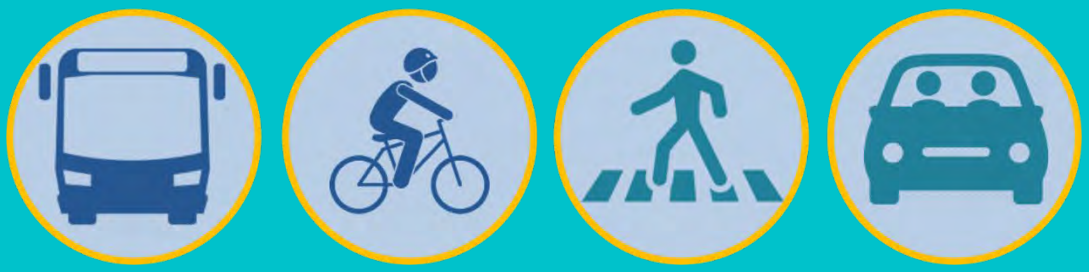
Attachment 2

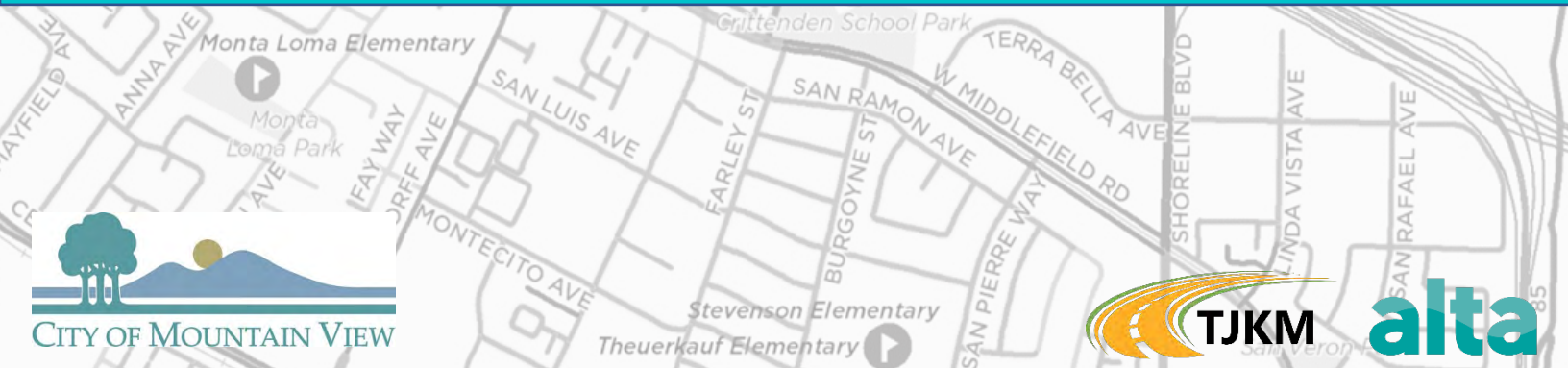


AccessMV

Mountain View's Comprehensive Modal Plan

Appendices

April 2021 | DRAFT



CITY OF MOUNTAIN VIEW

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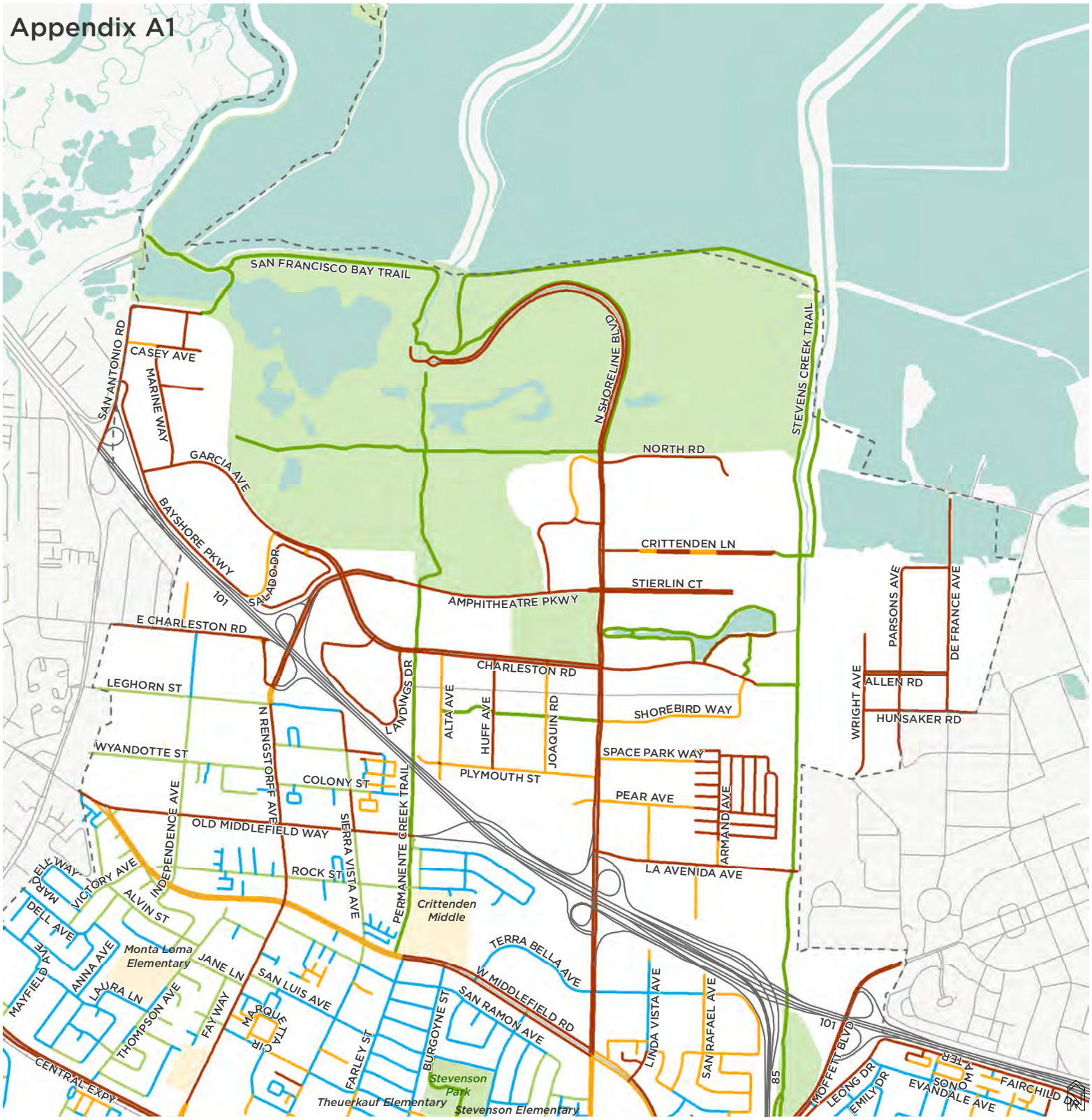
Appendices Table of Contents

Appendix A: Existing and Planned Infrastructure by Mode

Appendix A1



PEDESTRIAN QUALITY OF SERVICE

NORTH QUADRANT

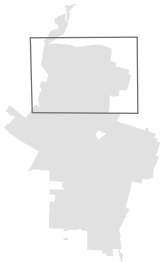
0 0.25 0.5 MILES

PQOS Score (Existing)

