

**MEMORANDUM**

Public Works Department

**DATE:** September 30, 2020

**TO:** Bicycle/Pedestrian Advisory Committee

**FROM:** Ria Hutabarat Lo, Transportation Manager  
Damian Skinner, Assistant Public Works Director  
Dawn S. Cameron, Public Works Director

**SUBJECT:** Comprehensive Modal Plan Prioritization Criteria

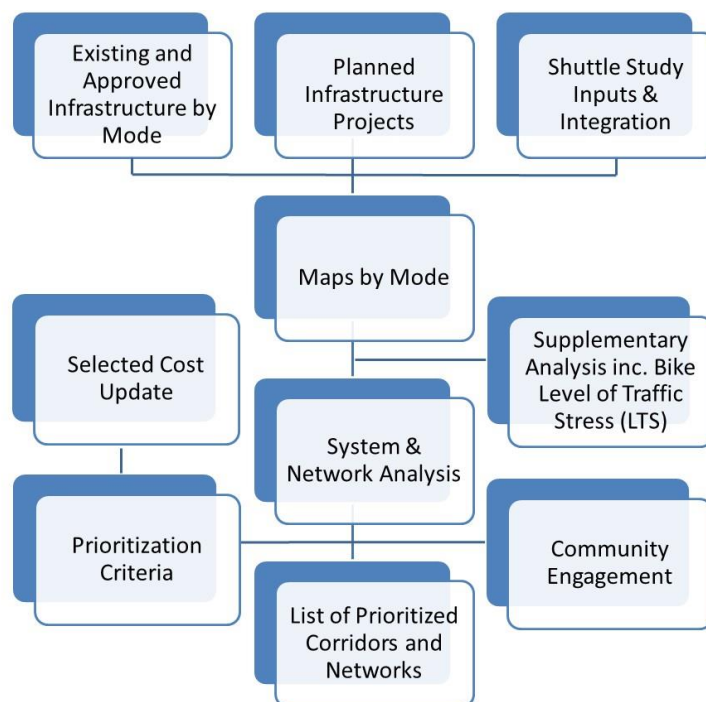
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**RECOMMENDATION**

Provide input on criteria for identifying priority corridors as part of the Comprehensive Modal Plan.

**BACKGROUND**

On [June 4, 2019](#), the City Council authorized the City Manager to execute a contract to undertake the Comprehensive Modal Plan as identified in the Council Major Goal related to transportation. The Comprehensive Modal Plan aims to identify the primary transportation network for all modes and to prioritize improvements from over 30 City and regional plans affecting transportation in Mountain View. The project approach is presented in Figure 1.

**Figure 1: Project Approach**

On [February 24, 2020](#), the City Council reviewed the Mountain View Shuttle Study, which was undertaken in conjunction with the Comprehensive Modal Plan. The Shuttle Study analyzed public transit and shuttle service operations and demand in Mountain View. Existing transit facilities and services (as of January 2020) are displayed in Figure 2. A transit propensity index is displayed in Figure 3 and demonstrates the level of transit ridership that could be expected within an area. The transit propensity index is based on characteristics of Mountain View residents and incorporates information on youths per acre, seniors per acre, population per acre, low-income population per acre, and number of zero-vehicle households per acre. The score is based on natural breaks, with a score of 1 representing an area with the lowest transit propensity and 5 representing an area with highest transit propensity.

On [June 24, 2020](#), the Bicycle/Pedestrian Advisory Committee (B/PAC) also reviewed draft reports on Pedestrian Quality of Service (QOS) and Bicycle Level of Traffic Stress (LTS), which were conducted as part of the supplemental analysis for the Comprehensive Modal Plan. Findings in relation to existing Citywide Pedestrian QOS and Bicycle LTS are presented in Figures 4 and 5.

