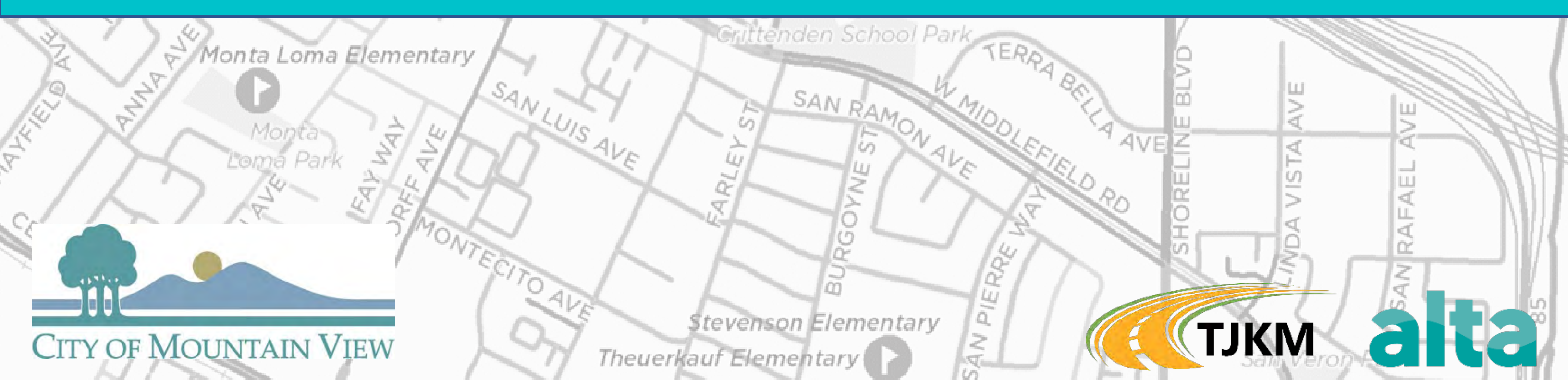
Attachment 1

AccessMV

Mountain View's Comprehensive Modal Plan

April 2021 | DRAFT



CITY OF MOUNTAIN VIEW

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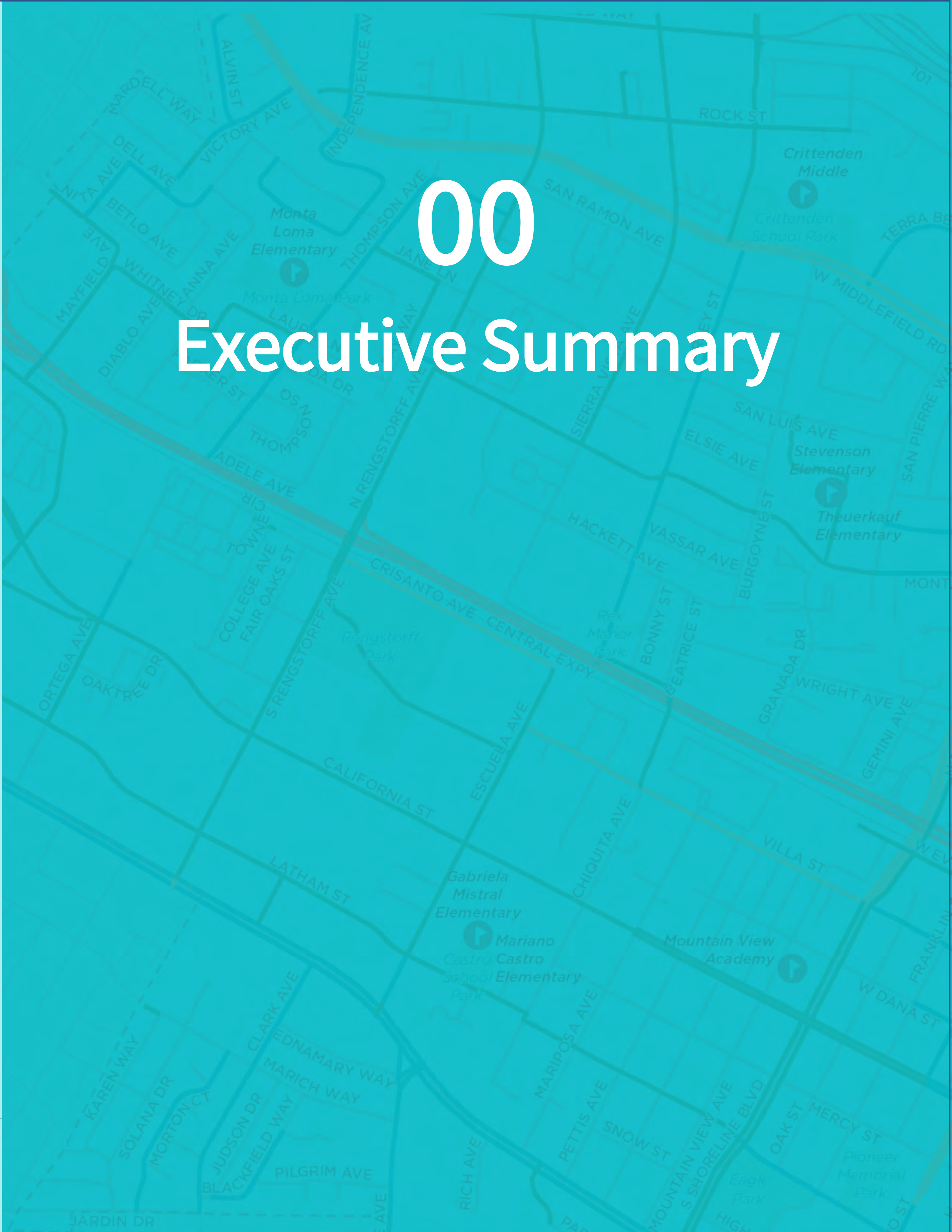
Executive Summary



Chapter 0 Executive Summary

AccessMV, the City of Mountain View's Comprehensive Modal Plan, provides a comprehensive vision for the City's multimodal transportation network. Building off previous and existing local transportation efforts, AccessMV aims to consolidate and integrate the City of Mountain View's existing and current transportation plans, studies, and services into a single, cohesive, coordinated, and comprehensive plan.

Plan Purpose

To identify the primary transportation network for all modes and prioritize improvements from over 30 City and regional plans.

Goals

- **Connectivity**: Improve connectivity within the multimodal network, with a focus on first-mile/last-mile connections to transit and schools.
- **Equity**: Improve the equitable distribution of transportation amenities and services specifically including vulnerable socio-economic groups and road users.
- **Mobility**: Improve mobility for people of all incomes, ages, and abilities using all modes of transportation.
- **Enhanced Safety**: Improve safety for all modes, with a focus on creating safe and connected bicycle and pedestrian facilities.
- **Sustainability**: Reduce vehicle miles traveled (VMT) and related greenhouse gas emissions.

Analyses

A series of analyses were completed to better understand the City's existing and planned transportation network for all modes and identify gaps, inconsistencies, and overlaps between various planning documents. These include a Pedestrian Quality of Service (PQOS) analysis, a Bicycle Level of Traffic Stress (BLTS) and Low Stress Islands analysis, and two Origin-Destination (OD) analyses, among others. In addition, the existing and planned transportation network for each mode was analyzed and visualized in a series of maps. Figures 1-3 illustrate several of these maps. These analyses are described in detail in Chapters 2-4.

Figure 1. Pedestrian Quality of Service (Existing)

Figure 2. Existing Low Stress Islands

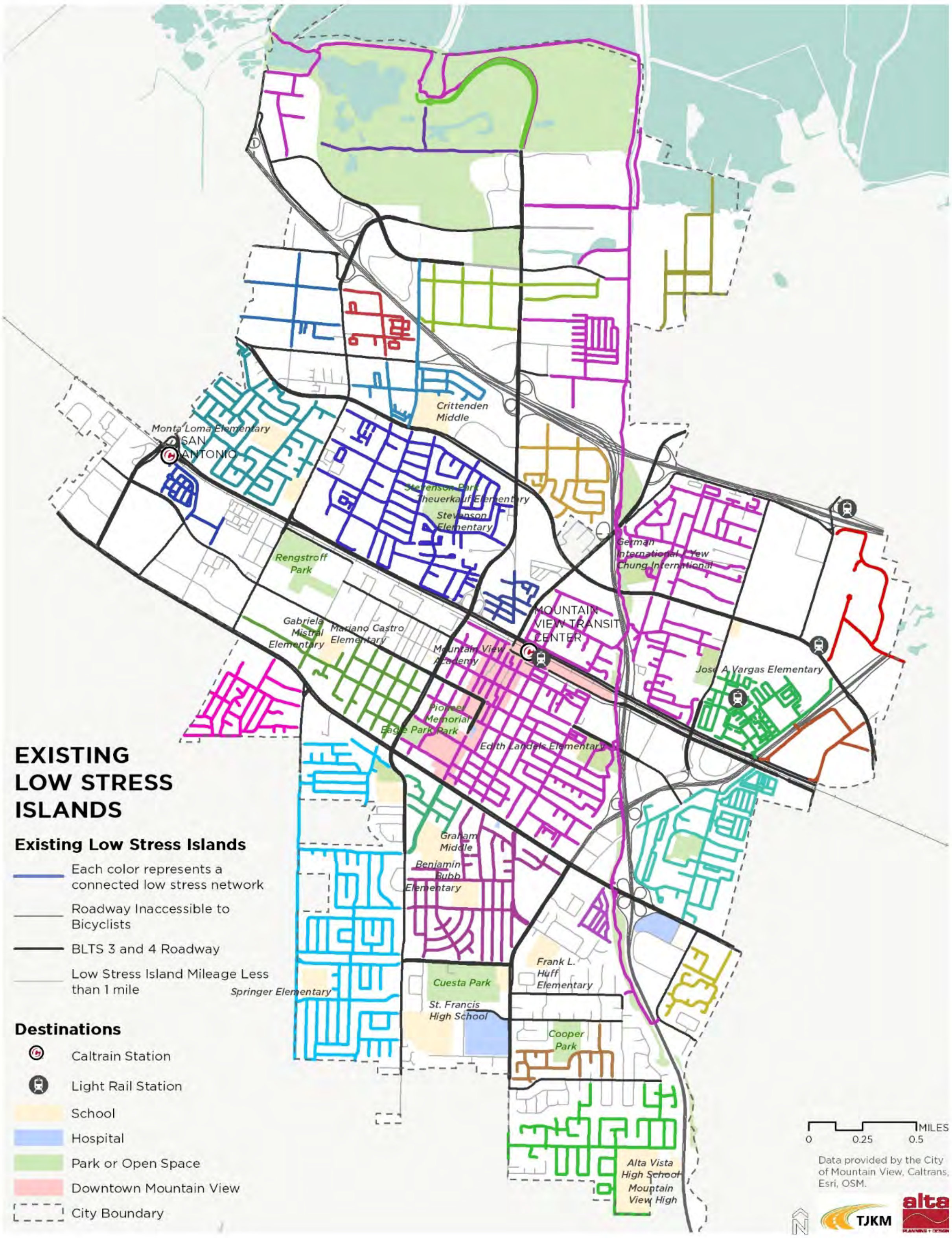
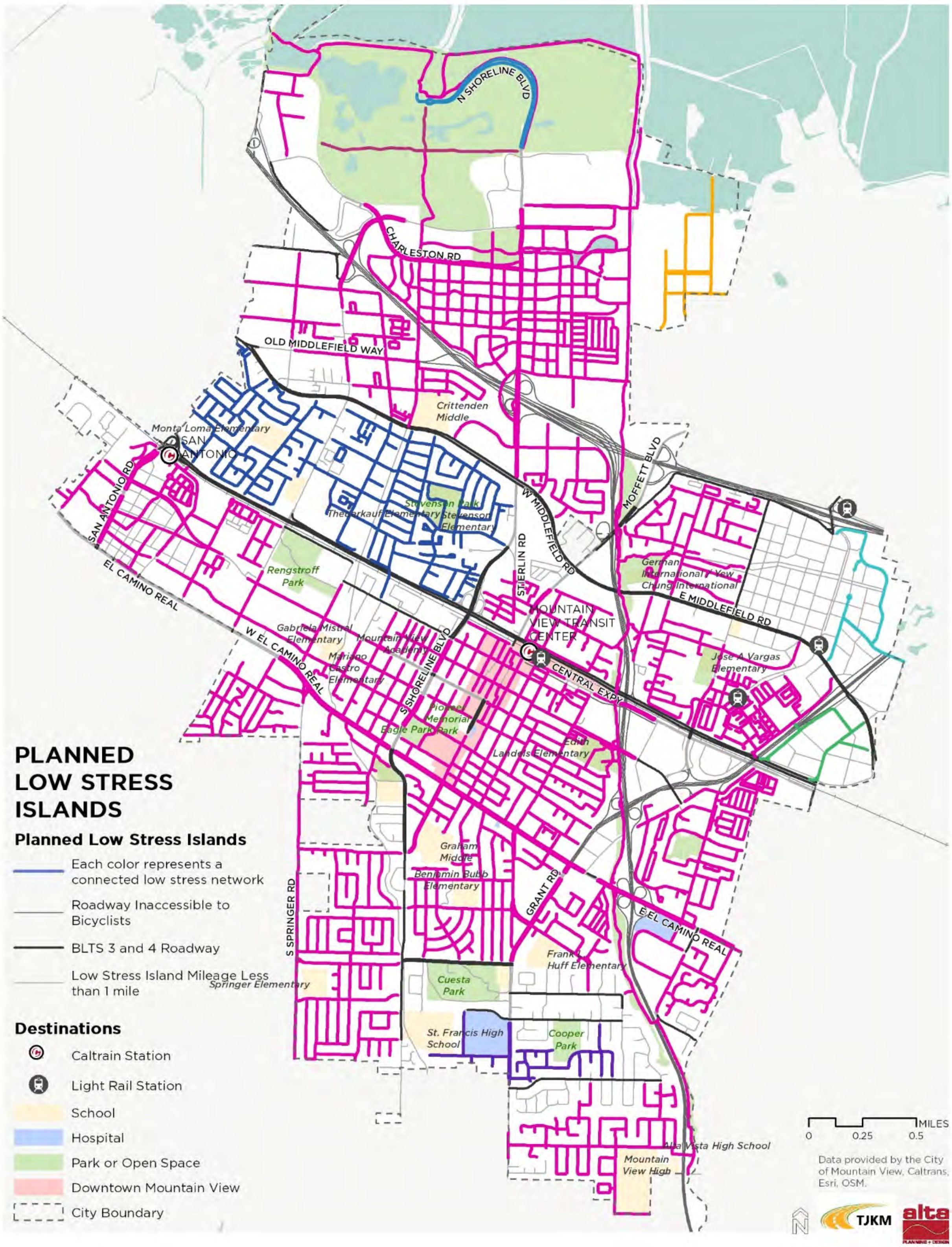


Figure 3. Planned Low Stress Islands



Prioritization Criteria

Network and project prioritization criteria were developed to (1) prioritize corridors throughout the city and (2) prioritize planned projects within each of the corridors. Figure 4 illustrates the process used to prioritize corridors and projects. The network and project prioritization criteria are described in detail in Chapter 5.

Figure 4. Prioritization Process

Network prioritization were based on the five project goals. Table 1 summarizes these network prioritization criteria.

Table 1. Network Prioritization Criteria Summary

GOALS	CRITERIA	MAX. POINTS
Equity	The corridor serves disadvantaged residents. The corridor has a high transit propensity score.	10 10
Mobility	The corridor is a high-priority corridor for the mode (cumulative). The corridor accommodates all modes. The corridor is a transit priority corridor.	16 5 8
Walkability / Bikeability	Connects residents to major destinations. The corridor closes a gap in the existing network. The corridor improves first/last mile connections Improves directness of travel to destinations.	9 9 10 10
Enhanced Safety	The corridor is accessible to all ages and abilities. The corridor is part of the high-injury network. The corridor is on a suggested route to school.	10 10 8
Sustainability	The corridor reduces VMT and greenhouse gas emissions.	10
Consistency	The corridor is identified in multiple previous plans. The corridor is on an Across Barrier Connection (ABC) or Cross County Bikeway Corridor (CCBC).	5 5
TOTAL		135

Project prioritization criteria build on these criteria, but add additional elements such as cost, feasibility, and community support. Table 2 summarizes the project prioritization criteria.

Table 2. Project Prioritization Criteria Summary

GOAL	CRITERIA
Network Priority	Actual Network Priority Score
Cost Effectiveness	Project is cost effective
Geographic Distribution	Project would provide a new route or improved access for a particular neighborhood
Feasibility	Project is relatively easy to implement
Cost Savings Potential	Opportunities for project implementation to be combined with other City or regional efforts
Funding Opportunities	Opportunities for several potential project funding sources
Community Support	Historical community feedback for the project
Strategic Importance	Project is a strategic gateway project for the City

Community Engagement

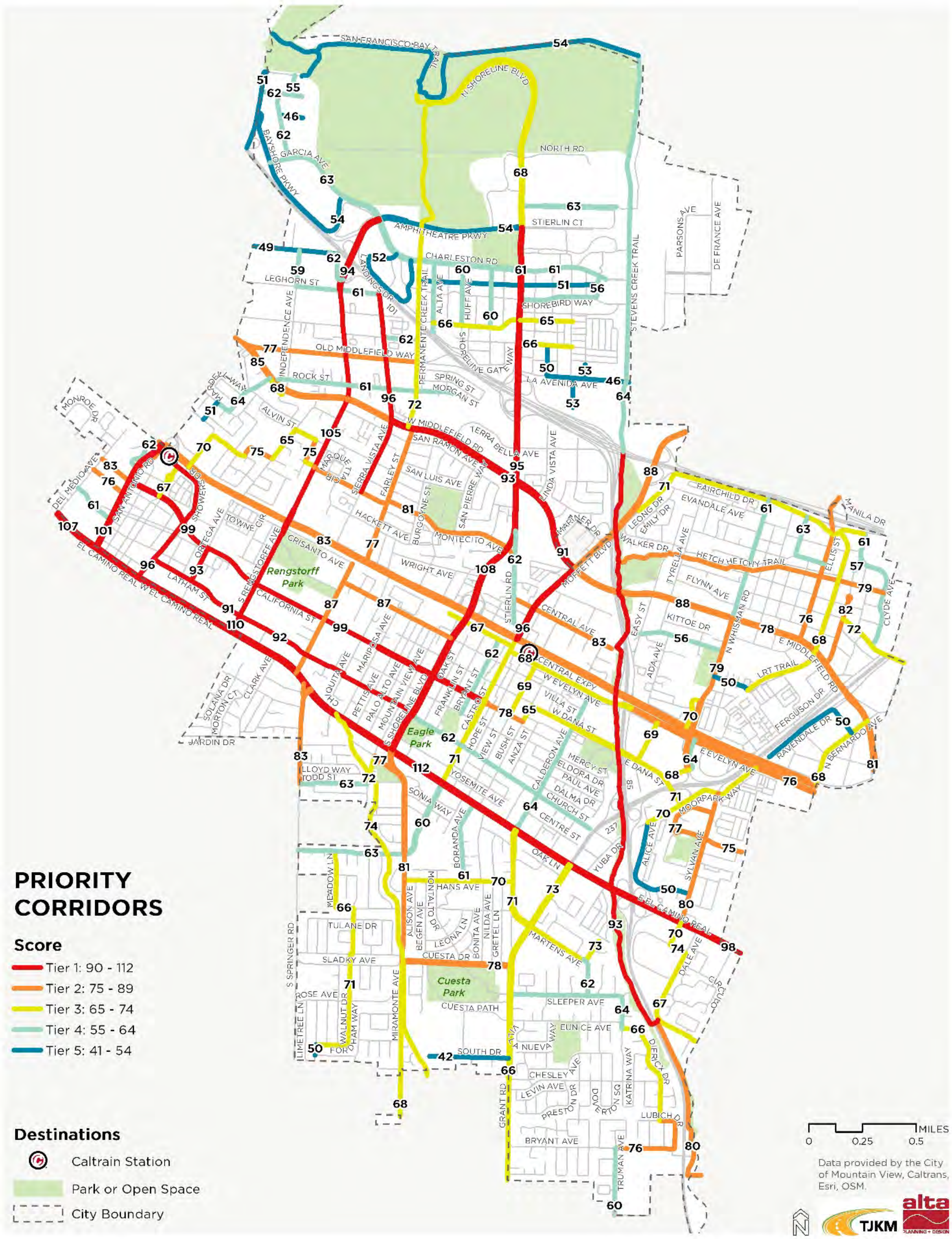
The proposed prioritization criteria were brought to the community during two virtual engagement events in October 2020 and February 2021. Community members were also given the opportunity to offer feedback on the network prioritization criteria via an online survey. Overall, community members were supportive of the network prioritization criteria, with almost 90% voting in favor of the metrics and weighting. A summary of community engagement activities is presented in Chapter 6.

Network Prioritization Results

As part of the network prioritization analysis, 147 different corridor segments were analyzed. Most corridor segments span approximately ½ to 1 mile between natural break points. The exception are priority transit corridors, which typically span a longer distance. The relatively short corridor segments reflect Mountain View's relatively small size.

While the maximum possible corridor priority score was 135 based on the network criteria, the highest scoring corridor (El Camino Real between Rengstorff and SR85) received 112 points. The lowest scoring corridor received 41 points. Corridor prioritization results are indicated in Figure 5 and detailed results are described in Chapter 7. In addition to these priority corridors, additional corridors located within Precise Plan areas may also warrant transportation infrastructure associated with future land use change.

Figure 5. Priority Corridors



Project Prioritization Results

Having prioritized corridors, individual projects relating to bicycle, roadway, and transit infrastructure were prioritized using project prioritization criteria. Mountain View's Pedestrian Master Plan did not include specific pedestrian project recommendations therefore this mode was not included in the analysis.

The results of the prioritization process were divided into four tiers representing high, medium, and low priorities for the City. Overall, many of the top scoring projects were located along high priority corridors, including El Camino Real, Shoreline Boulevard, and California Street.

Figures 6-8 illustrate the prioritized bicycle, vehicular, and transit infrastructure projects. In addition to the priorities for new facilities outlined in these figures, the City has a separate process for maintenance and repaving priorities which occur as part of the ongoing operations of the City. Analysis of intracity transit services was also conducted through an Origin-Destination analysis and transit service analysis that occurred as part of the Shuttle Study. The results of this analysis are described in Chapters 2 and 3, as well as Appendix C. Detailed project prioritization results are described in Chapter 7.

Figure 6 Prioritized Bicycle Projects

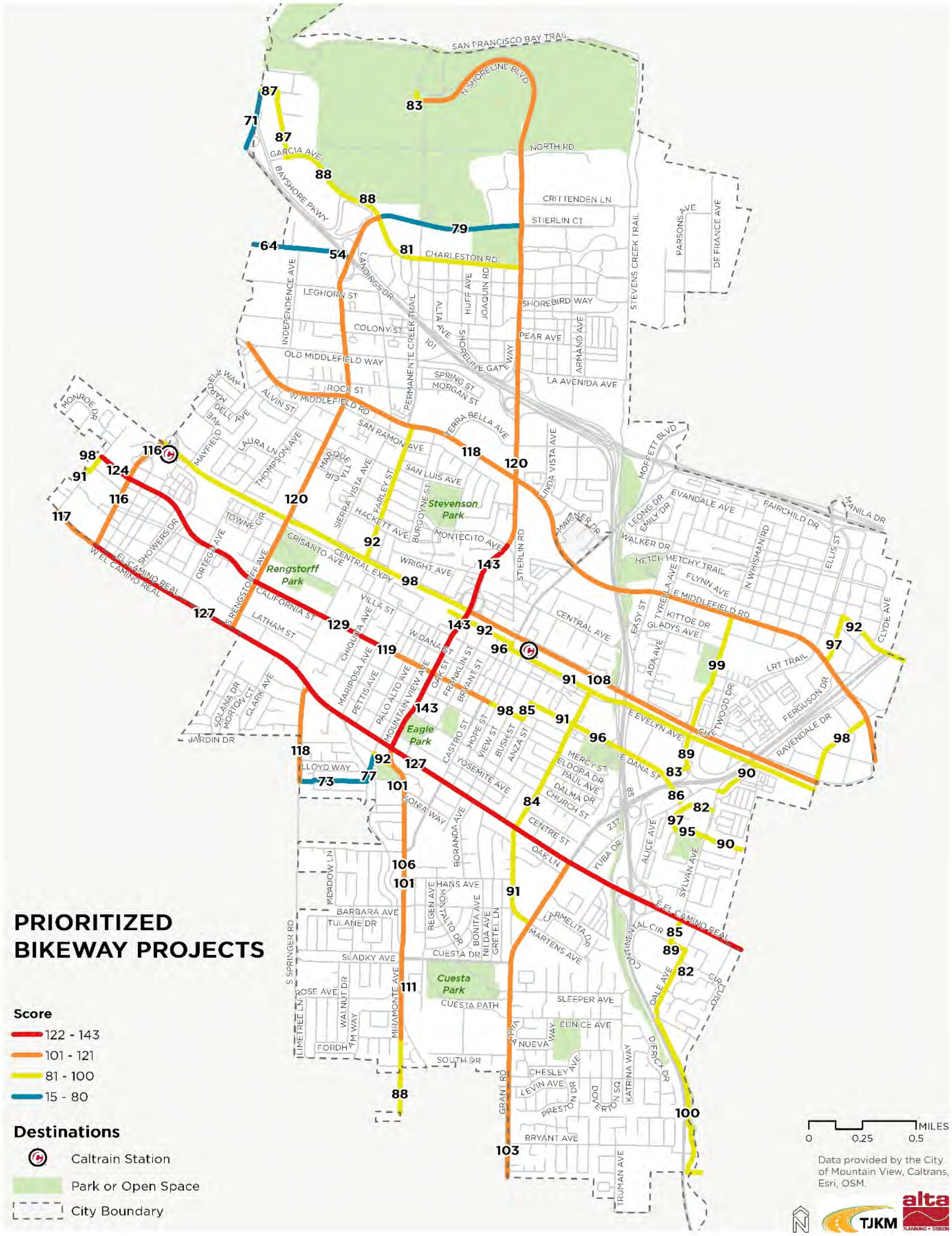


Figure 7 Prioritized Vehicular Projects

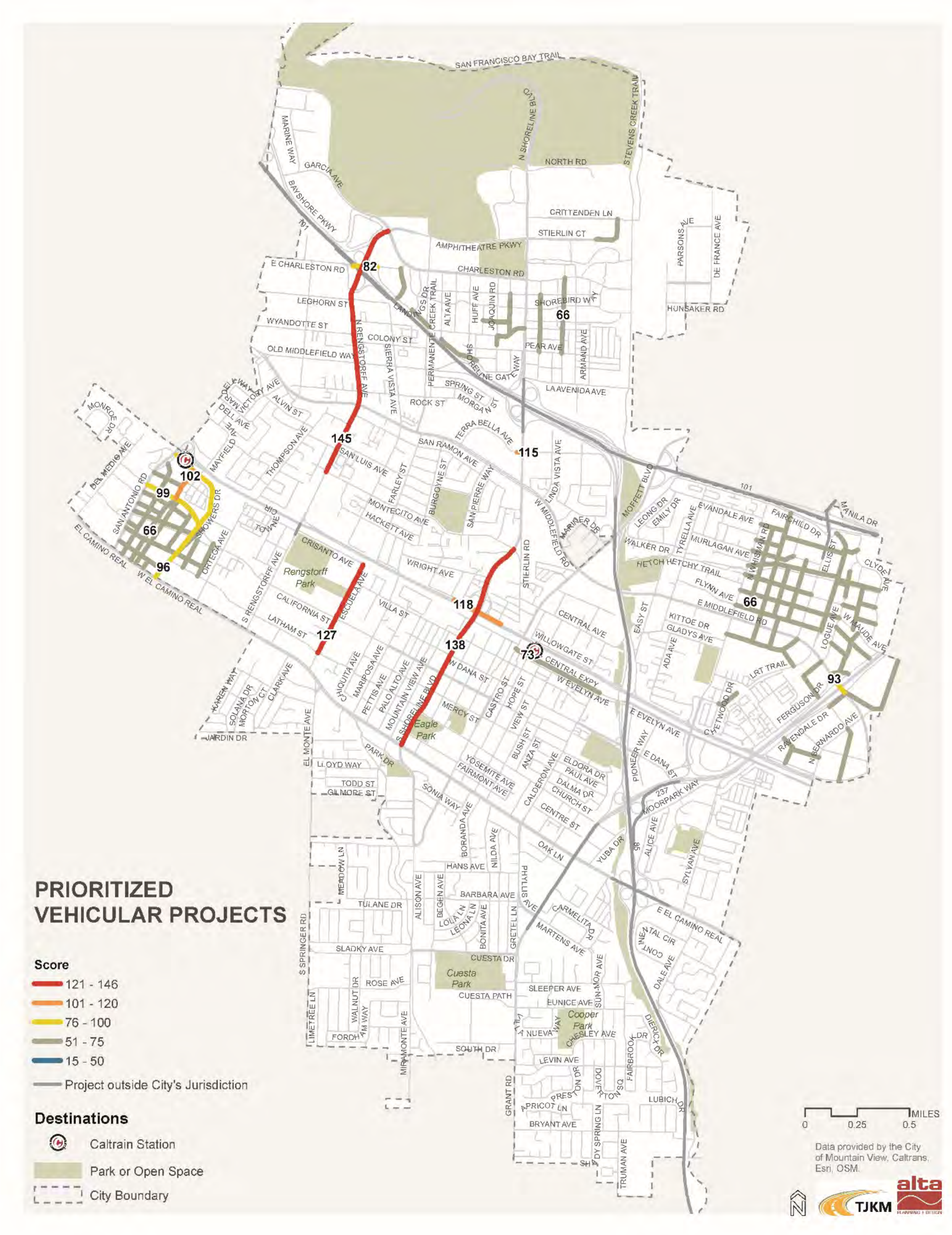
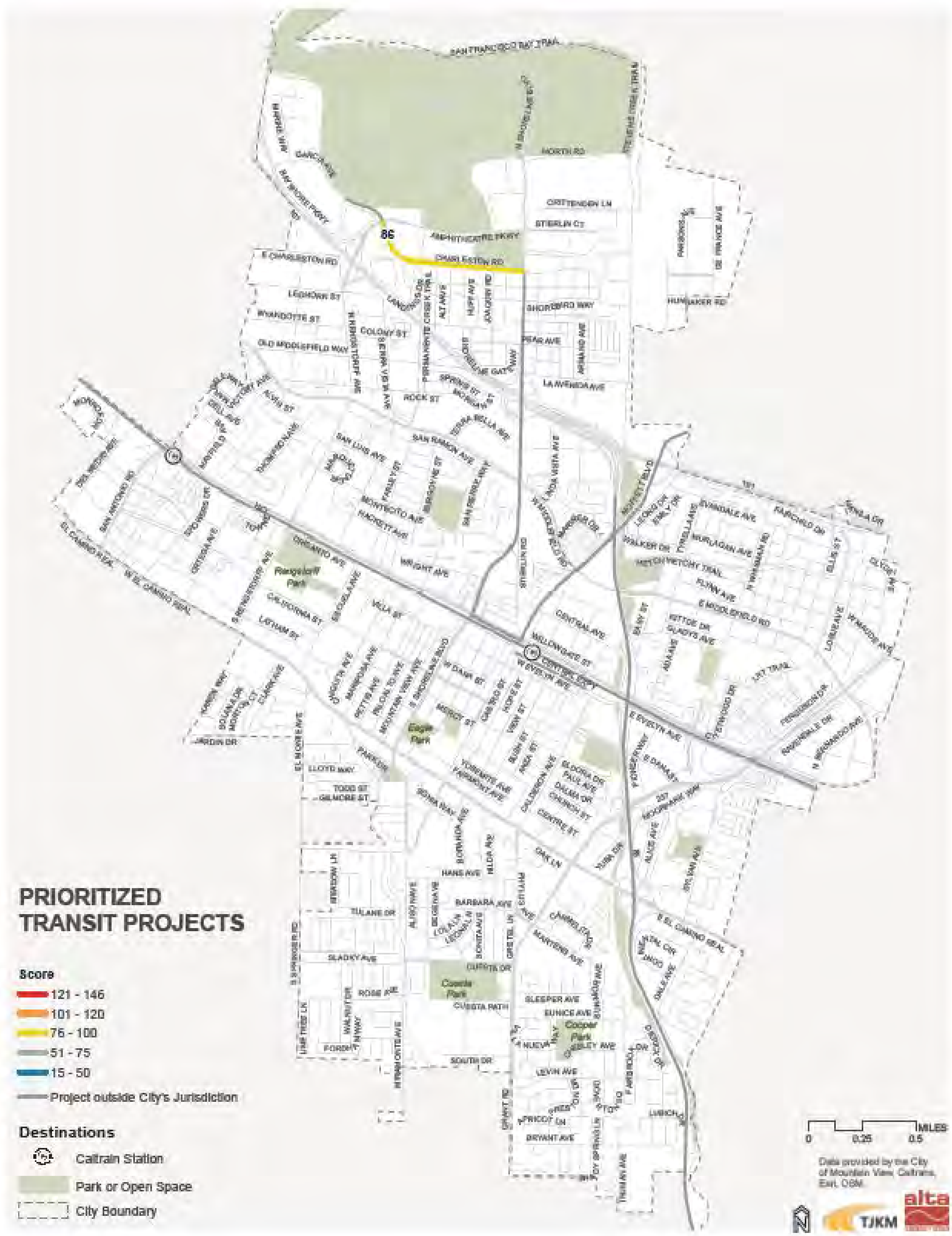


Figure 8 Prioritized Transit Projects



Next Steps

The results of the corridor and project prioritization process will be used to inform short-term, medium-term, and long-term Capital Improvement Program priorities in the coming years.

Beyond implementing the prioritized projects included in AccessMV, the City will focus additional future planning efforts on a number of key issues identified through the AccessMV planning process. This includes identifying corridors that should be prioritized for new tree canopy and green streets projects, implementing data collection efforts to improve the City's understanding of existing bicycle and pedestrian usage data, considering potential pedestrian network improvements, considering potential transit priority treatments, and implementing additional multimodal network planning efforts such as complete streets feasibility projects, signal prioritization, and signal synchronization.

The analyses completed as part of AccessMV will be used to guide these future planning efforts. Priority corridors and projects will be implemented with the goal of eliminating existing gaps and inconsistencies in the multimodal transportation network and creating a network of low-stress bicycle and pedestrian facilities. The analyses will be updated as appropriate to reflect new conditions as transportation projects are implemented throughout the city.

01

Introduction

Chapter 1 Introduction

AccessMV, the City of Mountain View's Comprehensive Modal Plan, provides a comprehensive vision for the City's multimodal transportation network. Building off previous and existing local transportation efforts, AccessMV aims to consolidate and integrate the City of Mountain View's existing and current transportation plans, studies, and services into a single, cohesive, coordinated, and comprehensive plan.

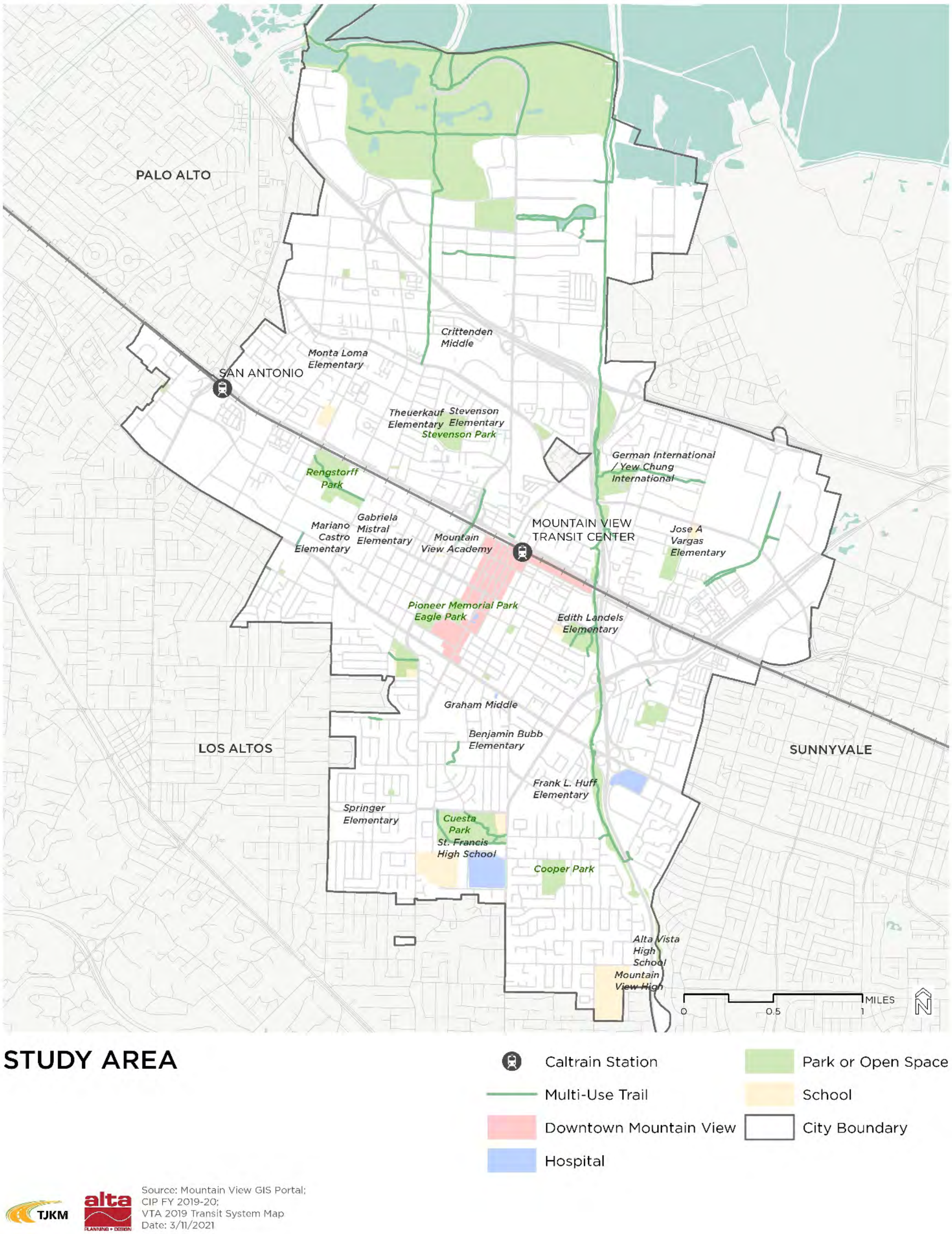
Consistent with the goals and policies outlined in previous transportation plans and studies, AccessMV identifies the City's primary transportation network serving all modes with a focus on priority corridors, first-mile/last-mile connections, and known travel patterns. It also establishes prioritization criteria to identify key corridors and improvement projects for all transportation modes. AccessMV incorporates community input on key corridors and projects to establish a list of priority citywide transportation improvements for the City of Mountain View, along with associated costs and anticipated funding sources.

1.1 Background

The City of Mountain View is located in Santa Clara County in the South Bay (Figure 1-1). The city covers just over 12 square miles and includes a complex network of roadways, transit corridors, and bicycle and pedestrian facilities, including more than 10 miles of multi-use trails (Figure 1-2). The City's 83,000 residents have access to a wide range of transportation options, including 211 miles of roadways, 75 miles of bikeways, public transit provided by Caltrain, Santa Clara Valley Transportation Authority (VTA), and Mountain View Transportation Management Association (MVTMA), several car-sharing services, and an array of facilities, programs, and services that facilitate bicycling and walking.

Figure 1-1. Regional Context

Figure 1-2. Study Area



1.2 Planning Goals, and Policies

AccessMV is based on the Mountain View City Council Goal “to develop and implement comprehensive and coordinated transportation strategies to achieve mobility, connectivity and safety for people of all ages”.