- QOS 1: Best Quality of Service
- QOS 2
- QOS 3
- QOS 4
- QOS 5: Lowest Quality of Service
- Roadway Inaccessible to Pedestrians

Destinations

- Caltrain Station
- Light Rail Station
- School
- Hospital
- Park or Open Space
- Downtown Mountain View
- City Boundary



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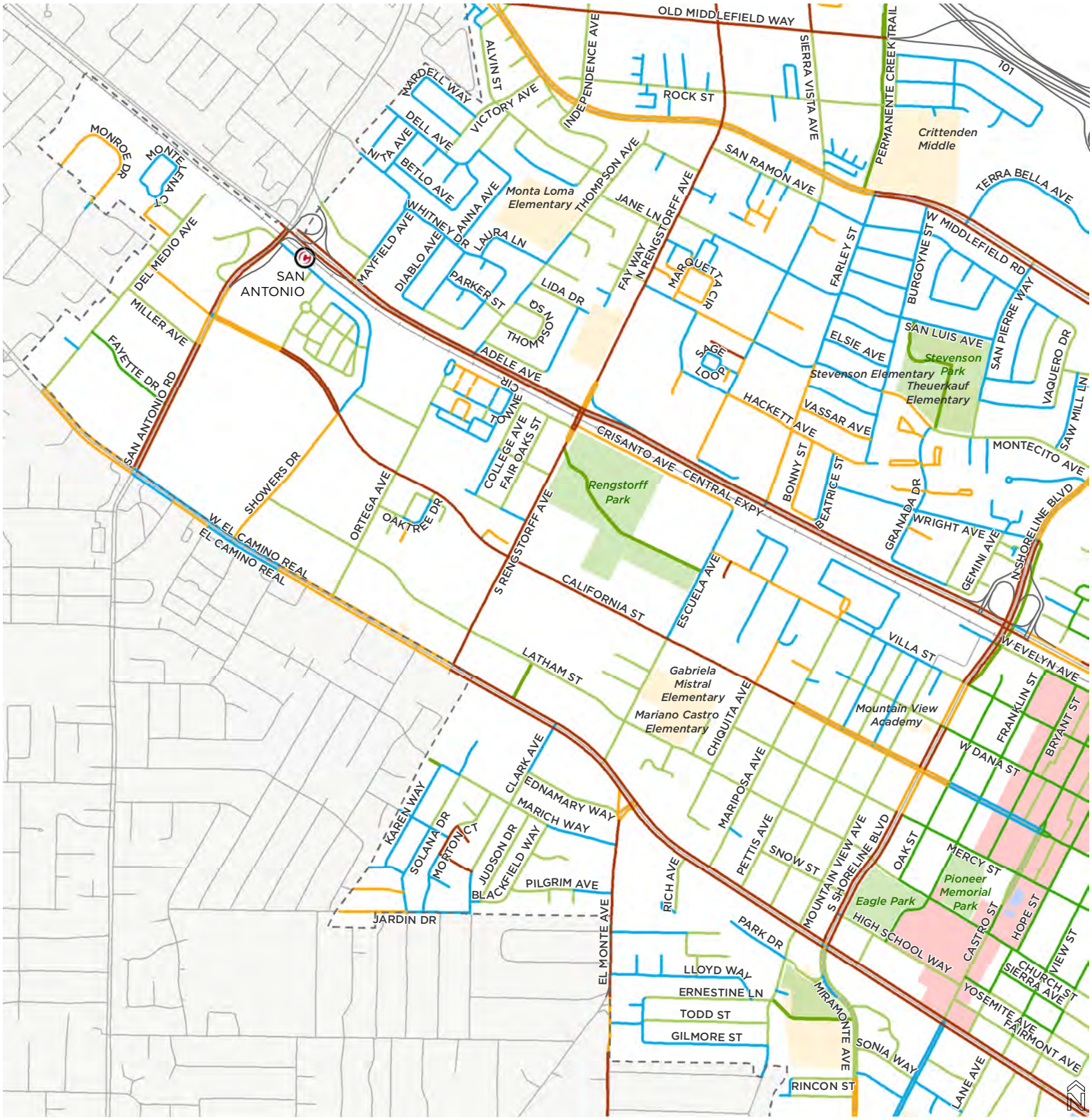


PEDESTRIAN QUALITY OF SERVICE

CENTRAL WEST QUADRANT

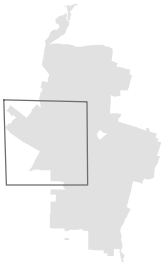
0 0.25 0.5 MILES

PQOS Score (Existing)

- QOS 1: Best Quality of Service
- QOS 2
- QOS 3
- QOS 4
- QOS 5: Lowest Quality of Service
- Roadway Inaccessible to Pedestrians

Destinations

- Caltrain Station
- Light Rail Station
- School
- Hospital
- Park or Open Space
- Downtown Mountain View
- City Boundary



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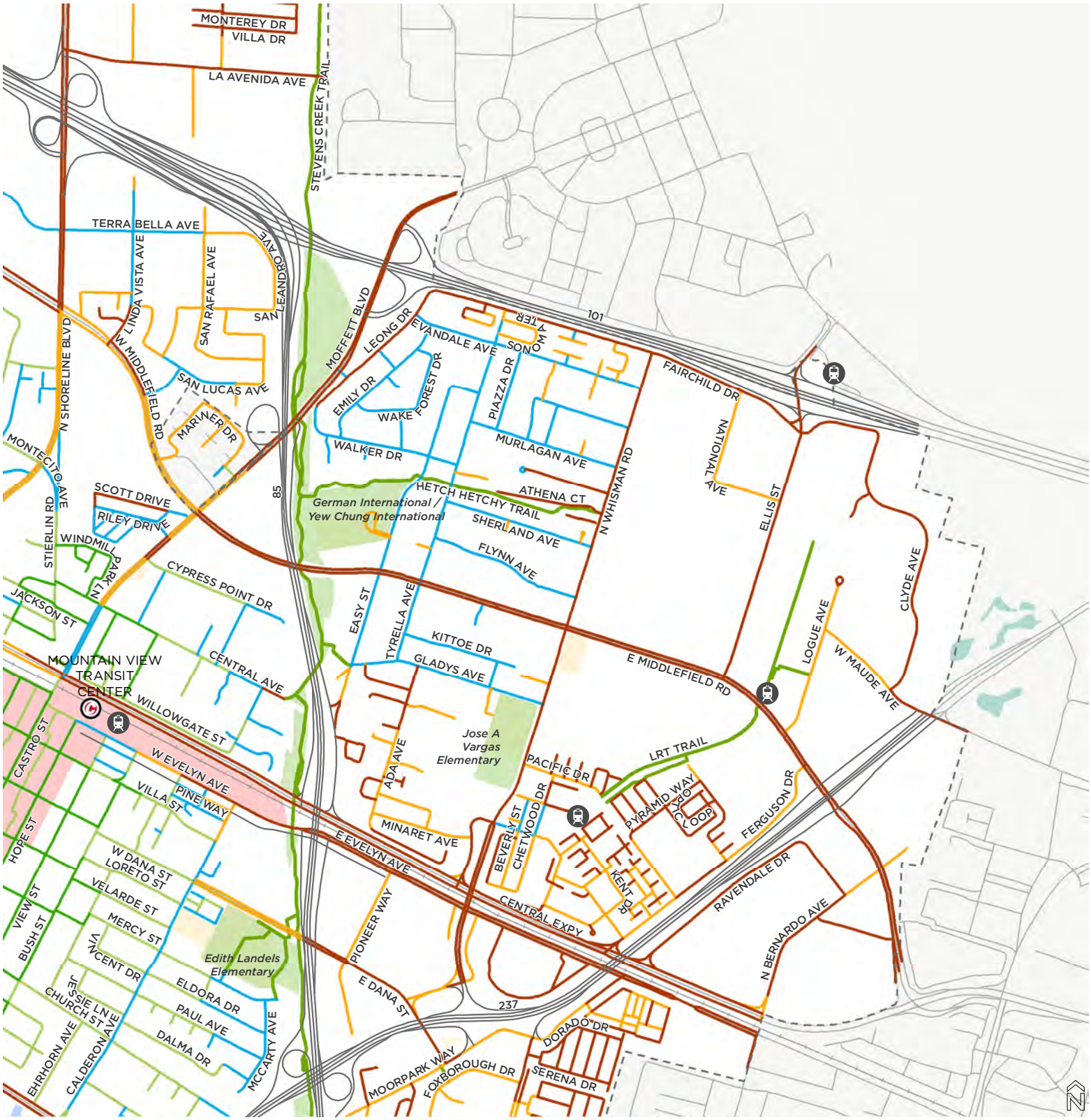