Figure 2: Citywide Transit Facilities and Services, January 2020

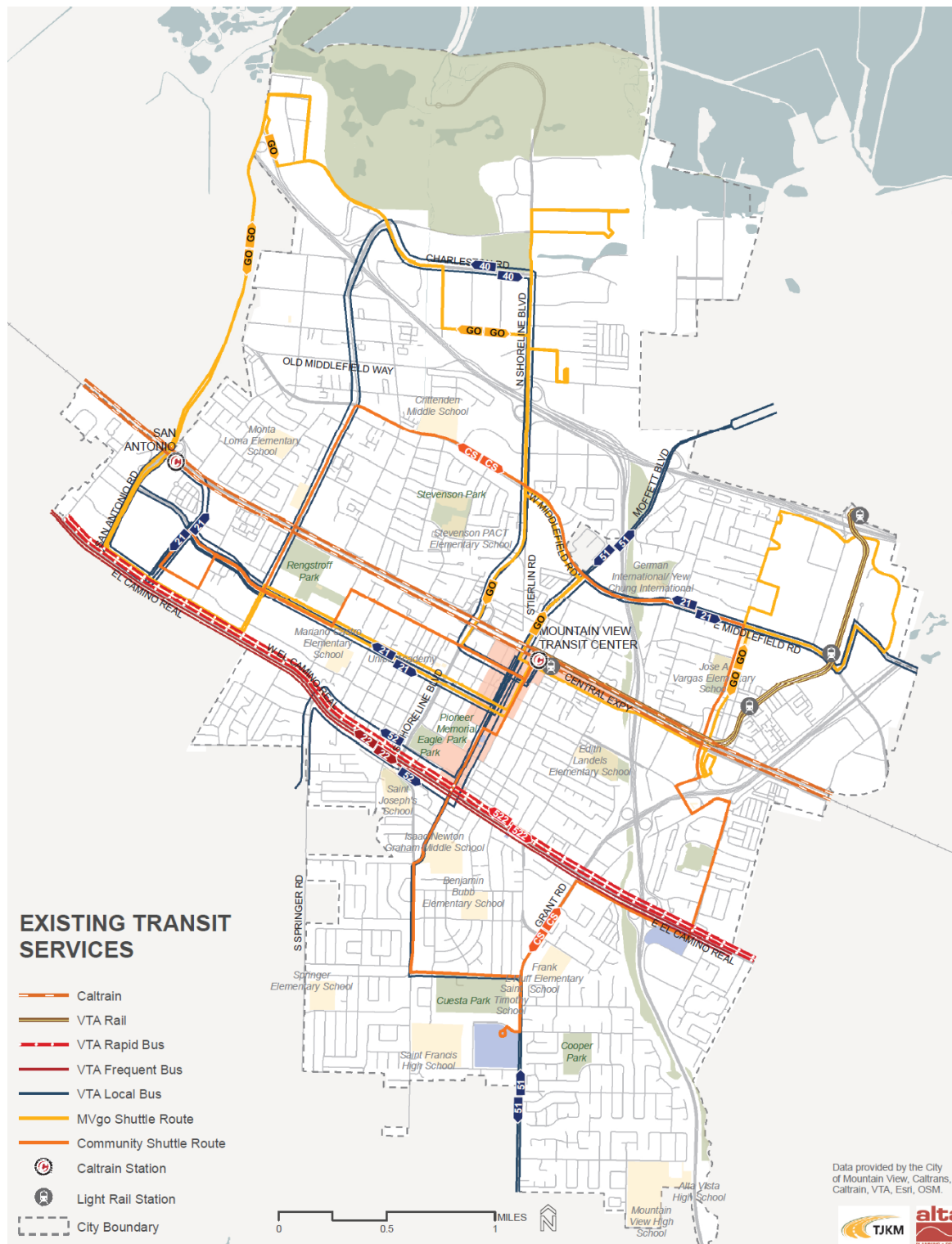


Figure 3: Citywide Transit Propensity for Residents

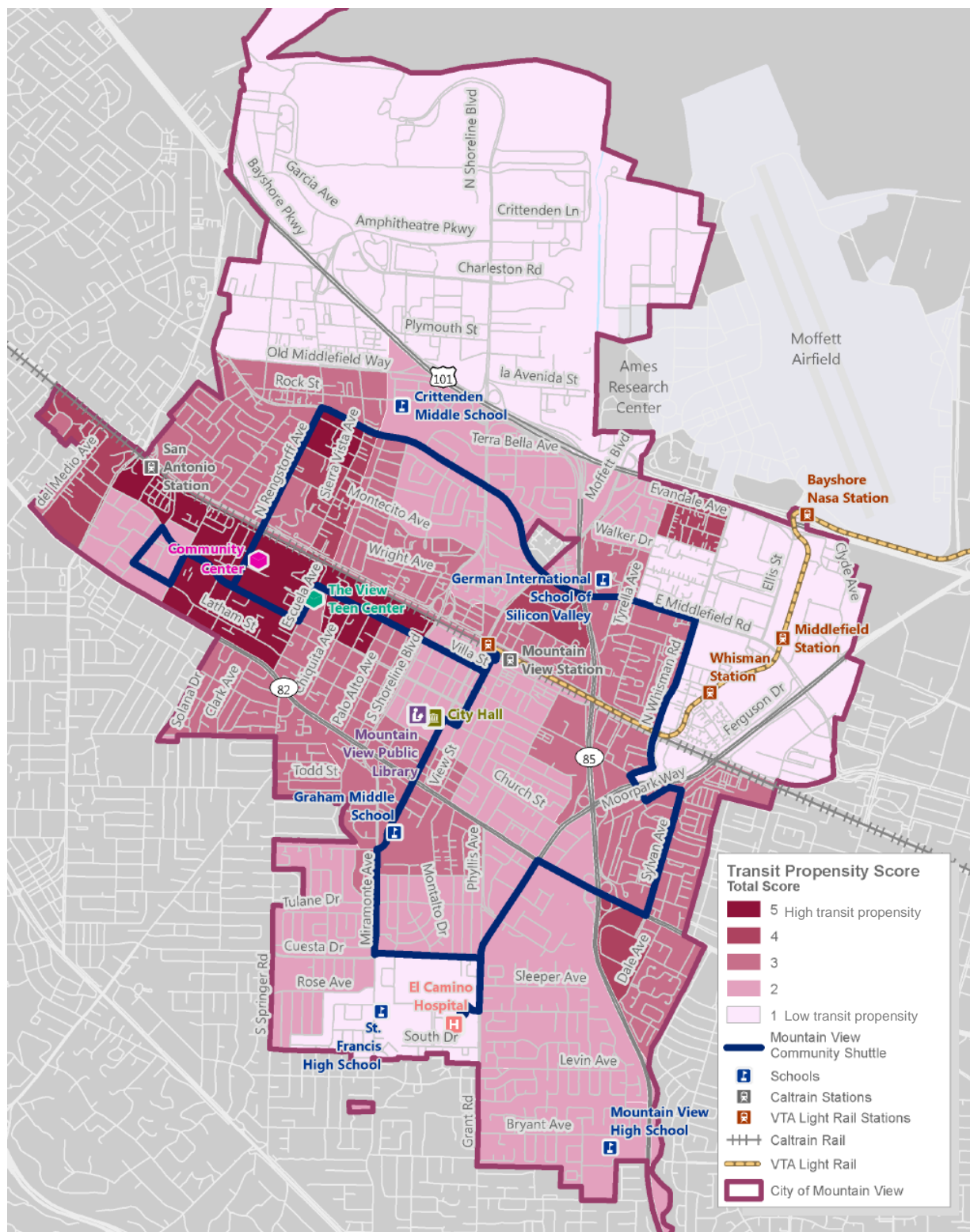
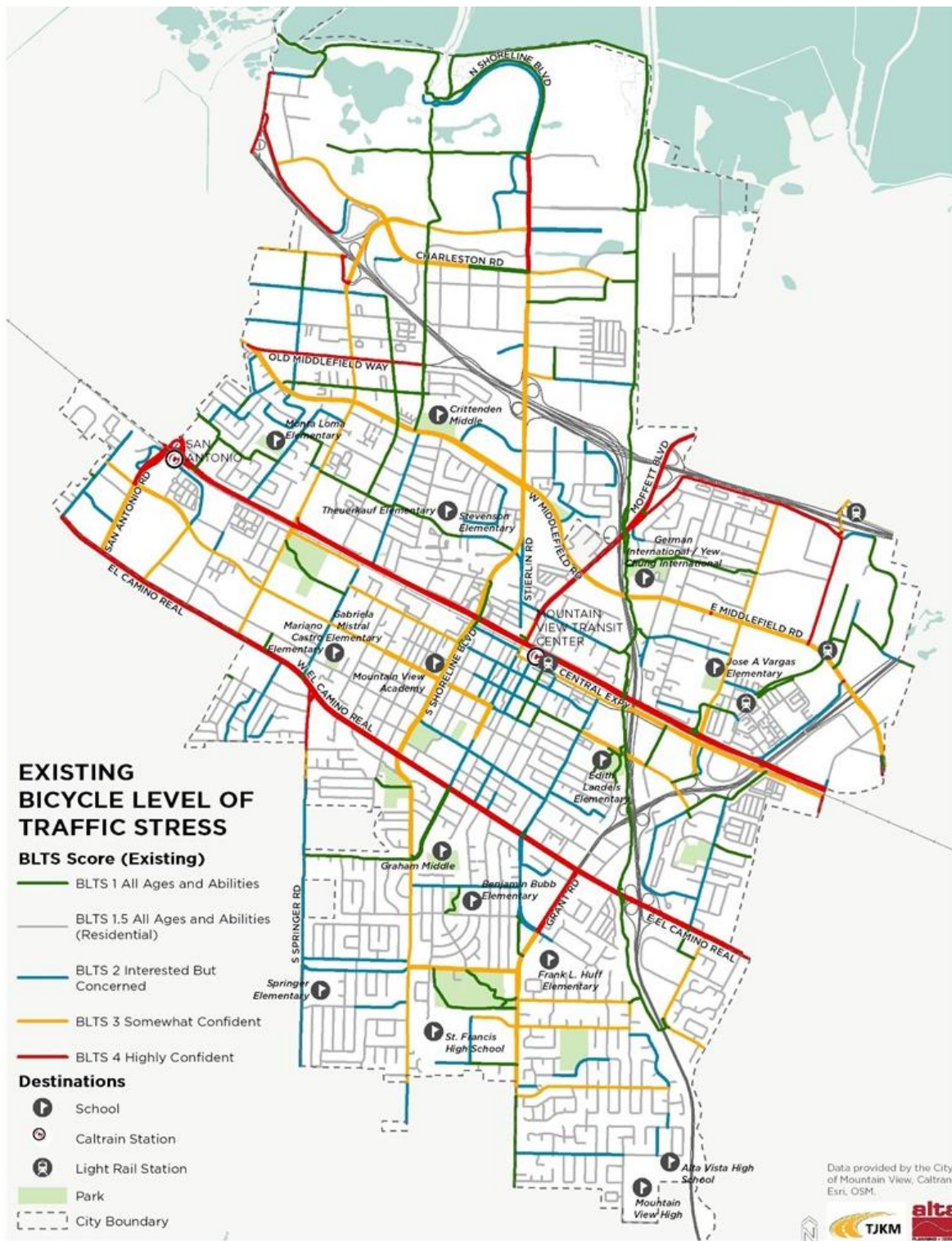