AccessMV reflects General Plan goals summarized below and listed in Table 1-1:

- **Connectivity**: Improve connectivity within the multimodal network, with a focus on first-mile/last-mile connections to transit and schools.
- **Equity**: Improve the equitable distribution of transportation amenities and services specifically including vulnerable socio-economic groups and road users.
- **Mobility**: Improve mobility for people of all incomes, ages, and abilities using all modes of transportation.
- **Safety**: Improve safety for all modes, with a focus on creating safe and connected bicycle and pedestrian facilities.
- **Sustainability**: Reduce vehicle miles traveled (VMT) and related greenhouse gas emissions.

Table 1-1. Planning Context, Goals, and Policies

THEME	RELEVANT GENERAL PLAN GOALS / POLICIES
Connectivity	
Reduced gaps in the network.	MOB 4.1. Bicycle network. Improve facilities and eliminate gaps along the bicycle network to connect destinations across the city. Other relevant policies: MOB 3.2, MOB 5.4
Improved connections to community destinations.	MOB 3.2. Pedestrian connections. Increase connectivity through direct and safe pedestrian connections to public amenities, neighborhoods, village centers and other destinations throughout the city. Other relevant policies: MOB 1.3, MOB 4.1, MOB 5.4, MOB 6.3
Improved first/last mile connections.	MOB 5.5. Access to transit services. Support right-of-way design and amenities consistent with local transit goals to make it easier to get to transit services and improve transit as a viable alternative to driving. Other relevant policies: MOB 6.3

THEME	RELEVANT GENERAL PLAN GOALS / POLICIES
Equity	
Equitable distribution of amenities and services / expanded access.	LUD 4.1. Well-distributed and accessible neighborhood centers. Plan for improved pedestrian accessibility to commercial areas from each neighborhood to increase access to retail, goods and services that serve local residents. Other relevant policies: LUD 6.2, MOB 1.2, MOB 1.5
Mobility	
Complete streets / synergies between modes.	MOB 1.2. Accommodating all modes. Plan, design, and construct new transportation improvement projects to safely accommodate the needs of pedestrians, bicyclists, transit riders, motorists and persons of all abilities. Other relevant policies: MOB 1.1
Improved transit services.	MOB 5.4. Connecting key areas. Identify and implement new or enhanced transit services to connect Downtown, El Camino Real, San Antonio, North Bayshore, East Whisman and NASA Ames Research Park.
Safety	
Improved safety for vulnerable users, especially pedestrians and bicyclists.	MOB 1.6. Traffic calming. Provide traffic calming, especially in neighborhoods and around schools, parks, and gathering places. Other relevant policies: MOB 3.1, MOB 3.3, MOB 4.1, MOB 4.2, MOB 6.2
Sustainability	
Reduced VMT and greenhouse gas emissions.	MOB 9.2. Reduced vehicle miles traveled. Support development and transportation improvements that help reduce greenhouse gas emissions by reducing per capital vehicle miles traveled. Other relevant policies: LUD 9.2, MOB 3.4, MOB 10.3

1.3 Planning Documents

The above goals are outlined in a number of approved City and regional planning documents.

As outlined in the City's 2030 General Plan, the City of Mountain View is focused on creating a network of complete streets that safely accommodate all modes. The City continues to expand its network of connected and low-stress bicycle and pedestrian facilities by implementing projects listed in local and regional active transportation plans including the Mountain View Pedestrian Master Plan (2014), the Mountain View Bicycle Transportation Plan (2015), the VTA Pedestrian Access to Transit Plan (2017), the Caltrans District 4 Bike Plan (2018), and the VTA Countywide Bicycle Plan (2018). The City also recently developed a draft Vision Zero policy, and is currently developing an integrated Local Road Safety Plan / Vision Zero Action Plan.

The City's General Plan, several Precise Plans and corridor specific plans, also emphasize the goal of improved transit access and ridership through transit-oriented development and transit-supportive policies. The City's transit-supportive efforts complement transit agency plans such as the VTA 2019 Transit Service Plan, Caltrain Business Plan (Service Vision), and VTA High Capacity Transit Study (currently underway). In addition, the City recently completed the Mountain View Shuttle Study to evaluate the efficiency and effectiveness of existing local transit and shuttle services in meeting intra-city transit needs.

In total, AccessMV incorporates goals, policies, standards, and projects from over 30 previous and current plans and studies as listed in Table 1-2. AccessMV identifies gaps, overlaps, and inconsistencies in existing network facilities and previously planned projects, and develops a list of future priority transportation improvements that strengthen the City's multimodal network.

Planning documents reviewed as part of this study are listed in Table 1-2 below:

Table 1-2. Planning Documents

THEME	AGENCY	RELEVANT GENERAL PLAN GOALS / POLICIES
General Plan and Specific Plans	City of Mountain View (CMV)	2030 General Plan (2012) Downtown Precise Plan (1988) Mayfield Precise Plan (2006) South Whisman Precise Plan (2009) El Camino Real Precise Plan (2014) San Antonio Precise Plan (2014) North Bayshore Precise Plan Update (2018) East Whisman Precise Plan (2019)
Transportation Plans and Policies	CMV	Pedestrian Master Plan (2014) Mountain View Bicycle Transportation Plan (2015) Multi-Modal Improvement Plan (2018) Vision Zero Policy (2019)
	Santa Clara Valley Transportation Authority (VTA)	Valley Transportation Plan 2040 (VTP 2040) (2014) Pedestrian Access to Transit Plan (2017) Countywide Bikeway Map (2017) Countywide Bicycle Plan (2018) Transit Service Plan (2019)
	Caltrain Joint Powers Board (JPB)	Caltrain Business Plan (Underway)
	Santa Clara County (SCC)	Santa Clara County Expressway Plan 2040 (2017)
	California Department of Transportation (Caltrans)	District 4 Bike Plan (2018)
Sustainability and Related Plans	CMV	Parks and Open Space Plan (2014) Climate Protection Roadmap (2015) Community Tree Master Plan (2015) Sustainability Action Plan 4 (SAP-4) (2019) 2017-2018 Environmental Sustainability Task Force 2 (2018)

THEME	AGENCY	RELEVANT GENERAL PLAN GOALS / POLICIES
Corridor or Area Plans and Studies	CMV	Shoreline Boulevard Corridor Study (2014) California/Escuela/Shoreline Complete Streets Feasibility Study (2015) Transit Center Master Plan (2017) Automated Guideway Transit Feasibility Study Phase 1 (2018) El Camino Real Streetscape Plan (2019) Mountain View Suggested Routes to Schools
	City of Los Altos	Los Altos Suggested Routes to Schools
	Grand Boulevard Initiative	Grand Boulevard Initiative Guiding Principles (2006)
	VTA	Draft SR 85 Corridor Transit Study (Underway)
	JPB	Caltrain Bicycle Access and Parking Plan (2008) On-Board Survey by Caltrain (2019)
	Association of Bay Area Governments (ABAG)	Bay Trail Plan (1989)


ALVIN ST
MARDELL WAY
VICTORY AVE
ROCK ST
DELL AVE
NITA AVE
BETLO AVE
Monta Loma Elementary
THOMPSON AVE
SAN RAMON AVE
Crittenden School Park
JANE LN
MAYFIELD AVE
WHITNEY DR
ANNA AVE
Monta Loma Park
LAURA LN
DIABLO AVE
FAY WAY
FARLEY ST
SIERRA VISTA AVE
PARKER ST
LIDA DR
N RENGSTORFF AVE
SAN LUIS AVE
ELSIE AVE
ADELE AVE
TOWNE CIR
HACKETT AVE
VASSAR AVE
BURGOYNE ST
COLLEGE AVE
FAIR OAKS ST
CRISANTO AVE
CENTRAL EXPY
Rex Manor Park
BONNY ST
BEATRICE ST
GRANADA DR
Rengstorff Park
S RENGSTORFF AVE
ORTEGA AVE
OAKTREE DR
ESCUELA AVE
CALIFORNIA ST
CHIQUITA AVE
VILLA ST
LATHAM ST
Gabriela Mistral Elementary
Mariano Castro Elementary
Castro School Park
Mountain View Academy
CLARK AVE
EDNAMARY WAY
MARICH WAY
MARIPOSA AVE
KAREN WAY
SOLANA DR
MORTON CT
JUDSON DR
BLACKFIELD WAY
PILGRIM AVE
RICH AVE
PETTIS AVE
SNOW ST
MOUNTAIN VIEW AVE
S SHORELINE BLVD
OAK ST
Eagle Park
JARDIN DR

02

Methodology

Chapter 2 Methodology

For AccessMV, the project team conducted four separate analyses to document and visualize the existing conditions of the City of Mountain View's pedestrian, bicycle, and motor vehicle networks. These analyses include Pedestrian Quality of Service analysis; Bicycle Level of Traffic Stress analysis, which also identifies low-stress islands and All Ages and Abilities bicycle facilities; a citywide Origin-Destination analysis for bicyclists, pedestrians, and motor vehicles; and an Origin-Destination analysis for short vehicle trips focused on four specific corridors. This chapter outlines the methodologies for each of these analyses.

2.1 Pedestrian Quality of Service Analysis

2.1.1. Overview

The Pedestrian Quality of Service (PQOS) analysis identifies the level of comfort experienced by pedestrians on any given roadway within the City of Mountain View. The analysis serves as a high-level review of the existing citywide pedestrian network. While suitable for citywide analyses, the methodology is not considered to be applicable to more detailed project-level analysis that would require a review of additional factors that may be unavailable on a citywide level, such as ADA accessibility requirements, sidewalk quality, crossing distance, and the absence of sidewalk obstructions.

There is no one method of analysis for determining pedestrian quality of service. The 2014 Santa Clara Valley Transportation Authority (VTA) Transportation Impact Assessment (TIA) Guidelines[1] recommend that agencies use a pedestrian QOS methodology, such as the one outlined in the Highway Capacity Manual (HCM) 2010 (Chapters 16-18) or similar, to analyze pedestrian conditions. However, these recommended methodologies present several concerns, including:

- The methodologies require agencies to have up-to-date data on the condition of every segment within their network, which is challenging for many agencies.
- The methodologies calculate QOS scores based on average scores of component segments, which does give enough weight to challenging segments that disproportionately affect pedestrian comfort and willingness to walk.
- The methodologies do not account for land use context or regional transit connections, which have a significant impact on people's willingness and ability to walk to reach destinations on foot.

Because of these concerns, the project team developed a custom PQOS metric for AccessMV. This PQOS metric is designed to cover five distinct factors, based on previous research conducted by pedestrian planning specialists. These factors include:

- Proximity to a variety of destinations and amenities;

[1] VTA Transportation Impact Analysis Guidelines, 2014, Page 21. https://www.vta.org/sites/default/files/documents/VTA_TIA_Guidelines_2014_MainDocumentOnly_FINAL.pdf

- Street connectivity and directness of routes to destinations;
- Presence of a continuous network of pedestrian facilities;
- Motor vehicle traffic speed; and
- Street width and intersection conditions.

Data Inputs

The first two factors listed above are accounted for via the WalkScore API, which produces a “Walk Score” between 0 and 100 for each segment location. Higher scores indicate a presence of pedestrian-friendly development including a multitude of nearby amenities, a high density of intersections, and short block lengths. Lower scores indicate a lack of nearby amenities and/or sprawling roadway networks characterized by longer block lengths, fewer pedestrian connections, and a lower density of intersections.

Additional data inputs include the number of motor vehicle travel lanes (as a proxy for street width), posted speed limit (as a proxy for prevailing motor vehicle speed), and sidewalk gaps (as a negative proxy for sidewalk continuity). These data inputs were obtained from the City of Mountain View roadway GIS datasets as well as additional information on sidewalk gaps in the vicinity of state routes.

Assumptions and Qualifications

This methodology developed for this analysis is useful for analyzing the citywide pedestrian network since input data is available on a citywide level and the results provide a high-level overview of pedestrian quality of service covering all five key factors. However, because this methodology uses WalkScore, a proprietary software that is subject to change, it may not be a sustainable methodology for use in future analyses.

In addition, this PQOS methodology omits certain data inputs that would be valuable when conducting a more detailed project-level analysis. These include elements such as ADA accessibility requirements, sidewalk quality, crossing distances, and sidewalk obstructions such as overgrown vegetation. For this reason, a modified methodology is recommended to analyze pedestrian quality of service at the project level.

2.1.2 Methodology

Step 1: Develop an initial QOS using WalkScore data.

The first step of the PQOS analysis involves querying the WalkScore API and reclassifying the WalkScore values into initial QOS scores. A WalkScore result of 90-100 is classified as QOS 1, a WalkScore result of 70-89 is classified as QOS 2, and WalkScore results of 0-69 are classified as QOS 3-5.

QOS 1
QOS 2
QOS 3
QOS 4
QOS 5

Step 2: Adjust results for built environment factors.

The initial PQOS scores are increased by 1 point for any street without sidewalks on both sides, indicating a worse quality of service for pedestrians. In addition, speed limit data is used to further increase the QOS score, showing how high-speed traffic impacts pedestrian comfort. Streets with posted speed limits below 30 MPH see no change to the QOS score, while streets with posted speeds of 30-34 MPH are given a 1-point increase and streets with posted speeds above 35 MPH are given a 2-point increase. Finally, the scores are adjusted to consider the impacts of roadway widths on pedestrian experience. Divided roadways with more than four lanes are given a 1-point increase, as are undivided roadways with more than three lanes.

Step 3: Calculate and visualize final QOS results.

The final QOS value for each segment is calculated by adding the adjusted scores to the initial QOS score described in Step 1. Aggregating these data inputs, a PQOS score is generated with five categories, from QOS 1 representing the best quality of service to QOS 5 representing the worst. Any final QOS values greater than 5 are adjusted back to 5.

The scores are visualized in a series of maps (see Chapter 3). A summary of the criteria used in the methodology is shown in Table 2-1.

Table 2-1. Pedestrian Quality of Service Criteria

Criterion	**Description**
WalkScore	WalkScore data identifies whether a location has nearby amenities, a high density of intersections, and short block lengths, which indicate it is comfortable for pedestrians. Streets with high WalkScores were given initial high PQOS scores as part of this analysis.
Missing Sidewalk	PQOS scores were increased by 1 for any street without sidewalks on both sides, indicating a worse quality of service for pedestrians.
Posted Speed Limit	Speed limit data impacts QOS scores by modeling the detrimental impact that high-speed traffic has on pedestrian comfort. Posted speed limits <30 MPH have no impact on QOS; speed limits between 30-34 MPH increase QOS scores by 1; speed limits above 35 MPH increase QOS scores by 2.
Road Type	Divided roads with more than 4 motor vehicle travel lanes and undivided roadways with more than 3 motor vehicle lanes increase PQOS scores by 1.

2.2 Bicycle Level of Traffic Stress Analysis

2.2.1 Overview

The Bicycle Level of Traffic Stress (BLTS) analysis identifies the BLTS network, low-stress network, and All Ages and Abilities network within Mountain View. The methodology for this analysis was adapted from the Mineta Transportation Institute's *Low Stress Bicycling and Network Connectivity* (2012)[2], and adjusted to reflect available data for Mountain View, which was missing citywide data for each street segment on elements such as land use context and prevailing speeds. The original methodology was also augmented to account for Class IV protected bikeways.

BLTS is a numeric value assigned to each segment and intersection of a road network which aims to approximate the level of stress experienced by bicyclists. BLTS is calculated directly from available street network data and considers the following built environment parameters:

- Street Segments
  - Number of through travel lanes
  - Posted speed limit
  - Class of bicycle facility (if any)
- Intersections
  - BLTS of intersecting segments
  - Presence of traffic signal
  - Presence of crossing island at least 6 feet in width

BLTS values have a range between 1 and 4, with lower numbers signifying lower traffic stress levels and therefore higher bicycle quality of service. BLTS values are defined as follows:

- **BLTS 1**: Roadway is comfortable for all ages and abilities.
- **BLTS 1.5**: Roadway is comfortable for people of all ages and abilities on residential streets
- **BLTS 2:** Roadway is comfortable for interested but concerned cyclists
- **BLTS 3**: Roadway is comfortable for somewhat confident cyclists
- **BLTS 4**: Roadway is comfortable for highly confident cyclists only

These values identify roadways that are suitable for the four types of bicyclists: "Highly Confident," "Somewhat Confident," "Interested but Concerned," and "All Ages and Abilities." According to a survey of people living in 50 U.S. metropolitan regions, just over half (51%) the population are considered to be "Interested but Concerned" bicyclists,[3] indicating a need for improved low-stress bicycle facilities to serve this significant user group.

[2] https://transweb.sjsu.edu/sites/default/files/1005-low-stress-bicycling-network-connectivity.pdf

[3] Jennifer Dill and Nathan McNeil, "Revisiting the Four Types of Cyclists: Findings from a National Survey," *Transportation Research Record: Journal of the Transportation Research Board*, 2587: 90-99, 2016.

The BLTS analysis identifies the current BLTS values for all roadways and intersections within the City of Mountain View. In addition, the analysis identifies the City's network of bicycle facilities that are comfortable for people of all ages and abilities. Finally, the results are used to identify connected "islands" of low-stress bicycle network facilities that visualize the bicycle network for "Interested but Concerned" bicyclists within the city.

The analysis was conducted for both the existing bicycle network and planned facilities within the City of Mountain View.

Data Inputs

Input data for BLTS includes roadway and intersection GIS datasets provided by the City of Mountain View, as well as a GIS dataset of existing and approved projects from the City's Capital Improvement Plan (CIP) and planned projects from the Mountain View Bicycle Transportation Plan (2015), the Santa Clara Countywide Bicycle Plan (2018), the Caltrans District 4 Bicycle Plan (2018), the North Bayshore Precise Plan (2018), the East Whisman Precise Plan (2019), the San Antonio Precise Plan (2014), as well as several development plans in the North Bayshore area.

Assumptions and Qualifications

Like the PQOS analysis, this modified BLTS analysis is considered appropriate for evaluating the bicycle network on the citywide level. While certain data inputs were unavailable at the citywide level, including a lack of information on land use context and prevailing speeds on individual street segments, these may be included during future project-level analyses if available.

2.2.2 Methodology

Step 1: Analyze Street Segments for Initial BLTS

The BLTS analysis is based on a number of factors, including posted speed limit, roadway width, and the presence of existing bicycle facilities. The first step of the analysis involves assigning initial BLTS values to road segments based on a combination of speed limit and roadway width data. An example is shown below.

	Street Width			
Speed Limit	2 lanes without centerline	2 - 3 lanes with centerline	4 - 5 lanes	6 + lanes
<= 25 mph	1.5	2	3	4
30 mph	2	3	4	4
>= 35 mph	4	4	4	4

Step 2: Adjust Results for Bikeway Facilities

Where bicycle facilities exist, the BLTS values are updated based on the class of facilities. Any Class I trail is considered to have a BLTS of 1. Class II bike lanes have different BLTS values depending on street width and speed limit, as shown below. Class III bike routes provide no change to BLTS values, which is an adjustment relative to the Mineta Transportation Institute's approach, to reflect the minimal approach to Class III bike routes in Mountain View. Class IV protected bikeways provide up to two grade improvements relative to no facilities.

Speed Limit	Street Width: Less than 4 lanes	Street Width: 4 or more lanes
<= 25 mph	1	3
30 mph	2	3
35 mph	3	3
>= 40 mph	4	4

Step 3: Address Intersection Effects and Map LTS throughout the Network

At intersections, a bicyclist's level of stress is determined by the worst BLTS value of all intersecting street segments. For example, an intersection of BLTS 4 and BLTS 2 streets is coded as BLTS 4. As with roadway segments, BLTS values at intersections are calculated based on a combination of street width and speed limit. Unsignalized intersections are also considered to be a factor that can increase stress, particularly where intersecting roadways feature higher speed limits, greater numbers of travel lanes, or both.

The roadway and intersection BLTS scores are visualized in a series of maps (see Chapter 3). A summary of the criteria used in the methodology is shown in Table 2-2.

Table 2-2. Bicycle Level of Traffic Stress Criteria

Criterion	Description
Street Width	The number of lanes and whether or not a road has a centerline impact BLTS scores. Streets with more lanes are less comfortable for bicyclists, although the level of stress depends on a combination of roadway width and speed limit.
Speed Limit	Higher speed limits provide a less comfortable experience for bicyclists. The BLTS analysis divides posted speed limits into three ranges: <= 25 MPH; 30 MPH; and >=35 MPH.
Existing Bicycle Facility / Class	Class I paths and Class IV protected bike lanes provide the most comfortable experience for bicyclists. The comfort of Class II facilities depends on street width and speed limit.
Signalized / Unsignalized Intersection	Bicyclists' stress at signalized intersections comes from both the road they are traveling on and the road they are crossing. At these intersections, BLTS scores are based on the less comfortable of the two roads. The level of traffic stress experienced at unsignalized intersections is dependent on both street width and speed limit.

Step 4: Identify All Ages and Abilities Facilities

According to the National Association of City Transportation Officials (NACTO)'s *Designing for All Ages & Abilities: Contextual Guidance for High-Comfort Facilities,*[4] the following thresholds are used to classify bicycle facilities that are comfortable for all ages and abilities (AAA):

Bicycle Facility	Posted Speed Limit	Motor Vehicle Lanes
Class I	Any	Any
Class IV	Any	Any
Class II	<= 25 MPH	1 lane in each direction (or less)
Class III	<= 25 MPH	No centerline

These thresholds were used to identify the existing and planned AAA bicycle network within the City of Mountain View. The analysis only considers streets that have existing or planned bicycle facilities. The planned network includes two bicycle facility types from the Caltrans D4 Bicycle Plan that do not fit within the existing four bicycle facility classes. These two facility types, Cross County Bicycle Corridors (CCBCs) and Bicycle Superhighways, are considered to be Class II and Class IV facilities, respectively, for the purpose of this AAA analysis. The existing citywide AAA network is illustrated in Chapter 3.

Step 5: Assess Low Stress Islands

The results of the initial BLTS analysis developed in Step 3 were used to identify "islands" of low-stress connectivity. These low-stress islands are contiguous low-stress road segments of BLTS 1, 1.5, or 2 that are not within 100 feet of a high-stress intersection (BLTS 3 or 4). This analysis considers the entire street network regardless of whether or not bicycle facilities are present. Low-stress islands greater than 0.1 square mile were considered for the results. This analysis was conducted for both existing and planned facilities.

[4] https://nacto.org/wp-content/uploads/2017/12/NACTO_Designing-for-All-Ages-Abilities.pdf

2.3 Origin-Destination Analysis

The project team conducted two Origin-Destination (O-D) analyses to identify existing bicyclist, pedestrian, and motor vehicle travel patterns in Mountain View. The first analysis focuses on traveler and trip attributes of vehicle, bicycle, and pedestrian travel within the city. The second focuses on short vehicle trips along four roadways: California Street, El Camino Real, Middlefield Road, and Moffett Boulevard/Castro Street.

2.3.1 Overview: Citywide O-D Analysis

The Citywide O-D analysis helps to determine Mountain View's primary multimodal transportation network by identifying existing motor vehicle, bicycle, and pedestrian traveler and trip attributes in the city. By identifying these trip attributes and travel patterns, the analysis provides insight into options for expanding the Mountain View Community Shuttle.

Data Inputs

StreetLight data were used for this analysis.[5] StreetLight, referred to as "Big Data for Mobility," is a web-based software product that allows transportation planners, modelers, and engineers to run dynamic analyses using billions of information data points gathered from various sources. These data sources include anonymized location records from smart phones and navigation devices in connected cars and trucks. StreetLight data from April to June 2018 and September to October 2018 were used for the analysis.

Assumptions and Qualifications

While StreetLight data is useful in providing mobility data for all modes, it has several limitations. These limitations include concerns about privacy issues, a lack of information about data sources, and an inaccuracy of data given the small sample sizes that are used.

For the O-D analysis, the data does not provide accurate information on the volume of trips. However, it provides information on the relative strength of well-defined O-D pairs and time periods.

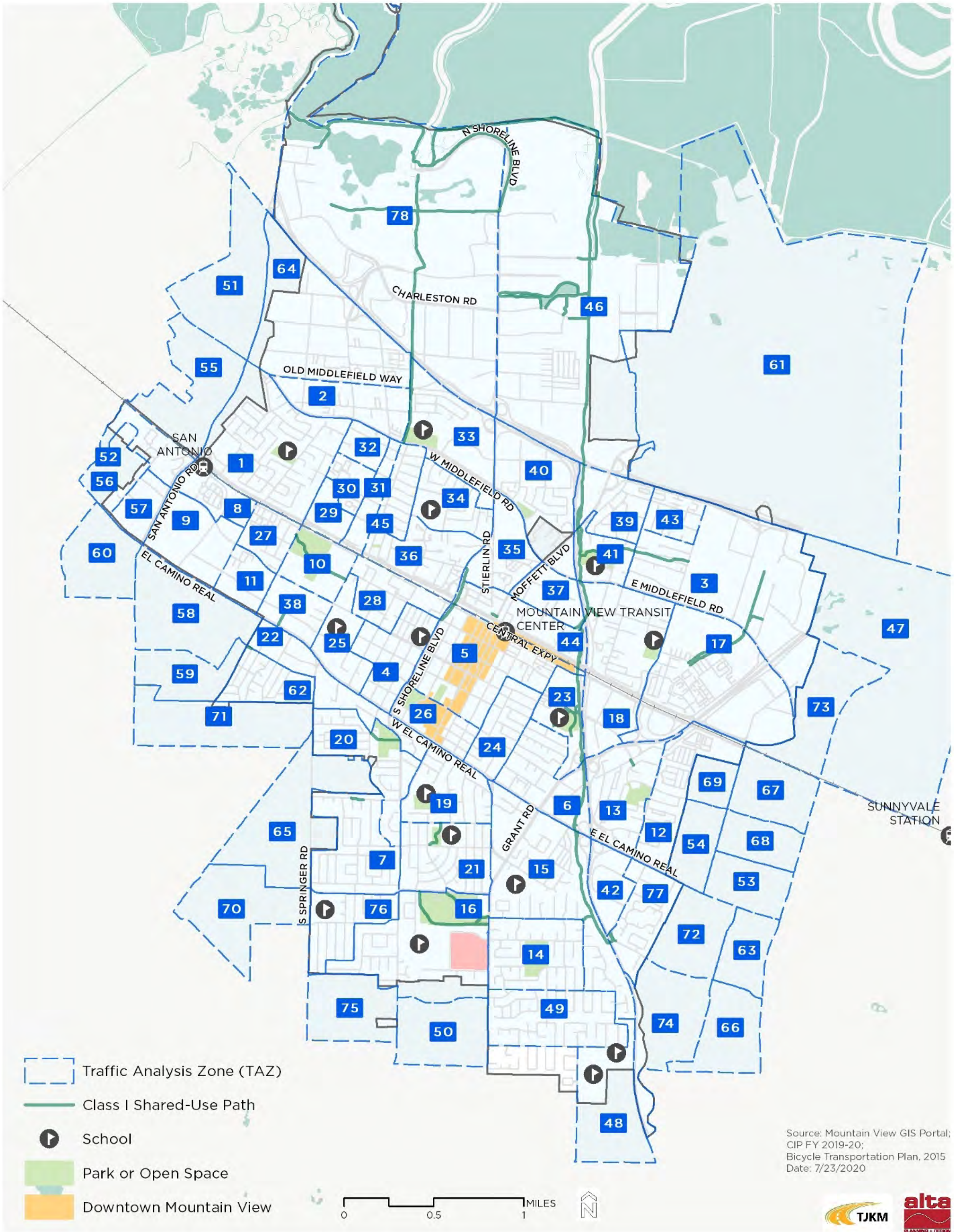
2.3.2 Methodology: Citywide O-D Analysis

Step 1: Identify Traffic Analysis Zones

The first step of the analysis involves identifying key census block groups that form Traffic Analysis Zones (TAZs) in Mountain View, as well as neighboring jurisdictions such as Los Altos and Sunnyvale. The project team divided the City of Mountain View into 78 TAZs to run the analysis (see Figure 2-1).

[5] https://www.streetlightdata.com

Figure 2-1. City of Mountain View Origin-Destination Transportation Analysis Zones



Step 2: Define Trip Attributes

The StreetLight Data Analysis produces a matrix of various trip types between each O-D TAZ. These include four types of trip attributes:

- **Trip Duration**: Trip time summarized into one minute groups or bins between O-Z zones.
- **Trip Length**: Trip length in miles between O-D zones, shown in bins ranging from one to five miles.
- **Trip Speed**: Average mile per hour (MPH) speed per trip between O-D zones in bins of 10 MPH.
- **Trip Circuity**: Ratio of trip length to the direct distance between end points of trips between O-D zones. The lower the trip circuity, the more direct the trip.

Results are shown for AM Peak Hour and PM Peak Hour trips for vehicles and daily trips for bicyclists and pedestrians.

Step 3: Define Traveler Attributes

The StreetLight Data Analysis also includes four traveler attributes:

- **Household Income**: Traveler household income bracket.
- **Education**: Highest education level of travelers over the age of 25.
- **Race**: Traveler self-identified race.
- **Family Status**: Traveler household family status.

Results are shown for daily trips for all three modes.

Step 4: Undertake Intersection Analysis

The results of the StreetLight Data Analysis were used as inputs to a VISUM (travel demand modeling software) analysis to determine the volume flow of trips produced between the 78 TAZs for all modes.

Results are shown for daily and peak hour weekday trips for vehicles, and daily weekday trips for bicyclists and pedestrians. Results can be found in Chapter 3.

2.3.3 Overview: Short Vehicle Trips O-D Analysis

A separate O-D analysis was completed for four specific roadways within Mountain View: California Street between Del Medio Avenue and Bush Street; El Camino Real between Del Medio Avenue and S Bernardo Avenue; Middlefield Road between San Antonio Road and Central Expressway; and Moffett Boulevard/Castro Street/Miramonte Avenue between US 101 and Covington Road. The purpose of the second O-D analysis was to understand the percentage of short vehicle trips within the City of Mountain View that could potentially be completed by bicycle if low-stress bicycle facilities were in place.

Data Inputs

StreetLight data from April to June 2018 and September to November 2018 were used for this analysis. The data included the following attributes:

- Personal trips
- Mid-week average from Tuesday to Thursday
- Daily traffic from 12:00am to 12:00am

Assumptions and Qualifications

As noted in Section 2.3.1, while StreetLight data is useful in providing mobility data for all modes, it has limitations related to the anonymity of its data sources, sample size, trip definition, and bicycle trips. Because of these existing limitations, the results of this O-D analysis should be interpreted as a sample of real traffic volumes only.

Additional assumptions include:

- All short vehicle trips begin and end in the study area, which means that no trips passing through the area are considered as "internal-to-internal" vehicle trips
- A middle filter – a "checkpoint" placed on a study corridor that specifies trip routing between O-D pairs – ensures trips using cross streets are also considered
- The sample size includes all possible trips on a given study corridor, including those that begin and end outside of the study area but only pass through it along the corridor, those that begin in the study area but have a destination outside of it, and those that begin and end within the area on the given corridor (short vehicle trips)
- The sample size can also be considered as the average daily traffic (ADT) representing each corridor

2.3.4 Methodology: Short Vehicle Trips O-D Analysis

Step 1: Identify O-D Zones

For each of the four corridors, the project team identified O-D zones where all possible vehicle trips traveling on that corridor are captured within the extent of the zone. Middle filters are numerous checkpoints placed on a given study corridor at the approaches of the selected cross street intersections (Figure 2-2). This placement of middle filters ensures trips using the cross streets are also captured.

Figure 2-2. Middle Filter

Step 2: Identify Short Vehicle Trips

Short vehicle trips are defined as vehicle trips with a length that is shorter than the total length of the study corridor. To identify the percentage of short vehicle trips taken per corridor, the project team divided the total average daily trips between zones by the sample size. The sample size of the study corridor includes all vehicle trips traveling on the corridor within the same period of time as the short vehicle trips used in the analysis.

Step 3: Summarize O-D Results

The percentage of trips from one zone to another were summarized to identify the total number of short vehicle trips taken on each of the corridors. These results were used to identify the potential percent increase to existing bicycle volume if 31.5%, 63% or 100% of the short vehicle trips were made by bicycle instead of by vehicle. Results for each of the four corridors are shown in Chapter 3.

03

Existing and Planned Infrastructure by Mode

Chapter 3 Existing and Planned Infrastructure by Mode

Mountain View's transportation system is comprised of a complex network of roadways, transit corridors, and bicycle and pedestrian facilities. This chapter identifies existing infrastructure by mode based on information gathered from field observation, analysis of existing data, and a review of planned infrastructure identified in over 30 completed plans and studies listed in Chapter 1 as well as the City's Capital Improvement Program (CIP), and conditions of approval associated with land development projects.

The resulting compilation of existing, approved, and planned infrastructure is organized by mode and presented in a series of maps. These maps include findings of the PQOS, BLTS and O-D analyses described in Chapter 2.

3.1 Pedestrian Network

3.1.1 Existing Pedestrian Network

There are currently 186 centerline miles of roadway and 18 miles of multi-use trails within the City of Mountain View. Some of the roadway facilities have sidewalk gaps, or are missing a sidewalk on one side of the street or both sides of the street. In addition to sidewalks, existing pedestrian facilities include multi-use trail connections as shown in Figure 3-1. Pedestrian facilities at intersections include marked crosswalks, enhanced crosswalks, and pedestrian signals as shown in Figure 3-2.

Figure 3-1. Existing Pedestrian Network (Street Segments)

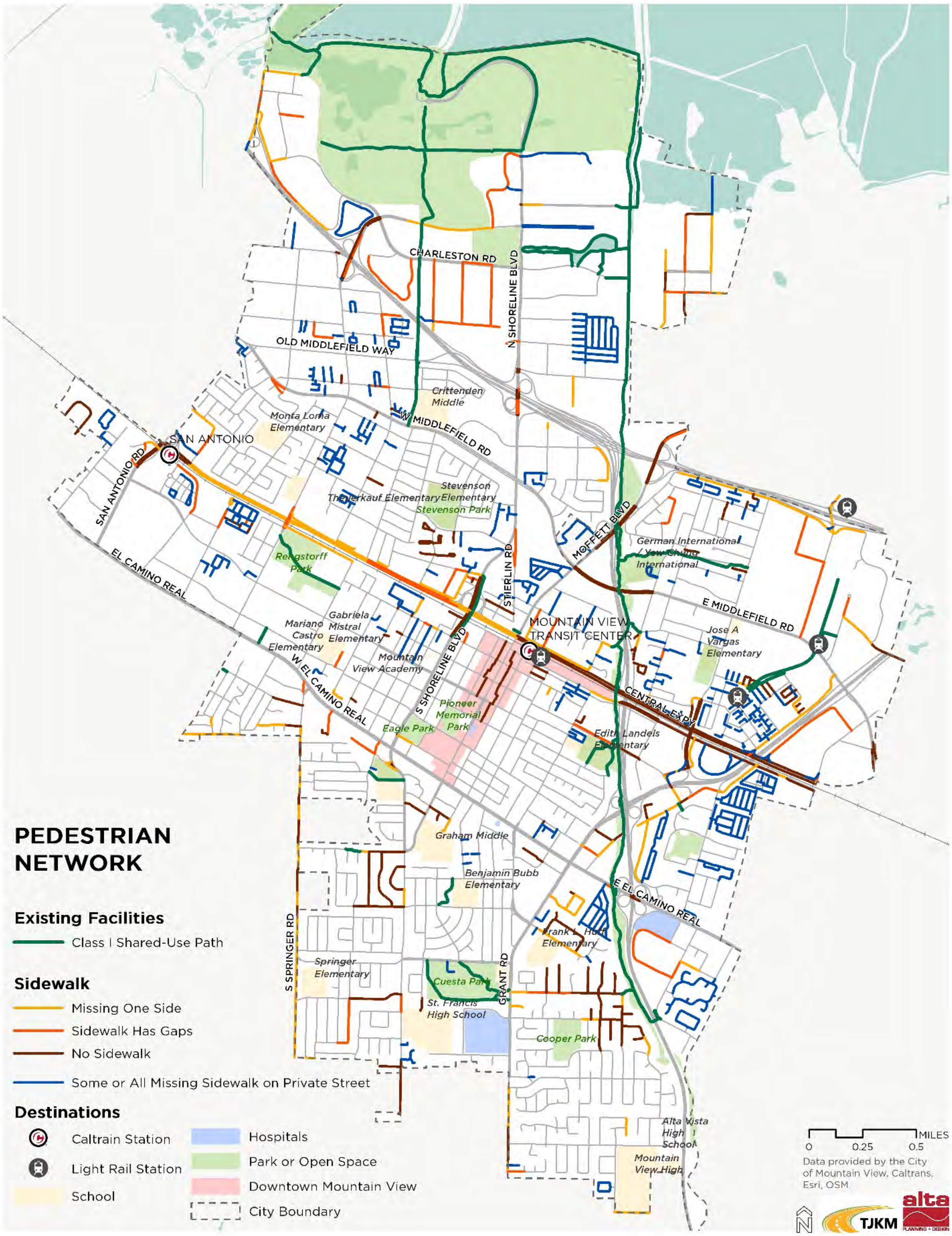
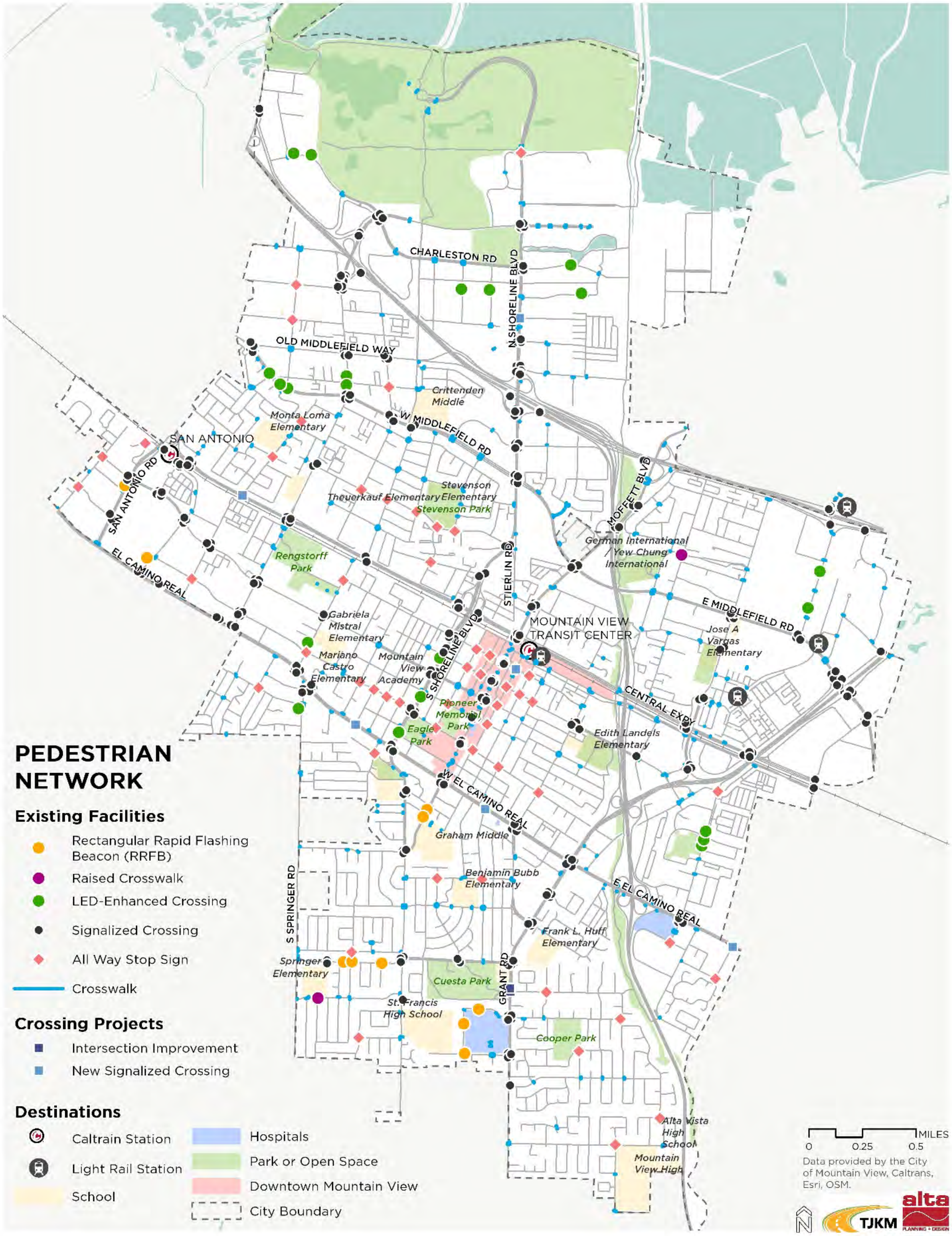


Figure 3-2. Existing Pedestrian Network (Intersections)



3.1.2 Existing Tree Canopy

Another component of the pedestrian network is shade. Trees and shade structures can cool surfaces by as much as 45 degrees Fahrenheit, temperature differentials that are critical for both safety and comfort in warmer months.[6] The City's Community Tree Master Plan (2015) estimates that the existing urban forest includes 26,166 publicly-managed trees which offer more than $8 million of benefits annually from air quality improvements, energy savings, water quality improvements, carbon reduction, and many aesthetic and socioeconomic benefits. The Community Tree Master Plan provides a guide for managing, enhancing, and growing the urban forest, including increasing the tree canopy by 5 percentage points by 2025.