PEDESTRIAN QUALITY OF SERVICE

CENTRAL EAST QUADRANT

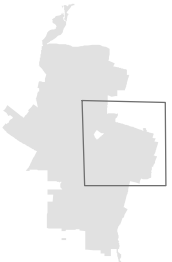
MILES
0 0.25 0.5

PQOS Score (Existing)

- QOS 1: Best Quality of Service
- QOS 2
- QOS 3
- QOS 4
- QOS 5: Lowest Quality of Service
- Roadway Inaccessible to Pedestrians

Destinations

- Caltrain Station
- Light Rail Station
- School
- Hospital
- Park or Open Space
- Downtown Mountain View
- City Boundary



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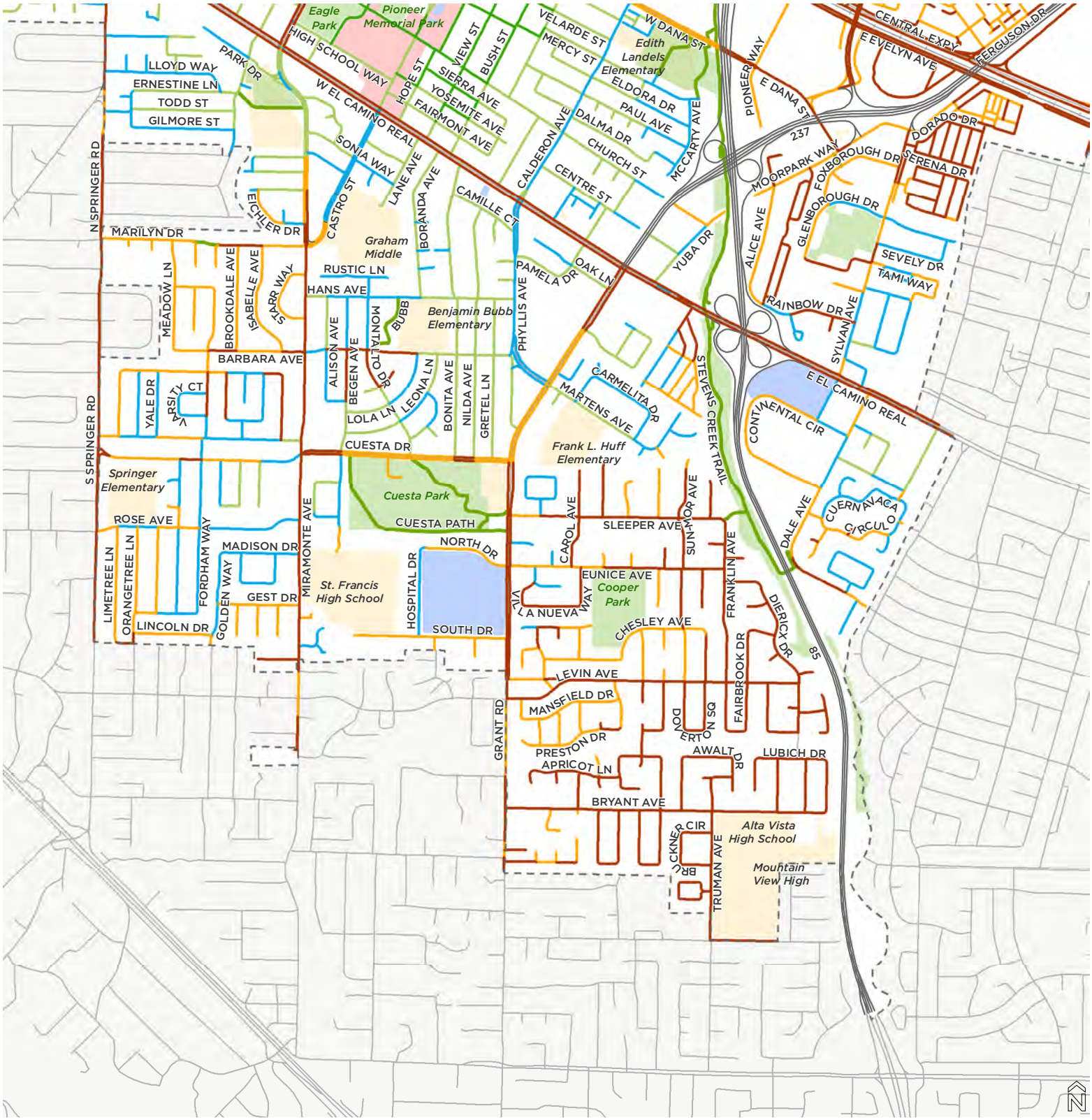

PEDESTRIAN QUALITY OF SERVICE

SOUTH QUADRANT

MILES
0 0.25 0.5

PQOS Score (Existing)

- QOS 1: Best Quality of Service
- QOS 2
- QOS 3
- QOS 4
- QOS 5: Lowest Quality of Service
- Roadway Inaccessible to Pedestrians

Destinations

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- Light Rail Station
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- Hospital
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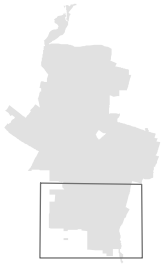

