pursued as a long-term solution. Estimated cost reflects phased interim treatment.

Figure 6-4



Priority Projects Legend

- NETWORK IMPROVEMENTS**
- Class 1A Shared Use Path ▬
 - Class 2A Bicycle Lane ▬
 - Class 2B Buffered Bicycle Lane ▬
 - Class 2B Buffered Bicycle Lane Study ▬
 - Class 3A Bicycle Route ▬
 - Class 3A is the first phase of a Bicycle Boulevard Project, pending funding & study
 - Class 3E Bicycle Boulevard ▬
 - Sidewalk Gap Improvement ▬
 - Class 4A Separated Bikeway ▬
 - Class 4A will be phased projects, starting out as Buffered Bicycle Lanes

- CROSSING IMPROVEMENTS**
- Medium Intensity Crossing Improvement ● RRFB, PHB, median refuge island, curb extension
 - High Intensity Crossing Improvement ● Traffic signal, traffic circle, intersection reconfiguration
 - 1-580 Crossing Improvement Study ●
 - Separated, non-separated

Legend

- EXISTING BIKEWAYS/TRAILS**
- ▬ Class 1a. Paved Shared Use Path
 - ▬ Class 2a. Bicycle Lane
- Other Symbols:**
- City of Livermore Boundary
 - School Ground
 - Park
 - Railway
 - ▬ Creek
 - Ⓜ ACE Station
 - 🏠 City Hall
 - 🏥 Hospital
 - 📖 Library
 - ★ Points of Interest
 - ✉ Post Office
 - 🎓 School

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 - S = Sidewalk Gap Improvement
 - P = Crossing Improvement

First Phase Projects

GUIDING PRINCIPLES

Due to the large number of network and intersection improvements and the limited financial resources available, the Implementation Strategy employs a set of principles to address challenges and realize the network vision. These guiding principles can be used to review and prioritize implementation of the broader project list beyond the first phase project list. These principles are not mutually exclusive, and should be applied by the City to achieve the desired improvement.

MAINTENANCE

All new network projects must secure maintenance funding prior to construction. These can include maintenance districts, agency partnerships, developer paid maintenance mechanism, or other means. Maintenance funding is vital to ensuring long-term sustainability of the facility.

OPPORTUNITIES AND EFFICIENCIES

The City should capitalize on opportunities and use resources efficiently to implement the network. The City should proactively seek grants, develop agency partnerships, share resources, and facilitate development of bicycle and pedestrian improvements owned and operated by other agencies. The City should also consider consolidating duplicative facilities.

Private developers should be required to build new facility types or upgrade existing facilities as part of development projects and consider active transportation through every stage of the project. The City should coordinate new bicycle and pedestrian facilities with other City sponsored projects to take advantage of economy of scale, including staging, traffic control, materials, and mobilization costs.

SUSTAINABILITY

Active transportation improvements should proactively seek materials and implement practices that extend useful life of the facility and reduce ongoing and long-term maintenance costs.

PROJECT PHASING

Project phasing includes installing an easier-to-implement project as an interim treatment before a more complex or costly improvement. For example, a separated facility could be implemented as a buffered bicycle lane or a bicycle boulevard could be implemented as a signed route. This approach would allow the City to provide additional comfort while continuing to study and evaluate the facility type, measure performance, secure funding, and track changes in travel patterns.

Phasing also refers to transitions between facility types in conflict zones or areas with limited right of way. Projects in this Plan are planning-level, and as more detailed engineering designs are completed some segments may not be feasible for the pedestrian or bikeway improvement identified. For example, a separated bikeway may need to transition to a buffered bicycle lane if a short segment has constrained right of way.

REGULAR REVIEW OF PRIORITIES

To be successful, the Implementation Strategy must adapt to evolving City Policies, changing Plan Goals, fluctuating Network Objectives. In addition, City will need to be strategic and flexible in terms of funding availability. The City should periodically review the project list and implementation principles, and may wish to seek additional input from the community and City Council on emerging priorities to identify a new five-year list of projects for implementation.