While a significant portion of the City of Mountain View's streets have a medium or high density of trees, the presence of street trees is not evenly distributed throughout the City (Figure 3-3). Higher concentrations of trees can be found around downtown, Rengstorff Park, Cuesta Park, and Charleston Park, and along major corridors such as Shoreline Boulevard and Moffett Boulevard. Major corridors in the city that have a low tree density include El Camino Real, segments of San Antonio Road, segments of Middlefield Road, and segments of California Street, indicating that these corridors could benefit from the addition of new street trees during future improvement projects.

[6] Environmental Protection Agency, "Using Trees and Vegetation to Reduce Heat Islands," accessed February 1, 2021, https://www.epa.gov/heat-islands/using-trees-and-vegetation-reduce-heat-islands#1.

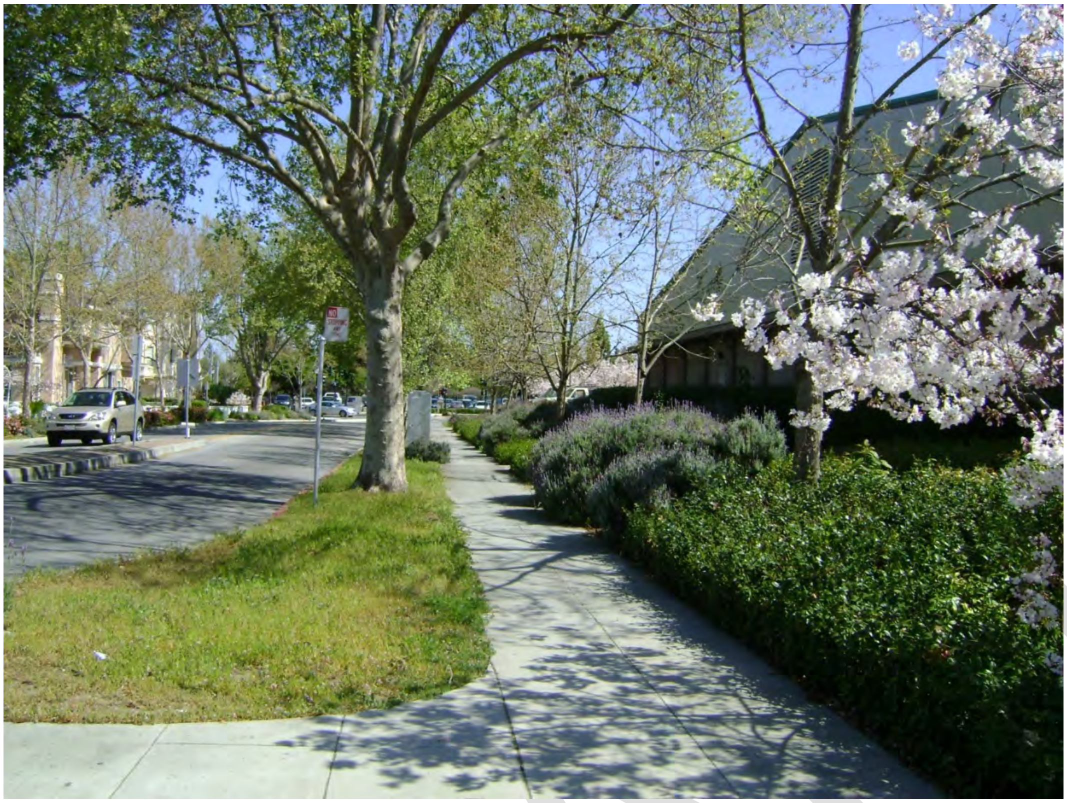
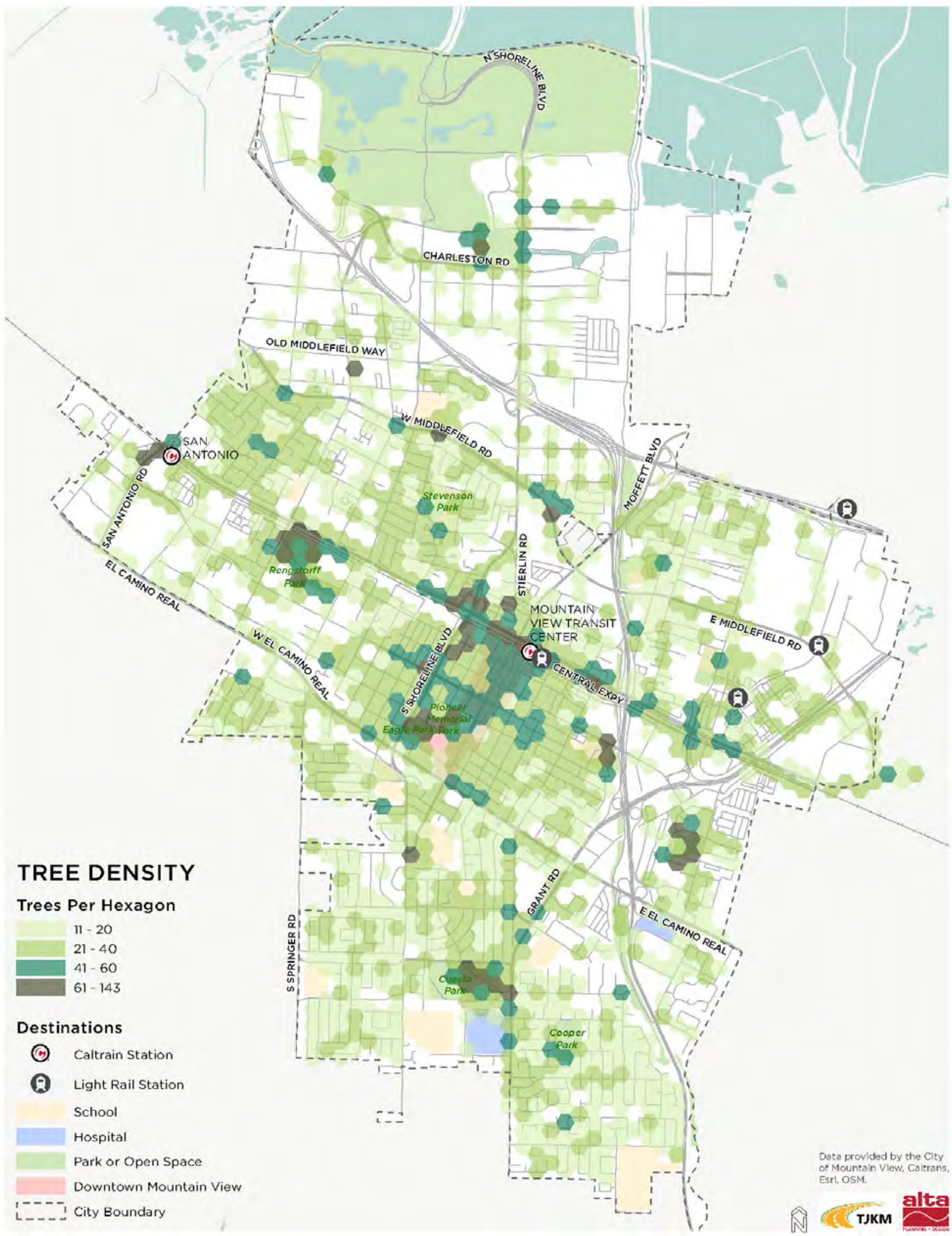


Figure 3-3. Tree Density (Street Trees)

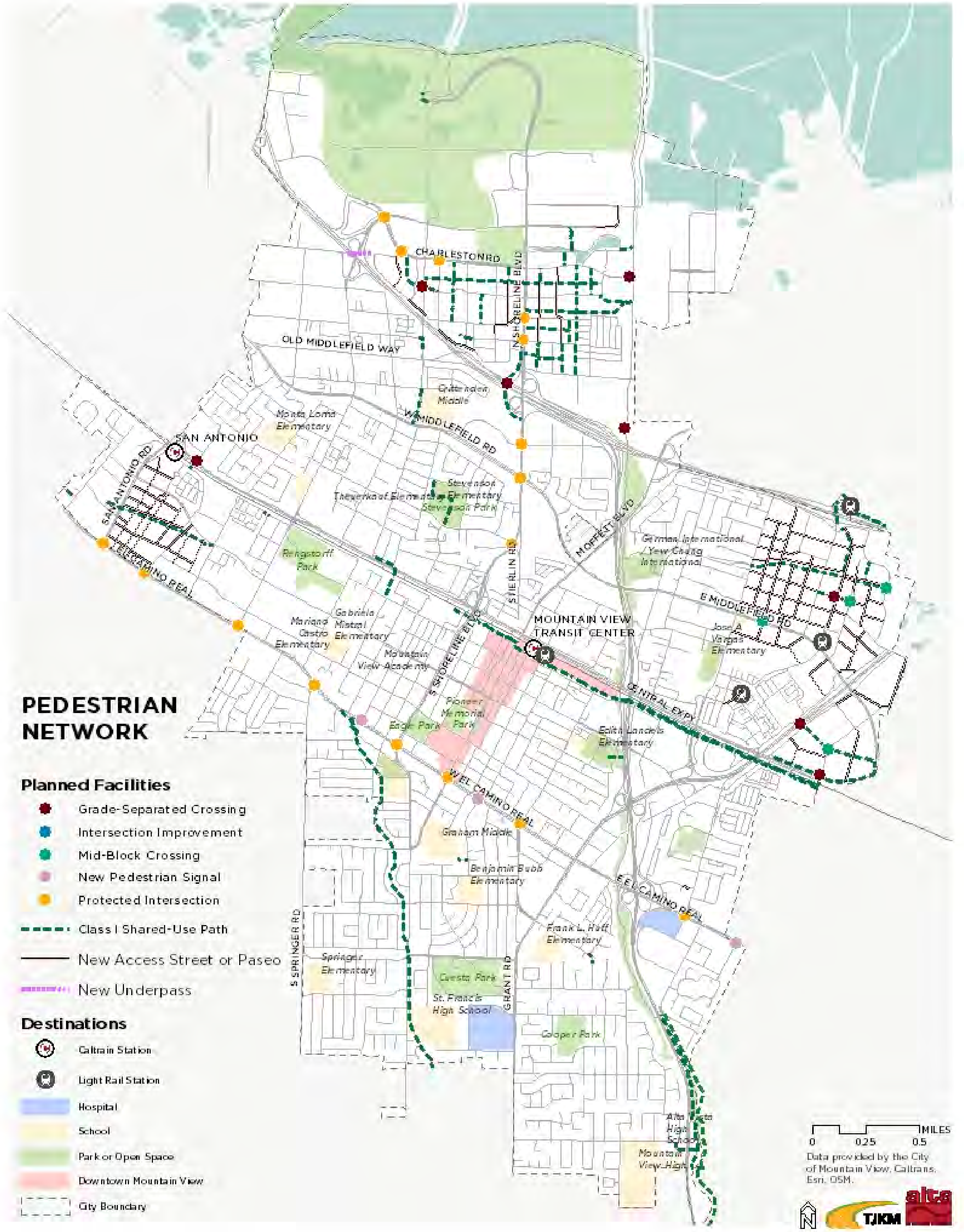


3.1.3 Planned and Existing Pedestrian Facilities

In addition to the existing pedestrian network, there are a number of planned pedestrian facility improvements identified in several local and regional plans and studies, including the VTA Pedestrian Access to Transit Plan (2017), the City of Mountain View Pedestrian Plan (2014), the Bay Trail Plan (1989), and several area precise plans. Figure 3-4 identifies these planned facilities.

In the City of Mountain View, sidewalk completion typically occurs through conditions of approval when the adjoining properties are redeveloped, or through complete streets improvements around highway interchanges. The City also maintains several unimproved streets that were dedicated to the City without sidewalk, gutter, drainage facilities, or other improvements. Along these streets, residents may establish an Improvement District to pay for any improvements above the condition in which the streets were conveyed to the City. These streets are not required to be improved during adjoining development or complete streets improvement projects. Instead, street improvements along these streets are funded through Improvement Districts.

Figure 3-4. Planned Pedestrian Network



3.1.4 Pedestrian Quality of Service

Using the Pedestrian Quality of Service (PQOS) methodology outlined in Chapter 2, the project team assessed walkability for all streets in Mountain View. This assessment focuses on key factors affecting walkability including the presence or absence of continuous sidewalks. The results provide a Citywide perspective on walkability that may not be appropriate for more granular analysis of walkability at the project scale.

As improved PQOS methodologies are developed (such as through the update the VTA TIA Guidelines) and the City develops a more complete sidewalk layer within its GIS database, an updated analysis of PQOS could be undertaken to provide better correspondence between citywide and project analyses, as well as mechanisms for calculating future PQOS.

The results of the existing PQOS analysis for this study indicate that downtown Mountain View has the highest walkability, due to the high intersection density, short block lengths, relatively lower speed limits, relatively narrower streets, and presence of sidewalks and nearby destinations.

There are a variety of areas within the city where the PQOS results demonstrate a lower-quality experience for pedestrians. Some of these areas are specific to certain corridors, including El Camino Real, Central Expressway, East Evelyn Avenue, East Middlefield Road, and portions of Moffett Boulevard. There are also some zones within the city where most streets received PQOS values of 4 and 5, indicating low pedestrian quality of service due to a lack of diverse walkable destinations. These include the North Bayshore neighborhood to the north of US 101, the Whisman Station neighborhood (bounded by East Middlefield Road, North Whisman Road, Central Expressway, and SR 237), and the Waverly Park neighborhood in the southern portion of the city. Implementation of the North Bayshore and East Whisman Precise Plans is likely to improve PQOS in the former two areas due to the creation of more a more fine-grained street network and a greater diversity of land uses including residential and retail land uses.

There does not appear to be a strong relationship between poor PQOS scores and pedestrian collisions. Most pedestrian collisions between 2014 and 2018 occurred downtown, likely due to the fact that downtown Mountain View has the highest level of travel demand for all modes.

Figure 3-5 illustrates the results of the PQOS analysis.

Figure 3-5. Pedestrian Quality of Service

3.2 Bicycle Network

3.2.1 Existing Bicycle Network

Along Mountain View's 186 centerline miles of roadway, there are 42 centerline miles of Class II bike lane facilities, and just over one centerline mile of Class IV protected bikeway facilities. Additionally, the City has 18 miles of Class I multi-use trail facilities and 16 centerline miles of Class III facilities, resulting in a total of 77 miles of bikeway facilities. Table 3-1 shows the breakdown of existing (and approved) bicycle facilities by Class. Figure 3-6 illustrates existing (and approved) facilities within city boundaries, and identifies key destinations that are accessible by the facilities including major transit stops, schools, and parks.

3.2.2 Planned and Existing Bicycle Facilities

In addition to the existing bicycle facilities identified in Figure 3-6, there are over 100 miles of planned bicycle facilities identified in previous plans and studies that include the Caltrans District 4 Bike Plan (2018), the VTA Countywide Bicycle Plan (2018), the City of Mountain View Bicycle Transportation Plan (2014), the Caltrain Bicycle Access and Parking Plan (2008), and several area precise plans. These facilities include 18 miles of new Class I multiuse trails and 41 miles of Class IV protected bikeways (Table 3-1). Figure 3-7 illustrates these planned facilities as well as major destinations within the City of Mountain View.

Table 3-1. Planned and Existing Bicycle Network

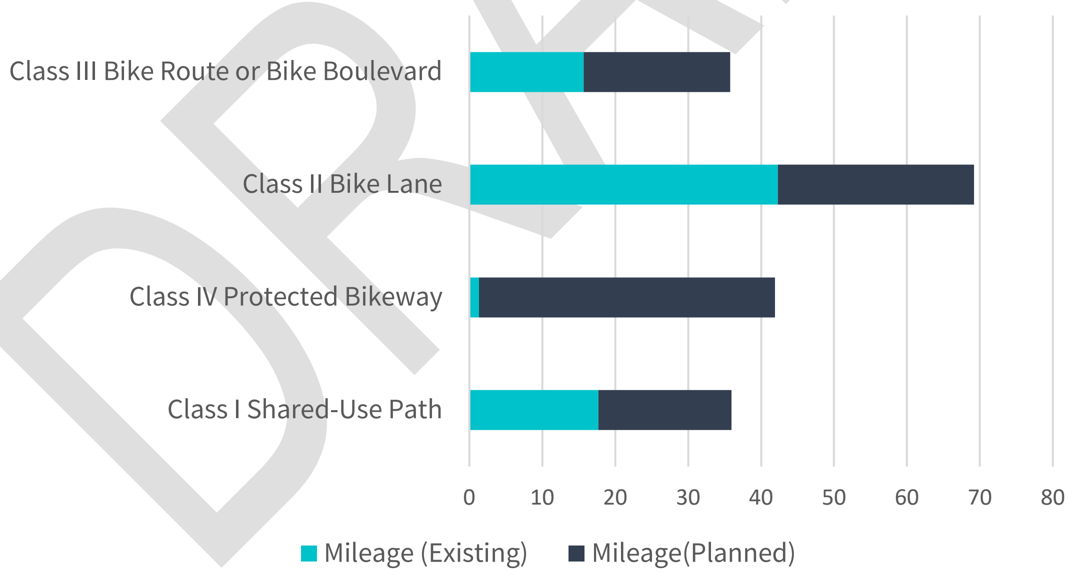


Figure 3-6. Existing Bikeways

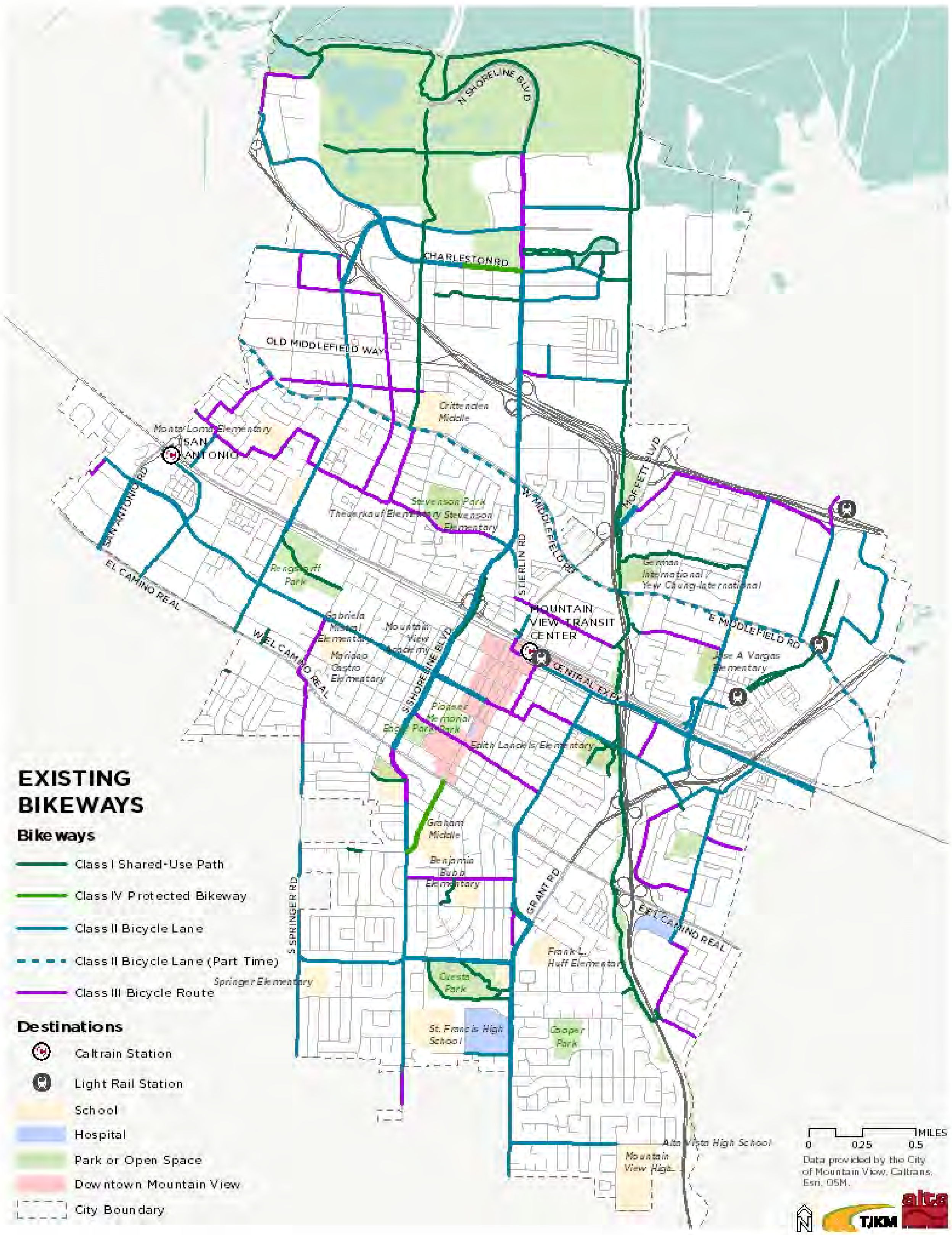
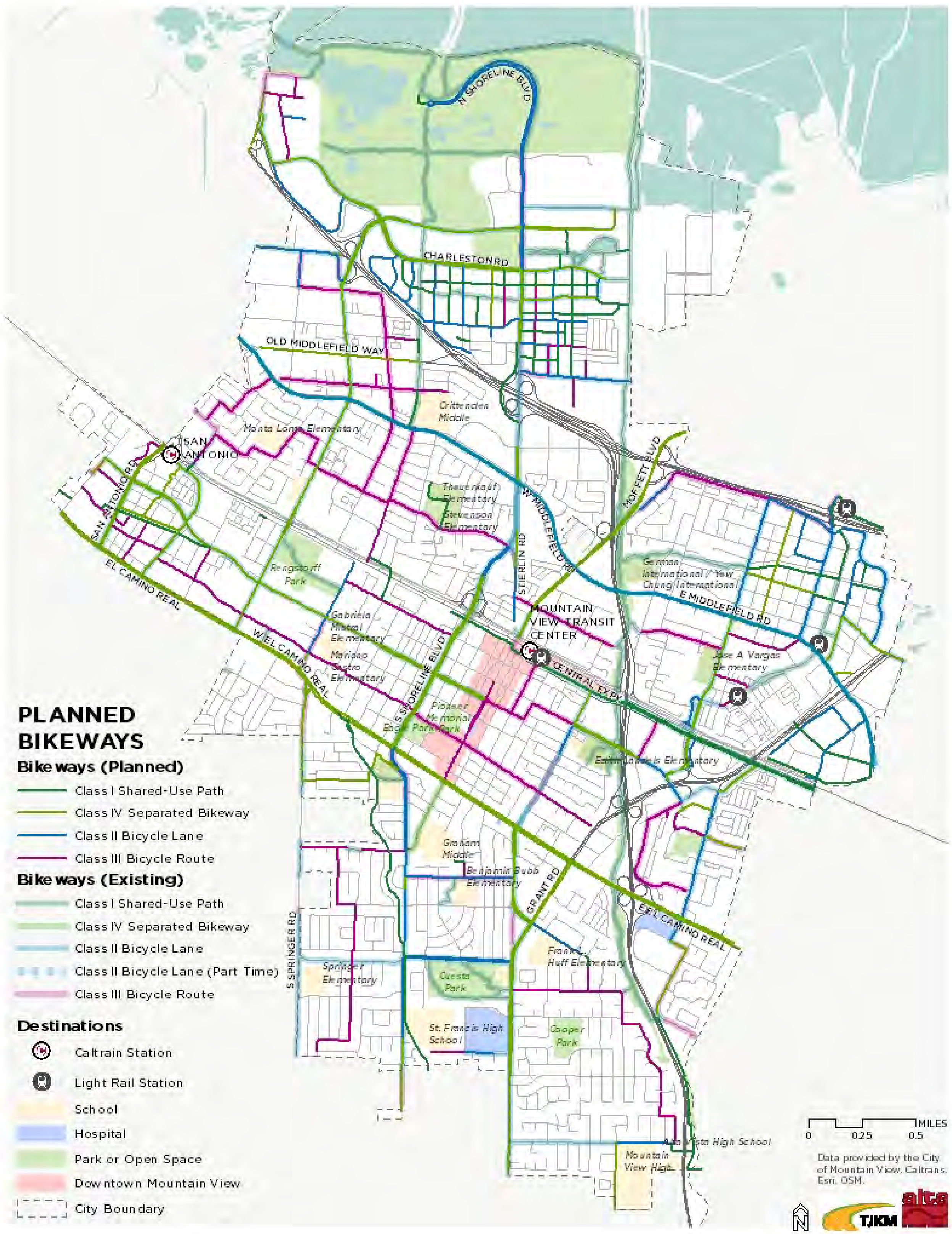


Figure 3-7. Planned and Existing Bicycle Facilities



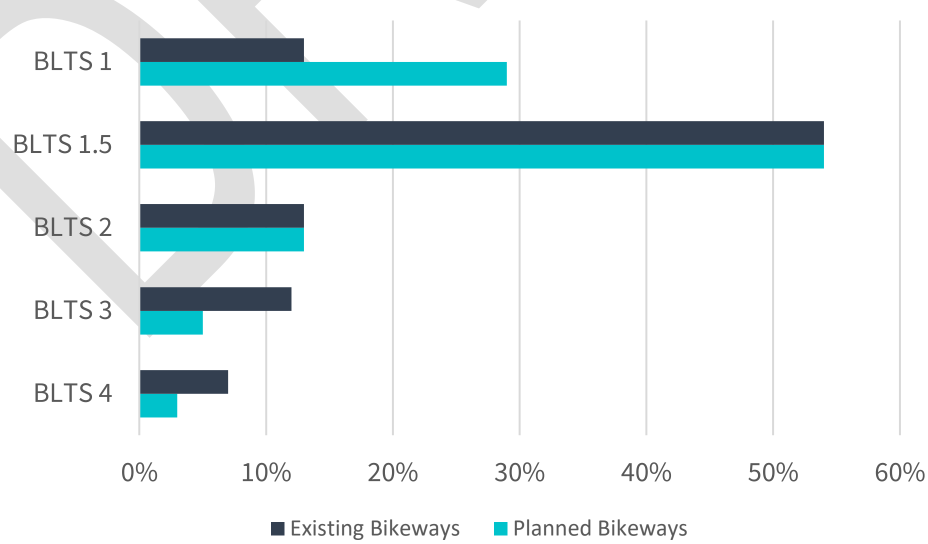
3.2.3 Bicycle Level of Traffic Stress Analysis

As outlined in Chapter 2, the Bicycle Level of Traffic Stress (BLTS) analysis rates each city roadway segment and intersection by the level of traffic stress for bicyclists. The rating is divided into five categories: All Ages and Abilities (LTS 1); All Ages and Abilities – Residential (LTS 1.5); Interested but Concerned (LTS 2); Somewhat Confident (LTS 3); and Highly Confident (LTS 4). For more detail on the methodology used for the analysis, see Chapter 2. Please note that the BLTS methodology was adjusted in order to facilitate analysis of the entire citywide network. The results of a more granular analysis at the project level may differ due to inclusion of additional variables such as land use context and prevailing speeds on individual street segments.

Analysis was conducted for both existing and planned bicycle facilities. The existing network consists of 186 centerline miles of roadway including 59 miles with designated bicycle facilities and 18 miles of off-road trails. The largest proportion of the existing bicycle network consists of local low-stress streets without any specific bicycle facilities or treatments. These residential streets are categorized as BLTS 1.5 and constitute 54% of the bicycle network. In addition, 13% of the network was categorized as BLTS 1 (All Ages and Abilities), 13% as BLTS 2 (Interested but Concerned), 12% as BLTS 3 (Somewhat Confident), and 7% as BLTS 4 (Highly Confident).

Planned bikeway improvements would increase the amount of BLTS 1 facilities from 13% to 29%, which would significantly expand the amount of the City's bicycle network available to people of all ages and abilities. These improvements involve upgrading some existing facilities, so BLTS 3 would be reduced from 12% to 5% and BLTS 4 from 7% to 3%. Overall, there would be a much higher availability of low-stress bicycle infrastructure. While most of these planned low-stress facilities are attributable to improved stress levels from streets that had been classified as BLTS 4, 3, or 1.5, several of the planned low-stress centerline miles are attributable to brand new low-stress facilities such as the planned Stevens Creek Trail extension. The percentages of existing and planned BLTS streets are shown in Figure 3-8.

Figure 3-8. Existing and Planned Bicycle Level of Traffic Stress Streets



Existing BLTS results are shown in Figure 3-10 and Figure 3-11. These figures also display bicycle collision data between 2014 and 2018. While collisions have numerous factors, including driver/cyclist behavior, driver impairment, and moving violations, some roadways have higher rates of collisions than others. This map shows that over 75% of all collisions occurred on roadways with BLTS scores of 3 or 4, which make up only 19% of the City's overall bicycle network (Figure 3-9). In contrast, only 10% of collisions occurred on routes with BLTS 1, and nearly all of these were at intersections with other roads. Planned BLTS scores are shown in Figure 3-12.

Figure 3-9. Percent of Collisions by Bicycle Level of Traffic Stress Rates on Existing Streets

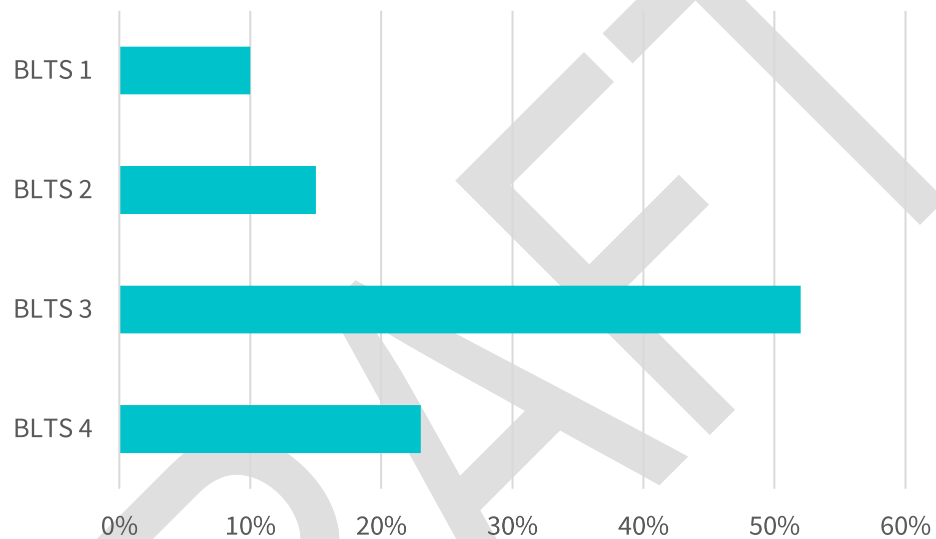


Figure 3-10. Existing Bicycle Level of Traffic Stress

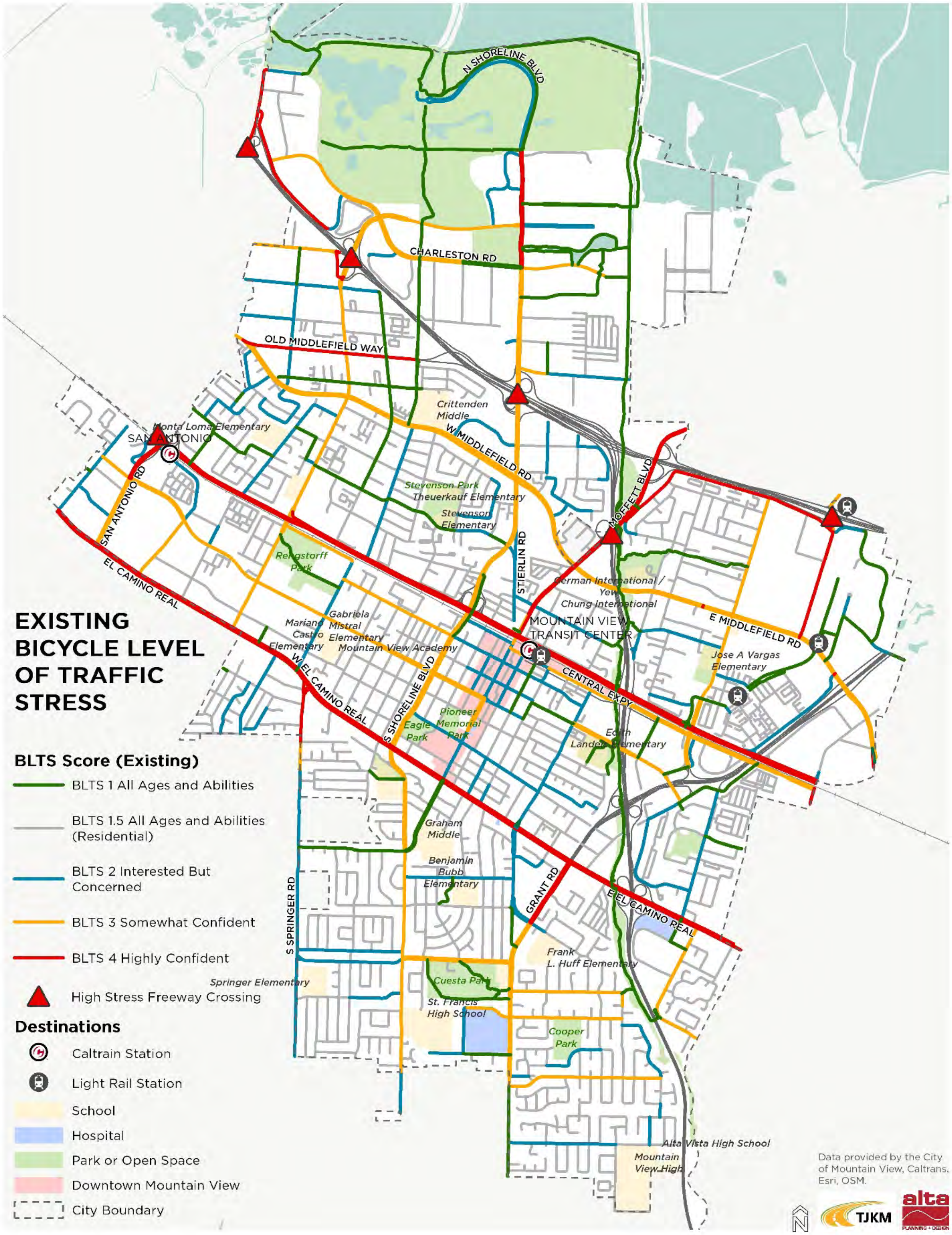
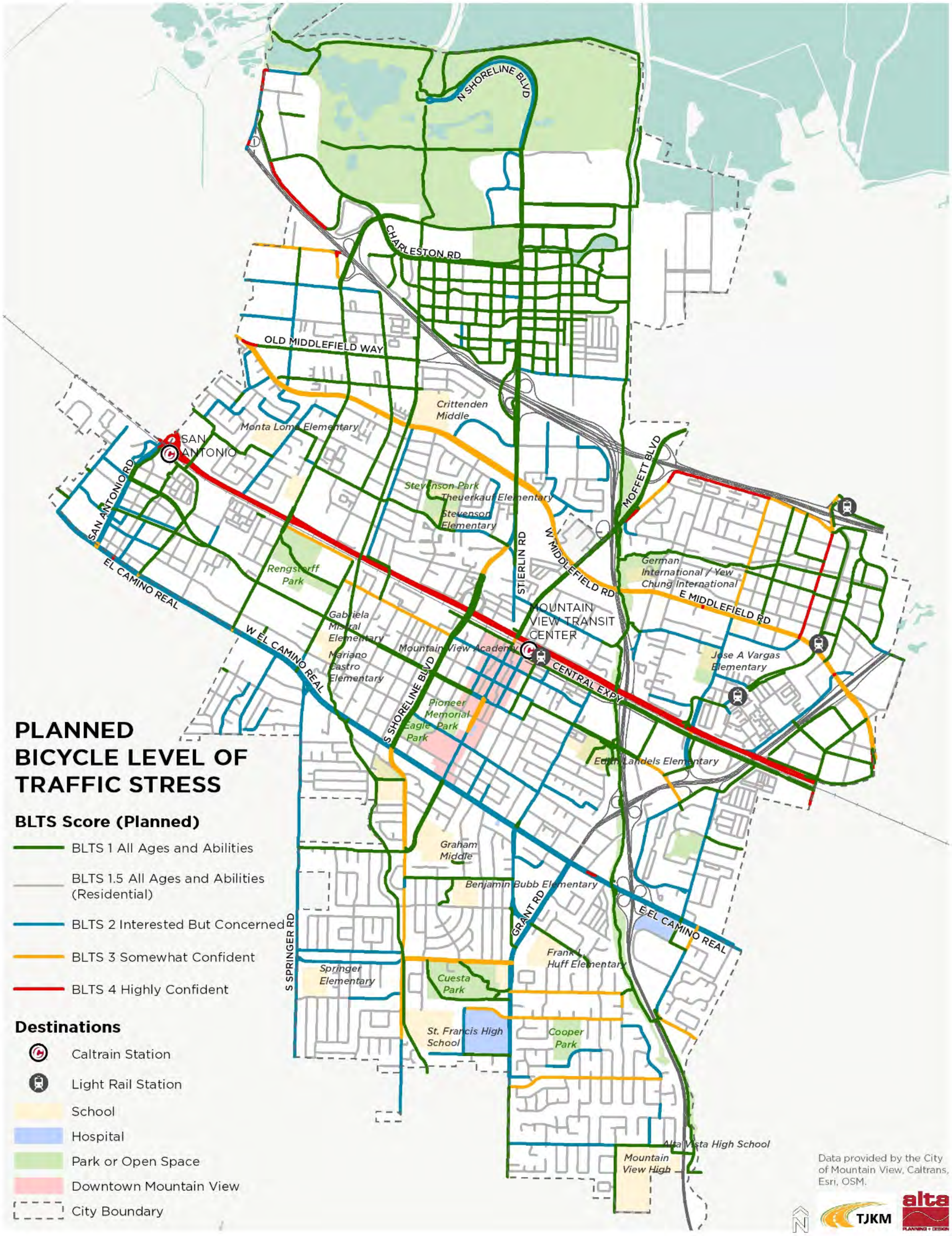


Figure 3-11. Existing Bicycle Level of Traffic Stress with Collisions

Figure 3-12. Planned Bicycle Level of Traffic Stress



Low Stress Network Comparison

As outlined in Chapter 2, the BLTS results were used to identify “islands” of low-stress connectivity within Mountain View, characterized as contiguous low-stress road segments of BLTS 1, 1.5, or 2. The islands represent the bikeable range for people of all ages and abilities as well as interested but concerned cyclists who wish to bike on facilities that feel comfortable to them. In reality, some cyclists may travel beyond the extent of the bikeable island where their journey started, but in order to do so, they (or their parents) need to decide how to navigate one or more high-stress segments or crossings.