Figure 4: Citywide Pedestrian Quality of Service



Figure 5: Citywide Bicycle Level of Traffic Stress



## **DISCUSSION**

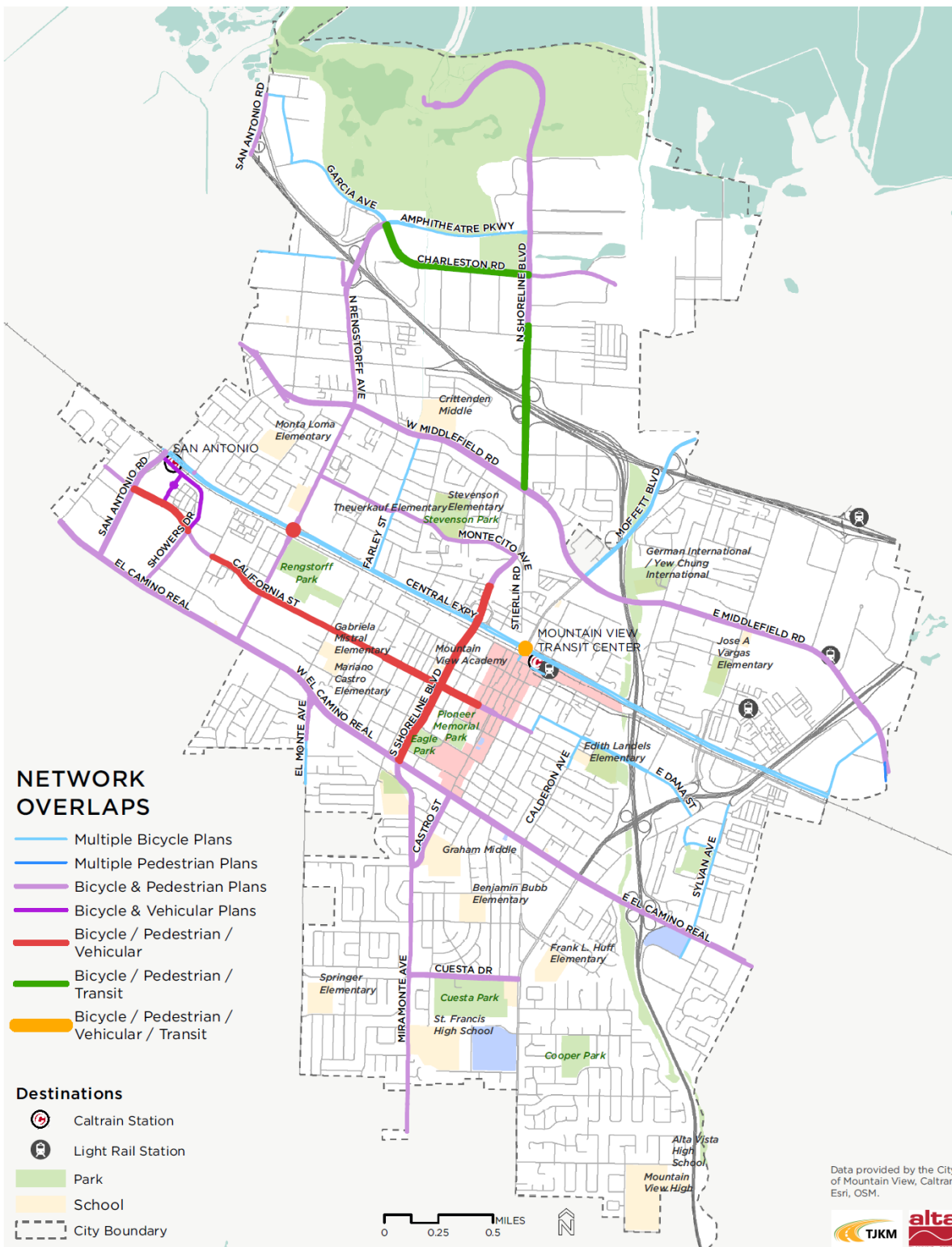
Based on analysis of more than 30 plans and studies related to Mountain View's transportation network, project staff has analyzed network overlaps, inconsistencies, and gaps between the different plans and studies.