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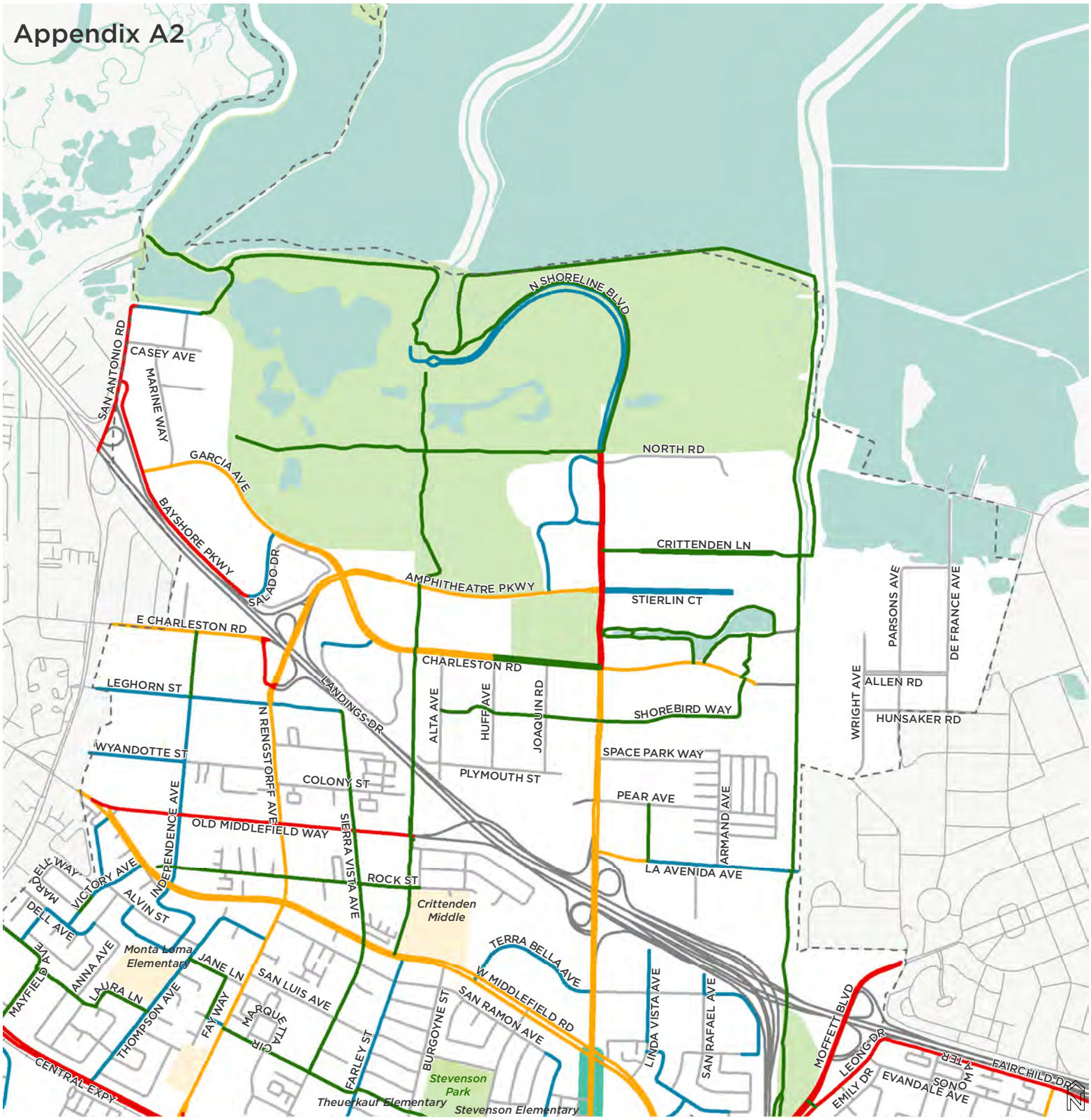
Appendix A2



EXISTING BICYCLE LEVEL OF TRAFFIC STRESS

NORTH QUADRANT

BLTS Score (Existing)

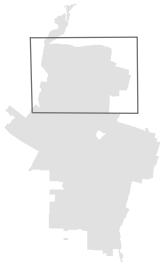
- BLTS 1 All Ages and Abilities
- BLTS 1.5 All Ages and Abilities (Residential)
- BLTS 2 Interested But Concerned
- BLTS 3 Somewhat Confident
- BLTS 4 Highly Confident

Other Roadway Features

- Teal Highlight Indicates Approved CIP Project
- Roadway Inaccessible to Bicyclists

Destinations

- Caltrain Station
- Light Rail Station
- School
- Hospital
- Park or Open Space
- Downtown Mountain View
- City Boundary



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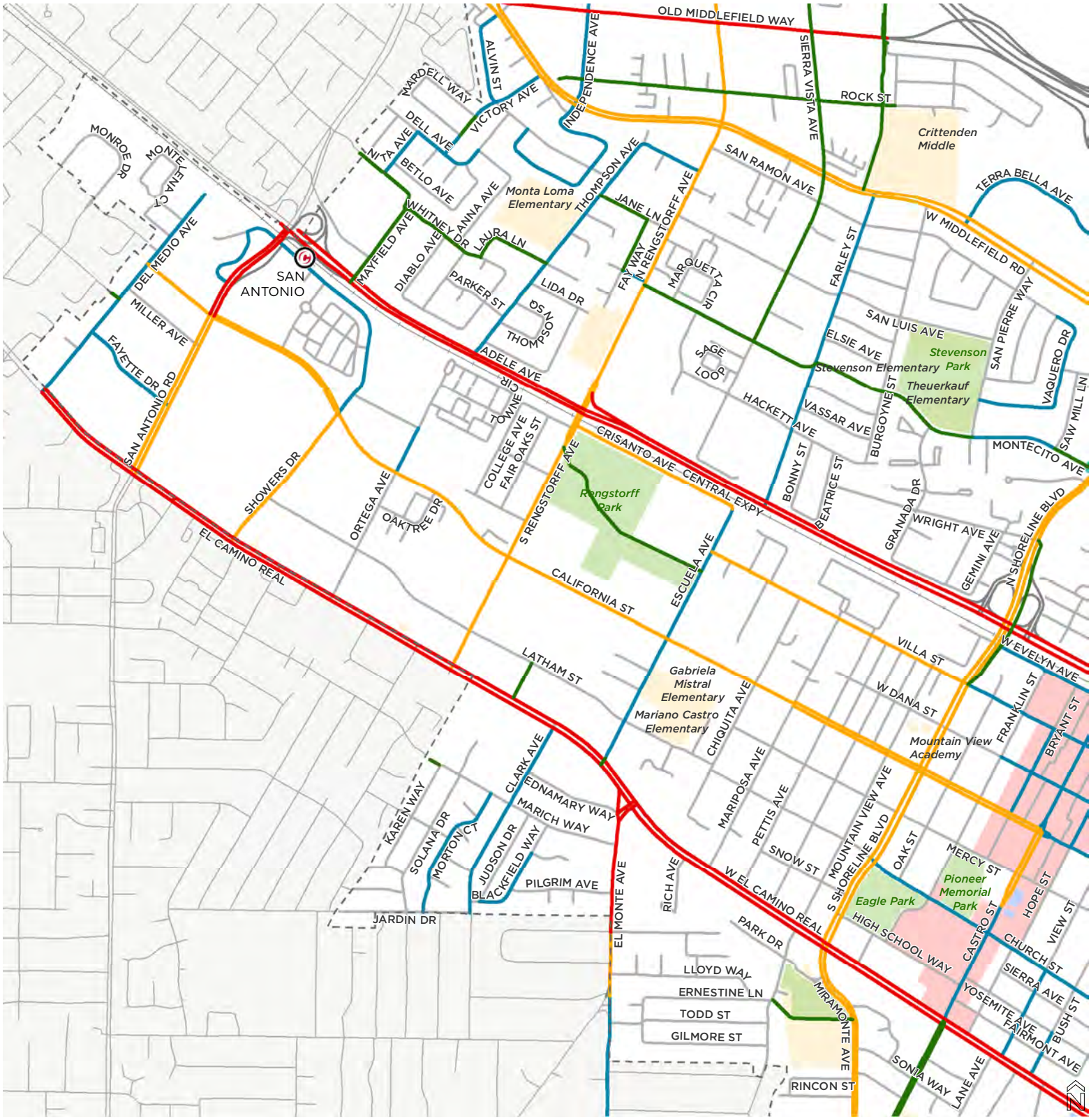