Based on this analysis, the City of Mountain View currently represents 26 distinct low-stress islands separated by straits of high-stress roadways or other barriers (such as railroads or freeways). Within the existing network, the average island size is 0.33 square miles, and the largest island is 2.6 sq. mi. comprised of the street network that connects to Stevens Creek Trail.

In the planned network, the number of distinct low-stress islands decreases to 8 because many existing low-stress islands become connected into a single island via new or improved bicycle facilities. The average island size grows to 1.3 sq. mi. and the largest island will span 8.6 sq. mi., as new low-stress bicycle facilities connect to the Stevens Creek Trail island.

The existing and planned low-stress islands are shown in Figure 3-13 and Figure 3-14. These maps are overlaid on WalkScore data to illustrate the overlap between the low-stress bicycle network and pedestrian network, as well as connectivity to destinations throughout the city. The maps show that each low-stress island includes destinations that have a range of walk scores. In some existing low-stress islands, certain destinations have high walk scores (80+) while others have fairly low scores (<20). This indicates that although certain areas are considered to be part of a low-stress bicycle network, bicyclists will likely need to travel further to reach destinations. WalkScore data is only available for the existing pedestrian network and does not account for planned improvements.

Figure 3-13. Existing Islands of Low Stress Bike Facilities and Streets

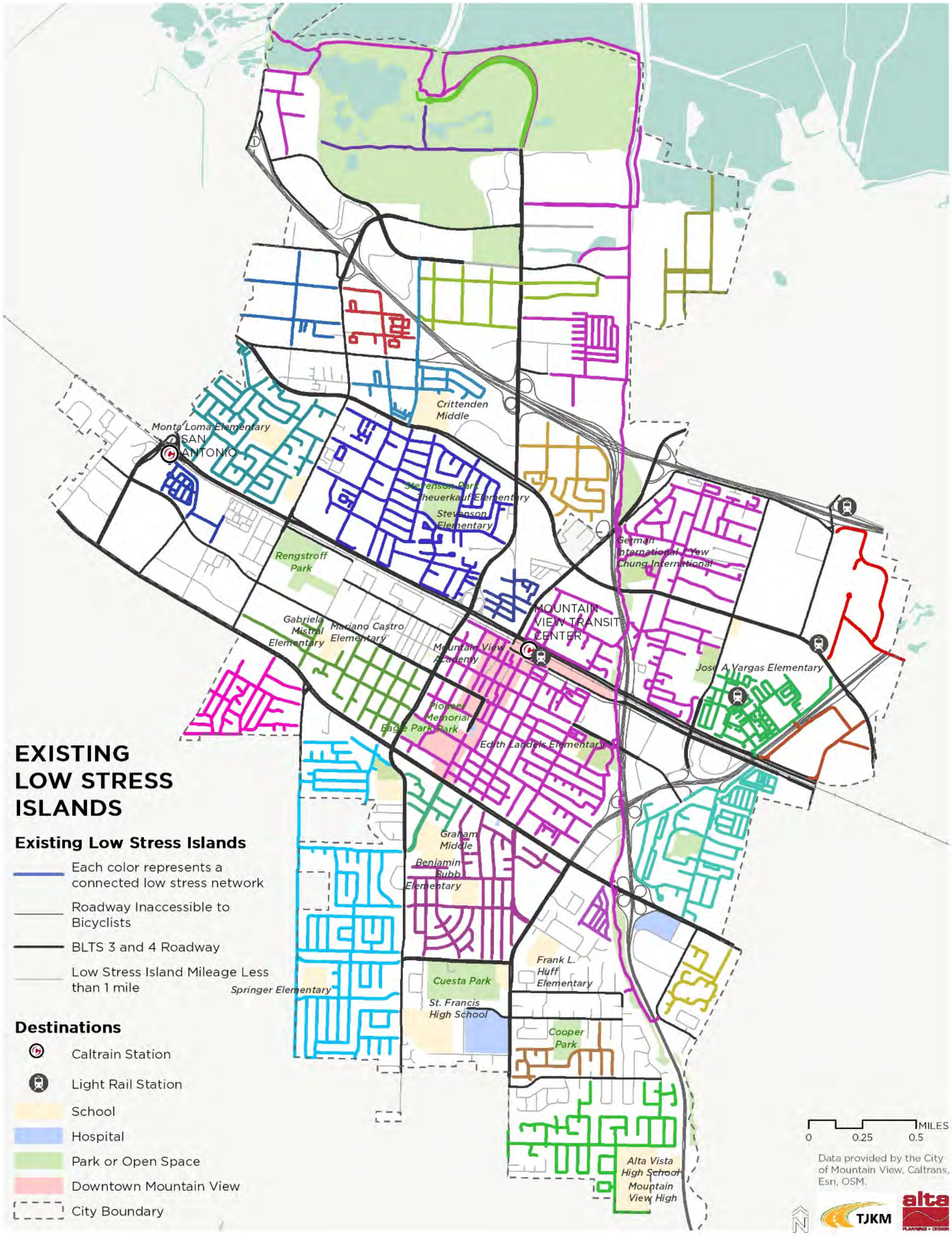
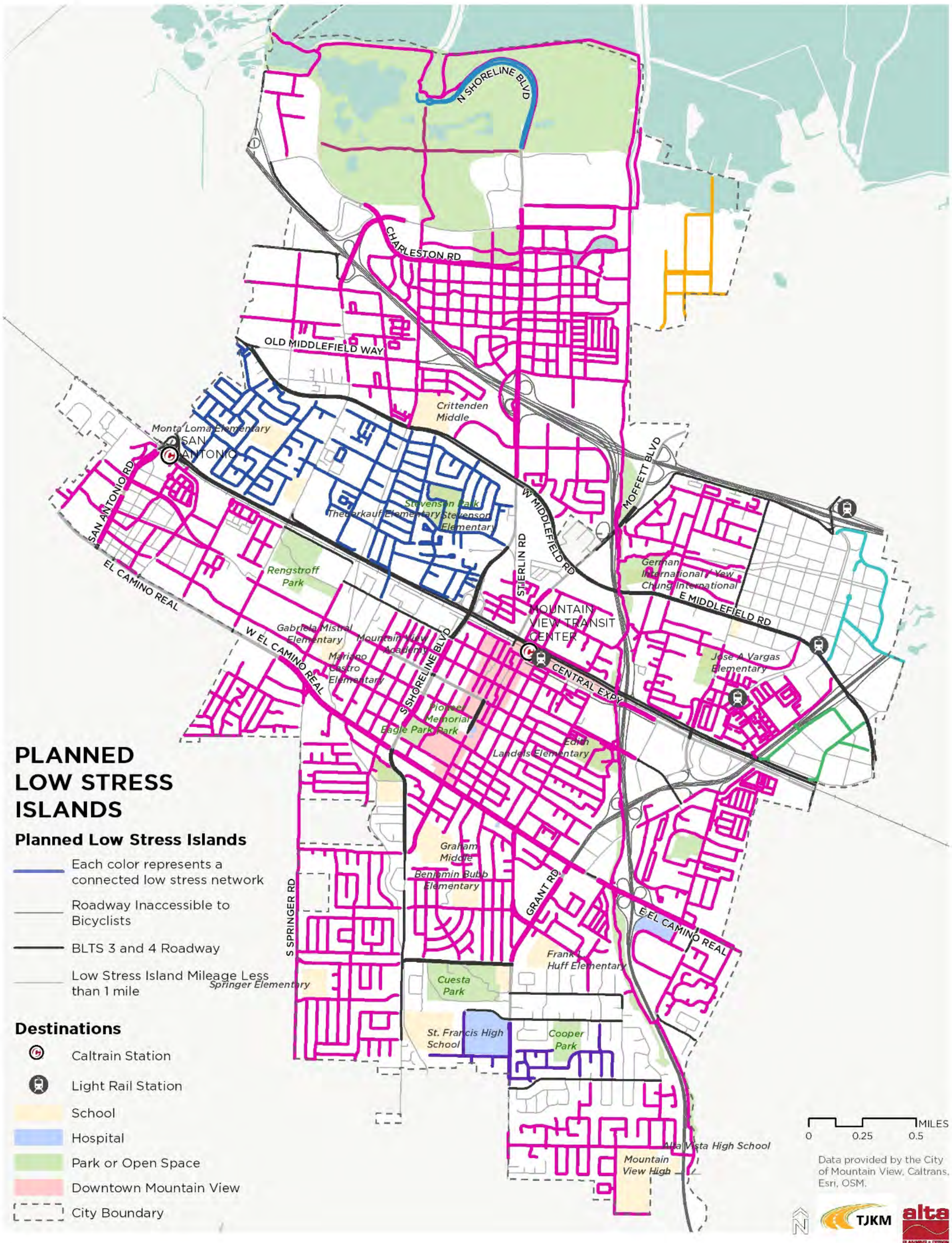


Figure 3-14. Planned and Existing Islands of Low Stress Bike Facilities and Streets



All Ages and Abilities Comparison

The project team also identified the extent of the planned and existing bicycle network facilities that meets National Association of City Transportation Officials (NACTO)'s All Ages and Abilities (AAA) threshold. This threshold includes any Class I or Class IV facility, as well as Class II and Class III facilities on streets with posted speeds less than 25 MPH. For the purpose of this analysis, two types of facilities included in the VTA's planned network—Cross County Bicycle Corridors (CCBCs) and Bicycle Superhighways—were assumed to be Class II and Class IV facilities, respectively.

The results of the analysis show that the existing AAA network spans approximately 25 miles. With the inclusion of planned facilities, this number grows to approximately 75 miles, which significantly expands the City's low-stress bicycle network. Figure 3-15 illustrates the existing AAA network and Figure 3-16 shows the planned and existing AAA network within the City of Mountain View.

Figure 3-15. Existing All Ages and Abilities Network

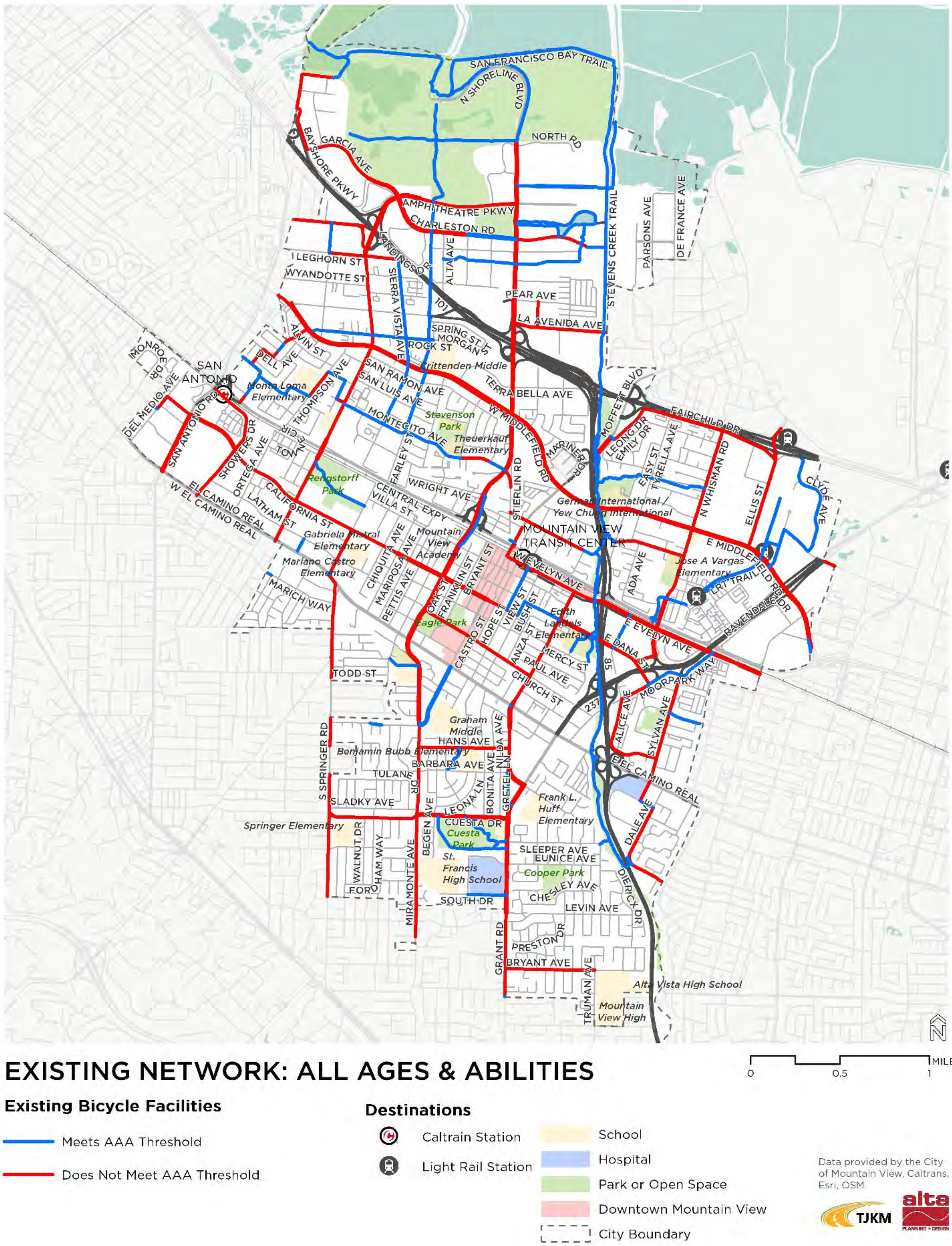
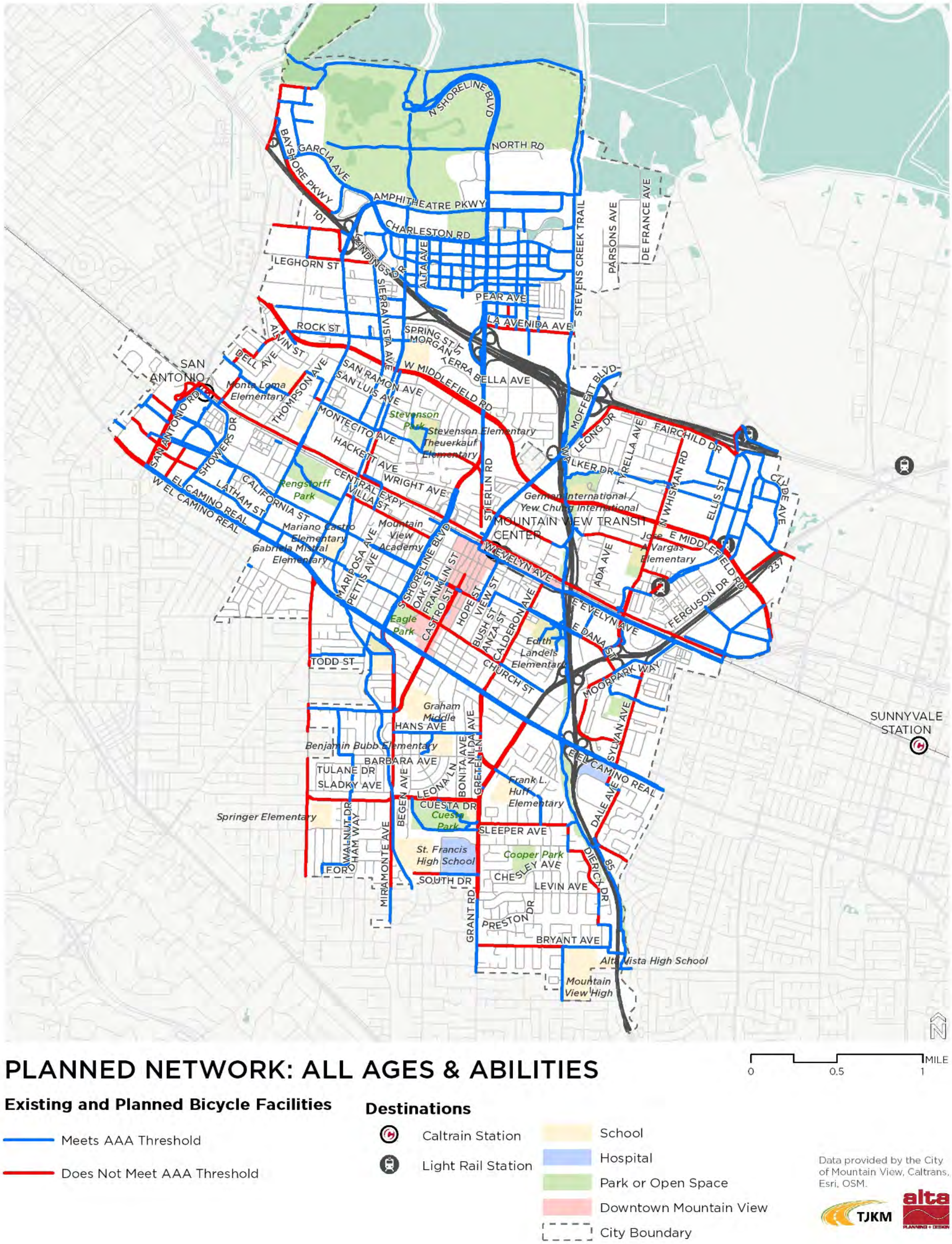


Figure 3-16. Planned and Existing All Ages and Abilities Network



3.2.4 O-D Analysis of Short Vehicle Trips

As outlined in Chapter 2, the project team conducted an Origin-Destination (O-D) analysis of short vehicle trips along four corridors—California Street, El Camino Real, Middlefield Road, and Moffett Boulevard/Castro Street—to identify what proportion of trips along each corridor could potentially be made by bicycle if low-stress bicycle facilities were in place.

As noted in Chapter 2, this analysis was completed using StreetLight data, which has many limitations and caveats. These include a small sample size and its inability to account for short breaks during trips, thereby potentially reporting shorter trip lengths than occur in reality. However, it provides some indication of the trips that could potentially be made by bicycle instead of personal vehicle.

The analysis found that approximately 17% of trips along California Street, 21% of trips along El Camino Real, 22% of trips along Middlefield Road, and 21% of trips along Moffett Boulevard/Castro Street are considered short and local trips.

According to research on the *Four Types of Cyclists*[7], 37% of people report that they would not ride a bicycle even if low-stress facilities are in place. This means that under the right conditions up to 63% of people are potentially willing to ride a bicycle to get to their destination. Fifty-one percent of people are “Interested but Concerned” bicyclists, indicating that low-stress bicycle infrastructure is particularly important for them. Only 12% of people consider themselves to be confident or highly confident bicyclists on roads where there is limited or no existing bicycle infrastructure.

Table 3-2 identifies how many more bicycle trips could occur on these corridors if 63% or 31.5% of all *short* trips were made by bicycle instead of personal vehicle. This represents a highly ambitious scenario in which there is a complete or near complete network of low-stress bicycle facilities accompanied by a culture shift toward biking in the City. The high number of bikeable trips within each corridor highlight the importance of having connected, low-stress bicycle infrastructure to encourage mode shift.

A more conservative approach to estimating realistic short-term increases in ridership along each corridor is by considering results from comparable projects along similar corridors within similarly partially completed bike networks. For these corridors, future volume estimates were calculated based on the rate of increase in bicycle and pedestrian volumes along the comparable Telegraph Avenue project in Oakland, CA, where bicycle traffic increased 78% and pedestrian traffic increased 100% within one year of implementation.

These potential increases are estimates only. Additional data is needed to calibrate the results to provide a more accurate estimate for future bicycling activity. The City should consider prioritizing these corridors when implementing new automated counters to collect bicycle usage data in the future.

[7] Jennifer Dill and Nathan McNeil, “Revisiting the Four Types of Cyclists: Findings from a National Survey,” *Transportation Research Record: Journal of the Transportation Research Board, 2587*: 90-99, 2016.

Table 3-2. Existing Daily Volumes and Potential Increase in Bicycle Volumes

Roadway	Existing Daily Bicycle Volume	Conservative Estimate of Daily Bicycle Volume	Bikeable Trips Estimate of Daily Bicycle Volume (Net Total Bikeable Trips)		% Increase to Existing Bicycle Volume		
			31.5% of Short Trips	63% of Short Trips	Conservative Estimate	31.5% of Short Trips	63% of Short Trips
California Street	143	271	595 (738)	1,191 (1,334)	90%	416%	833%
El Camino Real	322	609	3,260 (3,582)	6,519 (6,841)	89%	1,012%	2,024%
Middlefield Road	138	261	1,026 (1,164)	2,052 (2,190)	89%	744%	1,487%
Moffett Boulevard/Castro Street	340	643	954 (1,294)	1,908 (2,248)	89%	281%	561%

Existing Daily Volume Source: StreetLight Data

3.3 Transit Network and Services

3.3.1 Existing Transit Infrastructure

Existing transit facilities in Mountain View include transit stops and dedicated right-of-way that support the City's several transit service providers. There are two Caltrain stations (San Antonio and Downtown Mountain View) and four light rail stations (Downtown Mountain View, Whisman, Middlefield, and Bayshore/NASA) within the City of Mountain View. The Mountain View Transit Center serves as the City's central transit hub, connecting Caltrain, VTA light rail, several VTA bus services, Mountain View Community Shuttle, and MVgo shuttles.

Figure 3-17 illustrates the City's existing transit facilities, which includes those facilities (including those to be constructed in the near future). This includes transit stops and transit lines that utilize a dedicated right-of-way such as Caltrain and VTA light rail, as well as bus stops that utilize a shared right-of-way. The map also illustrates Shoreline Boulevard reversible transit lanes as approved infrastructure.

3.3.2 Existing Transit Services

Existing transit services within the City of Mountain View include Caltrain commuter rail service; VTA light rail (Orange Line); VTA bus routes 522 (Rapid), 22 (Frequent), 21 (Local), 40 (Local), 51 (Local), and 52 (Local); MVGo shuttle buses, provided by the Mountain View Transportation Management Association (MVTMA); and the Mountain View Community Shuttle, provided by MVTMA in partnership with Google and the City of Mountain View.

Figure 3-18 illustrates these existing services. VTA services are based on the VTA 2019 New Transit Service Plan, which reflects what are likely to be more permanent baseline conditions prior to the temporary service changes associated with COVID-19.

Figure 3-17. Existing Transit Facilities

Figure 3-18. Existing Transit Services

Headway

Mountain View is served by a number of high quality transit services and major transit stops. In California, the California Public Resources Code (PRC) §21155 defines high-quality transit corridors as corridors with fixed-route bus service with service intervals of no longer than 15 minutes during peak commute times. The Public Resources Code §21064.3 also defines major transit stops including all rail stations and ferry terminals as well as bus routes with two or more services running at service intervals of 15 minutes or better.

As of February 2020, Caltrain service, VTA Light Rail service (Orange line), VTA rapid (Route 522), and VTA (Route 22) frequent bus service along El Camino Real are high-quality transit corridors in the city, with transit vehicles arriving every 15 minutes (or better) during peak periods. Additionally, Caltrain and VTA light rail stations as well as the bus stops served by VTA bus routes 522 and 22 are also considered to be major transit stops within the City. Land uses that are located in proximity of high-quality transit corridors and major transit stops are eligible for environmental review screening under SB 743, density bonuses associated with transit-oriented development.

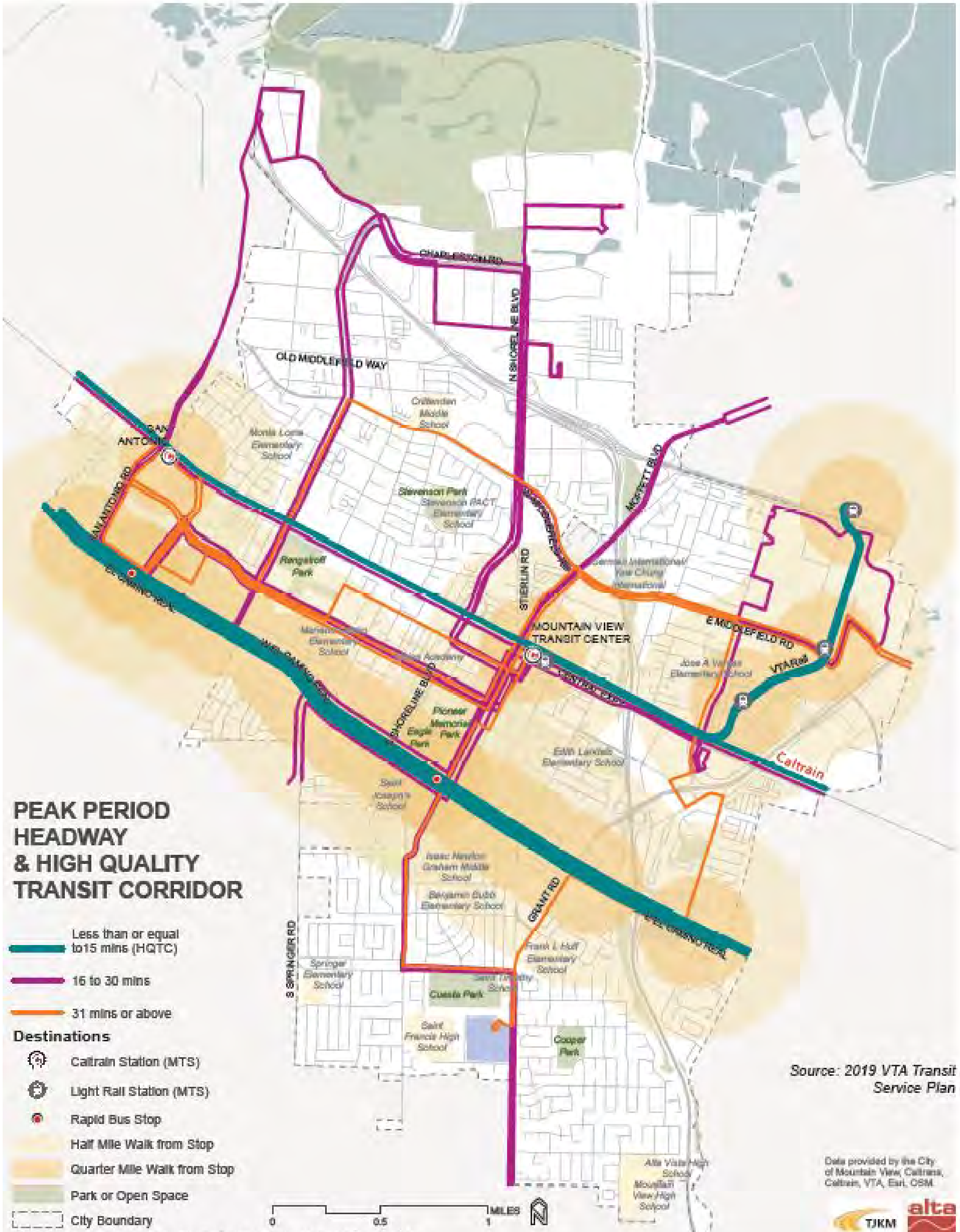
The peak period headways (service intervals) for each transit service in Mountain View are illustrated in Figure 3-19 along with the half-mile buffer of major transit stops or high-quality transit corridors. Development projects in these areas will qualify as transit priority projects.

As seen in Figure 3-19, approximately 25 percent of the City of Mountain View is not well served by the frequent transit network, particularly in the southern and northern parts of the city. Last mile solutions are therefore critical to transit ridership in these areas.

During off-peak periods, bus routes 522, 22, and VTA light rail have a service frequency of 15 minutes or better. Additionally, the Mountain View Community Shuttle and VTA bus route 21 provide frequent services, with vehicles arriving every 15 to 30 minutes. Off-peak transit headway is illustrated in Figure 3-20.


522 RAPID
4310

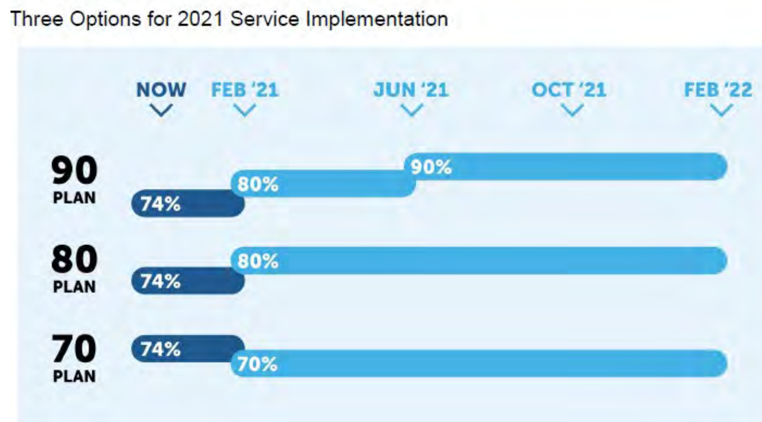
Figure 3-19. Transit Services by Peak Period Headway and High Quality Transit Corridors



HQTC- High Quality Transit Corridor; MTS - Major Transit Stop

Figure 3-20. Transit Services by Off-Peak Period Headway

Proposed 2021 VTA Transit Service Plan



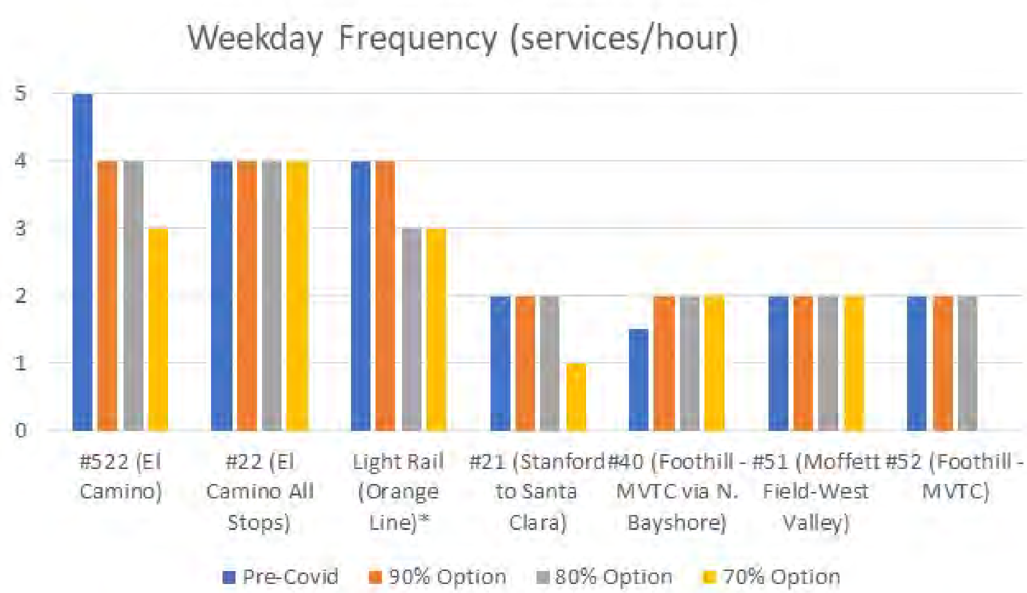
Source: Proposed 2021 VTA Transit Service

In March 2020, daily transit ridership plummeted due to COVID-19 and, by the end of 2020, reached about 70% lower than at the beginning of 2020. At the end of 2020, VTA was considering 70%, 80% and 90% service options for 2021. The proposed options were based on the percent of service by July 2021 compared to services at the beginning of 2020.

VTA staff do not expect that the 90% option would cause any existing high quality transit services in Mountain View to drop below the threshold for high quality transit corridors. However, VTA staff does expect that the 80% and 70% options would result in reduced frequencies on the Light Rail Orange Line service, which would drop this service below the threshold for a high quality transit corridor (HQTC) even though the light rail stations would still qualify as major transit stops (MTS).

VTA staff also expects that the 70% option would result in reduced frequency on the 522 express bus service along El Camino Real to service every 20 minutes, reduced frequency on the 21 local bus service between Stanford and Santa Clara, and discontinuation of the 52 bus service between the Mountain View Transit Center and Foothill College. Figure 3-21 shows the expected weekday frequency of several services under the 90%, 80%, and 70% options.

Figure 3-21. Potential 2021 Weekday Frequency



Source: Proposed 2021 VTA Transit Service

Reduced transit service that drops below the HQTC or MTS threshold could have substantial implications for land use development programs in the City. As shown in Table 3-3, only the 90% Option under VTA's proposed 2021 Transit Service Plan would maintain current HQTCs and MTSs.

Table 3-3. HQTS and MTS

	Pre-COVID		90% Option		80% Option		70% Option	
	MTS	HQTC	MTS	HQTC	MTS	HQTC	MTS	HQTC
Light Rail Stations	Yes	Yes	Yes	Yes	Yes	No	Yes	No
El Camino Real Bus Stops	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes

Source: Proposed 2021 VTA Transit Service

Service reduction that would affect MTS and HQTC status in Mountain View is likely to affect the City's ability to implement affordable housing and other land use programs. However, as planned in the City adopted plans, density along transit corridors continues to be processed, permitted during this time. Higher densities along transit lines is expected to result in increased transit use.

In November 2020, VTA shifted its focus from the 2021 Transit Service Plan to service adjustments to reduce the problem of frequent pass-ups resulting from social distancing requirements on buses. These interim improvements were implemented in February 2021.

Ridership

Transit ridership by stop and service for Caltrain, VTA bus, VTA light rail, Mountain View Community Shuttle, and MVgo shuttle service (from 2019) is illustrated in Figure 3-22. In Mountain View, VTA bus service is the most heavily used of all transit services, particularly along the El Camino Real corridor.

According to Caltrain's 2019 Annual Passenger Count Report[8], the average mid-weekday ridership (AMWR) at Mountain View Caltrain station decreased 5% from 4,810 in 2018 to 4,560 in 2019. However, the station still ranks among the top 5 stations served by the Caltrain. Per the annual count report, the decline in ridership indicates that weekday ridership might be entering the phase of maturity as ridership growth has been stagnating throughout the system. Another reason for this decline in ridership could be attributed to the denied bike boarding, especially as Mountain View ranks third only after San Francisco and Palo Alto in terms of total bicycle boarding.

In contrast, San Antonio Caltrain station saw an increase of 7.9% in AMWR from 2018 to 2019. The station had 1,017 AMWR in 2019.

[8] Caltrain, "Caltrain 2019 Annual Passenger Count: Key Findings" accessed on March 16, 2021 retrieved from https://www.caltrain.com/Assets/Stats+and+Reports/2019+Annual+Key+Findings+Report.pdf

Similarly, like Caltrain, VTA light rail saw a decrease of 1.8% in system-wide ridership in 2019 as per VTA's 2019 Annual Report.[9] However, the Mountain View line (Orange Line) recorded a 3.1% increase in ridership in 2019 as compared to 2018.

Reliability

VTA bus service along El Camino Real has relatively poor on-time performance, with only 40% to 75% of buses arriving on time, or within 5 minutes of scheduled service (Figure 3-23). This poor on-time performance is likely related to the lack of transit priority or dedicated transit infrastructure along VTA bus routes (Figure 3-17). Caltrain and VTA light rail service are among the most reliable transit lines, with over 90% on-time performance.

Travel Speed

VTA staff provided the scheduled time, dwell time and real time information for the VTA bus routes and light rail service at major stops for January 2020. The travel speed was calculated based on the ratio of corridor length (distance between the stops) and the average time between the stops.

VTA light rail provides the greatest overall travel speed (between 15-21 MPH) of the lines that have available data (Figure 3-24). However, due to its circuitous alignment, light rail is not attractive to many people traveling to, from, and within Mountain View. VTA local bus service along Moffett Boulevard has some of the lowest travel speed at 5-8 MPH on average.

[9] Santa Clara Valley Transportation Authority, "Annual Report, 2019" accessed on March 16, 2021 retrieved from https://www.vta.org/sites/default/files/2020-04/AnnualReport2019_Accessible.pdf

Figure 3-22. Transit Ridership by Stop and Service

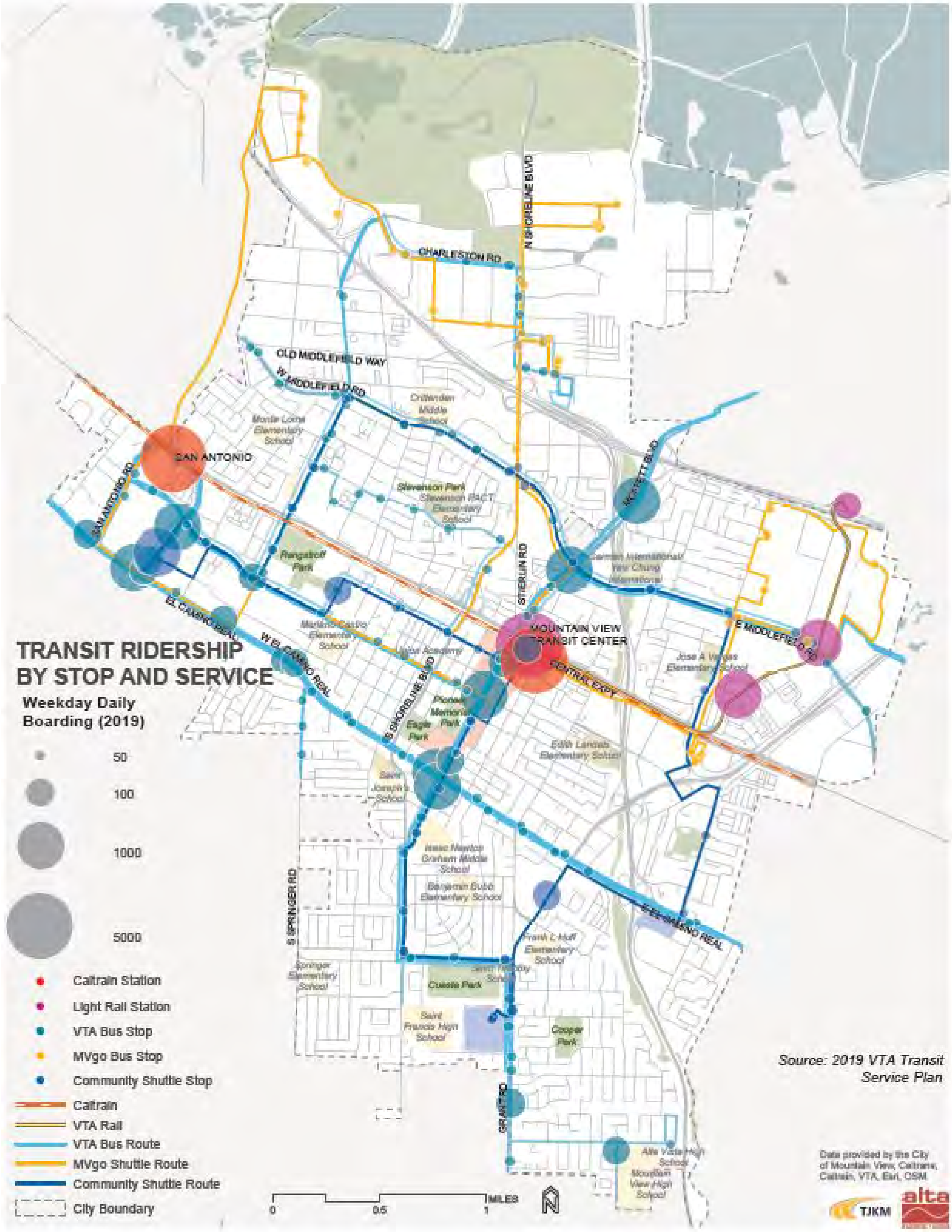


Figure 3-23. Percent On-Time Performance by Route

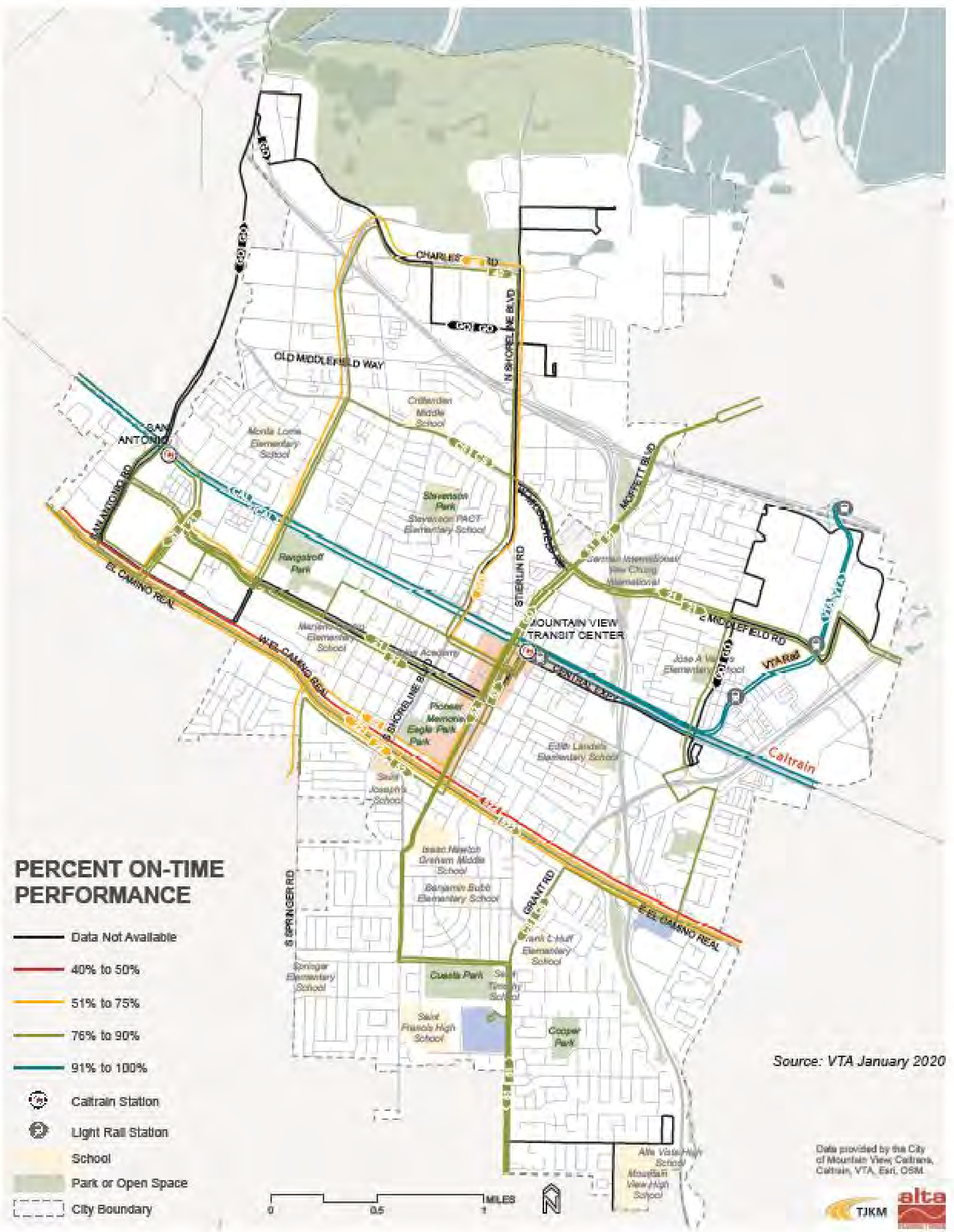


Figure 3-24. Transit Travel Speed

VTA system-wide average operating speed is 11.6 mph (Year 2016).