### **Analysis of Network Overlaps Between Plans**

Network overlaps include corridors where planned improvements are identified in multiple different plans or studies, such as the Bicycle Transportation Plan (BTP), Pedestrian Master Plan, Valley Transportation Authority (VTA) Transit Service Plan, and corridor feasibility studies.

This analysis identified Shoreline Boulevard, California Street, and Charleston Road as corridors where various plans had overlapping pedestrian, bicycle, and transit strategies, which reflects the multi-modal nature of the corridors as well as efforts to align different studies and plans. Other key corridors were also identified in multiple plans or studies as displayed in Figure 6.

**Figure 6: Network Overlaps Based on Multiple Plans or Studies**





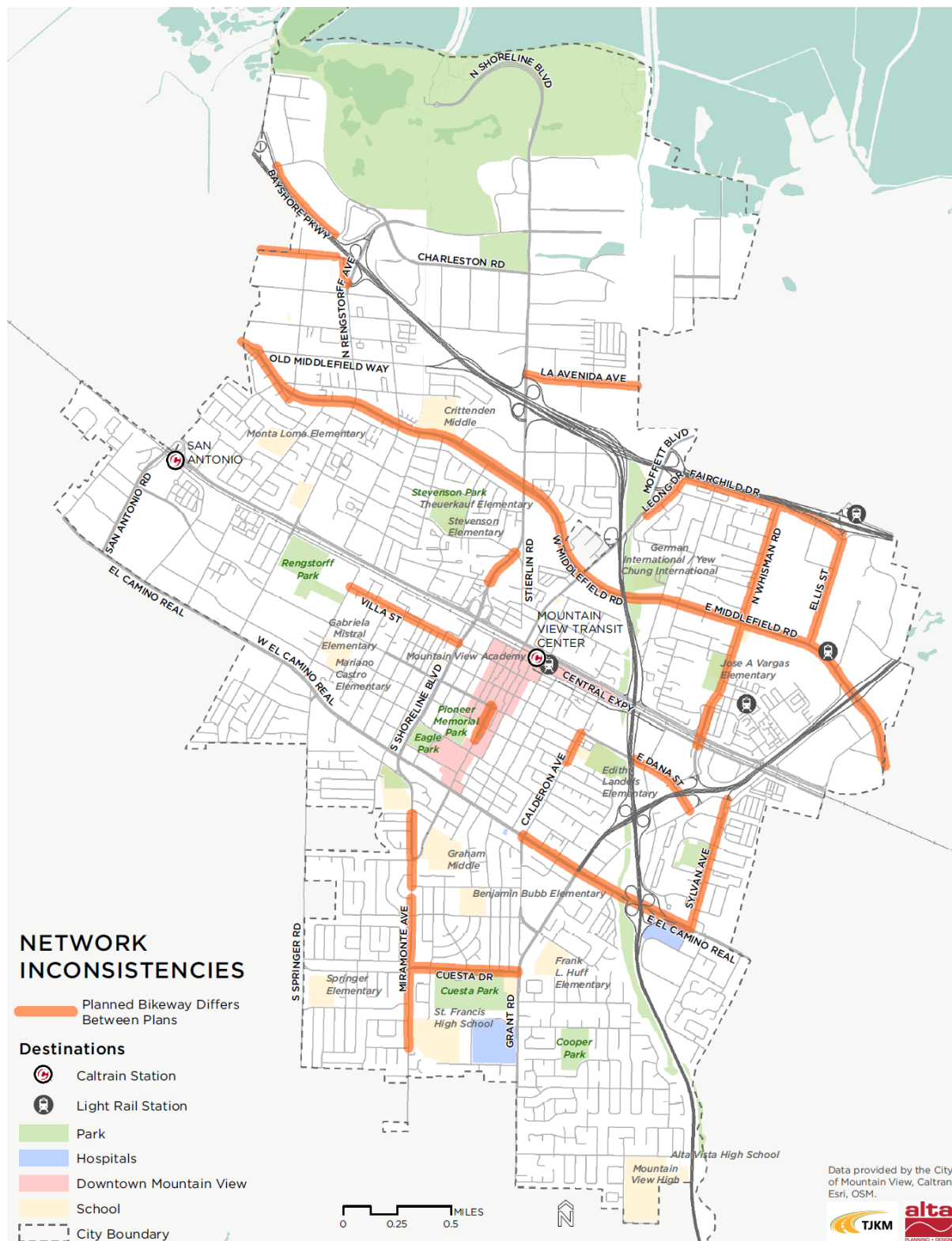
### **Analysis of Network Inconsistencies Between Plans**

Network inconsistencies include corridors where plans identify a different vision or strategy for the corridor. Although there are inconsistencies in plans for the corridors displayed in Figure 7, no fundamental inconsistencies were identified. This is indicative of deliberate efforts to align different planning efforts with one another.