EXISTING BICYCLE LEVEL OF TRAFFIC STRESS

CENTRAL WEST QUADRANT

BLTS Score (Existing)

- BLTS 1 All Ages and Abilities
- BLTS 1.5 All Ages and Abilities (Residential)
- BLTS 2 Interested But Concerned
- BLTS 3 Somewhat Confident
- BLTS 4 Highly Confident

Other Roadway Features

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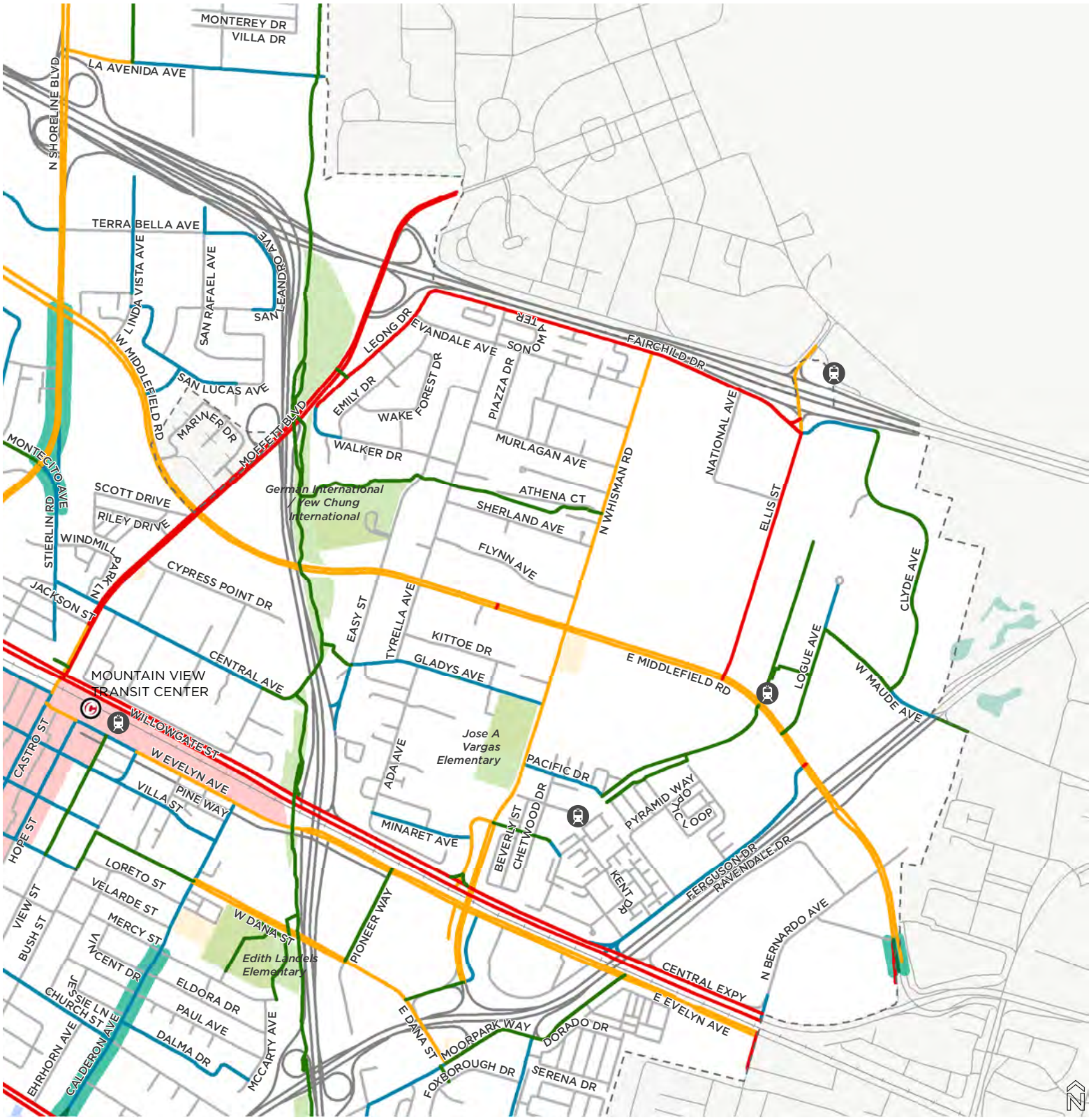

EXISTING BICYCLE LEVEL OF TRAFFIC STRESS

CENTRAL EAST QUADRANT

0 0.25 0.5 MILES

BLTS Score (Existing)

- BLTS 1 All Ages and Abilities
- BLTS 1.5 All Ages and Abilities (Residential)
- BLTS 2 Interested But Concerned
- BLTS 3 Somewhat Confident
- BLTS 4 Highly Confident

Other Roadway Features

- Teal Highlight Indicates Approved CIP Project
- Roadway Inaccessible to Bicyclists

Destinations

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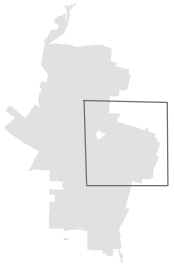