Mountain View Community Shuttle Study

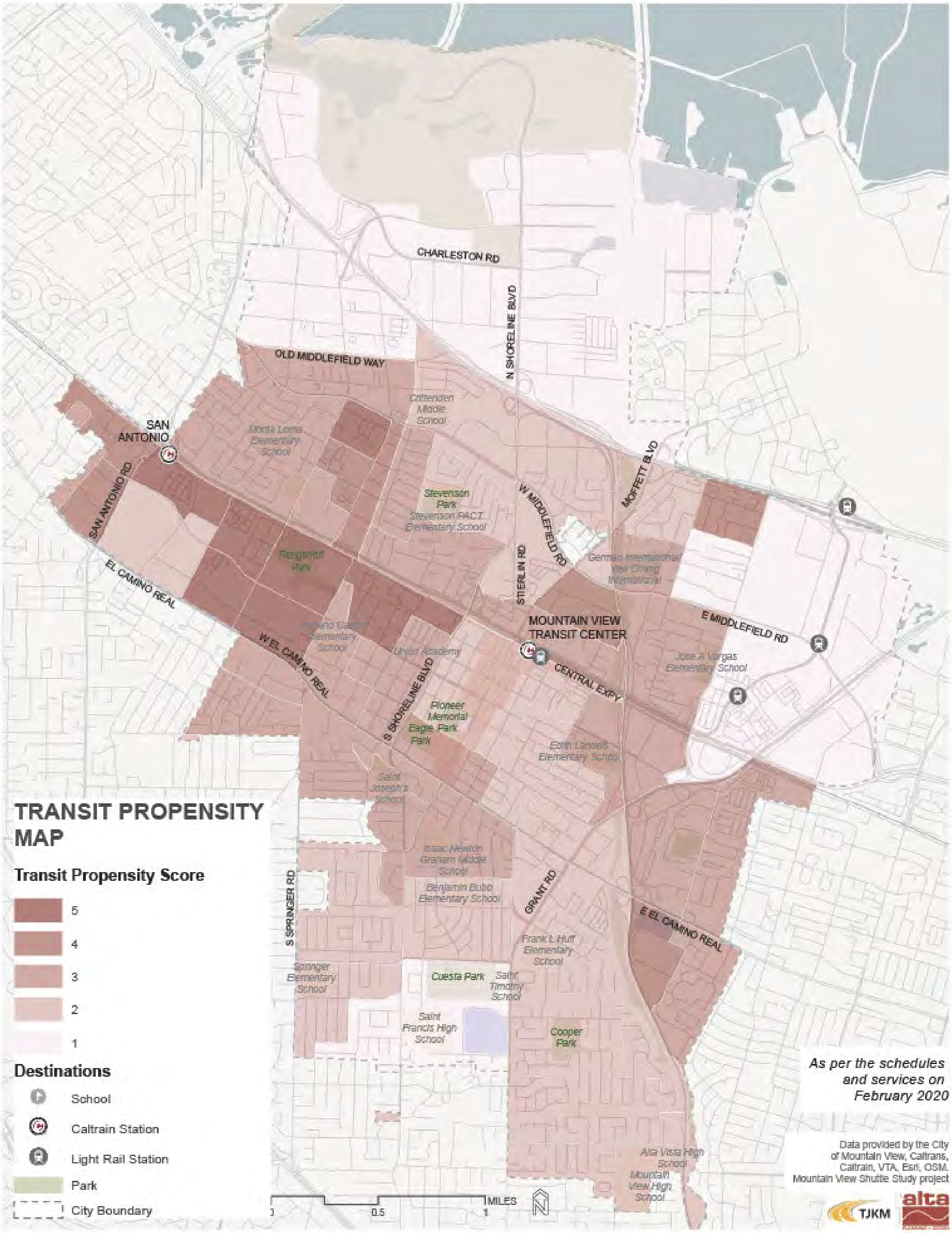
As part of the Comprehensive Modal Plan, the City of Mountain View conducted a shuttle study that examined the City's existing transit services, identified service gaps, and provided recommendations for addressing the service gaps. As a part of the study, a transit propensity map (Figure 3-25) was developed to identify the areas where transit is most likely to attract riders and serve the community. Additionally, intensifying existing transit corridors with diverse, attractive land uses (bringing the place to transit rather than transit to the place) should also result in increased transit use. The map was based on the following factors:

- Population Density
- Low-Income Household Density
- Zero-Vehicle Household Density
- Youth (Population Age 18 and Under) Density
- Seniors (Population Age 65 and Over) Density

A transit propensity score of 5 indicates the area has the highest potential for transit ridership, while a score of 1 indicates the area has the lowest potential for transit ridership.

The study involved extensive public outreach efforts through a community survey and small-group stakeholder interviews. The study concluded that some service gaps created by VTA's 2019 Transit Service Plan (e.g., along Middlefield Road) could be filled by the Community Shuttle if the hours of service and frequency of the shuttle improved. The study also suggested realigning the existing Community Shuttle route to improve productivity, attract new riders, and/or reduce redundancies between the Community Shuttle and other transit operators. In addition, the study also recommended enhanced first/last mile connections such as higher MVgo service, expansion of pedestrian and bicycle infrastructure, and use of on-demand services to increase station access. The Community Shuttle transitioned to MVTMA management in late 2020, with no changes to shuttle route and hours.

Figure 3-25. Transit Propensity Map



Transit Service Quality Metrics and Results

Table 3-4 summarizes the existing transit services by route and their respective service quality metrics and results, including peak hour headway, off-peak headway, span, coverage, average speed (travel time), and on-time performance. The data is based on February 2020 services.

Table 3-4. Existing Transit Service Quality Metrics and Results

Transit Service	Route No./ Name	Direction	Transit Span	Mileage (Miles)*	Peak Period Headway (Minutes)	Off-Peak Period Headway (Minutes)	Average Percent On-Time (%)	Average Travel Speed (MPH)
Caltrain	San Francisco to San Jose	East-bound	4:00 am to 2:00 am	4.0	24	60	93%	32.63
Caltrain	San Francisco to San Jose	West-bound	4:00 am to 2:00 am	4.0	12	60	93%	35.28
VTA Light Rail	Orange Line	East-bound	5:00 am to 10:00 pm	2.4	15	30	97%	16.53
VTA Light Rail	Orange Line	West-bound	5:00 am to 10:00 pm	2.4	15	29	99%	18.25
VTA Bus Services	522	East-bound	5:00 am to 10:00 pm	3.8	10	29	68%	15.03
VTA Bus Services	522	West-bound	5:00 am to 10:00 pm	3.8	11	24	41%	16.3
VTA Bus Services	22	East-bound	5:00 am to 10:00 pm	3.8	17	27	81%	9.9
VTA Bus Services	22	West-bound	5:00 am to 10:00 am	3.8	15	18	65%	11.75
VTA Bus Services	21	East-bound	8:00 am to 8:00 pm	6.3	30	29	83%	11.7
VTA Bus Services	21	West-bound	8:00 am to 8:00 pm	6.3	30	30	83%	12.1
VTA Bus Services	40	North-bound	9:00 am to 6:00 pm	4.3	27	44	80%	12.73
VTA Bus Services	40	South-bound	9:00 am to 6:00 pm	4.1	24	43	73%	9.7
VTA Bus Services	51	North-bound	8:00 am to 6:00 pm	4.3	24	57	86%	9.2
VTA Bus Services	51	South-bound	8:00 am to 6:00 pm	4.3	24	56	89%	10.75
VTA Bus Services	52	North-bound	8:00 am to 6:00 pm	1.9	25	33	62%	6.45
VTA Bus Services	52	South-bound	8:00 am to 6:00 pm	1.9	25	59	87%	7.7
Mountain View Community Shuttle	Red	Counter-clockwise	10:00 am to 6:00 pm	12.0	30	60	87%	13.1

Transit Service	Route No./ Name	Direction	Transit Span	Mileage (Miles)*	Peak Period Headway (Minutes)	Off-Peak Period Headway (Minutes)	Average Percent On-Time (%)	Average Travel Speed (MPH)
Mountain View Community Shuttle	Gray	Clockwise	10:00 am to 6:00 pm	12.0	30	60	87%	13.1
MVgo**	A – Whisman, Clyde and Middlefield	Loop	10:00 am to 6:00 pm	5.0	15	No Off-Service Peak	N/A	N/A
MVgo**	B – Shoreline, La Avenida, Crittenden	Loop	10:00 am to 6:00 pm	5.5	20	No Off-Service Peak	N/A	N/A
MVgo**	C – Charleston, Garcia and San Antonio	Counter-clockwise Loop	10:00 am to 6:00 pm	8.8	15	No Off-Service Peak	N/A	N/A
MVgo**	D – San Antonio, Garcia and Charleston	Clockwise Loop	10:00 am to 6:00 pm	9.5	15	No Off-Service Peak	N/A	N/A

**miles within Mountain View city limits*

***MVgo data not available*

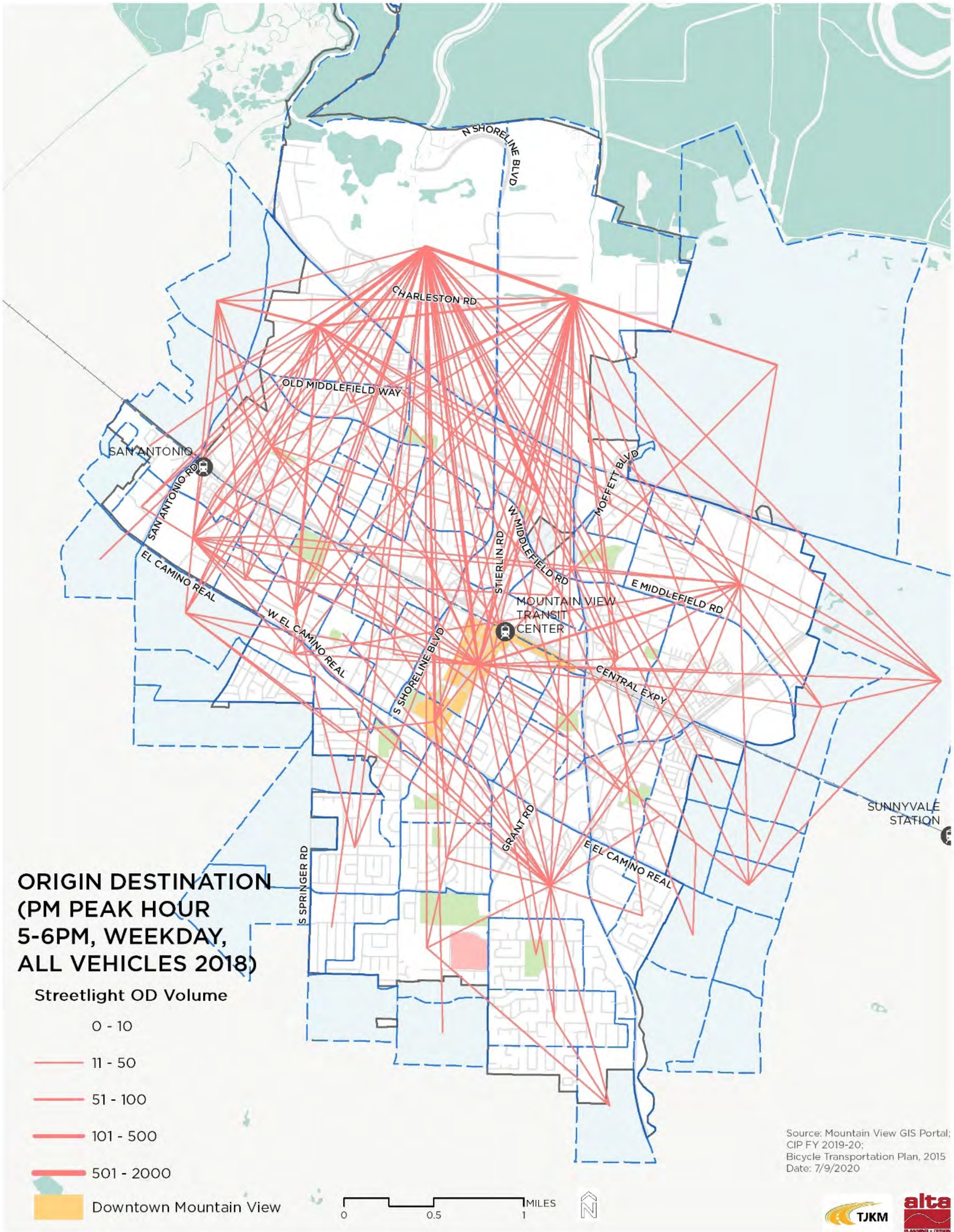
3.3.3 Citywide O-D Analysis (Shuttle Study)

As part of the Citywide O-D Analysis described in Chapter 2, the project team reviewed existing vehicle, bicyclist, and pedestrian travel patterns between Traffic Analysis Zones (TAZs) within the City of Mountain View. The intent of the study was to understand how many existing trips could potentially be made by transit if shuttle service was expanded.

The results of this analysis suggest that most vehicle trips are made around major transit hubs, major employment centers such as the Google headquarters, and major shopping and commercial areas such as the San Antonio Center. According to the analysis, the average trip length is under five miles, average trip time is under 20 minutes, and average travel speed is under 20 miles per hour. A large number of daily trips have a circuity count of two, which means the trip uses a direct route between TAZs. These trip attributes all signal that a number of daily vehicle trips within the City of Mountain View could potentially be made using expanded shuttle service, since they are relatively short trips between major destinations within the city, many of which are already served by existing shuttle routes.

As noted in Chapter 2, this analysis was completed using StreetLight data, which has several limitations in relation to its ability to represent the full spectrum of trips within the City. However, it provides some indication of the trips that could potentially be made by transit instead of personal vehicles. The Citywide vehicle O-D weekday PM peak hour results are shown in Figure 3-26.

Figure 3-26. Citywide Vehicle Origin-Destination Analysis Results

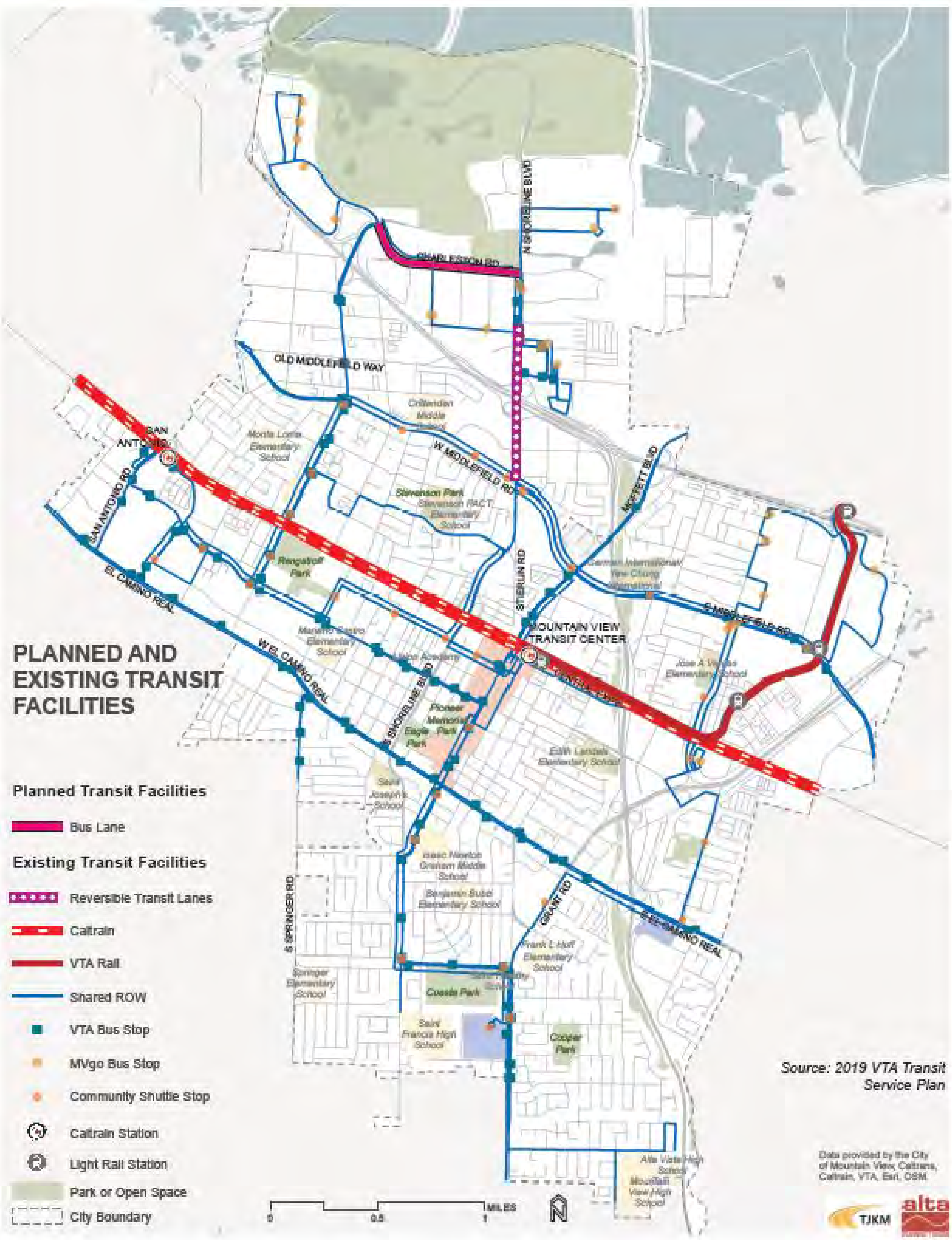


3.3.4 Planned Transit Facilities and Service Quality

In addition to the existing and approved transit facilities and services identified in Sections 3.3.1 and 3.3.2, there are other planned transit facilities in the City of Mountain View, including infrastructure upgrades and additions. These planned facilities were identified during a review of several previous plans and studies, including the Mountain View Multimodal Improvement Plan (2018), the Santa Clara County Expressway Plan 2040 (2017), the Transit Center Master Plan (2017), VTA Transportation Plan 2040 (2014), Shoreline Boulevard Corridor Study (2014), Caltrain Bicycle Access and Parking Plan (2008), and several area precise plans. Planned facilities are illustrated in Figure 3-27.

Planned services were identified in the Shoreline Boulevard Corridor Study (2014) Study, Mountain View Shuttle Study (2019) and the Automated Guideway Transit Feasibility Study (2018), and include the City's consideration of extending the hours of service of the Mountain View Community Shuttle in the future to expand service.

Figure 3-27. Planned and Existing Transit Facilities



3.4 Motor Vehicle Network

3.4.1 Existing Vehicular Facilities

The City of Mountain View's existing 186-mile roadway network—the dominant part of the city's transportation network—is made up of several different street typologies, including boulevards, avenues, major retail streets, and residential streets, among several other street types (Figure 3-28).

The City's General Plan identifies these street typologies and the modes that should be prioritized along each street type (Table 3-5). These priorities help guide efforts to ensure the city's streets best accommodate all modes. Motor vehicles are considered to be a high-priority mode along four different street types: Highway, Expressway, Boulevard, and Major Retail Street. They are a low-priority mode along residential streets and park streets.

Table 3-5. Street Typology and Mode Priority

Street Type	General Plan Mode Priority			
	Pedestrian	Bicycle	Transit	Vehicle
Highway	N/A	N/A	N/A	High
Expressway	Low	Low	Low	High
Boulevard	High	Medium/Low	High	High
Avenue	Medium	High/Medium	Medium/Low	Medium
Main Street (Castro)	High	Medium/Low	Medium	Medium
Major Retail Street (N. Bayshore)	High	High	High	High
Downtown Street	High	High/Medium	Medium/Low	Medium
Flexible Street	High	High/Medium	Medium/Low	Medium
Residential Collector	High	High	Low	Medium
Neighborhood Collector	High	High	Low	Medium/Low
Residential Street	High	High	Low	Low
Park Street	High	High	Low	Low
Multi-Use Pathway	High	High	N/A	N/A

Figure 3-28. Existing Street Typology

Existing Street Network Features

Posted speed limits in the City of Mountain View correspond to the different street typologies, and range from 15 MPH to 45 MPH (Figure 3-29). At 45 MPH, Central Expressway has some of the highest posted speeds within the city. Other major corridors like El Camino Real, Moffett Boulevard and Middlefield Road have posted speed limits of 35 MPH to 40 MPH. The number of lanes per roadway range from two to six (Figure 3-30).

Existing signalized intersections, including pedestrian crossing signals such as rectangular rapid flash beacons (RRFBs) and in-roadway warning lights (IRWL), are shown in Figure 3-31.

Figure 3-29. Posted Speed Limit

Figure 3-30. Existing Number of Traffic Lanes

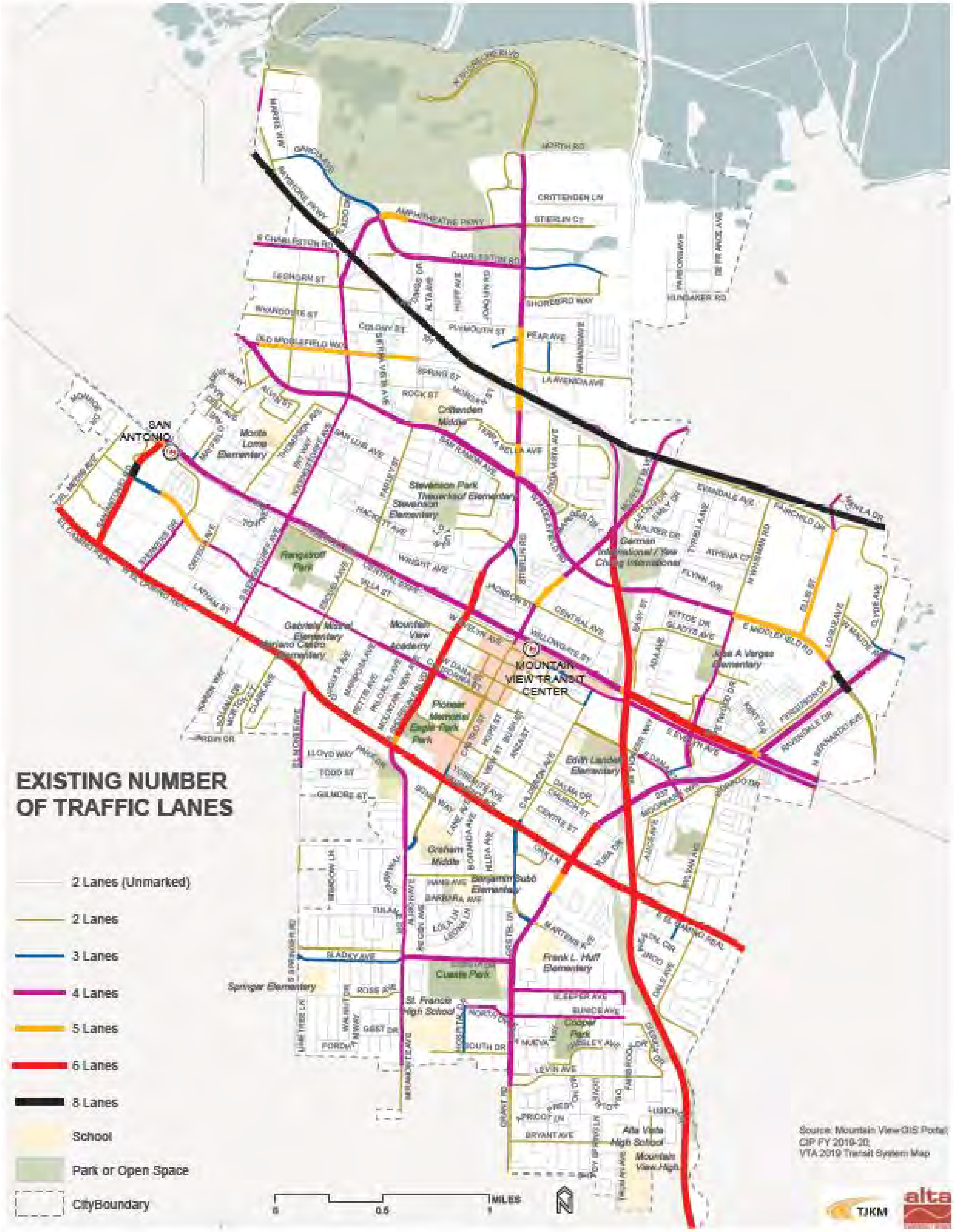
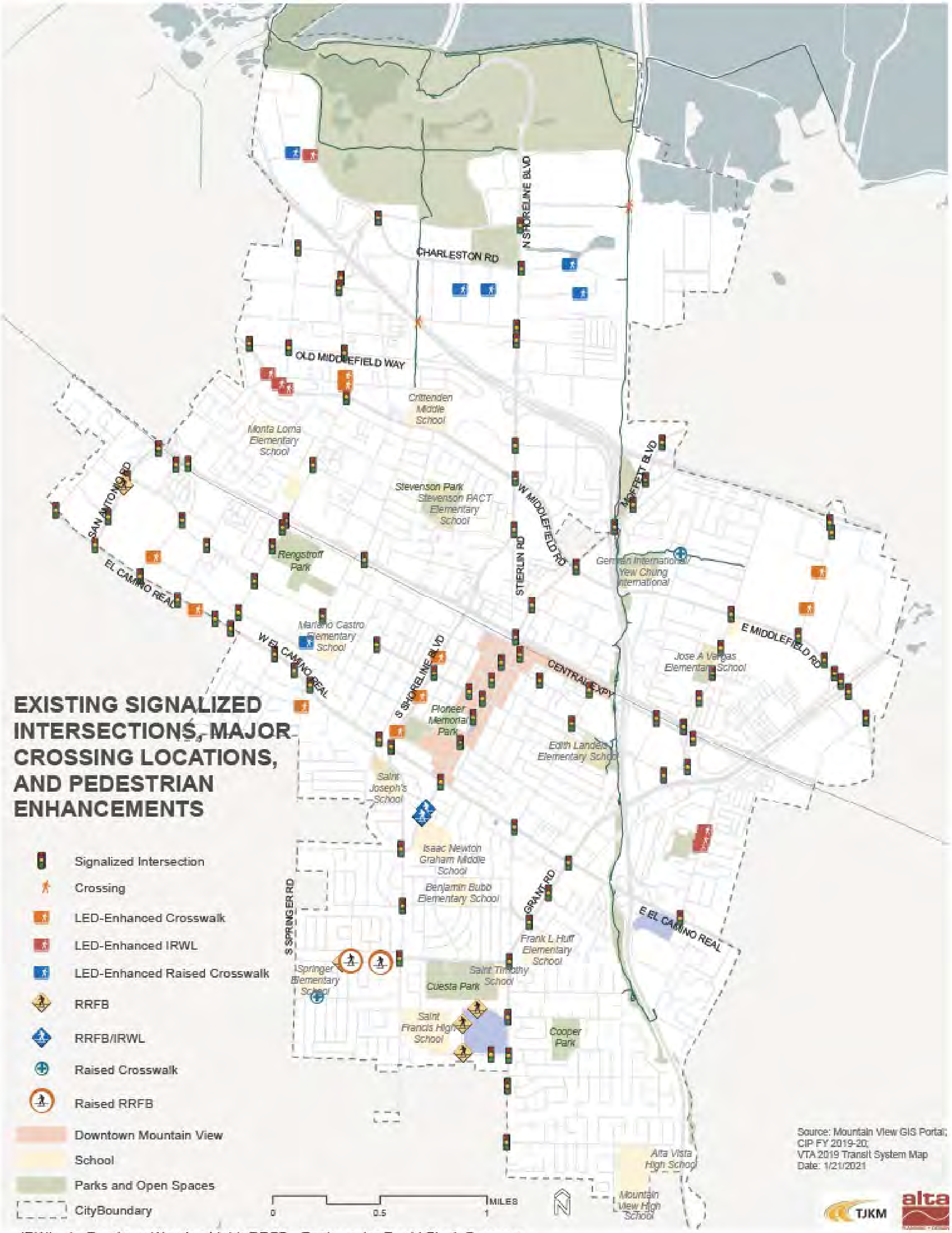


Figure 3-31. Existing Signalized Intersections, Major Crossing Locations, and Pedestrian Enhancements



IRWL - In-Roadway Warning Light; RRFB - Rectangular Rapid Flash Beacons

Collisions

The following figures identify Mountain View's collision history from 2014-2018, including collision locations, severity, factors, and types. The collision data was collected using the Transportation Injury Mapping System (TIMS) for the period of five years between January 1, 2014 and December 31, 2018.

Figure 3-32 shows the location and number of fatal, severe, and other injury collisions. Within the analysis period, the intersections that had the highest number of collisions were El Camino Real/Grant Road, Central Expressway/Rengstorff Avenue, and Central Expressway/Moffett Boulevard. Other areas with high numbers of collisions include the ramps connecting to SR 237 and US-101.

Figure 3-33 shows the location of collisions based on their severity (fatal, severe, or other injuries) and mode (motor vehicle, bicycle, and pedestrian). The heat map overlap illustrates collision hotspots along US-101, Shoreline Boulevard, El Camino Real, and around downtown Mountain View.

The Collision Factors map (Figure 3-34) identifies the top five factors that led to the collisions: unsafe speed, automobile right-of-way (ROW) violation, improper turning, wrong side of road driving, and driving under the influence. The analysis was only conducted on fatal, severe, and other injury collisions. Adding non-injury collisions or property damage collisions would result in different factors.

Figure 3-35 identifies the three types of collisions: broadside or angled collisions, rear-end, and hit-object. The most common reasons for these collision types were because of speeding and distracted driving.

Figure 3-32. Traffic Collision

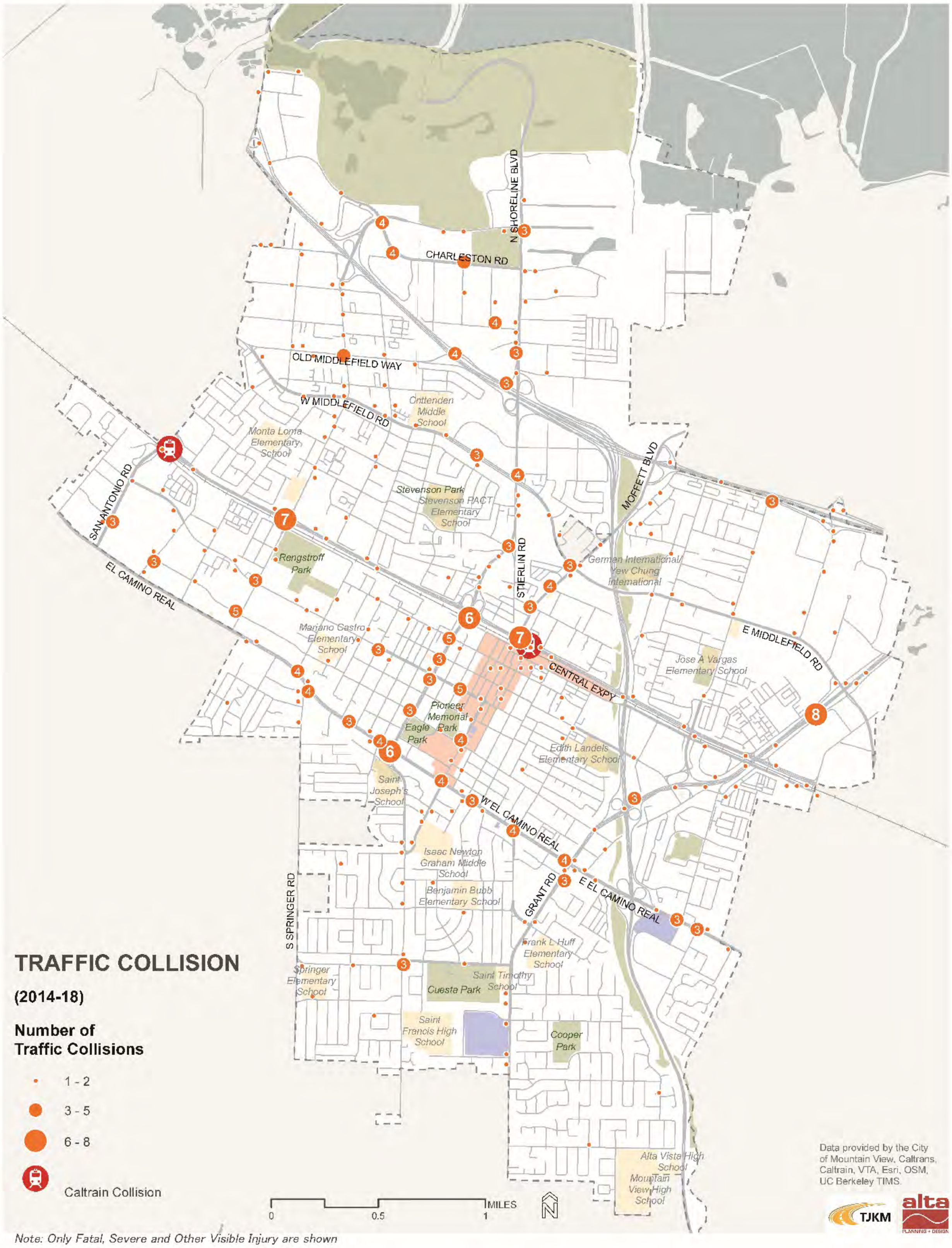


Figure 3-33. Traffic Collision by Severity

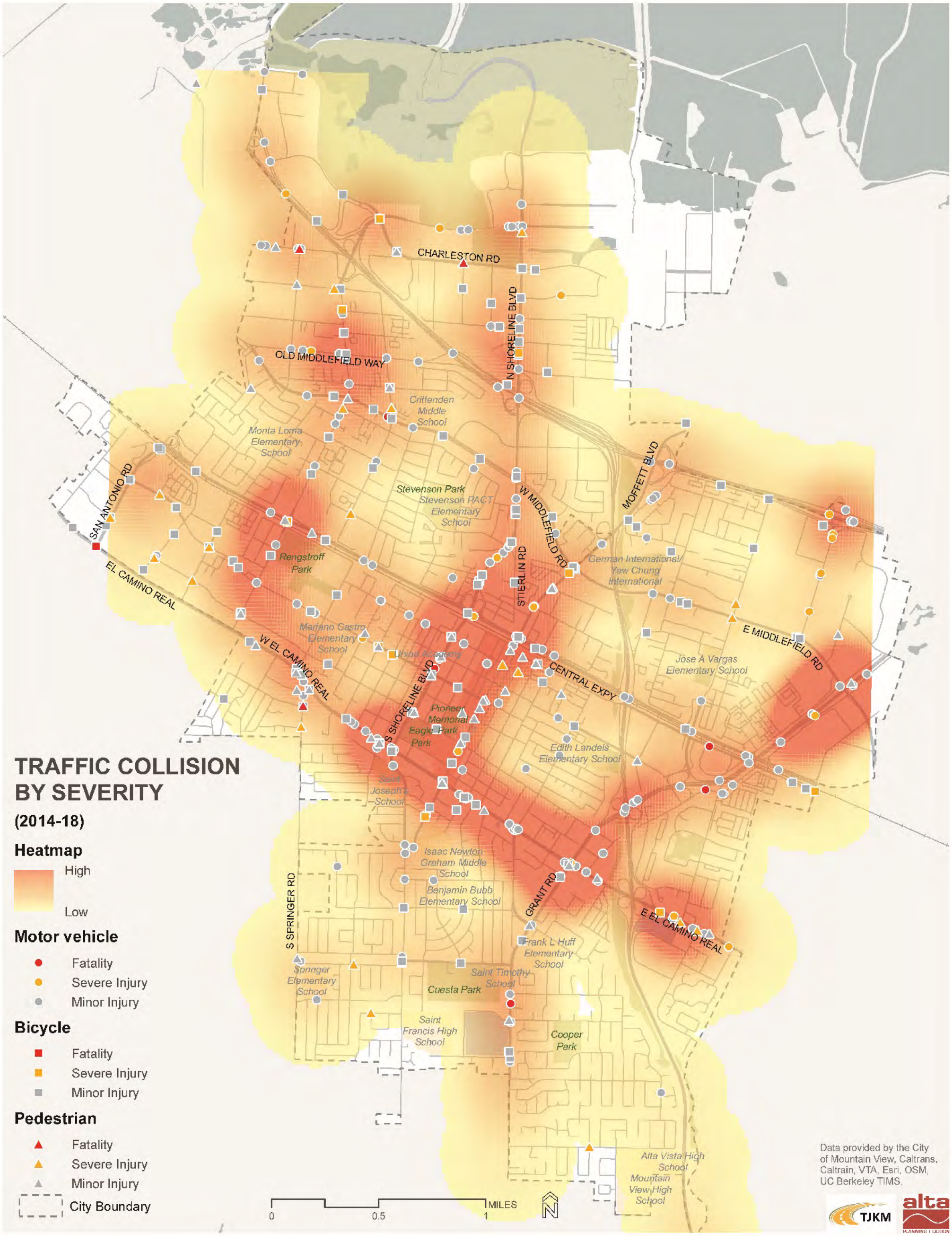


Figure 3-34. Traffic Collision by Factors

Automobile ROW - Failing to yield to other motorist CVC 21800; Wrong Side of Road - Driving on the wrong side of the Road CVC 21650

Figure 3-35. Traffic Collision by Type

High Injury Network

As part of the development of Mountain View's Vision Zero Policy, the City identified the High Injury Network (HIN) within city boundaries. The HIN is the set of roads on which a disproportionately large number of traffic fatalities have historically occurred. In Mountain View, 50% of Killed or Severely Injured (KSI) collisions occurred on six corridors in the city:

- El Camino Real (24 KSI collisions between 2006 and 2016)
- Shoreline Boulevard (13 KSI collisions between 2006 and 2016)
- Rengstorff Avenue (12 KSI collisions between 2006 and 2016)
- Middlefield Road (9 KSI collisions between 2006 and 2016)
- Central Expressway (8 KSI collisions between 2006 and 2016)
- California Street (7 KSI collisions between 2006 and 2016)

The City also analyzed the street network based on the number of KSI collisions that occurred per mile on a segment basis. This analysis yielded four additional high injury streets:

- El Monte Avenue (3 KSI collisions between 2006 and 2016)
- Old Middlefield Way (5 KSI collisions between 2006 and 2016)
- Ellis Street (3 KSI collisions between 2006 and 2016)
- San Antonio Road in Mountain View (3 KSI collisions between 2006 and 2016)

Figure 3-36 illustrates the HIN within the City of Mountain View.