More nuanced and textual inconsistencies for corridors shown in Figure 7 represent differences in recommended treatment types for the same facility. In general, these differences relate to bicycle transportation facilities and result from the rapid evolution of bicycle treatments in recent years. Given the recent recognition of Class IV protected bikeways as an acceptable treatment in California, there are a number of inconsistencies with respect to corridors where Class IV facilities are proposed. For example, the City of Mountain View 2015 Bicycle Transportation Plan (BTP) identifies roadways with posted speed limits of 30 miles per hour (mph) or greater as corridors where Class IV protected bikeways are to be prioritized wherever feasible. Feasibility concerns could include competing uses within limited right-of-way (in the context of vehicular demand, the need for wider sidewalks, and limited ability to narrow travel lanes), as well as frequent driveway cuts that limit the effectiveness of protected bikeway facilities. Corridors that have a posted speed limit of 30 miles per hour, but are identified for facilities other than protected bikeways, are included among network inconsistencies. Network inconsistencies between plans 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 designated as future Class II buffered bicycle lanes (from Calderon Avenue to Dale Avenue) in the BTP;
- Whisman Road (from Middlefield Road to Evelyn Avenue) has a speed limit of 35 miles per hour but is designated as future buffered Class II bike lanes in the BTP;
- Dana Street (from Moorpark Way to State Route 85) has a speed limit of 35 miles per hour but is designated as future buffered Class II lanes in the BTP;
- Middlefield Road (from San Antonio Road to Bernardo Avenue) has a speed limit of 35 miles per hour but is designated as future Class II bicycle lanes in the BTP; and
- Fairchild Drive has a speed limit of 35 miles per hour but is designated as a future Class III bicycle boulevard under the BTP and future Class II bike lanes under the 2019 East Whisman Precise Plan.

Figure 7: Network Inconsistencies Based on Multiple Plans or Studies



Where the above inconsistencies result from the rapid recent evolution of bicycle transportation treatments in California, the most recent plan will tend to better reflect current understanding of appropriate treatments for the facility. Where the inconsistency is based on the BTP policy of prioritizing Class IV facilities where feasible, resolution of the inconsistency may require feasibility assessment. Resolution of these inconsistencies could also be considered in future updates of plans such as the Bicycle Transportation Plan.

### **Analysis of Network Gaps Between Plans**

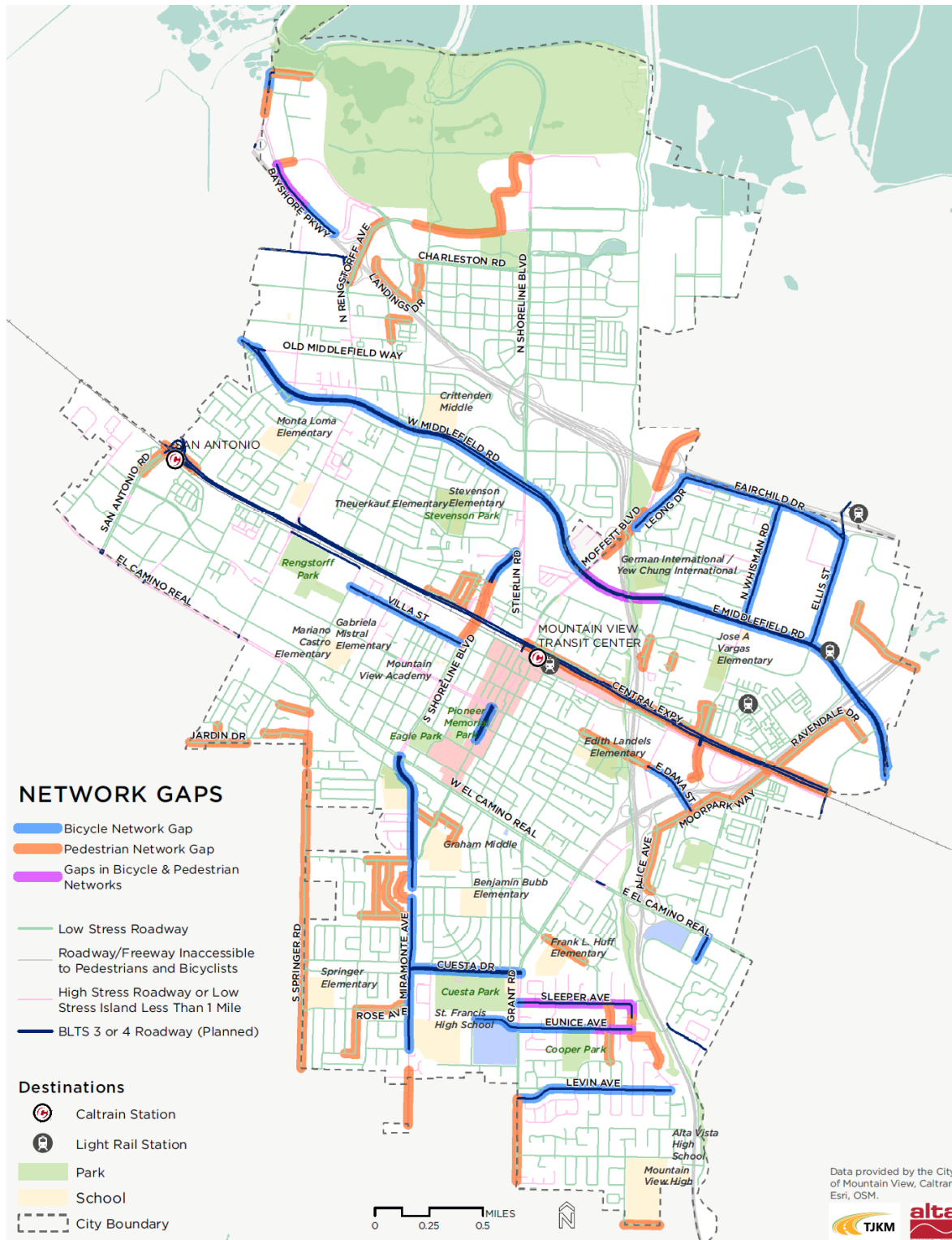
The Comprehensive Modal Plan does not aim to identify new capital projects. Instead, the goal of this work is to prioritize the numerous projects that have already been identified in prior plans and studies and have been vetted through both internal review and community engagement processes.