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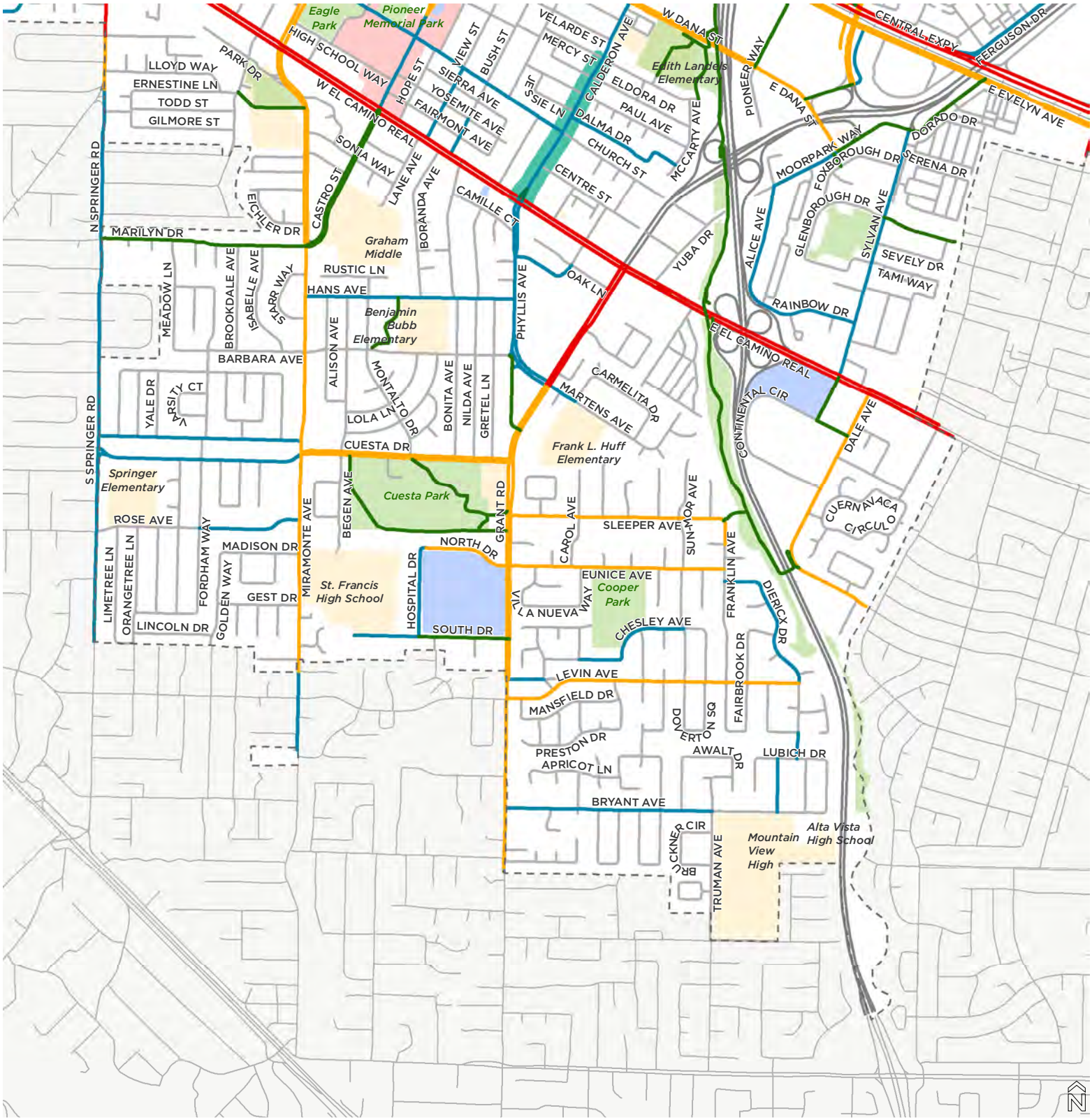

EXISTING BICYCLE LEVEL OF TRAFFIC STRESS

SOUTH QUADRANT

0 0.25 0.5 MILES

BLTS Score (Existing)

- BLTS 1 All Ages and Abilities
- BLTS 1.5 All Ages and Abilities (Residential)
- BLTS 2 Interested But Concerned
- BLTS 3 Somewhat Confident
- BLTS 4 Highly Confident

Other Roadway Features

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Destinations

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- Hospital
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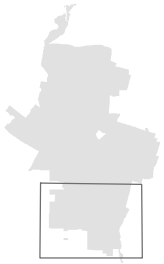

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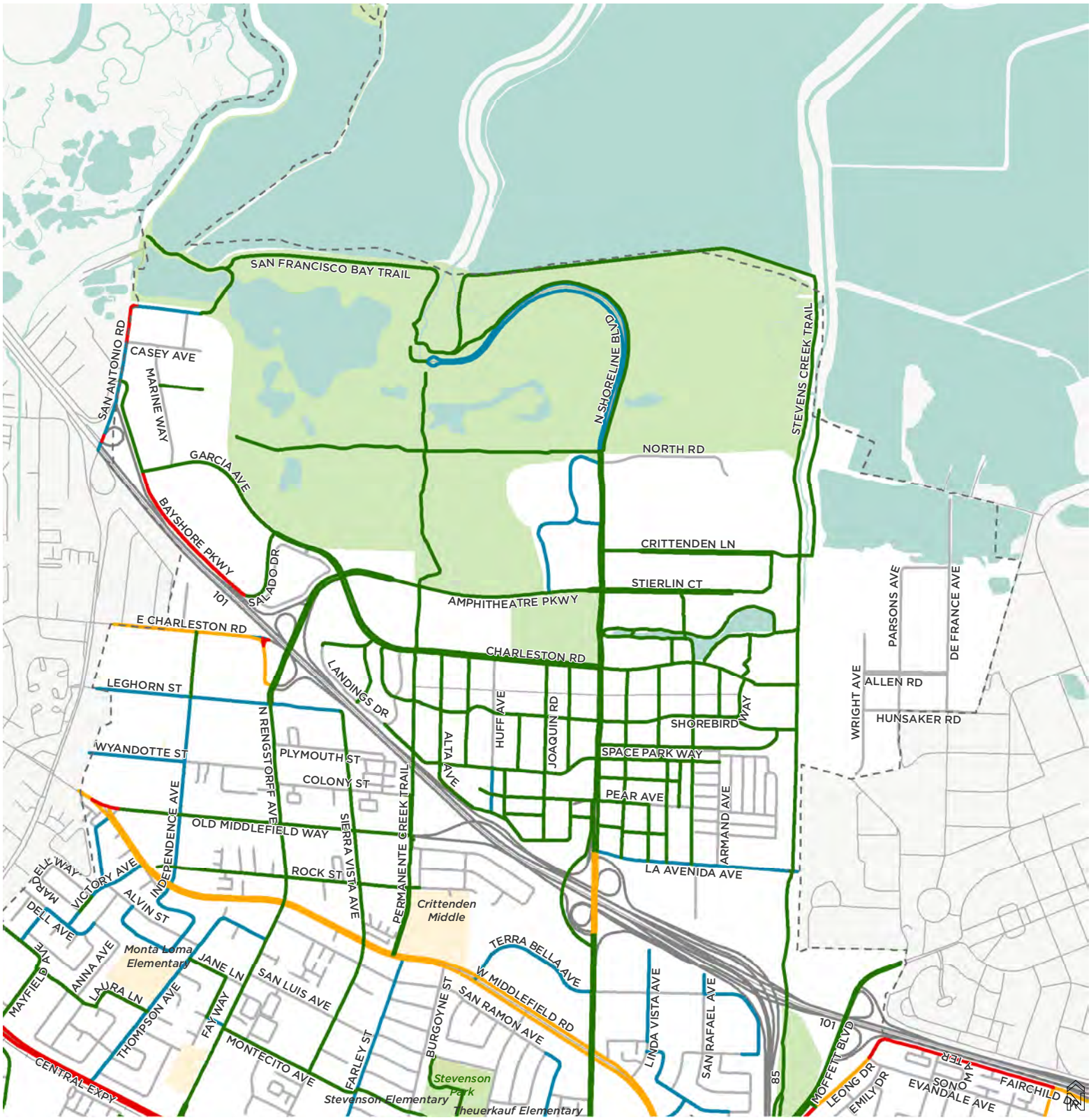

PLANNED BICYCLE LEVEL OF TRAFFIC STRESS

NORTH QUADRANT

MILES
0 0.25 0.5

BLTS Score (Planned)

- BLTS 1 All Ages and Abilities
- BLTS 1.5 All Ages and Abilities (Residential)
- BLTS 2 Interested But Concerned
- BLTS 3 Somewhat Confident
- BLTS 4 Highly Confident

Other Roadway Features

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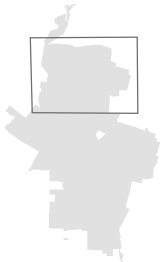