Figure 3-36. High Injury Network

Congestion

The following figures provide information related to peak hour congestion at intersections and illustrate traffic speed by street segment along Mountain View's street network. This information was collected using commercial speed data from INRIX[10] where available for October 2019.[11] The Highway Capacity Manual (HCM) also provides Level of Service (LOS) classification based on the comparison between observed speed and free flow speed (usually the posted speed).

LOS is a qualitative measure that describes operational conditions as they relate to the traffic stream and perceptions by motorists and passengers. The LOS generally describes these conditions in terms of factors such as speed, travel time and delays. The operational LOS are given letter designations from A to F, with A representing free-flow operating conditions and F representing severely congested flow with high delays. Typically, LOS C/D is considered as an ideal condition as it represents stable flow and efficient use of a transportation facility. Intersections generally are the capacity-controlling locations with respect to traffic operations on arterial and collector streets.

From analysis of daily average travel speed as compared to the posted speed limit, Figure 3-37 shows that segments of North Shoreline Boulevard, Grant Road, South Rengstorff Avenue, Showers Drive, Crisanto Avenue, Castro Street and other streets in downtown Mountain View have lower prevailing speeds for motorists than the posted speed limits. This suggests either higher levels of traffic congestion, or more complex, unpredictable or pedestrian-oriented travel environments, resulting in more cautious driver behavior.

Figure 3-38 illustrates LOS information by signalized intersection, based on information collected from various plans and studies conducted from 2015 to 2019 listed below.

- California/Escuela/Shoreline Complete Streets Feasibility Study, 2015
- North Bayshore Precise Plan, 2017
- 840 East El Camino Real Traffic Impact Analysis (TIA), 2017
- Multimodal Improvement Plan, 2018
- Hope Street -Villa Street TIA, 2018
- 701 West Evelyn Avenue TIA, 2019
- North Bayshore Circulation Feasibility Study, 2019
- Stierlin Road Bicycle and Pedestrian Improvements Project, 2020
- 676 West Dana Street TIA, 2020
- Castro Bikeway Feasibility Study, 2021 (Ongoing)

In relation to intersection delay for motorists, a few of the intersections along Shoreline Boulevard and Rengstorff Avenue have LOS E and below, indicating motorists experience considerable delays during typical peak hours.[12] However, LOS E is an indication of the overall intersection operations but may not

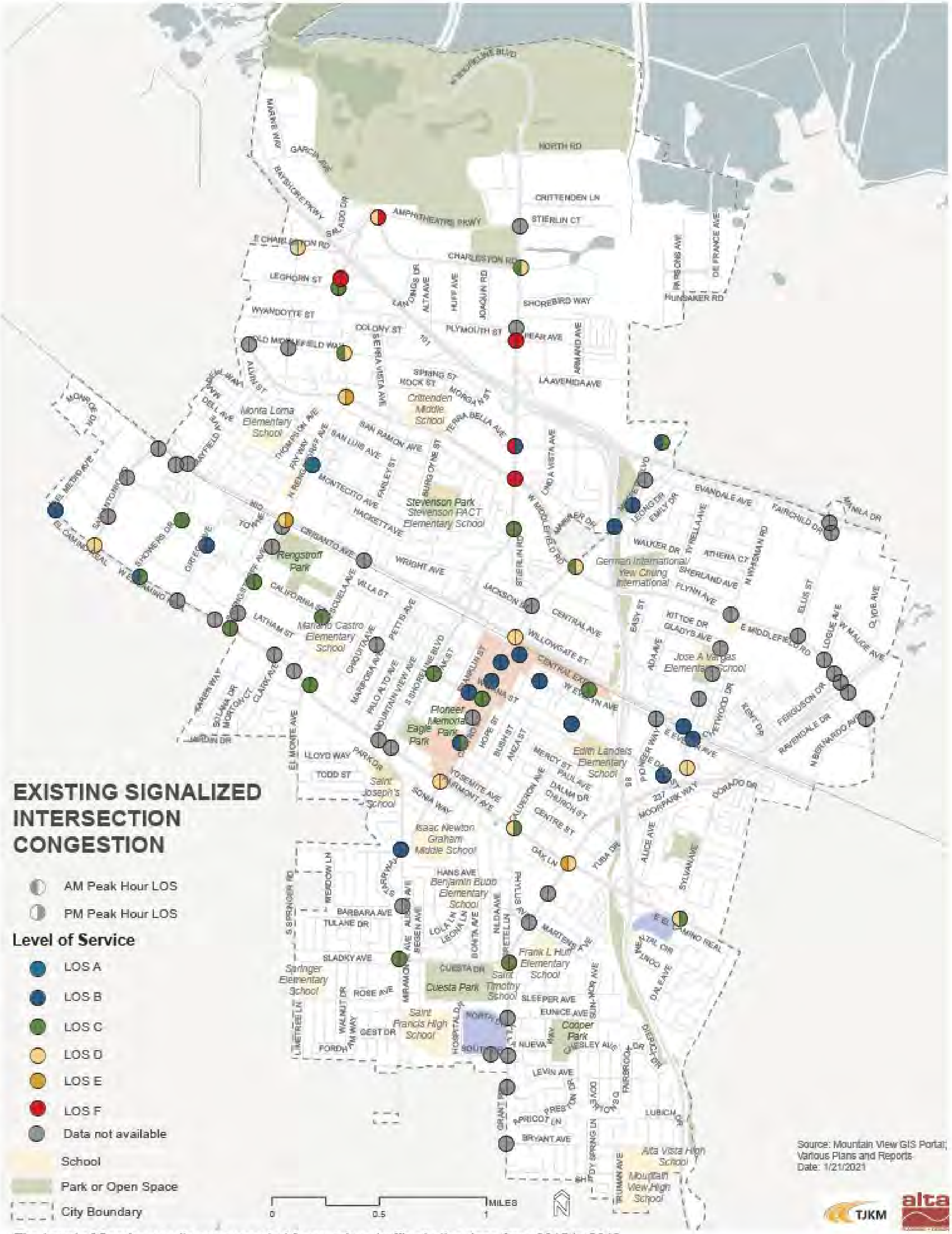
[10] https://inrix.com/
[11] October 2019 data
[12] Peak hour refers to the time when the highest traffic volume is observed at an intersection within the peak period. Typical peak periods are consecutive two-hour time periods usually observed during the morning commute, midday school drop-off and pick-up hours, and during the evening commute time. Peak hours vary from intersection to intersection.

reflect the efficiencies of certain directional travel or interconnectedness of corridors, and thereby is dependent on upstream and downstream conditions. Intersection operations and efficiency could be resolved by analyzing the critical movements, critical V/C, and queueing.

The segment of Rengstorff Ave near Leland Ave is significantly impacted by the Caltrain and Central Expressway at-grade crossing. Additionally, a few intersections on El Camino Real and Central Expressway are presently at LOS D, which also suggests some peak hour delays along those roadways that would require attention in the near future.

Figure 3-37. Existing Vehicle Speeds Relative to Posted Speed Limits

Figure 3-38. Existing Peak Hour Signalized Intersection Congestion



The Level of Service results are presented from various traffic studies done from 2015 to 2019

Existing Infrastructure

Corridor Classification

Mountain View has a network of arterial roads that serve a key function for motorists in the City. As shown in Figure 3-39, the arterial network includes various street typologies such as Boulevards and Avenues. The street classification reflects the character of the surrounding area and its function in the transportation system.

In order to enhance the efficiency of motor vehicle circulation a number of corridors efforts are currently underway in relation to the City's arterial network. For example, Shoreline Boulevard corridor has been envisioned as a corridor that is pedestrian, bicyclist, and transit friendly, and also works efficiently for motorists. For this reason, several improvements are soon to be constructed aimed at enhancing mobility and connectivity for motor vehicle traffic. This includes the US 101 off-ramp realignment that connects the northbound off-ramp to La Avenida Street instead of Shoreline Boulevard, as well as the Plymouth Street realignment. A second corridor that is undergoing substantial redesign is Charleston corridor, which will include a transit center for the North Bayshore as well as Class IV protected bikeways and intersection enhancements.

Traffic Signals

Intersection conditions are also critical to the efficiency of motor vehicle movements. Presently, traffic signals along Middlefield Road, San Antonio Road, Rengstorff Avenue, Charleston Road, Grant Road, and Shoreline Boulevard are coordinated to ensure more seamless and smooth movement along these corridors.

New and upgraded traffic signals with improved signal timing are planned to enhance motor vehicle circulation and reduce delays to motorists. These upgrades will occur at Rengstorff Avenue, Shoreline Boulevard, Grant Road, Middlefield Road, San Antonio Road and Charleston Road, and a recently approved new traffic signal at Villa Street and Hope Street intersection. An adaptive traffic signal technology installation is currently underway on Rengstorff Avenue.

Traffic Calming

Traffic calming measures on collector and residential streets have been implemented to reduce speed and cut-through traffic in residential neighborhoods. Traffic calming strategies such as speed humps and traffic circles are prominent traffic calming measures the City has implemented along streets such as Plymouth Street, Gretel Lane, Bonita Avenue, and Sleeper Avenue. Additionally, speed feedback signs have been installed near schools to heighten motorists' awareness of their driving speeds. Other traffic calming can also increase active transportation by improving the pedestrian, bicycle, and transit accessibility. Traffic calming measures such as curb extensions (bulbouts) are currently present at the Calderon Avenue and Mercy Street intersection. The City is analyzing potential traffic calming measures for El Monte Avenue between El Camino Real and Springer Road to improve the overall safety for all modes of travel.

Figure 3-39. Existing Vehicular Facilities

3.4.2 Planned and Existing Vehicular Facilities

In addition to existing vehicular facilities, there are also a number of planned motor vehicle infrastructure improvements within the City of Mountain View. These include new access streets in the North Bayshore, East Whisman and San Antonio areas; road diets on California Street and South Shoreline Boulevard; traffic calming measures; and intersection improvements. These improvements aim address the safety and mobility concerns, and are outlined in various plans including the Mountain View Multi-Modal Improvement Plan (2018), Valley Transportation Plan 2040 (2014), several precise plans, and streetscape feasibility studies. The planned improvements are also consistent with the General Plan policy of avoiding road widening as a means of addressing congestion.

Planned improvements and existing vehicular facilities by corridors are shown in Figure 3-40, with additional information provided below.

Roadway Redesign, Grade Separations and Interchange Changes

Changes to roadway network are planned in the vicinity of several at-grade crossings and freeway interchanges. Several plans and studies address planned grade separations at Castro Street and Rengstorff Avenue. As outlined in the Transit Center Master Plan, the Castro Street grade separation would incorporate a new vehicular ramp to Shoreline Boulevard and a pedestrian/bicycle undercrossing across the Caltrain line and Central Expressway.

The North Bayshore Precise Plan and East Whisman Precise Plan, also recommend road network changes in the vicinity of interchanges that include Shoreline/US 101 and Middlefield/SR 237. VTA interchange studies and the City of Mountain View's North Bayshore Circulation Study, which are currently underway, further investigate options for multimodal network changes at Rengstorff Avenue/Charleston Road/US 101, as well as Middlefield Road/SR 237.

Road Diets and Traffic Calming

Road diets were identified in the San Antonio Precise Plan and California, Escuela, and Shoreline Complete Streets Feasibility Study for California Street, and South Shoreline Boulevard (south of Wright Avenue). These plans were approved or supported by Council with the goal of addressing multimodal mobility and safety concerns.

Traffic calming strategies are designed to reduce motor vehicle travel speeds to create an environment where various modes can safely coexist. Mountain View City Council has supported implementation of traffic calming strategies associated with the San Antonio Precise Plan (Pacchetti Way), the California, Escuela, and Shoreline Complete Streets Feasibility Study (Escuela Avenue and California Street), and Latham-Church Street Bike Boulevard Feasibility Study (Latham and Church Streets).

New Streets

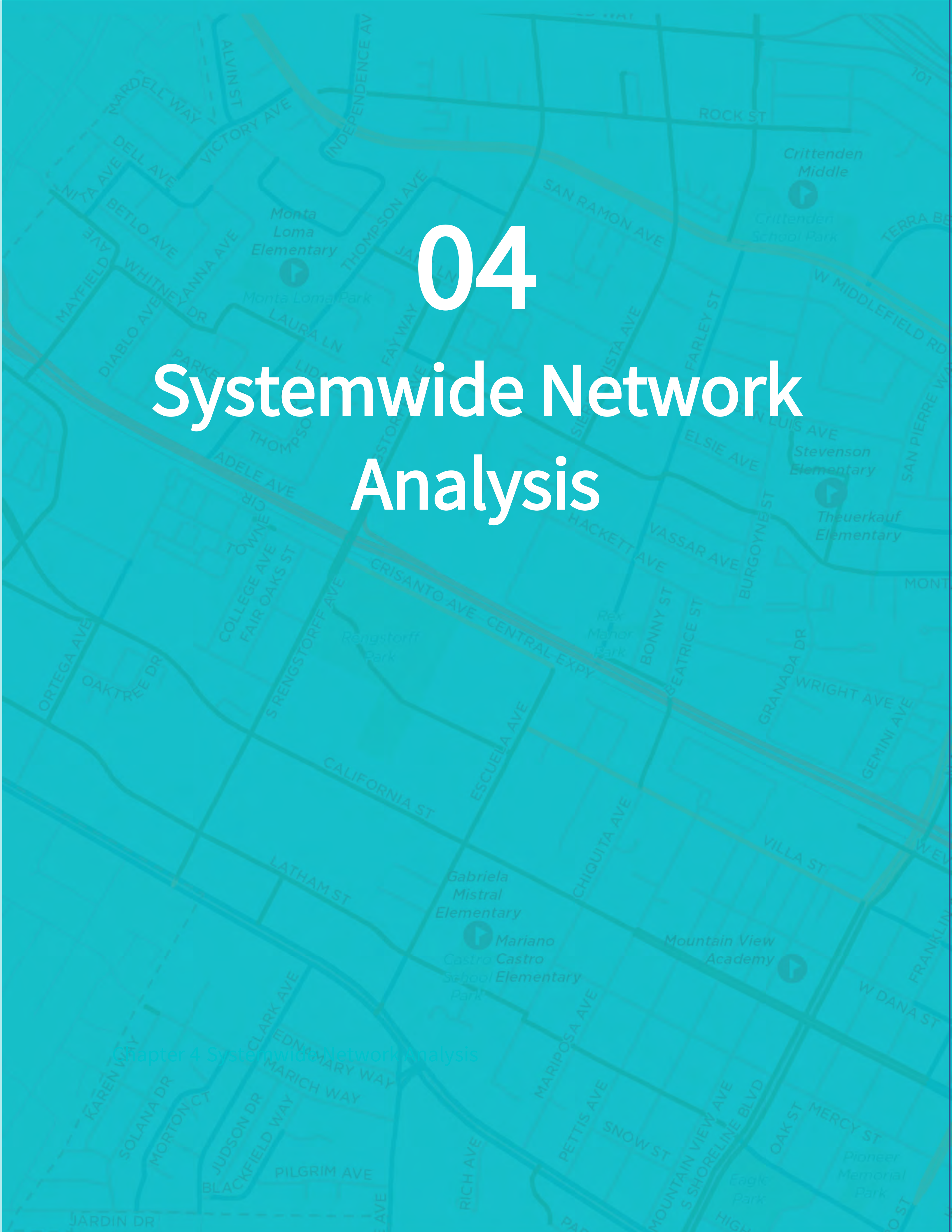
As part of the adopted North Bayshore Precise Plan, San Antonio Precise Plan, and East Whisman Precise Plan, a number of new streets are planned in order to break up industrial "superblocks" and create a more fine-grained and walkable street network.

Additionally, right-of-way expansions on Showers Drive and Shorebird Way (per the San Antonio Precise Plan) are planned to accommodate non-motorized modes of travel.

Figure 3-40. Planned Vehicular Facilities (Street Segments)

04

Systemwide Network Analysis



The existing and planned infrastructure and services described in Chapter 3 were used to identify overlaps, potential inconsistencies, and gaps in the City's multimodal network.

Network **overlaps** are planned improvements identified in multiple previous plans or studies, such as Precise Plans, the Bicycle Transportation Plan (BTP), VTA Transit Service Plan, and corridor studies. Network **inconsistencies** occur when different plans identify different visions or strategies for a particular corridor. Network **gaps** are physical or temporal gaps identified after accounting for future improvements.

Many planning documents reviewed for AccessMV account for prior planning efforts by using the same network proposals or building upon them. This sometimes leads to overlaps between the different plans, in which planned improvements are identified in multiple different plans or studies. However, some newer plans propose different visions, strategies, or designs that differ from previously proposed networks. These inconsistencies between plans indicate a need to clarify and prioritize planned improvements by mode. Finally, network gaps occur where there are no planned improvements, or in the case of bicycle facilities, where planned improvements are insufficient to produce low-stress conditions along priority corridors.

4.1 Network Overlaps

Network overlaps occur on corridors that have been identified for improvements in multiple plans over the years. As such, network overlaps are expected in transportation planning and are not problematic in most instances. More than anything, these overlaps serve as a proxy to identify which corridors have consistently been identified for planned improvements. In some cases, the overlapping plans target the same mode, such as bicycles. At other times, the overlapping improvements are identified in the same plan, but the overlaps include multiple modes. For example, a planned road diet results in reduced general travel lanes, new bike lanes, and a safer environment for pedestrians, thus this single plan proposes improvements that overlap across three different modes. Specific examples of network overlaps include:

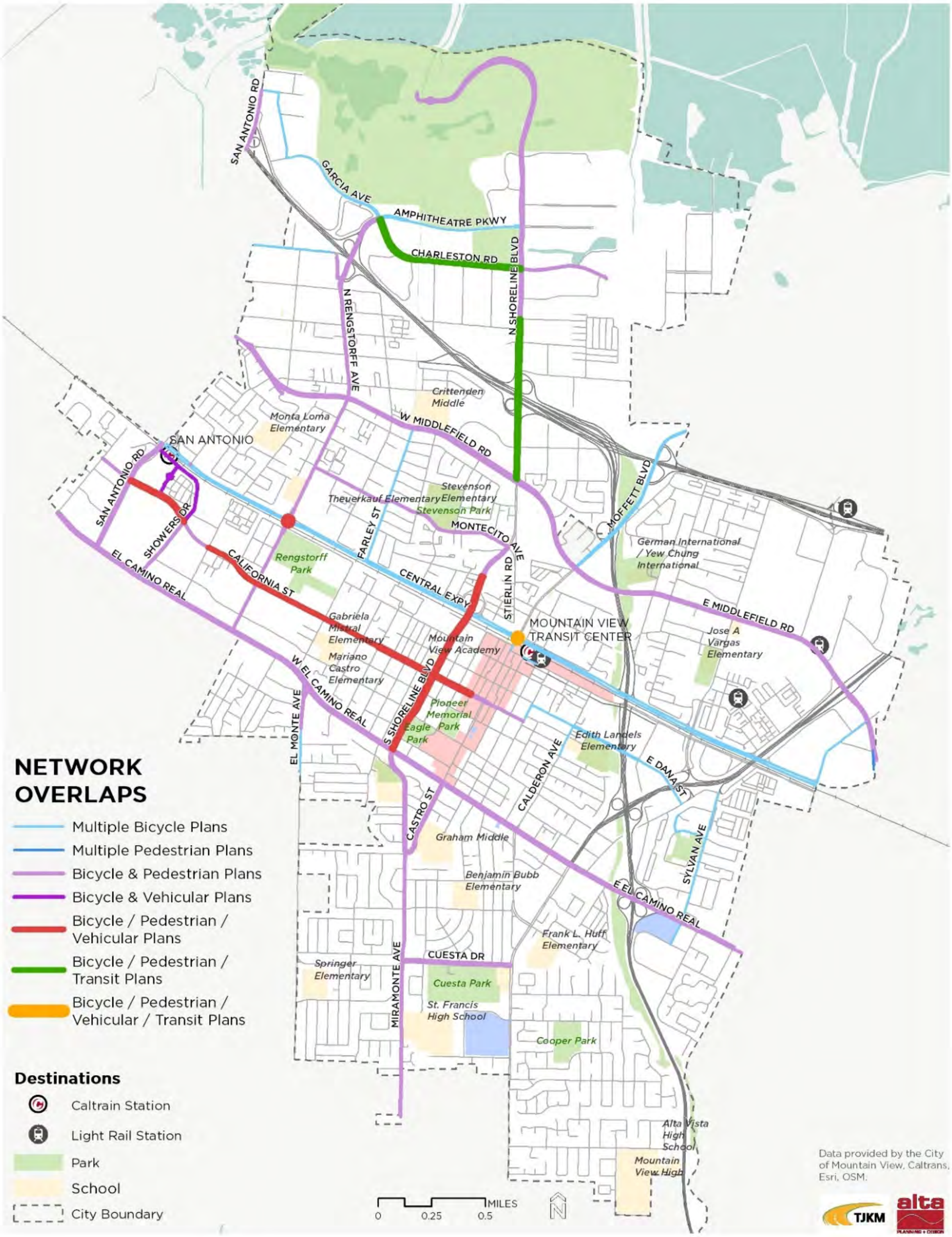
- El Camino Real: Plans include Class IV protected bikeways and pedestrian improvements
- California Street: Plans include a road diet and Class IV protected bikeways
- Charleston Drive: Plans include dedicated transit lanes and Class IV protected bikeways
- Shoreline Boulevard: Plans include reversible transit lanes and Class IV protected bikeways
- Rengstorff Avenue: Grade-separation plans incorporate travel lanes, Class IV protected bikeways and new pedestrian facilities

Table 4-1 identifies the length of network overlaps by mode. Figure 4-1 illustrates overlaps by corridor.

Table 4-1. Centerline Miles of Overlapping Network Plans by Mode

Overlaps Between Modes	Centerline Miles
Bicycle	10.46
Bicycle / Pedestrian	18.38
Bicycle / Pedestrian / Transit	1.50
Bicycle / Pedestrian / Vehicular	2.64
Bicycle / Pedestrian / Vehicular / Transit	0.01
Bicycle / Vehicular	0.64
Pedestrian	0.14

Figure 4-1. Network Overlaps



4.2 Network Inconsistencies

While many overlaps between plans do not pose any issues for implementation, some recommended improvement projects may be inconsistent with one another. For example, if one plan calls for dedicated bus lanes on a particular corridor, and another calls for Class IV protected bikeways and no dedicated bus lanes, it may not be possible to implement both of them on the same roadway due to a lack of available right-of-way.

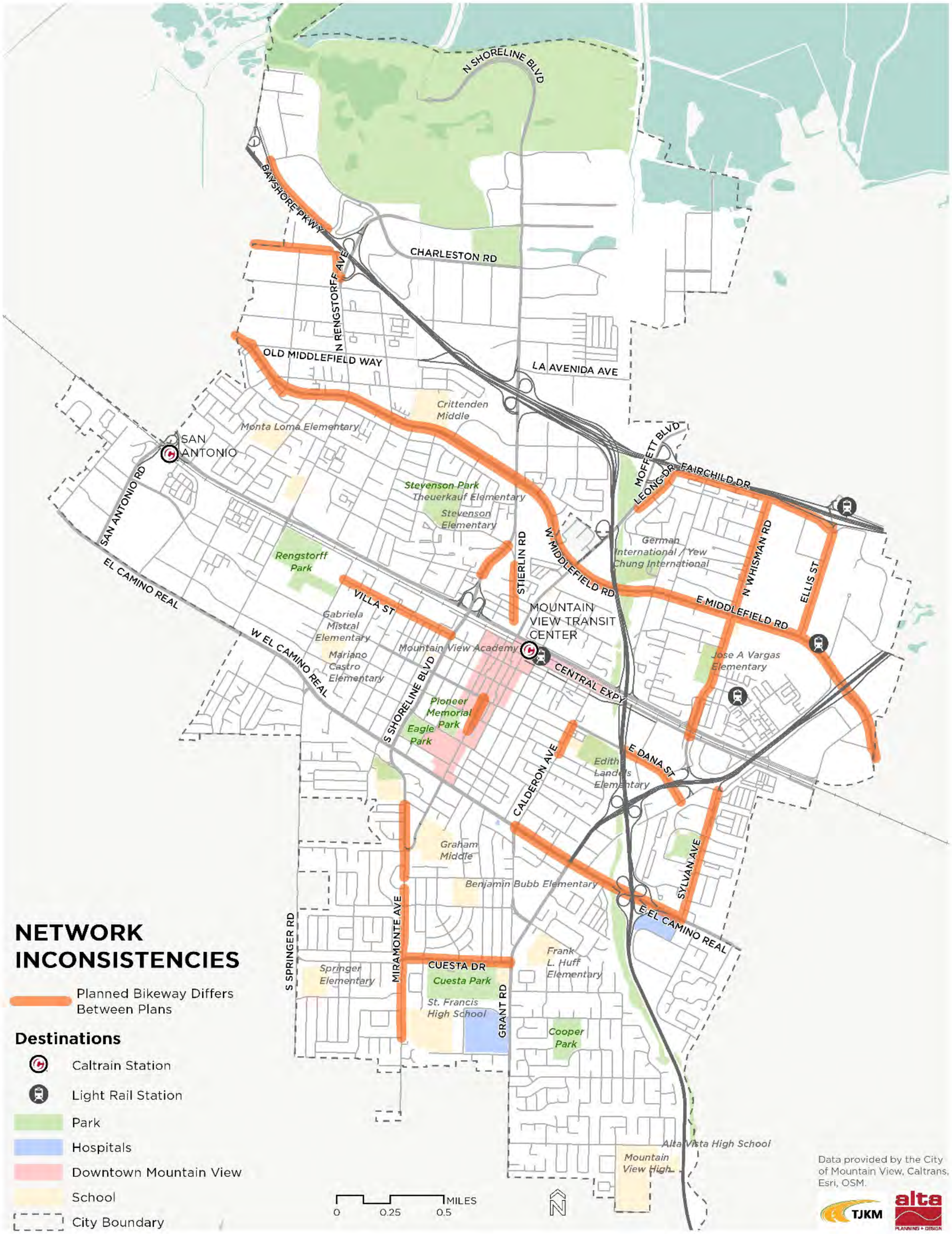
No fundamental inconsistencies were identified in the City's multimodal network. Instead, most potential inconsistencies were relatively easily resolved by choosing the more refined bicycle facility over facilities indicated in older plans. For example, one plan calls for buffered Class II bike lanes on a segment of El Camino Real, while two more recent plans call for Class IV protected bikeways. This type of inconsistency reflects the recent evolution of bicycle transportation planning and is resolved by choosing the planned bikeway that reflects the level of traffic stress along this roadway or the most recent plan.

In some cases inconsistencies were textual. For example, the City of Mountain View 2015 Bicycle Transportation Plan (BTP) establishes a policy of prioritizing Class IV protected bikeways on roadways with posted speed limits of 30 miles per hour or greater, yet the BTP and other plans list Class II bike lanes or Class III bike routes for certain roads with posted speed limits of 30 miles per hour or greater. Analysis identified 13 centerline miles of roadway with this type of inconsistent bikeway recommendations (Figure 4-2).

The inconsistencies include the following examples:

- El Camino Real, which has a posted speed limit of 35 to 40 miles per hour, is slated for Class IV protected bikeways in the Caltrans 2018 District 4 Bike Plan and City of Mountain View 2019 El Camino Real Streetscape Plan but is designated for future Class II buffered bicycle lanes (from Calderon Avenue to Dale Avenue) in the BTP;
- Whisman Road (from Middlefield Road to Evelyn Avenue), which has a speed limit of 35 miles per hour but is designated for future buffered Class II bike lanes in the BTP;
- Dana Street (from Moorpark Way to State Route 85), which has a speed limit of 35 miles per hour but is designated for future buffered Class II lanes in the BTP;
- Middlefield Road (from San Antonio Road to Bernardo Avenue), which has a speed limit of 35 miles per hour but is designated for future Class II bicycle lanes in the BTP; and
- Fairchild Drive, which has a speed limit of 35 miles per hour but is designated for a future Class III bicycle boulevard under the BTP and future Class II bike lanes under the 2019 East Whisman Precise Plan.

Figure 4-2. Network Inconsistencies



4.3 Network Gaps

4.3.1 Bicycle Network Gaps

Bicycle network gaps are corridors or segments identified in the General Plan as having a medium or high priority for bicycle access that are not adequate for bicyclists of all ages and abilities. These corridors have a high level of traffic stress (BLTS score of 3 or 4) even after accounting for planned improvement projects. There are approximately 12 centerline miles of bicycle network gaps identified within the city's network (Figure 4-3). Most roadways in Mountain View have bicycle network gaps on short segments only. For others, such as Middlefield Road, the gap spans the entire corridor within the city. For these facilities the planned bikeway facility class is insufficient to improve the BLTS, or the posted speed limit is high relative to the existing or planned bikeways.

Along streets that were dedicated to the City without sidewalk, gutter, drainage facilities, or other improvements, bikeway projects would require the inclusion of stormwater infrastructure or other improvements. The cost of these improvements would need to be factored into the cost of the bikeway projects.

4.3.2 Pedestrian Network Gaps

This analysis identified 15 centerline miles of pedestrian network gaps (Figure 4-3). The pedestrian network gaps are based on missing sidewalks on public roadways with the exception of expressways or freeway frontage roads that have complete sidewalks on one side, but are missing sidewalks on the freeway- or railway-side of the road (as these roadways are identified in the General Plan as having a low priority for pedestrians). Additionally, this analysis did not include privately owned streets or all of the short street segments near dead-end roads that are missing sidewalks. The analysis also did not consider pedestrian facilities to be incomplete if a two-way multiuse trail was included on just one side of a roadway within a City park.

4.3.3 Transit Network Gaps

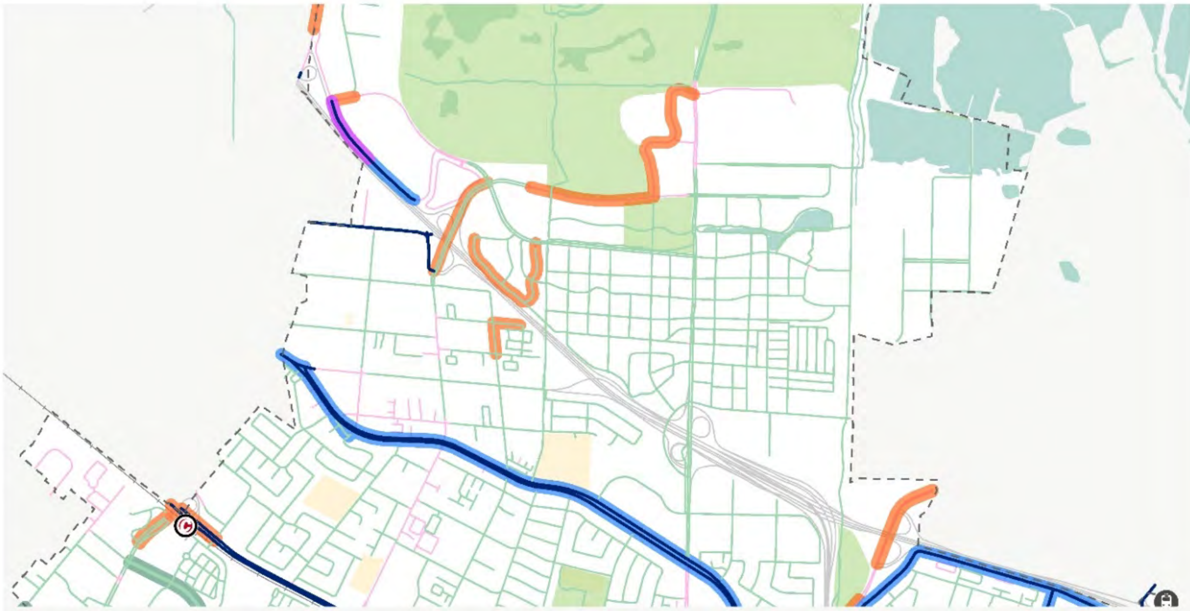
Transit network gaps are transit corridors that provide intra-city service where there is a high transit propensity but a lack of available services. The transit network gap analysis was based on the City of Mountain View's Community Shuttle Study, which determined that there were no spatial transit network gaps for intracity movements within the city. However, the study did identify temporal service gaps within the network, and recommended expanding the Community Shuttle's service hours in 2021.

In addition to intra-city transit gaps, gaps in the regional transit network include transit corridors that have been identified as high capacity or priority transit corridors, yet do not have any transit priority treatments or planned treatments such as transit signal priority, bus lanes (or dedicated rail track), queue jumps, in lane stopping with boarding islands, or other priority treatments. (More information on transit priority corridors is provided in Chapter 7.)

4.3.4 Vehicular Network Gaps

Vehicular gaps are corridors where roadways are needed to access destinations but are unavailable even after accounting for planned vehicular improvements. There were no vehicular network gaps identified in the city's network. It should be noted that corridors with low Pavement Condition Index (PCI) are addressed as part of City operations through the City's repavement program.

Figure 4-3. Network Gaps



05

Prioritization Criteria

Chapter 5 Prioritization Criteria

In order to prioritize corridors and projects, a scoring system was developed. The scoring system was based on goals and values described in various plans. These goals were then translated into corridor prioritization criteria by mode. These network criteria aimed to identify which corridors should be prioritized for future improvement projects for each mode. Based on corridor priorities, project criteria were then developed to prioritize the planned improvement projects within each corridor. Project criteria included additional metrics such as feasibility and cost.

5.1 Prioritization Process

Figure 5-1 illustrates the process used to develop network and project criteria as well as identify priority corridors and projects. Each step is described in detail in Sections 5.1.1 – 5.1.4.

Figure 5-1. Prioritization Process

5.1.1 Identify Key Goals and Policies

To ensure the prioritization process reflected prior planning efforts within the City of Mountain View, the project team first identified key themes, goals, and policies from the City's General Plan and other previous planning documents. These goals and policies were used as a guide for developing prioritization criteria. Key goals and policies from the General Plan are identified in Chapter 1.

The project team also reviewed the General Plan's Street Typology map to understand which corridors were considered to be priority for which modes. Figure 5-2 illustrates the street typology for each corridor and Table 5-1 identifies the mode priority for each street type. The General Plan mode priority was used as a criterion for measuring Mobility attributes for the corridors that have designated street typologies. Some corridors, including planned streets, do not have an assigned street typology, and therefore they were not scored based on this prioritization criterion.

Figure 5-2. Existing Street Typology

Table 5-1. General Plan Mode Priority by Street Typology

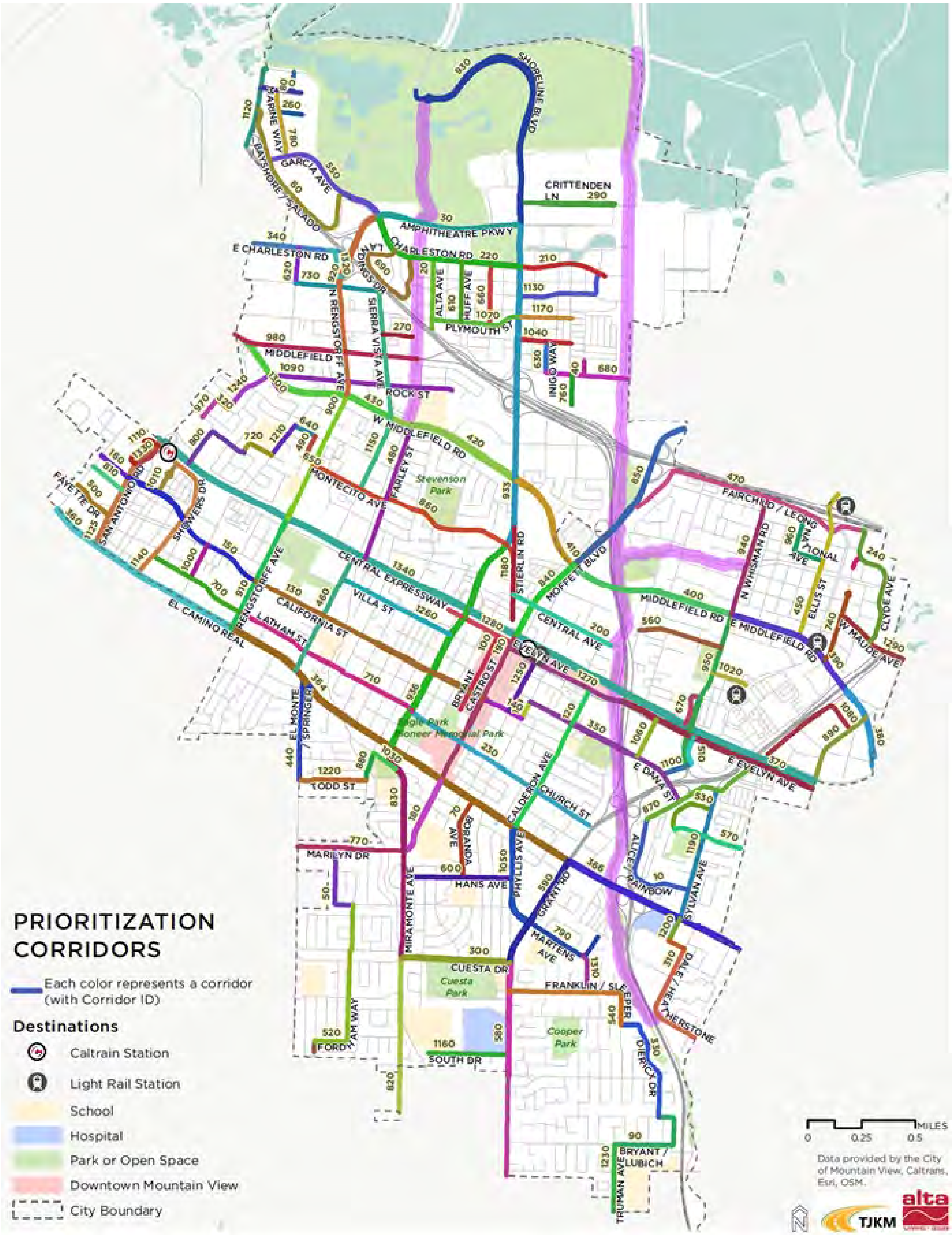
STREET TYPE	GENERAL PLAN MODE PRIORITY			
	Pedestrian	**Bicycle**	**Transit**	**Vehicle**
Highway	N/A	N/A	N/A	High
Expressway	Low	Low	Low	High
Boulevard	High	Medium/Low	High	High
Avenue	Medium	High/Medium	Medium/Low	Medium
Main Street (Castro)	High	Medium/Low	Medium	Medium
Major Retail Street (N. Bayshore)	High	High	High	High
Downtown Street	High	High/Medium	Medium/Low	Medium
Flexible Street	High	High/Medium	Medium/Low	Medium
Residential Collector	High	High	Low	Medium
Neighborhood Collector	High	High	Low	Medium/Low
Residential Street	High	High	Low	Low
Park Street	High	High	Low	Low
Multi-Use Pathway	High	High	N/A	N/A

5.1.2 Identify Network Corridor Criteria

Network criteria were developed to reflect the identified goals from the General Plan: Connectivity, Equity, Mobility, Safety, and Sustainability. In addition, Consistency was added as a prioritization goal to measure how frequently planned improvement projects were identified in previous planning efforts. Network criteria and metrics are described in detail in Section 5.2.