Nevertheless, the project team has undertaken an analysis of network gaps in conjunction with the project analysis. This information could potentially be considered in future updates of the respective plans, such as the Pedestrian Master Plan and Bicycle Transportation Plan. In the context of this analysis, network gaps are defined as follows:

- Pedestrian network gaps are public roadways that are missing a sidewalk on at least one side of the street, or adjacent multi-use trail, even after planned projects have been implemented;
- Bicycle network gaps are bikeways or streets identified in the General Plan as having high or medium bike use priority where it is anticipated that there will be a high level of traffic (LTS 3 or 4) even after planned projects have been implemented;
- Transit gaps are transit corridors for trips within the City of Mountain View (intra-City trips) where there is a high transit propensity but a lack of available services even after accounting for future improvements; and
- Vehicular gaps are corridors where roadways would be needed to access destinations but are not available even after accounting for future projects.

As indicated in Figure 8, key gaps identified in Mountain View relate to pedestrian and bicycle facilities. Based on the Shuttle Study analysis, no spatial gaps were identified in relation to intra-City transit trips within Mountain View. However, the study did identify temporal gaps in the intracity transit network, particularly in regard to the Community Shuttle span of service.

Figure 8: Network Gaps Based on Multiple Plans or Studies



### **Goals and Priorities from the General Plan**

In order to develop a framework for prioritizing corridors and transportation improvements on a Citywide scale, key goals and policies have been identified based on General Plan policies. As displayed in Table 1, these goals include:

- Equity;
- Mobility;
- Connectivity;
- Safety; and
- Sustainability.

Additionally, project complexity (such as cross-jurisdictional issues), cost, and synergistic opportunities are other typical considerations for capital project assessments.

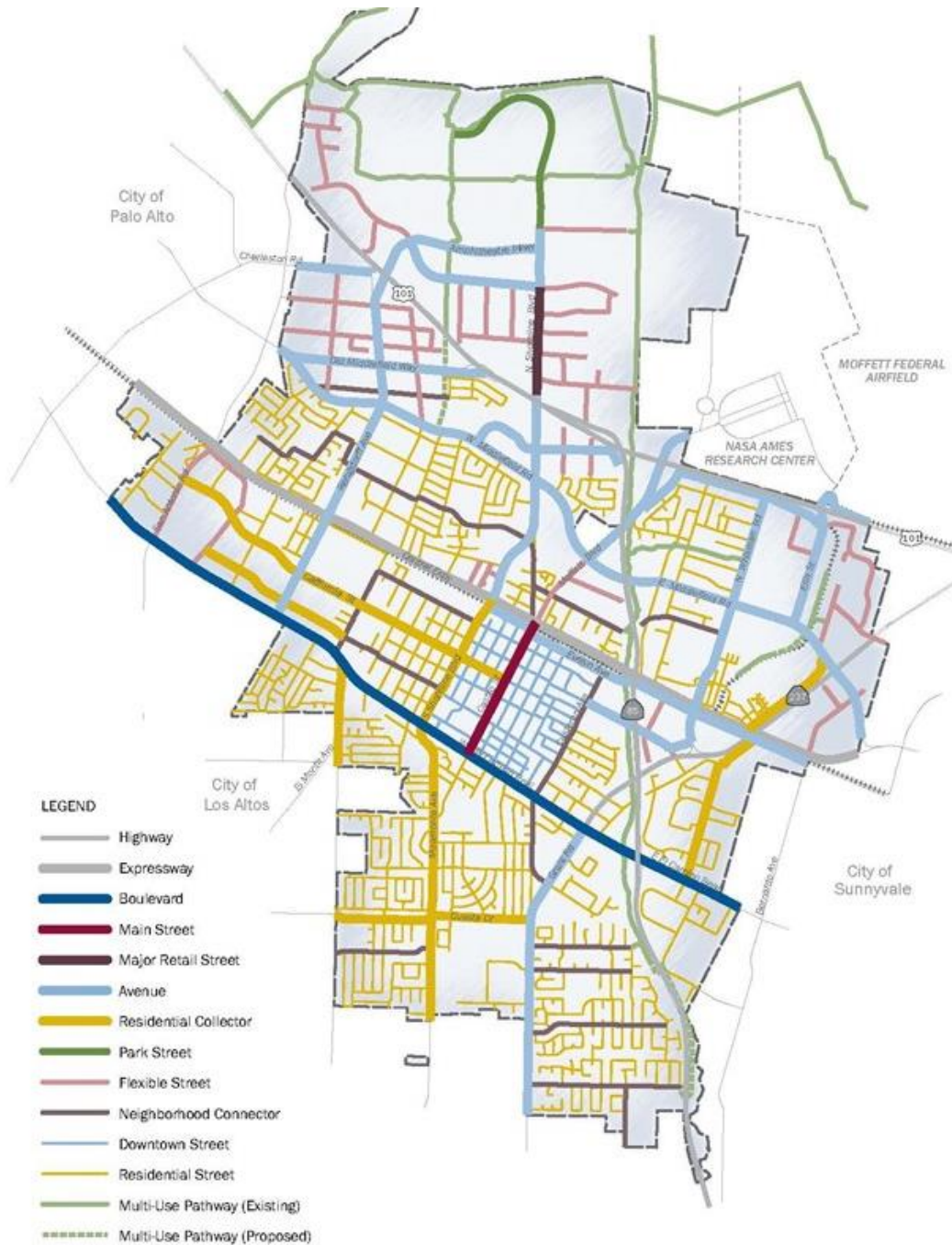
**Table 1: Goals and Relevant General Plan Policies**

<b>Goal</b>	<b>Description</b>	<b>Relevant General Plan Policies</b>
<b>Equity</b>	Equitable distribution of amenities and services/expanded access for all users.	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.
<b>Mobility</b>	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.