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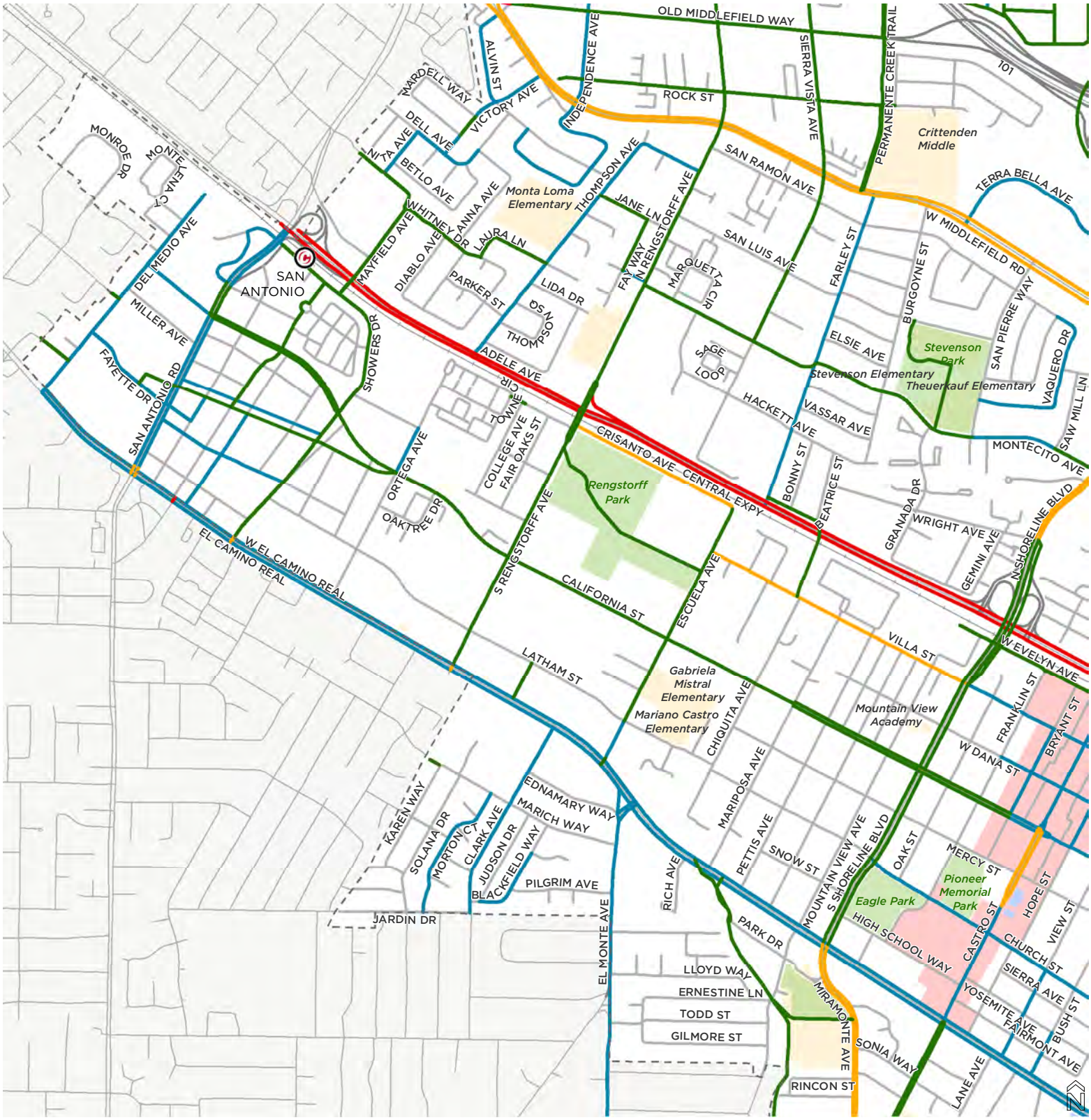

PLANNED BICYCLE LEVEL OF TRAFFIC STRESS

CENTRAL WEST QUADRANT

MILES
0 0.25 0.5

BLTS Score (Planned)

- BLTS 1 All Ages and Abilities
- BLTS 1.5 All Ages and Abilities (Residential)
- BLTS 2 Interested But Concerned
- BLTS 3 Somewhat Confident
- BLTS 4 Highly Confident

Other Roadway Features

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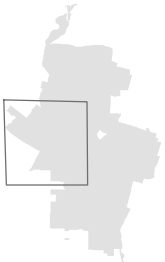

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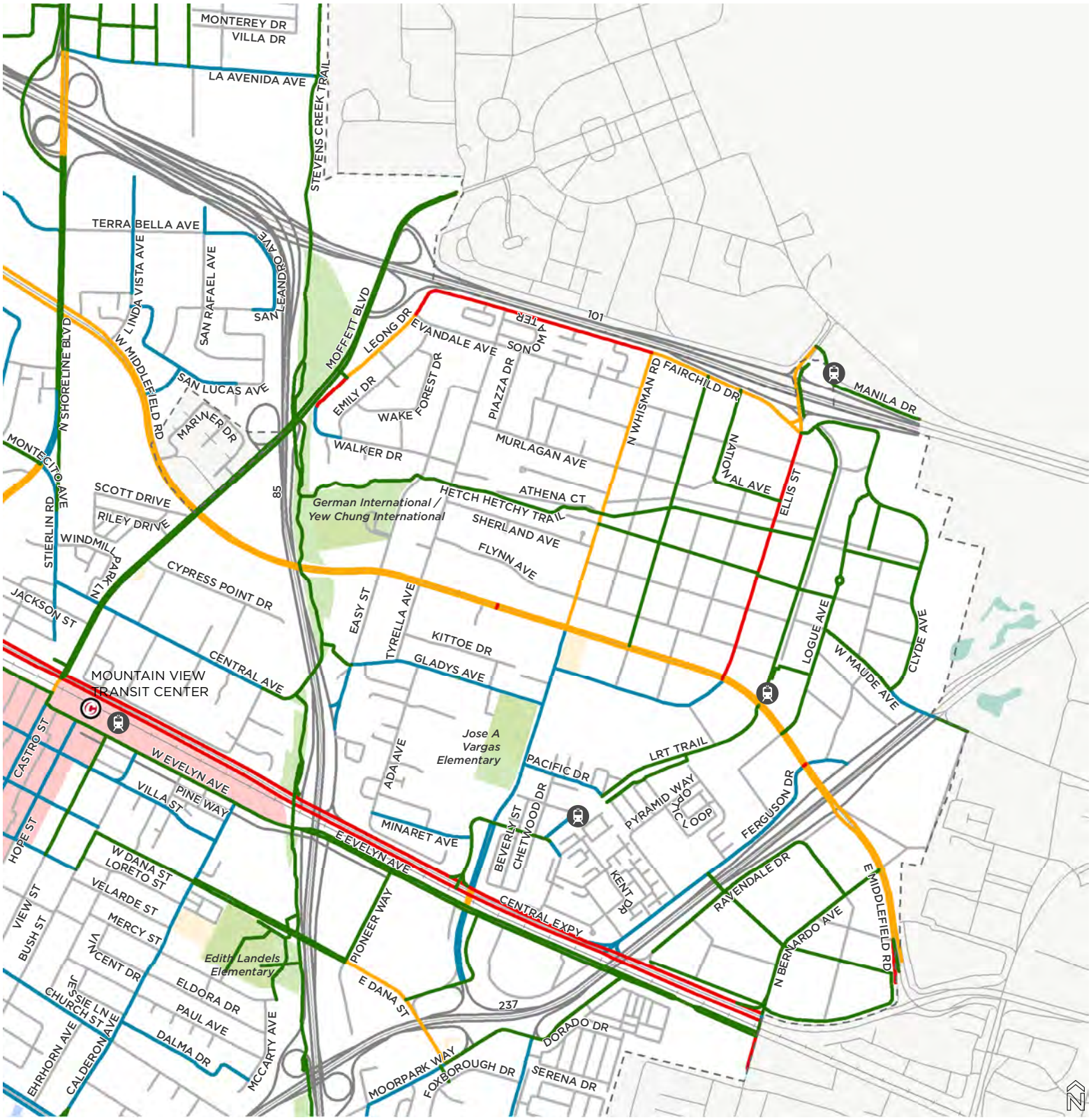