To apply the network criteria to corridors, the project team first divided Mountain View's streets into different corridors for analysis. Most corridors span approximately ½ to 1 mile between natural break points. The exception are priority transit corridors, which typically span a longer distance. The relatively short corridor segments were created to reflect Mountain View's relatively small size. At only 12 square miles, ½ mile to 1 mile segments were deemed appropriate to meaningfully differentiate between different corridors in the city. Figure 5-3 illustrates the corridors used for the prioritization analysis.

Figure 5-3. Prioritization Corridors



5.1.3 Refinement of Corridor Criteria through Engagement

Proposed prioritization goals and network criteria were presented at an interagency stakeholder meeting in October 2020, as well as a meeting of the Bicycle/Pedestrian Advisory Committee (B/PAC) on September 30, 2020, and a virtual community meeting on October 22, 2020. An online survey was also issued to solicit further input from community members who were unable to make the community meeting on October 22, 2020. The online survey was available from October 22, 2020 through November 12, 2020.

At these events, stakeholders and community members were given the opportunity to weigh in on the prioritization goals and proposed criteria and metrics. They were also asked to comment on the proposed segmentation of the corridors. The feedback received from B/PAC, community members and stakeholders included changing the equity metric (originally, the project team had proposed using CalEnviroScreen as a metric); changing the connectivity metric from ¼ mile to ½ mile to better accommodate bicyclists; and adding Safe Routes to School as an additional safety metric. A complete description of community engagement activities and community feedback is included in Chapter 6, Community Engagement.

5.1.4 Identify Project Criteria

The next step of the prioritization process involved developing project criteria to prioritize transportation improvement projects within each corridor. Project criteria built upon corridor prioritization criteria, and added several additional criteria related to project feasibility. These new criteria include factors such as cost, implementation, potential project synergies, and funding. Project prioritization criteria and metrics are shown in detail in Section 5.3.

5.1.5 Refinement of Project Criteria through Engagement

Proposed project criteria were presented at a virtual community meeting on February 18, 2021, where community members had the opportunity to review the results of the corridor prioritization process and proposed project prioritization criteria, and comment on whether any important elements were missing from the project prioritization criteria. A complete description of community feedback is included in Chapter 6.

5.2 Network Prioritization Criteria

Table 5-2 identifies the network prioritization criteria used to prioritize corridors. Each of the prioritization goals include one or more criteria that are worth a total of 10-38 points in the prioritization process.

Table 5-2. Network Prioritization Criteria

GOALS	CRITERIA	POINTS	METRICS
Connectivity / Walkability / Bikeability		**38 max**	
	Corridor connects residents to major destinations.	0 3 6 9	Not within 1/2 mile of any destinations Within 1/2 mile of 1 destination Within 1/2 mile of 2-4 destinations Within 1/2 mile of 5+ destinations
	Planned improvements for the corridor close a gap in the existing network.	0 3 6 9	Does not close a gap Closes a gap (has existing facility) Closes a gap (no existing facility) Reduces the number of low-stress islands
	Corridor improves first/last mile connections.	0 5 10	Not within ½ mile of any transit Within ½ mile of shuttle/bus Within ½ mile of Caltrain/light rail or El Camino Real
	Corridor improves directness of travel to destinations.	0 5 10	Low density of 4-way intersections Medium density of 4-way intersections High density of 4-way intersections
Equity		**20 max**	
	Corridor serves disadvantaged residents.	4 6 8 10	Lowest 50% Median Household Income: Upper Quartile Upper Middle Quartile Lower Middle Quartile Lower Quartile
	Corridor has a high transit propensity score.	0 5 10	Transit Propensity Score 1 Transit Propensity Score 2-3 Transit Propensity Score 4-5
Mobility		**29 max**	
	Corridor is a high-priority corridor for the mode (cumulative).	1 2 3 4	N/A Low Medium High

GOALS	CRITERIA	POINTS	METRICS
	Corridor accommodates all modes.	1 3 5	Accommodates 1 mode Accommodates 2-3 modes Accommodates all modes
	Corridor is a transit priority corridor.	0 2 4 6 8	Not a transit corridor Potential transit corridor Basic transit corridor Priority transit corridor High capacity transit corridor
Enhanced Safety		**28 max**	
	Planned improvements make corridor accessible to all ages and abilities.	0 5 10	None of the corridor meets All Ages and Abilities (AAA) threshold Some of the corridor meets AAA threshold All of the corridor meets AAA threshold
	Corridor is part of the high-injury network (HIN).	0 5 10	None of the corridor is on the HIN Some of the corridor is on the HIN All of the corridor is on the HIN
	Corridor is on a suggested route to school.	0 8	Not on a suggested route to school On suggested route to school
Sustainability		**10 max**	
	Planned improvements for the corridor reduce VMT and greenhouse gas emissions.	0 5 10	Motor vehicle project that results in increased/unchanged VMT Motor vehicle project that results in reduced VMT Bike, pedestrian, or transit project
Consistency		**10 max**	
	Corridor is identified in multiple previous plans.	1 3 5	Identified in 1 other plan Identified in 2-3 previous plans Identified in 4+ previous plans
	Corridor is on Across Barrier Connection (ABC) or Cross County Bikeway Corridor (CCBC)	0 5	Not on an ABC or CCB Is on an ABC or CCB
MAXIMUM POSSIBLE POINTS		**135**	

5.3 Silicon Valley Bicycle Coalition Network Priority Tool

Silicon Valley Bicycle Coalition (SVBC) developed a Network Priority Tool that was used to complete a supplemental network analysis for the City of Mountain View. The tool was initially developed to serve as a way to prioritize bicycle projects in San Mateo and Santa Clara counties based on demand, low-stress networks, connectivity to key destinations, and other factors. The tool was initially used as part of the Sunnyvale Active Transportation Plan (ATP).

This network priority tool represents an alternative approach to network prioritization which can be used to inform future planning efforts and recommendations in Mountain View. The tool focuses on four main categories – High Need Areas, Proximity to Destinations, Harm Reduction, and Bike Network Connectivity – which are made up of 17 different criteria. While many of the criteria are similar to the methodology used for AccessMV, AccessMV provides an approach that is relevant to multiple modes and specific to local context and needs. For bicycle facilities, results from this method are similar to that of AccessMV with Central Expressway, El Camino Real, Middlefield Road and Rengstorff Avenue emerging as high priority corridors under this methodology.

5.4 Project Prioritization Criteria

Table 5-3 identifies the prioritization criteria used for prioritizing improvement projects. Project prioritization criteria use the actual network priority score as the starting point and then considers additional implementation factors such as cost, ease of implementation, and funding availability. The project prioritization criteria include a total of seven criteria that provide up to 45 points.

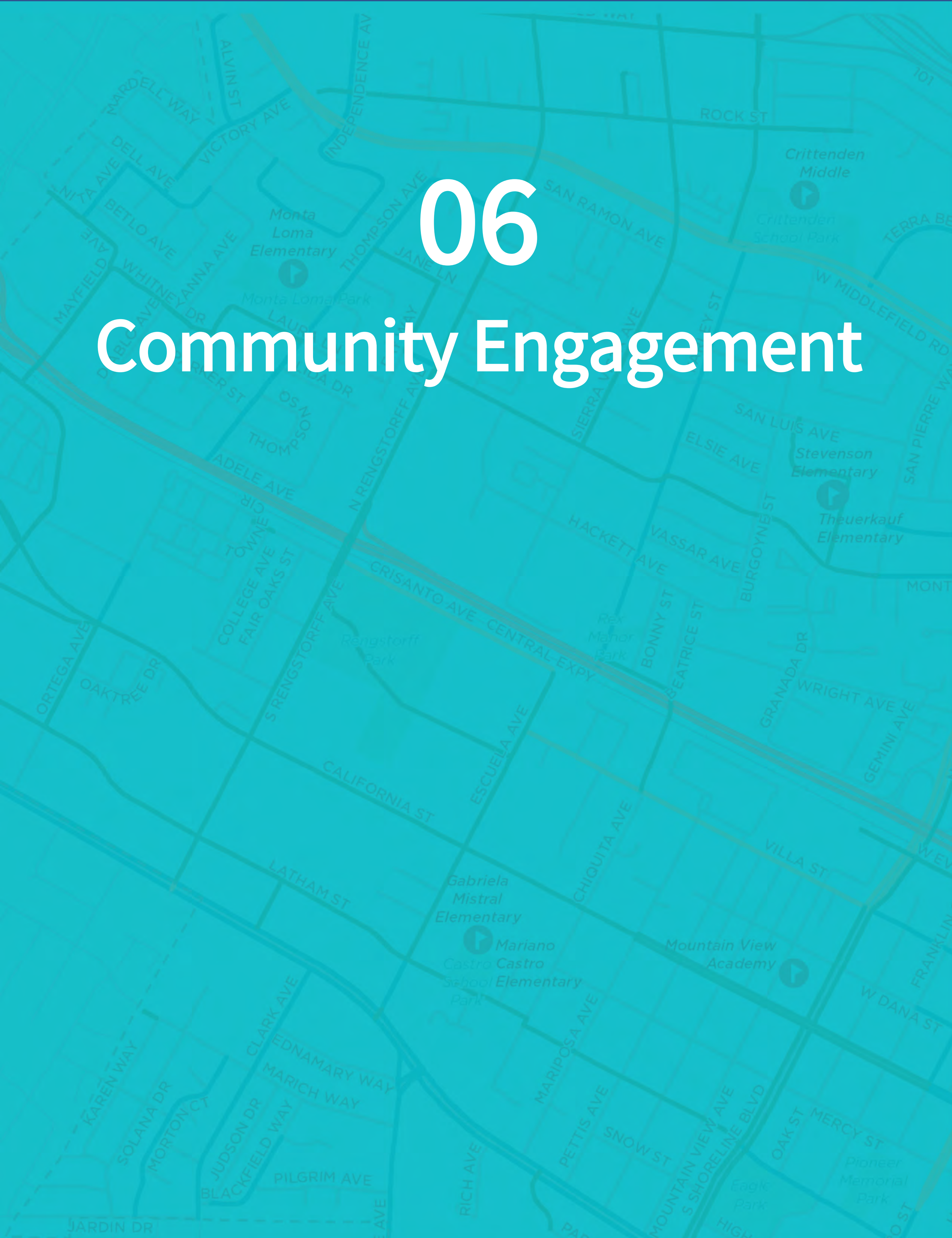
Table 5-3. Project Prioritization Criteria

GOALS	CRITERIA	POINTS	METRICS
Corridor Priority Score		**112 max**	
	Network priority score.	Network Priority Score (42-112)	Actual Network Priority Score (42-112)
Cost Effectiveness		**10 max**	
	Project is cost-effective.	0 5 10	High cost ($$$) Medium cost ($$) Low cost ($)
Geographic Distribution		**0 max**	
	Project would provide a new route or improved access for the neighborhood	Minus 5 0	Similar or parallel project exists within the same neighborhood No similar or parallel project exists within the same neighborhood (preference given to higher ranking project)
Feasibility		**10 max**	
	Project is relatively easy to implement.	0 5	Difficult to implement (requires easements or acquisitions; extensive interagency coordination)

GOALS	CRITERIA	POINTS	METRICS
		10	Somewhat difficult to implement (requires some easements or acquisitions; some interagency coordination) Relatively easy to implement (City-owned ROW; requires limited interagency coordination)
Cost Savings Potential*		**5 max**	
***Data currently unavailable, but will be included in the final analysis**	Opportunities for project implementation to be combined with other City or regional efforts.	0 5	< 2 years or 10+ year City repaving schedule In 2-10 year City repaving schedule
Funding Opportunities		**10 max**	
	Opportunities for several potential project funding sources.	0 5 10	Unlikely eligible for competitive grant funding Project may be eligible for some competitive grant funding (improvement to existing poor facility) Project likely eligible for competitive grant facility (new facility; gap closure)
Community Support		**5 max**	
	Historical community feedback for project.	Minus 5 0 Plus 5	Project has received negative community feedback during previous planning efforts Project has not received any community feedback during previous planning efforts Project has received positive community feedback during previous planning efforts
Strategic Importance		**5 max**	
	Project serves as a strategic gateway project.	0 5	Not a strategic gateway project Strategic gateway project
MAXIMUM POSSIBLE POINTS		**87-157**	

06

Community Engagement



Chapter 6 Community Engagement

Community engagement for AccessMV took place during two rounds in fall 2020 and winter 2021. During the first round of engagement, community members were presented with an overview of the project and prioritization process and asked to provide feedback on proposed network prioritization criteria. During the second round, community members were presented with the results of the prioritization process and given access to view and toggle between various local transportation-related datasets using an interactive web map on their own time. Both rounds of community engagement are described in detail in the following pages.

6.1 Round 1: Prioritization Process

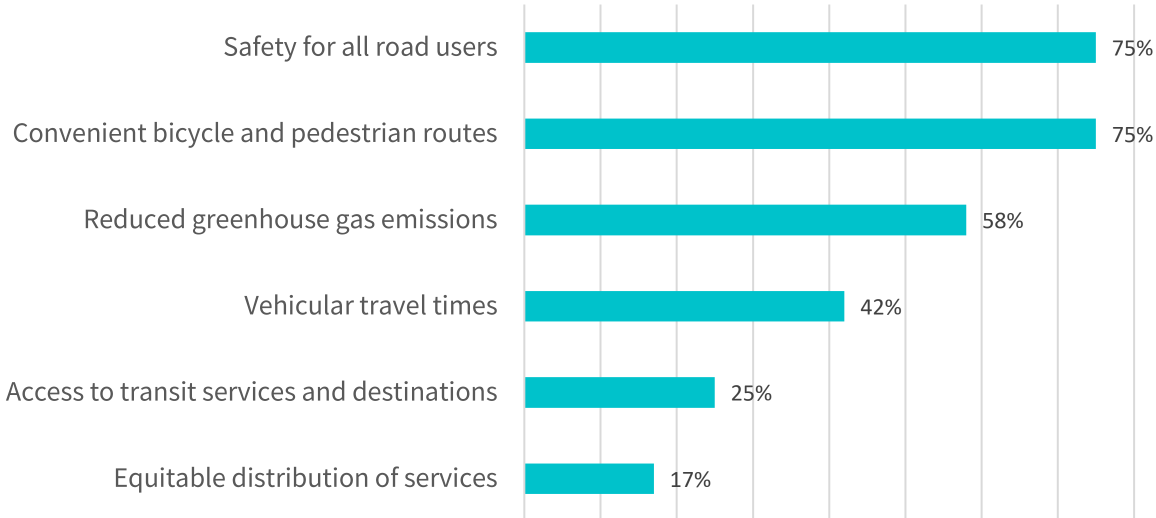
6.1.1 Virtual Community Meeting

As noted in Chapter 5, proposed prioritization goals and network criteria were presented at a virtual community meeting on October 22, 2020. Notification of the virtual community meeting included yard signs at different locations throughout the City, notices on social media platforms including Facebook, Twitter, NextDoor and Instagram, email blasts to B/PAC subscribers and transportation project lists, and agenda posting. Twenty-one community members attended the meeting.

The project team provided an overview of the project purpose and approach, a summary of the analyses completed to date, and an overview of the proposed prioritization process, criteria, and metrics. Community members were given the opportunity to describe their priorities for the City's transportation system, weigh in on the prioritization goals and proposed criteria and metrics, and comment on the proposed segmentation of the corridors. All attendees had the opportunity to respond to a series of poll questions.

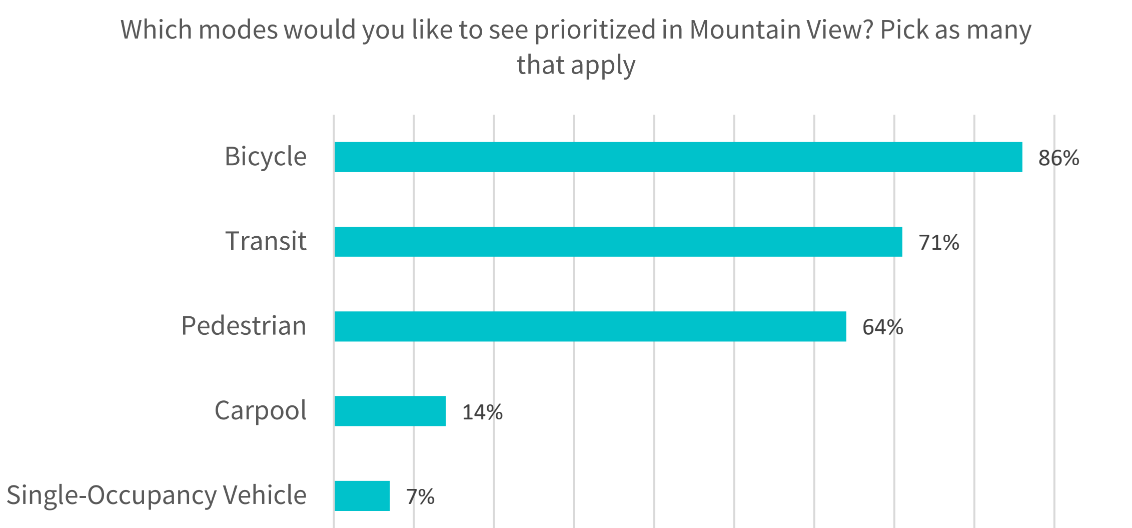
Of the community members who participated in the poll, the majority (50%) of respondents indicated they both live and work in Mountain View, 33% live in Mountain View, and 17% work in Mountain View. The most common modes used by respondents to get around town are driving (75%) and walking (75%). When asked about their top three priorities for the City's transportation system, the most common responses were *safety for all road users* (75%), *convenient bicycle and pedestrian routes* (75%), and *reduced greenhouse gas emissions* (58%) (Figure 6-1.).

Figure 6-1. Priorities for Mountain View's Transportation System (Community Meeting #1)



Eighty-six percent of attendees noted they would like to see bicycling prioritized in Mountain View, followed by transit (71%) and walking (64%) (Figure 6-2).

Figure 6-2. Priority Modes (Community Meeting #1)



Prioritization Process

Overall, 69% of attendees noted they either "strongly support" or "somewhat support" the proposed prioritization criteria and metrics, and 71% of attendees noted they strongly support or somewhat support the weights associated with the scoring system for each metric. Open-ended comments included questions about the prioritization process and timeline for improvements, as well as comments about specific improvements that are desired by the community, such as protected bikeways and more street trees.

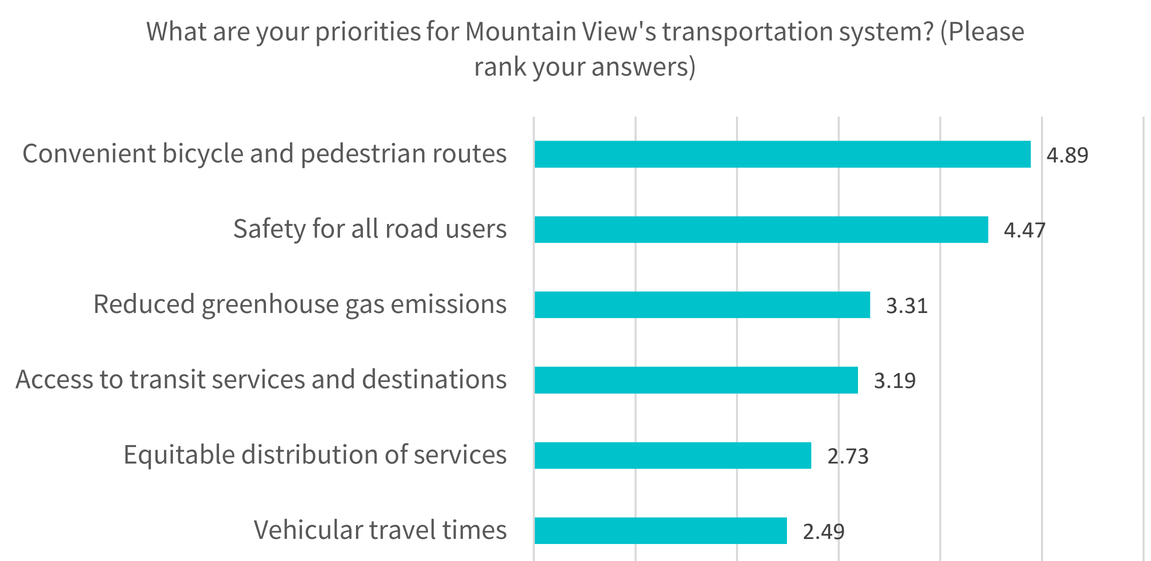
6.1.2 Online Survey

An online survey was also issued to solicit further input from community members who were unable to make the community meeting on October 22, 2020. The survey asked the same questions as those asked during the virtual community engagement event. The online survey was available from October 22, 2020 until November 12, 2020 and received 80 responses during this time.

The majority of respondents (46%) noted they both live and work in Mountain View, followed by 28% who live in Mountain View and 23% who work in Mountain View. Over 80% of respondents indicated they typically get around Mountain View by bike, indicating that the survey results likely have an overrepresentation of bicyclists. Online surveys and community meetings are subject to self-selection bias so may not be representative of the entire community. The survey results nonetheless provide useful insight into community preferences and concerns.

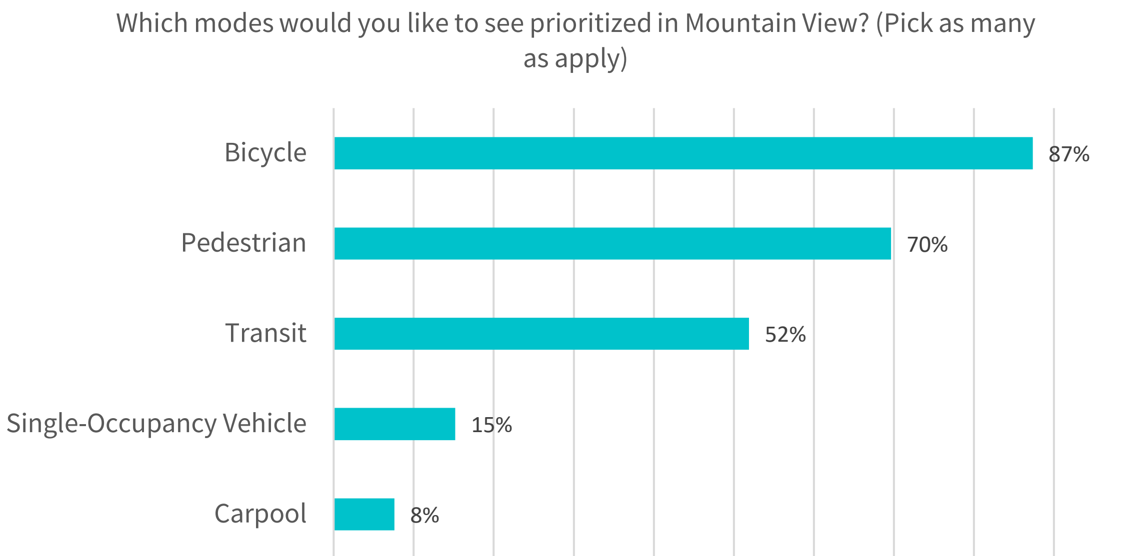
Community members were also asked to rank their priorities for Mountain View's transportation system. Unlike the community meeting where participants chose their top three priorities, survey respondents were asked to rank their priorities from 1-6. Similar to community meeting attendees, survey respondents chose convenient bicycle and pedestrian routes, safety for all road users, and reduced greenhouse gas emissions as their top priorities for the City's transportation system. Average scores based on ranking are shown in Figure 6-3.

Figure 6-3. Priorities for Mountain View's Transportation System (Online Survey)



Bicycling (87%), walking (70%), and transit (52%) were the modes identified most frequently as priorities for the City's transportation system. Priority modes are shown in Figure 6-4.

Figure 6-4. Priority Modes (Online Survey)



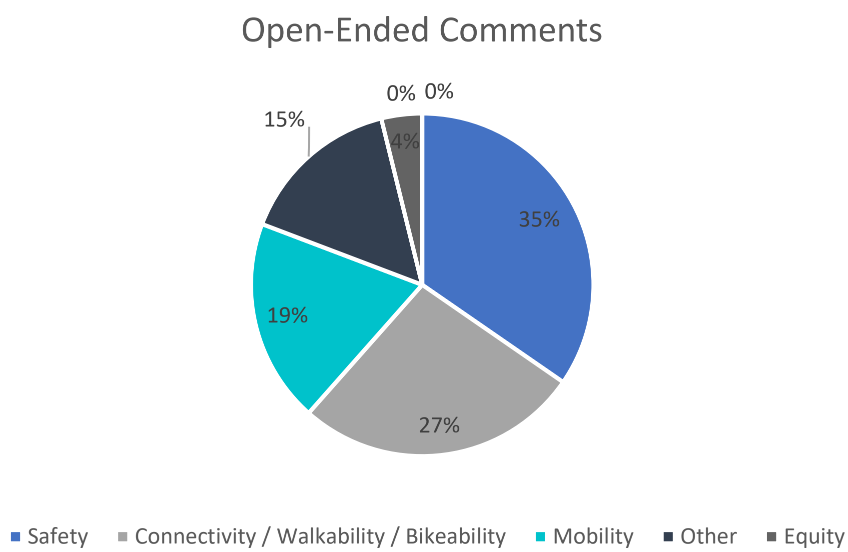
Prioritization Process

Overall, 88% of survey respondents noted they either “strongly support” or “somewhat support” the proposed prioritization criteria and metrics, and 90% of respondents noted they strongly support or somewhat support the weights associated with the scoring system for each metric. Open-ended comments included support for prioritizing safety for bicyclists and pedestrians and safe routes to schools, as well as connectivity with adjacent cities and destinations.

Open-ended comments were coded by prioritization goal to understand which topics or themes were most important to survey respondents (Figure 6-5). Comments related to Enhanced Safety came up most frequently, followed by Connectivity / Walkability / Bikeability and Mobility. Key comments related to Enhanced Safety and Connectivity include:

- *Need to make bicycle travel accessible and safe for all age levels - not just adults.*
- *Please prioritize safe bike lanes!*
- *I think connectivity is THE MOST important thing, as a bike rider. I'm in favor of equity, connecting to schools, and things like that, but if it results in a patchwork of partial solutions, that's way less good than providing excellent, safe bike routes in a smaller area.*
- *I'm highly supportive of improving cycling and walking safety and extending Mountain View's network of separated cycle routes.*

Figure 6-5. Open-Ended Questions by Prioritization Goal (Online Survey)



6.2 Round 2: Prioritization Results

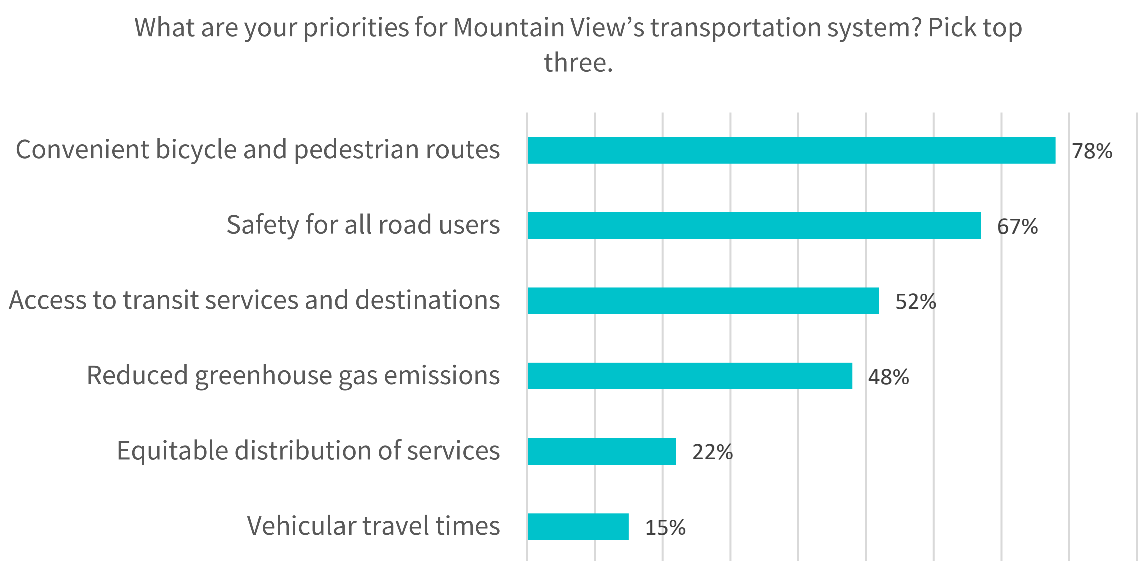
6.2.1 Virtual Community Meeting

A second community meeting was held on February 18, 2021. Notification of the virtual community meeting included yard signs at different locations throughout the City, notices on social media platforms including Facebook, Twitter, NextDoor and Instagram, email blasts to B/PAC subscribers and transportation project lists, and agenda posting. Thirty-five community members attended the meeting.

The project team provided an overview of the project purpose and approach, a summary of the results from the first round of community engagement, and a summary of analyses completed to date and criteria used to prioritize corridors. The main purpose of the meeting was to provide an overview of the results of the network prioritization process, as well as to introduce proposed project prioritization criteria. Like the first round of engagement, community members were given the opportunity to describe their priorities for the City's transportation system, as well as weigh in on the prioritization goals and proposed criteria. Participants were also encouraged to comment on whether anything was missing from the prioritization process. All attendees had the opportunity to respond to a series of poll questions, several of which were also asked during the first community meeting.

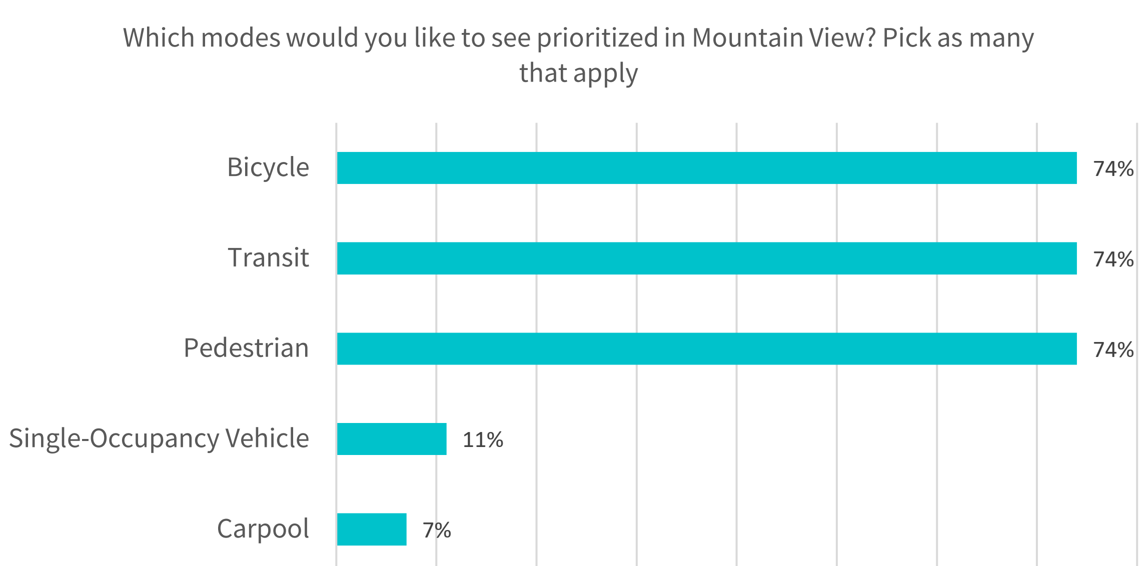
Of the community members who participated in the poll, most heard about the meeting through an email blast (44%) or other (33%), which included seeing a sign advertising the meeting near City Hall. The majority (44%) of respondents indicated they live in Mountain View, 33% live and work in Mountain View, and 11% work in Mountain View. The most common modes used by respondents to get around town are driving (74%) and walking (74%). When asked about their top three priorities for the City's transportation system, the most common responses were convenient bicycle and pedestrian routes (78%), safety for all road users (67%), and access to transit services and destinations (52%) (Figure 6-6).

Figure 6-6. Priorities for Mountain View's Transportation System (Community Meeting #2)



When asked about which modes they would like to see prioritized in Mountain View, community members voted evenly for pedestrian, bicycle, and transit (all 74%) (Figure 6-7).

Figure 6-7. Priority Modes (Community Meeting #2)



After reviewing the proposed project prioritization criteria, community members were given the opportunity to vote if the project prioritization criteria missed any key elements. Overall, 43% of respondents voted that they agreed with the criteria, and 57% noted that additional elements should be considered. The most common responses for additional elements that should be considered in the project prioritization process included implementing green complete streets considerations, tree canopy, and vegetation. Additional comments were related to gap closure (which was captured in the corridor prioritization process), a focus on sidewalks (which will be addressed in an upcoming Pedestrian Master Plan update), and the timeline for implementation (which will be based on the different tiers of project prioritization results). While these comments were not directly incorporated into the project prioritization criteria, they will be addressed in future City planning efforts as described in Chapter 7.

07

Priority Corridors and Projects

Chapter 7 Priority Corridors and Projects

The network and project prioritization criteria presented in Chapter 5 were used to prioritize the transportation improvement projects identified in Chapter 3. First, network criteria were used to identify priority corridors overall, followed by priority corridors by mode. Second, network prioritization scores were included as one of several criteria used to prioritize specific improvement projects within each corridor.

7.1 Priority Corridors

The network criteria presented in Chapter 5 were used to prioritize each of the corridors identified for the analysis.

The results show that the highest overall scores were for segments of:

- El Camino Real,
- Rengstorff Avenue, and
- Shoreline Boulevard.

All of these corridors score highly from an equity perspective, have high levels of transit propensity, accommodate several modes, and are located within 1/2 mile of several destinations, including parks and open spaces, schools, and transit facilities. Other priority corridors include segments of California Street, San Antonio Road, and Showers Drive, among others. Prioritization scores range from 41 to 112, out of a maximum of 135 points, and are divided into five tiers as follows:

- **Tier 1**: 90-112
- **Tier 2**: 75-89
- **Tier 3**: 65-74
- **Tier 4:** 55-64
- **Tier 5:** 42-54

Priority corridors overall are identified in Figure 7-1 and Table 7-1.