Goal	Description	Relevant General Plan Policies
<b>Connectivity</b>	Reduced gaps in the network.	<p>MOB 4.1. Bicycle network. Improve facilities and eliminate gaps along the bicycle network to connect destinations across the City.</p> <p>Other relevant policies: MOB 3.2, MOB 5.4.</p>
	Improved connections to community destinations.	<p>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.</p> <p>Other relevant policies: MOB 1.3, MOB 4.1, MOB 5.4, MOB 6.3.</p>
	Improved first-/last-mile connections.	<p>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.</p> <p>Other relevant policies: MOB 6.3.</p>
<b>Safety</b>	Improved safety for vulnerable users, especially pedestrians and bicyclists.	<p>MOB 1.6. Traffic calming. Provide traffic calming, especially in neighborhoods and around schools, parks, and gathering places.</p> <p>Other relevant policies: MOB 3.1, MOB 3.3, MOB 4.1, MOB 4.2, MOB 6.2.</p>
<b>Sustainability</b>	Reduced VMT and greenhouse gas emissions.	<p>MOB 9.2. Reduced vehicle miles traveled. Support development and transportation improvements that help reduce greenhouse gas emissions by reducing per-capita vehicle miles traveled.</p> <p>Other relevant policies: LUD 9.2, MOB 3.4, MOB 10.3.</p>

In addition to the above goals, the General Plan sets out priorities for different street typologies in the City. These are displayed in Figure 9 and Table 2 respectively. This framework will help to refine analysis results with respect to specific corridors.

**Figure 9: General Plan Street Typologies**



**Table 2: 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 (North 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

### **Proposed Metrics**

In order to rank corridors with respect to the City's stated goals, a number of metrics are proposed for each goal. These metrics are displayed below in Table 3. Metrics include CalEnviroScreen, which is a standard equity screening tool used to help identify communities disproportionately burdened by multiple sources of pollution and with population characteristics that make them more sensitive to pollution. Other metrics include the All Ages and Abilities (AAA) threshold, which relates to bicycle facilities with



a level of traffic stress (LTS) of 1 based on the modified Mineta Transportation Institute methodology, which was presented at the June 24, 2020 B/PAC meeting.