Figure 7-1. Priority Corridors

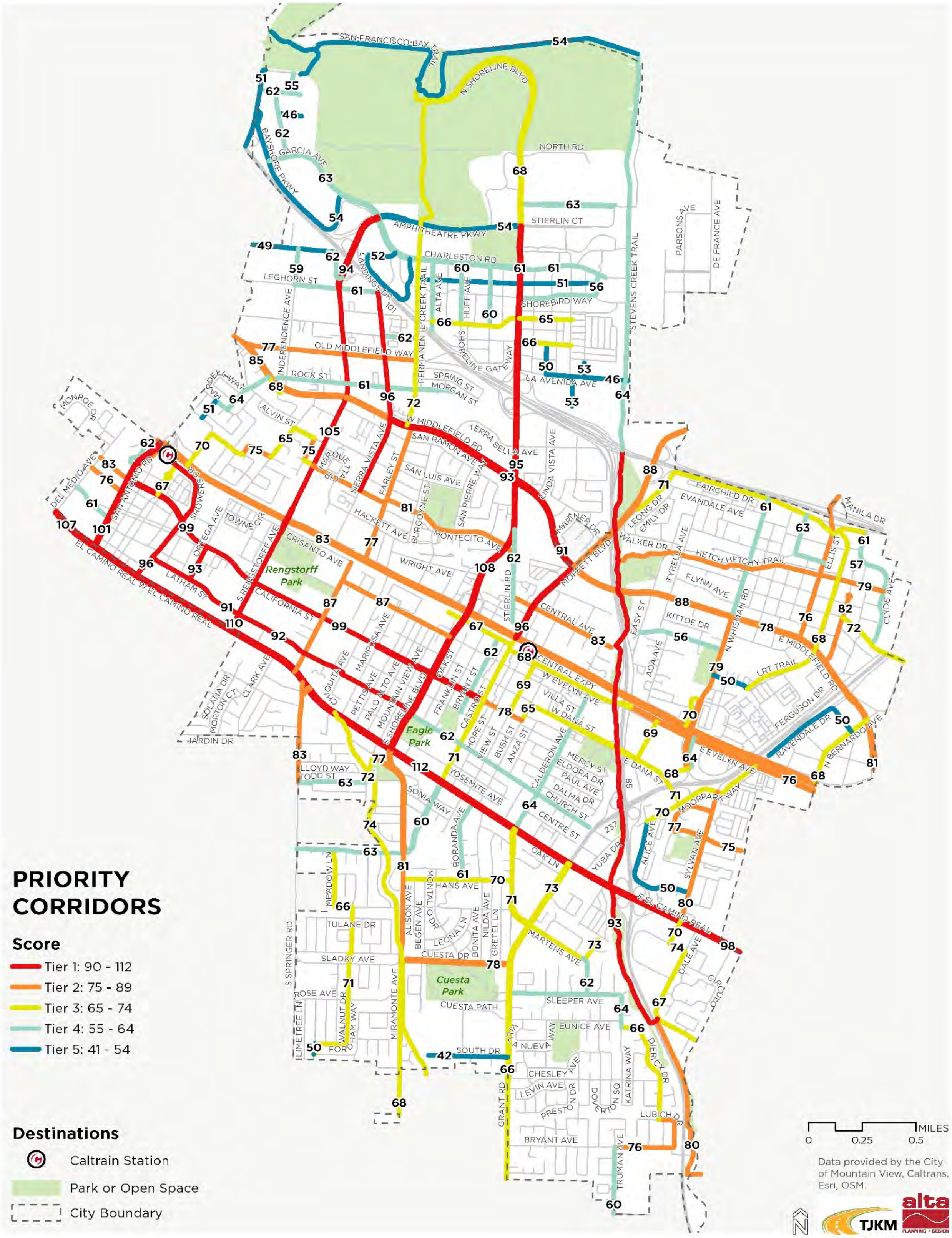


Table 7-1. List of Prioritized Corridors

Rank	Corridor	From	To	Miles	Score
Tier 1					
1	El Camino Real	Rengstorff Ave	Southbay Fwy	3.85	112
2	Rengstorff Ave	Central Expy	El Camino Real	0.66	110
3	Shoreline Blvd	Montecito Ave	El Camino Real	2.19	108
4	El Camino Real	West City Boundary	Rengstorff Ave	1.98	107
5	Rengstorff Ave	Middlefield Rd	Central Expy	0.69	105
6	San Antonio Rd	Central Expy	El Camino Real	1.15	101
7	California St	Rengstorff Ave	Castro St	1.75	99
8	California St	San Antonio Rd	Rengstorff Ave	1.12	99
9	El Camino Real	Southbay Fwy	East City Boundary	1.75	98
10	Showers Dr	San Antonio Rd	El Camino Real	0.76	96
11	Sierra Vista Ave	Leghorn St	Montecito Ave	0.96	96
12	Shoreline Blvd	Ampitheatre Pkwy	Montecito Ave	3.00	95
13	Moffett Blvd	Middlefield Rd	Central Expy	0.88	94
14	Rengstorff Ave	Charleston Rd	Middlefield Rd	1.29	94
15	Middlefield Rd	Sierra Vista Ave	Shoreline Blvd	1.32	93
16	Ortega Ave	California St	Latham St	0.17	93
17	Stevens Creek Trail - Middle	US 101	Heatherstone Way	2.88	93
18	Latham St	Rengstorff Ave	Shoreline Blvd	0.93	92
19	Latham St	Showers Dr	Rengstorff Ave	0.48	91
20	Middlefield Rd	Shoreline Blvd	Moffett Blvd	1.02	91
Tier 2					
21	Moffett Blvd	RT Jones Rd	Middlefield Rd	1.68	88
22	San Antonio Cir	Showers Dr	San Antonio Rd	0.15	88
23	Middlefield Rd	Moffett Blvd	Whisman Rd	1.56	88
24	Escuela Ave	Cristanto Ave	El Camino Real	0.57	87
25	Villa St	Escuela Ave	Shoreline Blvd	0.56	87
26	Middlefield Rd	Old Middlefield Way	Sierra Vista Ave	1.61	85
27	California St	Del Medio Ave	San Antonio Rd	0.16	83
28	Central Ave	Stierlin Rd	Stevens Creek Trail	0.51	83
29	Central Expressway	West City Boundary	East City Boundary	6.89	83
30	El Monte / Springer	El Camino Real	Todd Rd	0.56	83
31	Logue Ave	Loop	Middlefield Rd	0.36	82
32	Middlefield Rd	Southbay Fwy	Central Expy	0.77	81
33	Miramonte Ave	El Camino Real	Cuesta Dr	1.52	81
34	Montecito Ave	Rengstorff Ave	Stierlin Rd	1.10	81
35	Sylvan Ave	Moorpark Way	El Camino Real	0.62	80
36	Stevens Creek Trail Extension	Heatherstone Way	City Limit - Sunnyvale	0.82	80
37	N Whisman Rd	Middlefield Rd	Ferry Morse Way	1.16	79
38	Hetch Hetchy Trail	Stevens Creek Trail	Clyde Ave	1.29	79

Rank	Corridor	From	To	Miles	Score
39	California St	Castro St	Bush St	0.22	78
40	Cuesta Dr	Miramonte Ave	Grant Rd	1.03	78
41	Middlefield Rd	Whisman Rd	Southbay Fwy	1.30	78
42	Farley St	Middlefield Rd	Central Expy	0.67	77
43	Foxborough Dr	Glenborough Dr	Sylvan Ave	0.26	77
44	Middlefield Way	West City Boundary	Rengstorff Ave	0.87	77
45	Park Dr	Mountain View Ave	Miramonte Ave	0.18	77
46	Bryant / Lubich	Diericx Dr	Truman Ave	0.47	76
47	E Evelyn Ave	Stevens Creek / SR85	S Bernardo Ave	1.84	76
48	Ellis St	Manila Ave	Middlefield Rd	0.70	76
49	Miller Ave	Del Medio Ave	San Antonio Rd	0.17	76
50	Fay Way	Jane Ln	Jewell Pl	0.11	75
51	Glenborough / Dana	Foxborough Dr	Tahoe Terrace	0.33	75
52	Laura Ln	Whitney Dr	Thompson Ave	0.16	75
Tier 3					
53	Continental Cir	The Americana	Dale Ave	0.08	74
54	Permanente Creek Trail - South	El Camino Real	City Limit - Los Altos	1.84	74
55	Grant Rd	El Camino Real	Cuesta Dr	1.10	73
56	Martens Ave	Grant Rd	Dead End	0.41	73
57	Mountain View Ave	Park Dr	Todd St	0.14	72
58	Permanente Creek Trail - North	Middlefield Rd	Shoreline Blvd	1.54	72
59	W Maude Ave	Logue Ave	East City Boundary	0.36	72
60	E Dana St	Bush St	Moorpark Way	1.20	71
61	Fairchild / Leong	Moffett Blvd	Clyde Ave	1.19	71
62	Fordham Way	Barbara Ave	Orangetree Ln	0.79	71
63	Phyllis Ave	El Camino Real	Grant Rd	0.77	71
64	Castro St	Evelyn Ave	El Camino Real	0.94	71
65	Hans Ave	Miramonte Ave	Phyllis Ave	0.51	70
66	Jane Ln	Thompson Ave	Fay Way	0.11	70
67	Jewell Pl	Fay Way	Rengstorff Ave	0.05	70
68	Kittyhawk Way	Whisman Rd	Central Expy	0.17	70
69	Mayfield / Whitney	Central Expy	Laura Ln	0.36	70
70	Moorpark Way	Alice Ave	Evelyn Ave	0.59	70
71	The Americana	El Camino Real	Continental Cir	0.12	70
72	Pioneer Way	Evelyn Ave	Dana St	0.19	69
73	View St	Evelyn Ave	California St	0.27	69
74	Evelyn Ave	Castro St	Stevens Creek Fwy	0.69	68
75	Middlefield Rd	Victory Ave	Thaddeus Dr	0.09	68
76	Miramonte Ave	Cuesta Dr	South City Boundary	0.72	68
77	N Bernardo Ave	Middlefield Rd	Central Expy	0.39	68
78	S Whisman Rd	Dana St	Ferry Morse Way	0.12	68
79	Shoreline Blvd	Shoreline Lake	Ampitheatre Pwky	2.67	68

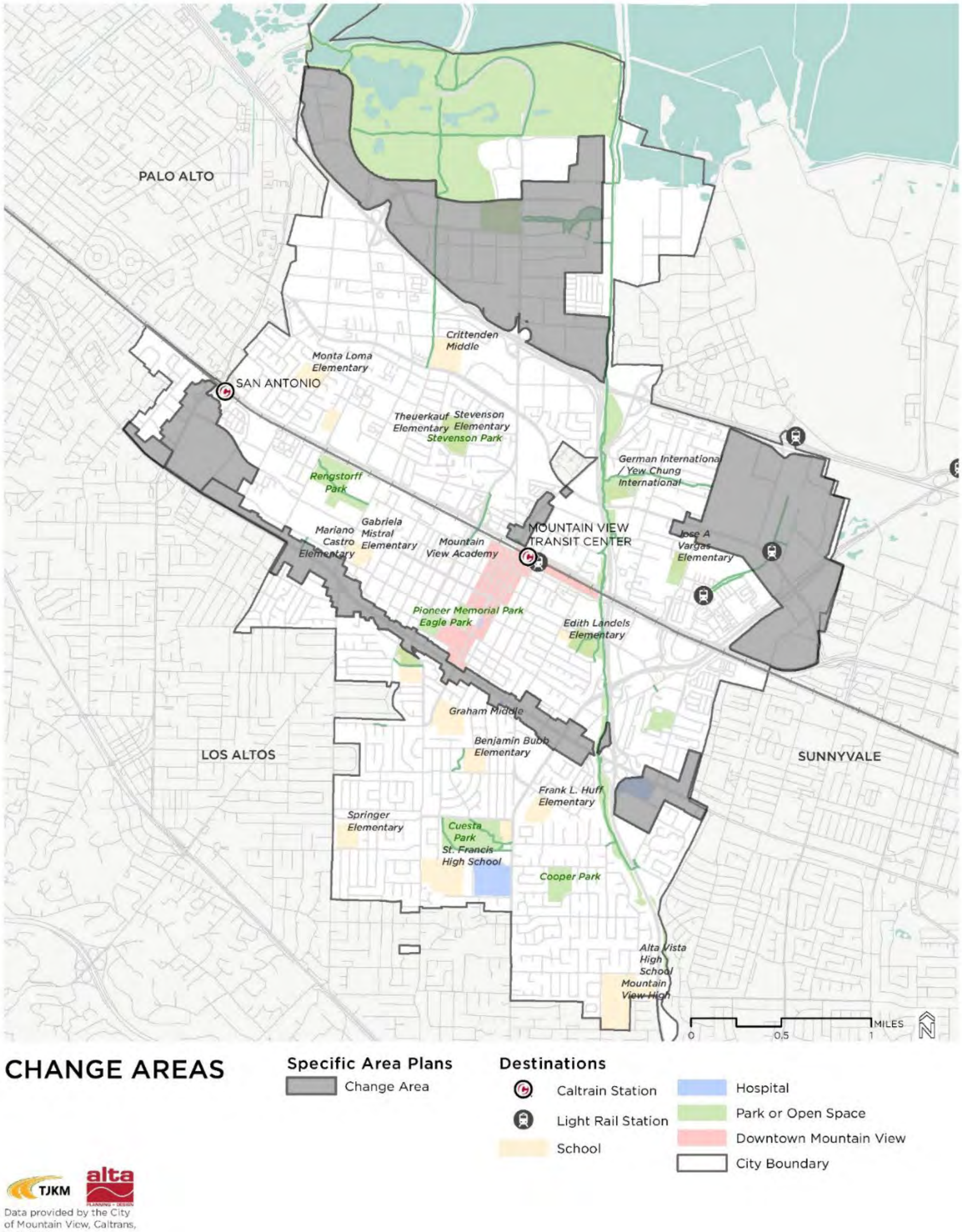
Rank	Corridor	From	To	Miles	Score
80	LRT Trail	Pacific Dr	Fairchild Dr	0.96	68
81	Dale / Heatherstone	Continental Cir	Knickerbocker Dr	0.54	67
82	Evelyn Ave	Khan Lab School	Castro St	0.33	67
83	Pacchetti Way	Showers Dr	California St	0.21	67
84	Barbara / Meadow	Marilyn Dr	Fordham Way	0.35	66
85	Diericx Dr	Franklin Ave	Lubich Dr	0.54	66
86	Grant Rd	Cuesta Dr	South City Boundary	1.52	66
87	Pear Ave	Shoreline Blvd	Dead End	0.25	66
88	Plymouth St	Alta Ave	Shoreline Blvd	0.41	66
89	Bush St	Dana St	California St	0.09	65
90	Space Park Way	Shoreline Blvd	Oro Way	0.25	65
91	Thompson Ave	Jane Ln	Laura Ln	0.17	65
Tier 4					
92	Alta Ave	Charleston Rd	Plymouth St	0.32	64
93	Calderon Ave	Evelyn Ave	El Camino Real	0.77	64
94	Ferry-Morse Way	Evelyn Ave	Whisman Rd	0.16	64
95	Franklin / Sleeper	Grant Rd	Diericx Way	0.67	64
96	Victory Ave	Middlefield Rd	Dell Ave	0.25	64
97	Stevens Creek Trail - North	US 101	Bay Trail	1.86	64
98	Crittenden Ln	Shoreline Blvd	Stevens Creek Trail	0.79	63
99	Garcia Ave	Bayshore Pkwy	Rengstorff Ave	0.84	63
100	Marilyn Dr	Springer Rd	Miramonte Ave	0.50	63
101	National Ave	Fairchild Dr	Ellis St	0.32	63
102	Todd St	Springer Rd	Mountain View Ave	0.31	63
103	Bryant	Evelyn Ave	Mercy St	0.39	62
104	Casey Ave	San Antonio Rd	Intuit	0.19	62
105	Church St	Shoreline Blvd	Southbay Fwy	0.98	62
106	Colony St	Sierra Vista Ave	Dead End	0.14	62
107	Marine Way	Casey Ave	Garcia Ave	0.31	62
108	Rengstorff Ave	Charleston Rd	Rengstorff Ave	0.21	62
109	San Antonio Cir	San Antonio Rd	San Antonio Rd	0.22	62
110	Stierlin Rd	Shoreline Blvd	Washington St	0.43	62
111	Yorkshire Way	Martens Ave	Sleeper Ave	0.17	62
112	Boranda Ave	El Camino Real	Hans Ave	0.37	61
113	Charleston Rd	Shoreline Blvd	Shorebird Way	0.41	61
114	Charleston Rd	Rengstorff Ave	Shoreline Blvd	1.55	61
115	Clyde Ave	Fairchild Dr	Maude Ave	0.61	61
116	Fayette Dr	Del Medio Ave	San Antonio Rd	0.21	61
117	Leghorn St	Independence Ave	Sierra Vista Ave	0.39	61
118	N Whisman Rd	Fairchild Dr	Middlefield Rd	0.57	61
119	Rock St	Middlefield Rd	Dead End	0.82	61
120	Castro St	El Camino Real	Miramonte Ave	0.78	60

Rank	Corridor	From	To	Miles	Score
121	Huff Ave	Charleston Rd	Plymouth St	0.28	60
122	Joaquin Rd	Charleston Rd	Plymouth St	0.28	60
123	Truman Ave	Bryant Ave	South City Boundary	0.31	60
124	Dell Ave	Nita Ave	Victory Ave	0.07	59
125	Independence Ave	Charleston Rd	Leghorn St	0.17	59
126	Clyde Ct	Clyde Ave	Dead End	0.06	57
127	Gladys Ave	Easy St	Whisman Rd	0.39	56
128	Shorebird Way	Shoreline Blvd	Charleston Rd	0.45	56
129	Broderick Way	Terminal Blvd	Casey Ave	0.09	55
Tier 5					
130	Amphitheatre Pkwy	Charleston Rd	Shoreline Blvd	0.85	54
131	Bayshore / Salado	San Antonio Rd	Garcia Ave	0.88	54
132	Bay Trail	City Boundary - West	Stevens Creek Trail	2.37	54
133	Armand Ave	Villa Dr	La Avenida St	0.07	53
134	Macon Ave	La Avenida St	Dead End	0.14	53
135	Landings Dr	Charleston Rd	Charleston Rd	0.62	52
136	Nita Ave	Dell Ave	Nita Ave	0.10	51
137	San Antonio Rd	Terminal Blvd	Bayshore Fwy	0.38	51
138	North Bayshore New Street	Permanente Creek Trail	Shorebird Way	0.83	51
139	Alice / Rainbow	Moorepark Way	Sylvan Ave	0.54	50
140	Inigo Way	Pear Ave	La Avenida St	0.14	50
141	Orangetree Ln	Fordham Way	South City Boundary	0.05	50
142	Pacific Dr	Whisman Rd	Pacific Dr	0.17	50
143	Ravendale Dr	Central Expy	Bernardo Ave	0.51	50
144	E Charleston Rd	West City Boundary	Rengstorff Ave	0.40	49
145	Coast Ave	Marine Way	Intuit	0.11	46
146	La Avenida Ave	Inigo Way	Stevens Creek Trail	0.38	46
147	South Dr	Dead End	Grant Rd	0.37	42

Identification as a priority corridor indicates that the corridor is ripe for consideration in relation to investment and improvements in multimodal transportation projects at a corridor level. The identified priority corridor will therefore be considered as part of the project prioritization process. This prioritization process is based on current land use conditions and the compilation of transportation projects from numerous studies analyzed as part of this process.

Corridors that are not listed as priority corridors may still warrant public or private investment in transportation improvements if future land use change is expected; if improvements are identified as conditions of approval for new development; or transportation improvements are part of the build-out of a change area or precise plan. Figure 7-2 identifies the change areas in the city as identified in the General Plan.

Figure 7-2. Change Areas



7.2 Priority Projects by Mode

The project prioritization criteria presented in Chapter 5 was used to prioritize bicycle, vehicular, and transit improvement projects within each of the corridors. Priority projects have been divided into four tiers representing high, medium, and low priorities for the City.

The City's Pavement Management Plan for the next decade is currently under development and was not available for inclusion in the project prioritization analysis. When the Pavement Management Plan is finalized, the timing of some projects may shift slightly in order to take advantage of cost savings and other synergistic benefits that accrue from making streetscape changes in concert with street repaving operations.

As discussed in relation to Priority Corridors, additional projects that are not included on the list of priorities may be warranted if they are needed as a condition of approval for new development, or transportation projects tied to implementation of a Precise Plan.

7.2.1 Priority Bicycle Projects

Overall, projects along priority corridors such as Shoreline Boulevard, California Street, El Camino Real, and Rengstorff Avenue rose to the top of the list. The majority of the top scoring bicycle projects involve Class IV protected bikeways, which respond well to the Enhanced Safety goal of the AccessMV planning process.

Figure 7-3 and Table 7-2 identify prioritized bicycle projects by prioritization tier.

Figure 7-3 Prioritized Bicycle Projects

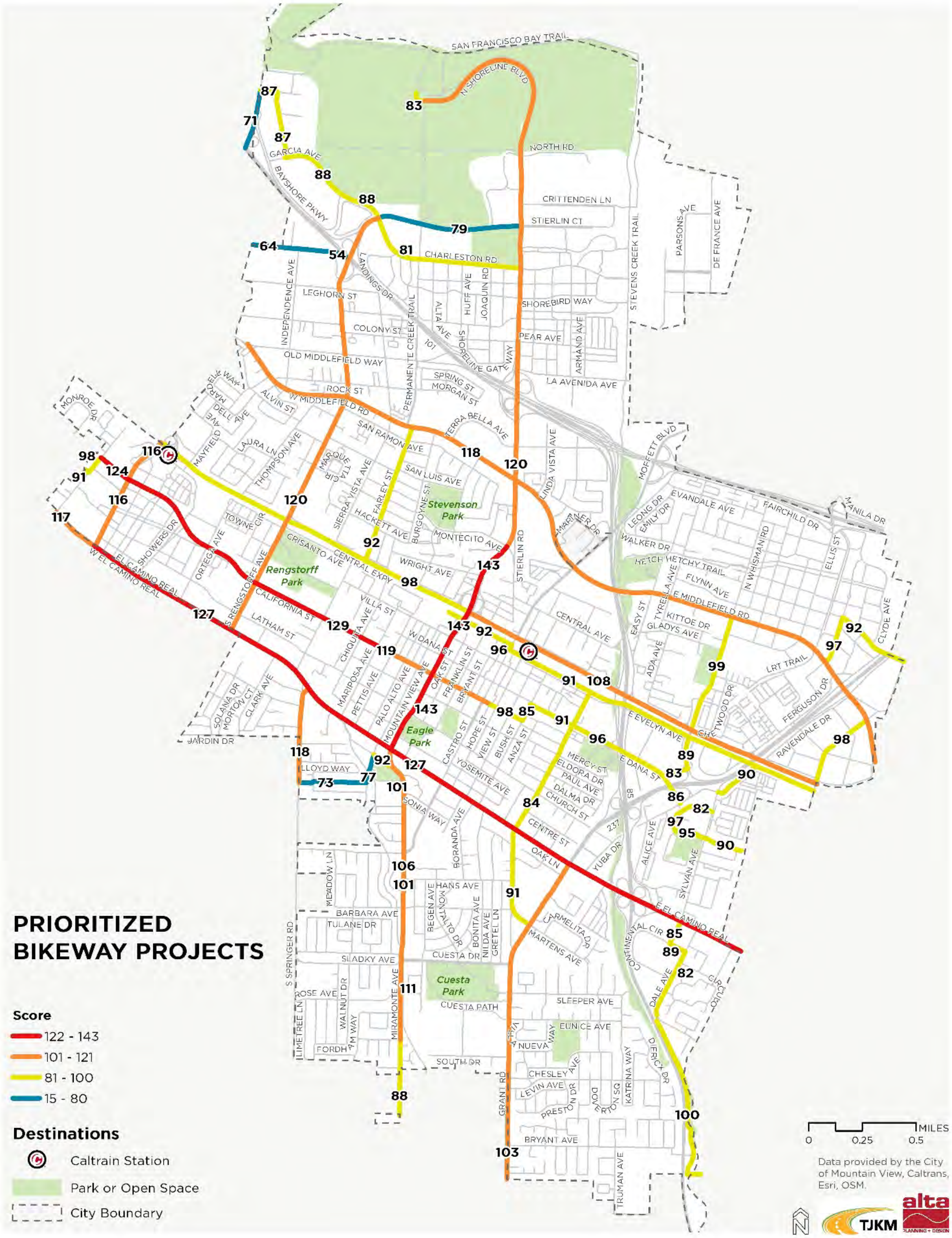


Table 7-2. Prioritized Bicycle Projects

Rank	Corridor	From	To	Class	Miles	Score
Tier 1						
1	Shoreline Blvd	Villa St	Wright Ave	4	0.50	143
2	Shoreline Blvd	El Camino Real	Villa St	4	0.59	143
3	Shoreline Blvd	Wright Ave	Montacito Ave	2	0.50	143
4	California St	Showers Dr	Mariposa Ave	4	1.09	129
5	El Camino Real	El Monte Ave	City Limit - Sunnyvale	4	2.36	127
6	El Camino Real	San Antonio Rd	El Monte Ave	4	1.21	127
7	California St	Del Medio Ave	Showers Dr	4	0.49	124
Tier 2						
8	Rengstorff Ave	El Camino Real	Charleston Rd	4	2.11	120
9	Shoreline Blvd	Montecito Ave	Shoreline Park	4	2.80	120
10	California St	Mariposa Ave	Castro St	4	0.58	119
11	El Monte Ave	Todd St	El Camino Real	4	0.45	118
12	Middlefield Ave	Central Expy	Old Middlefield Way	4	3.77	118
13	El Camino Real	City Boundary	San Antonio Rd	4	0.24	117
14	San Antonio Rd	El Camino Real	California St	4	0.34	116
15	San Antonio Rd	California St	Central Expy	4	0.23	116
16	Miramonte Ave	Gest Dr	Starr Way	2	0.70	111
17	Central Expy	Shoreline Blvd	Bernardo Ave	4	1.81	108
18	Miramonte Ave	Hans Ave	Castro St	2	0.12	106
19	Ellis St	Fairchild Dr	Manila Ave	2	0.19	106
20	Grant Rd	El Camino Real	Waverly Pl	4	1.55	103
21	Miramonte Ave	El Camino Real	Marylin Dr	4	0.50	101
22	Miramonte Ave	Starr Way	Hans Ave	4	0.05	101
Tier 3						
23	Stevens Creek Trail Extension	Heatherstone Way	City Limit - Sunnyvale	1	0.82	100
24	Whisman Rd	Central Expy	Middlefield Rd	4	0.55	99
25	Bernardo Ave	Central Expy	Middlefield Rd	2	0.39	98
26	California St	Blossom Ln	Bush St	3	0.18	98
27	Central Expy	San Antonio Rd	Shoreline Blvd	4	1.62	98
28	Del Medio Ave	Miller Ave	California St	2	0.09	98
29	Foxborough Dr	Glenborough Dr	Hedgerow Ct	3	0.09	97
30	Logue Ave	Middlefield Rd	Maude Ave	4	0.22	97
31	Castro St	Evelyn Ave	Evelyn Ave	4	0.02	96
32	Dana St	Calderon Ave	Pioneer Way	4	0.34	96
33	Glenborough Dr	Foxborough Dr	Sylvan Ave	3	0.14	95
34	Evelyn Ave	Castro St	End of Street	4	0.33	92
35	Farley St	Central Expy	Middlefield Rd	3	0.67	92

Rank	Corridor	From	To	Class	Miles	Score
36	Maude Ave	Logue Ave	City Boundary	4	0.36	92
37	Park Dr	Mountain View Ave	Miramonte Ave	4	0.10	92
38	Dana St	Bush St	Calderon Ave	3	0.22	91
39	Evelyn Ave	Bernardo Ave	Castro St	4	1.57	91
40	Miller Ave	Del Medio Ave	City Boundary	4	0.02	91
41	Phyllis Ave	El Camino Real	Grant Rd	4	0.48	91
42	Dana St	Sylvan Ave	Tahoe Ter	2	0.18	90
43	Moorpark Way	Sylvan Ave	Evelyn Ave	4	0.22	90
44	Continental Cir	The Americana	Dale Ave	4	0.08	89
45	Whisman Rd	Ferry Morse Way	Evelyn Ave	4	0.15	89
46	Garcia Ave	Salado Dr	Rengstorff Ave	4	0.21	88
47	Garcia Ave	Marine Way	Salado Dr	4	0.35	88
48	Miramonte Ave	Gest Dr	Eastwood Dr	4	0.35	88
49	Casey Ave	San Antonio Rd	Marine Way	3	0.08	87
50	Marine Way	Casey Ave	Garcia Ave	3	0.31	87
51	Dana St	Pioneer Way	Moorpark Way	2	0.29	86
52	Bush St	California St	Dana St	3	0.09	85
53	The Americana	Continental Cir	El Camino Real	2	0.10	85
54	Calderon Ave	El Camino Real	Evelyn Ave	2	0.52	84
55	Shoreline Blvd	Park Entrance	Shoreline Blvd	4	0.07	83
56	Whisman Rd	Dana St	Ferry Morse Way	4	0.12	83
57	Dale Ave	Continental Cir	Heatherstone Way	2	0.33	82
58	Foxborough Dr	Hedgerow Ct	Sylvan Ave	2	0.18	82
59	Charleston Rd	Rengstorff Ave	Shoreline Blvd	4	0.77	81
Tier 4						
60	Amphitheatre Pkwy	Charelston Rd	Shoreline Blvd	4	0.67	79
61	Mountain View Ave	Todd St	Park Dr	2	0.14	77
62	Todd St	Springer Rd	Mountain View Ave	3	0.31	73
63	San Antonio Rd	US 101	Casey Ave	4	0.28	71
64	Charleston Rd	Commercial St	Rengstorff Ave	2	0.35	64
65	Charleston Rd	Rengstorff Ave	Rengstorff Ave	4	0.09	54

7.2.2 Priority Vehicular Projects

Fourteen vehicular projects were prioritized using the AccessMV project prioritization criteria. Like the bicycle projects, several of the top scoring vehicular projects were along priority corridors such as Rengstorff Avenue and Shoreline Boulevard. Prioritized vehicular projects by prioritization tier are shown in Figure 7-4 and Table 7-3. In addition, priorities for street repaving projects are determined as part of the City's Pavement Management Program operations.

Figure 7-4 Prioritized Vehicular Projects

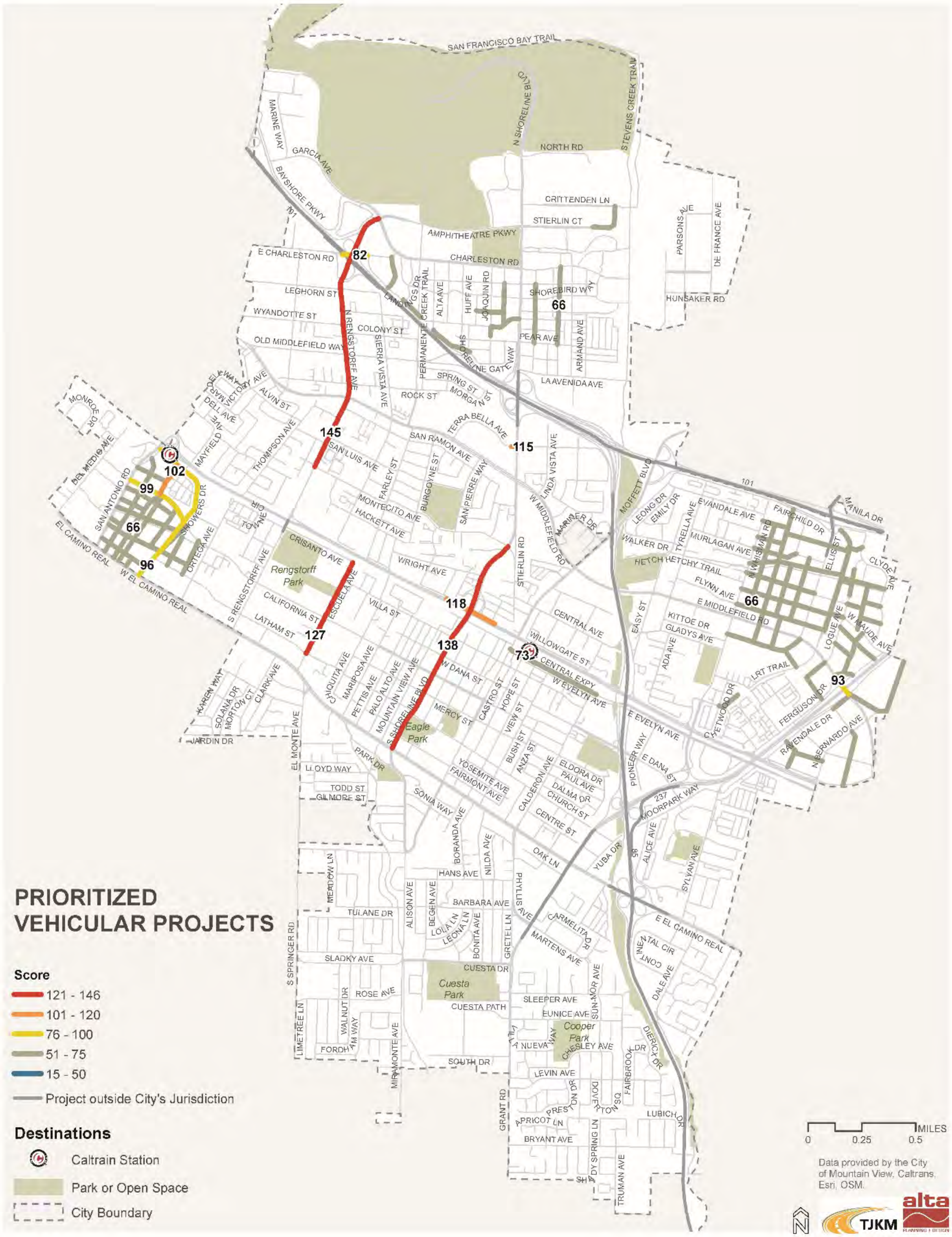


Table 7-3. Prioritized Vehicular Projects

Rank	Project Name	Corridor	Score
Tier 1			
1	Rengstorff Avenue Adaptive Signal System	Rengstorff Avenue between Montecito Avenue and Garcia Ave	145
2	South Shoreline Boulevard Complete Street Pilot	Shoreline Blvd between Montecito Ave and El Camino	138
3	Traffic Calming on Escuela Avenue	Escuela Ave between Latham St and Crisanto Ave	127
Tier 2			
4	Redesign Shoreline Blvd and Central Expy	Shoreline Blvd / Central Expy	118
5	Shoreline Blvd/Terra Bella Ave Intersection Improvement	Shoreline Boulevard/Terra Bella Avenue	115
6	Pacchetti Way Improvements	Pacchetti Way btn California Street and Showers Dr	102
Tier 3			
7	California Street streetscape improvement	California Street between San Antonio Rd and Showers	99
8	Showers Dr streetscape improvement	Showers Dr between San Antonio Rd and California St	96
9	SR-237/Middlefield Interchange Improvements	SR-237 /Middlefield Interchange	93
Tier 4			
10	New Planned Street - North Bayshore Area	New Road (41)	66
11	New Planned Street - San Antonio Area	New Road (41)	66
12	New Planned Street - East Whisman Area	New Road (41)	66

7.2.3 Priority Transit Projects

Only one transit project along Charleston Road was included in this analysis. This project is shown in Figure 7-5 and Table 7-4. Construction of transit priority treatments along Shoreline Boulevard are approved and therefore included in existing conditions. Other transit supportive network treatments were not specifically identified in the reviewed plans, but could be incorporated into planned projects such as traffic signal upgrades and complete streets redesigns for transit priority corridors as displayed in the Figure 7-6.

Table 7-4. Prioritized Transit Projects

Rank	Project Name	Corridor	Score
Tier 3			
1	Charleston Road between Shoreline Blvd and Garcia Avenue	Charleston Rd between Shoreline Blvd and Garcia Avenue	86

Figure 7-5 Prioritized Transit Projects

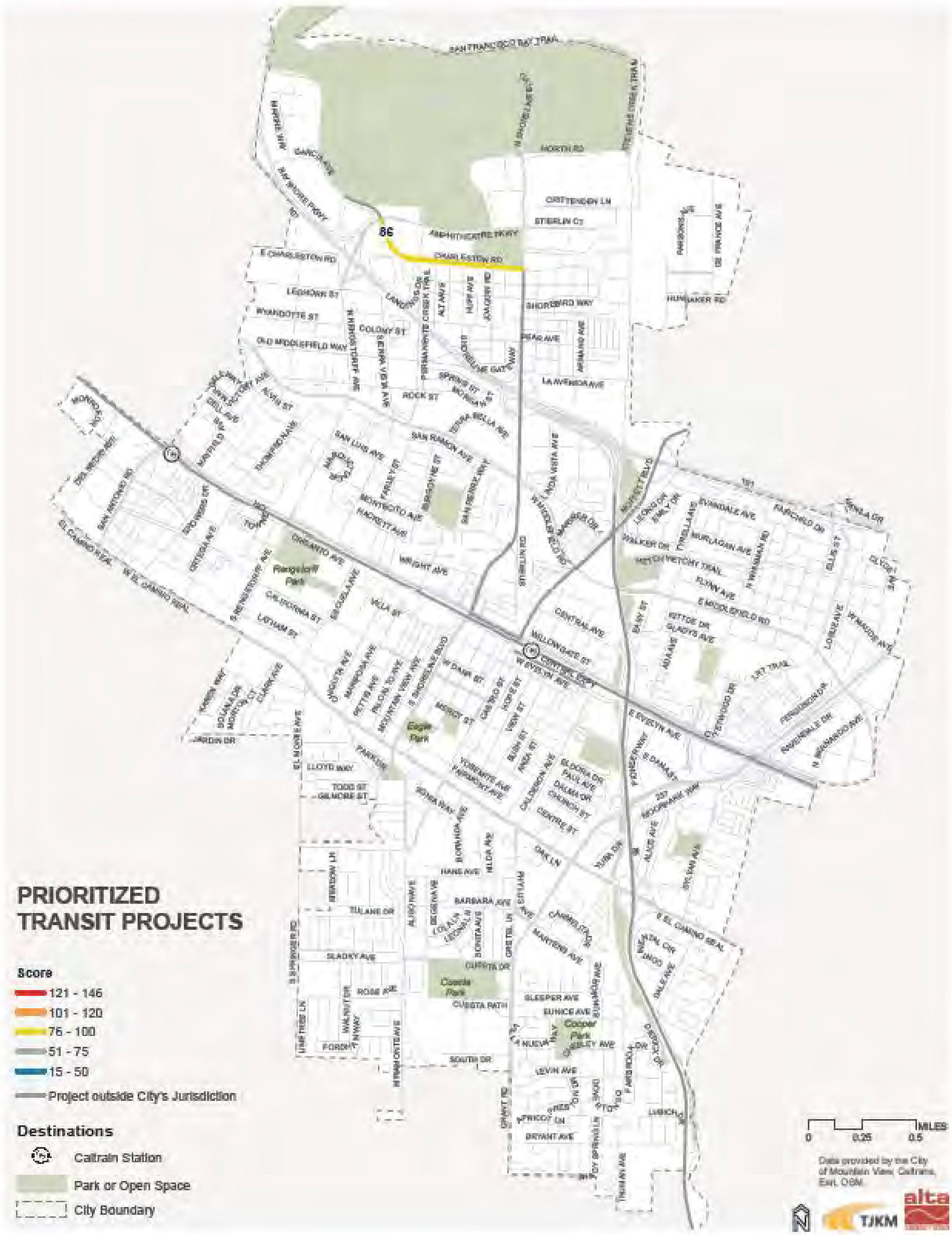
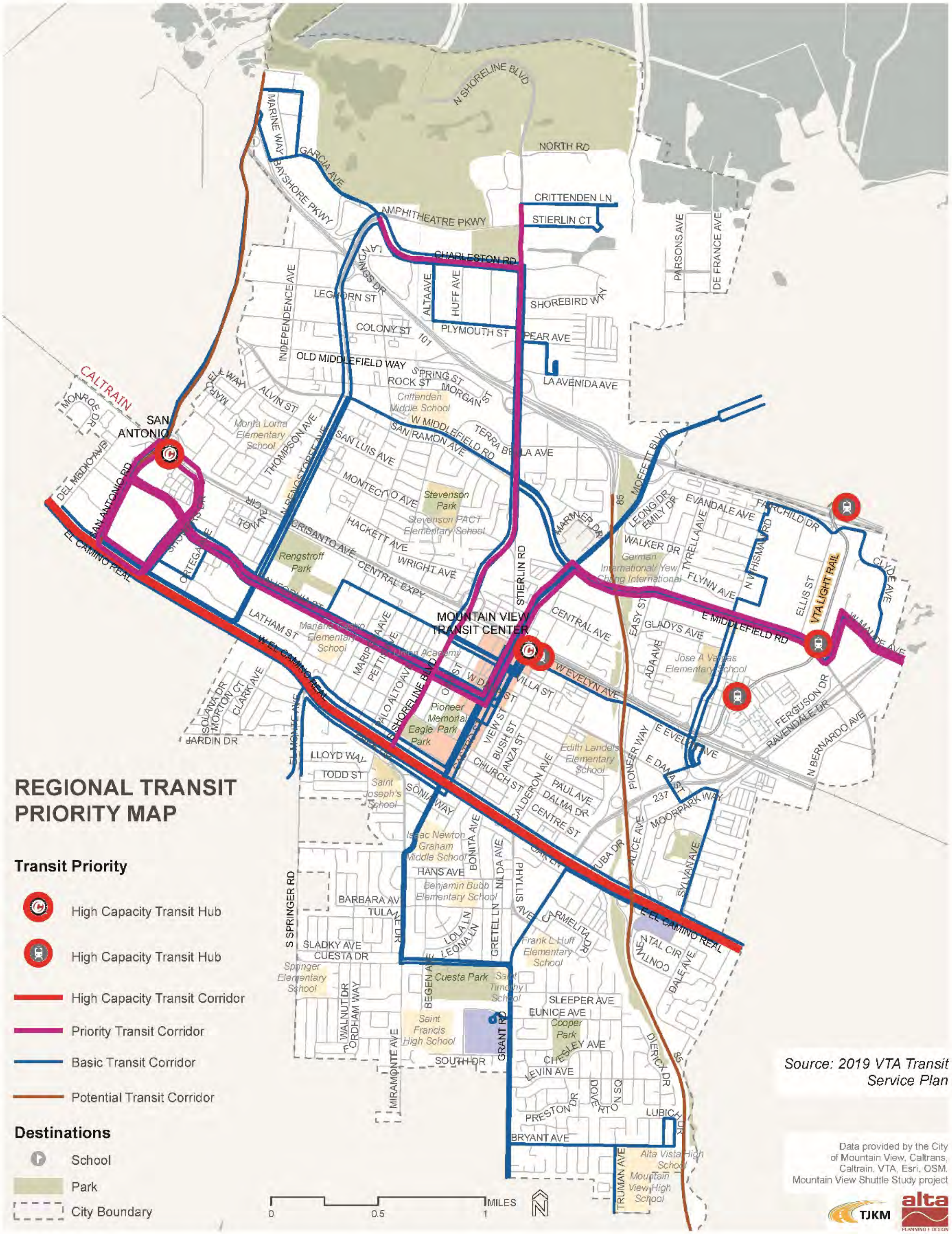


Figure 7-6 Regional Transit Priority Map



7.3 Next Steps

While no new projects have been recommended as part of AccessMV, the results of the corridor and project prioritization process will be used to inform short-term, medium-term, and long-term Capital Improvement Program priorities in the coming years. Beyond implementing the prioritized projects included in AccessMV, the City will focus additional future planning efforts on a number of key issues identified through the AccessMV planning process. This includes identifying corridors that should be prioritized for new tree canopy and green streets projects, implementing data collection efforts to improve the City's understanding of existing bicycle and pedestrian usage data, creating new HOV lanes, and implementing additional multimodal network planning efforts such as complete streets feasibility projects, signal prioritization, and signal synchronization.

Following AccessMV, future City planning efforts in the near-term will include updates to the City's Tree Master Plan, Pedestrian Master Plan, Bicycle Master Plan, and Trails Master Plan. A key focus of these planning efforts will be to increase access to shade and green space for the residents of Mountain View. As highlighted by community members during the AccessMV planning process and noted in previous planning documents, including the Mountain View Community Tree Master Plan (2015) and Parks and Open Space Plan (2014), increasing tree canopy, pervious surfaces, and access to open space is a key priority for the City. Efforts will be made to enhance greenery throughout the city, including along sidewalks, roadway medians, and parking lot edges.

The analyses completed as part of AccessMV, including Pedestrian Quality of Service (PQOS), Bicycle Level of Traffic Stress (BLTS), and gaps, overlaps, and inconsistencies, will be used to guide these future planning efforts. Priority corridors and projects will be implemented with the goal of eliminating existing gaps and inconsistencies in the multimodal transportation network and creating a network of low-stress bicycle and pedestrian facilities. The analyses will be updated as appropriate to reflect new conditions as transportation projects are implemented throughout the city.