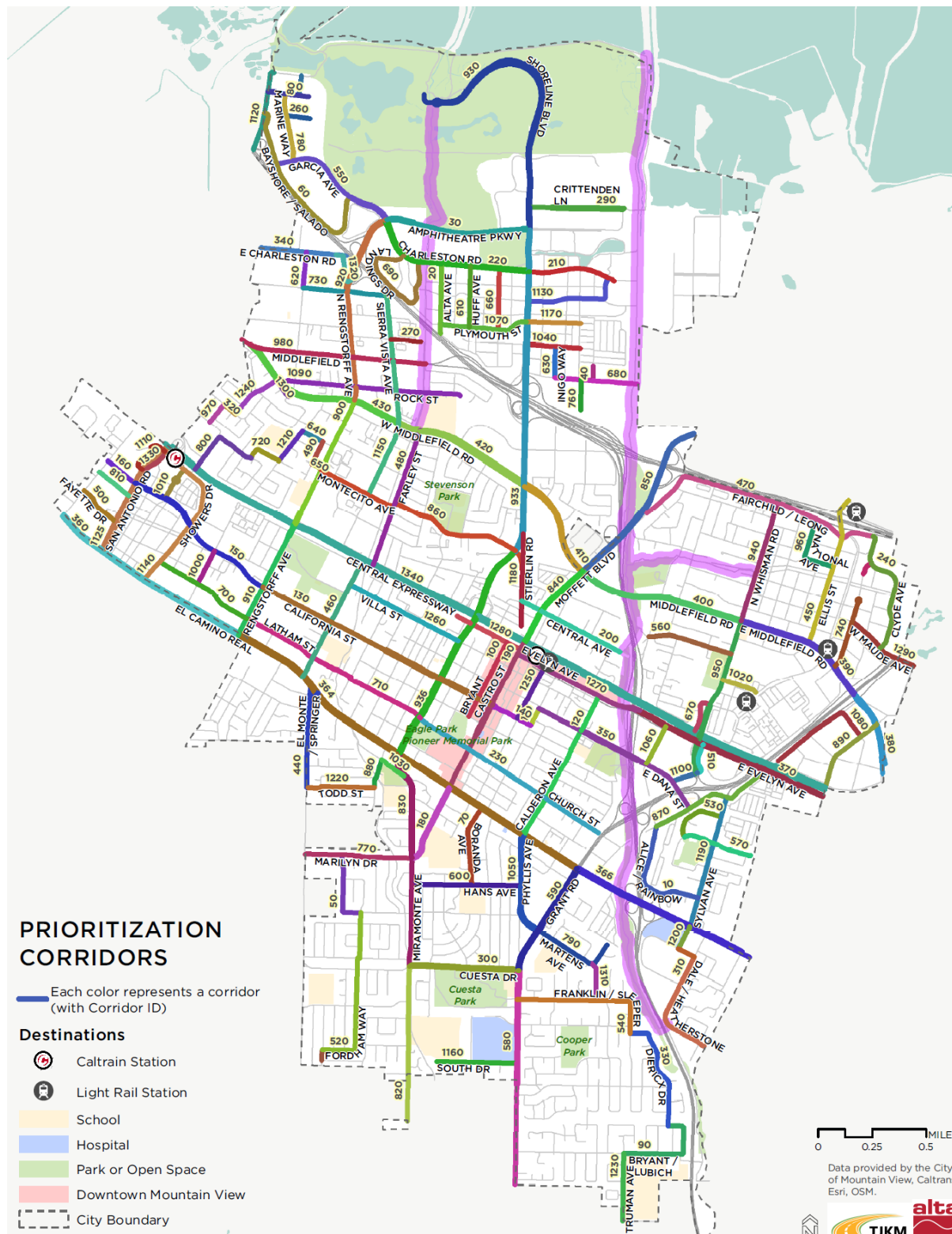
**Table 3: Proposed Metrics**

Goals	Criteria	Points	Metrics
<b>Equity</b>	The corridor serves disadvantaged residents.	0 5 10	CalEnviroScreen Score 1%-20% CalEnviroScreen Score 21%-40% CalEnviroScreen Score 41+%
	The corridor has a high transit propensity score.	0 5 10	Transit Propensity Score 1 Transit Propensity Score 2-3 Transit Propensity Score 4-5
<b>Mobility</b>	This corridor is a high-priority corridor for the mode according to the General Plan street typology (cumulative).	1 2 3 4	N/A Low Medium High
	The corridor accommodates all modes.	2 6 10	Accommodates 1 mode Accommodates 2-3 modes Accommodates all modes
<b>Connectivity/ Walkability/ Bikeability</b>	The corridor connects residents to major destinations, including schools, parks, commercial centers, and employment centers.	0 3 6 9	Not within 1/4 mile of any destinations Within 1/4 mile of one destination Within 1/4 mile of 2-4 destinations Within 1/4 mile of 5+ destinations
	The planned improvements for this 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 (does not have existing facility) Reduces the number of low-stress islands
	The corridor serves first-/last-mile connections.	0 5 10	Not within 1/2 mile of any transit Within 1/2 mile of shuttle/bus Within 1/2 mile of Caltrain/light rail or El Camino Real

<b>Goals</b>	<b>Criteria</b>	<b>Points</b>	<b>Metrics</b>
	The corridor provides 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
<b>Safety</b>	The corridor is accessible to all ages and abilities.	0 5 10	None of the corridor meets AAA threshold Some of corridor meets AAA threshold All of corridor meets AAA threshold
	The corridor is part of the high-injury network (HIN).	0 5 10	None of the corridor is on the HIN Some of corridor is on the HIN All of corridor is on the on HIN
<b>Sustainability</b>	The planned improvements for this 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
<b>Consistency</b>	The planned improvements for this corridor are identified in multiple previous plans.	2 6 10	Identified in 1 other plan 2-3 previous plans 4+ previous plans

These metrics are applied to corridors throughout the City. For longer corridors, analysis is undertaken by segment as illustrated in Figure 10.

Figure 10: Corridor Segmentation for Analysis



By way of example, the metrics have been applied to California Street and its planned improvements. The segment under consideration is from Rengstorff Avenue to Bryant Street. Results from this initial analysis are shown in Table 4.

Based on this initial analysis, California Street would receive a score of 101 points out of a maximum of 124. The implications for corridor prioritization in the Capital Improvement Program (CIP) process would then be determined based on scores calculated for other corridors.

During the CIP process, additional consideration is given to project-specific issues, such as total cost associated with the project, the availability of grant funding, funding deadlines, legal mandates, and synergistic opportunities, such as street repaving.

**Table 4: Proposed Metrics for Corridors and Planned Improvements**

Goals	Criteria	Maximum Points	California Street
<b>Equity</b>	The corridor serves disadvantaged residents.	10	5
	The corridor has a high transit propensity score.	10	10
<b>Mobility</b>	The corridor is a high-priority corridor for the mode according to the General Plan street typology. (Cumulative)	16	13
	The corridor accommodates all modes.	10	10
<b>Connectivity</b>	The corridor connects residents to major destinations.	9	9
	The planned improvements for this corridor close a gap in the existing network.	9	3
	The corridor serves first-/last-mile connections.	10	10
	The corridor provides directness of travel to destinations.	10	10
<b>Safety</b>	The corridor is accessible to all ages and abilities.	10	5
	The corridor is part of the high-injury network.	10	10
<b>Sustainability</b>	The planned improvements for this corridor reduce VMT and greenhouse gas emissions.	10	10

<b>Goals</b>	<b>Criteria</b>	<b>Maximum Points</b>	<b>California Street</b>
<b>Consistency</b>	The planned improvements for this corridor are identified in multiple previous plans.	10	6
<b>TOTAL</b>		<b>124</b>	<b>101</b>

### Key Questions

In relation to the goals and prioritization criteria presented above, the project team is seeking input on the following key questions:

- Are there any other key themes or goals which should be utilized in the prioritization of primary corridors and priority transportation projects?
- Do you concur with the presented metrics for assessing these key themes or goals for transportation in Mountain View?
- Do you concur with the weights suggested by the above scoring system for each metric?

### NEXT STEPS

Project staff will engage community members on prioritization criteria for the Comprehensive Modal Plan via an online survey as well as a virtual community meeting to be held at 6:30 p.m. on October 22, 2020. The City Council will also provide input on prioritization criteria at a Study Session to be held on November 10, 2020.

After obtaining community, B/PAC, and City Council input on prioritization criteria, corridors and projects will be analyzed based on these criteria, and a draft report will be prepared and presented to the B/PAC and Council.

The project findings will assist in ranking and scheduling projects from numerous plans and studies over the coming decades. Projects identified as highest priority will be submitted for consideration for the upcoming five-year Capital Improvement Program.

RHL-DSC/6/PWK/947-09-30-20M