PLANNED BICYCLE LEVEL OF TRAFFIC STRESS

CENTRAL EAST QUADRANT

MILES
0 0.25 0.5

BLTS Score (Planned)

- BLTS 1 All Ages and Abilities
- BLTS 1.5 All Ages and Abilities (Residential)
- BLTS 2 Interested But Concerned
- BLTS 3 Somewhat Confident
- BLTS 4 Highly Confident

Other Roadway Features

- Roadway Inaccessible to Bicyclists

Destinations

- Caltrain Station
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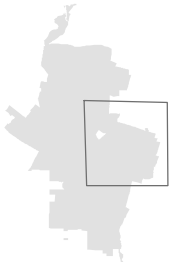
- City Boundary



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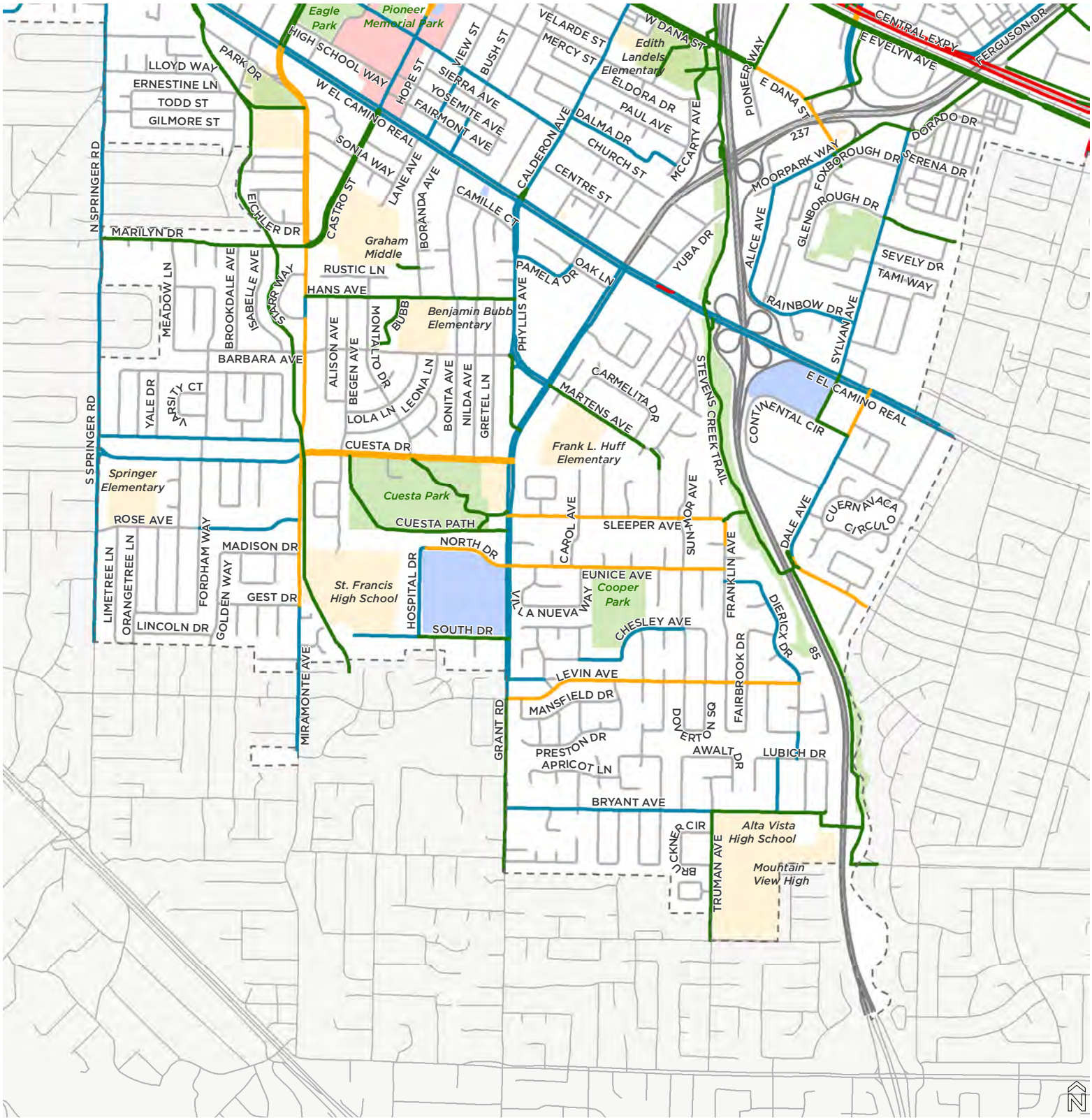

PLANNED BICYCLE LEVEL OF TRAFFIC STRESS

SOUTH QUADRANT

0 0.25 0.5 MILES

BLTS Score (Planned)

- BLTS 1 All Ages and Abilities
- BLTS 1.5 All Ages and Abilities (Residential)
- BLTS 2 Interested But Concerned
- BLTS 3 Somewhat Confident
- BLTS 4 Highly Confident

Other Roadway Features

- Roadway Inaccessible to Bicyclists

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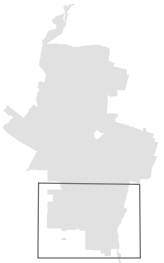

Data provided by the City of Mountain View, Caltrans, Esri, OSM.

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TJKM VISION THAT MOVES YOUR COMMUNITY

TECHNICAL MEMORANDUM

Date: March 6, 2020

To: Ria Lo, Transportation Manager
Aruna Bodduna, Project Manager
City of Mountain View

From: Dhawal Kataria
Task Lead
Arthur Chen
Associate Planner

Subject: ***City of Mountain View Origin-Destination (O-D) Analysis Tech Memo***

INTRODUCTION

TJKM conducted an Origin-Destination (O-D) study within the City of Mountain View to identify traveler and trip attributes of vehicle, bicycle, and pedestrian travel within the city. In addition, the O-D analysis provides current data relevant to the network system and gaps analysis. The O-D analysis also provides current data relevant to the prioritization of infrastructure and service options. Finally, the O-D analysis provides insight on options for the expansion of the Mountain View Community Shuttle service.

METHODOLOGY

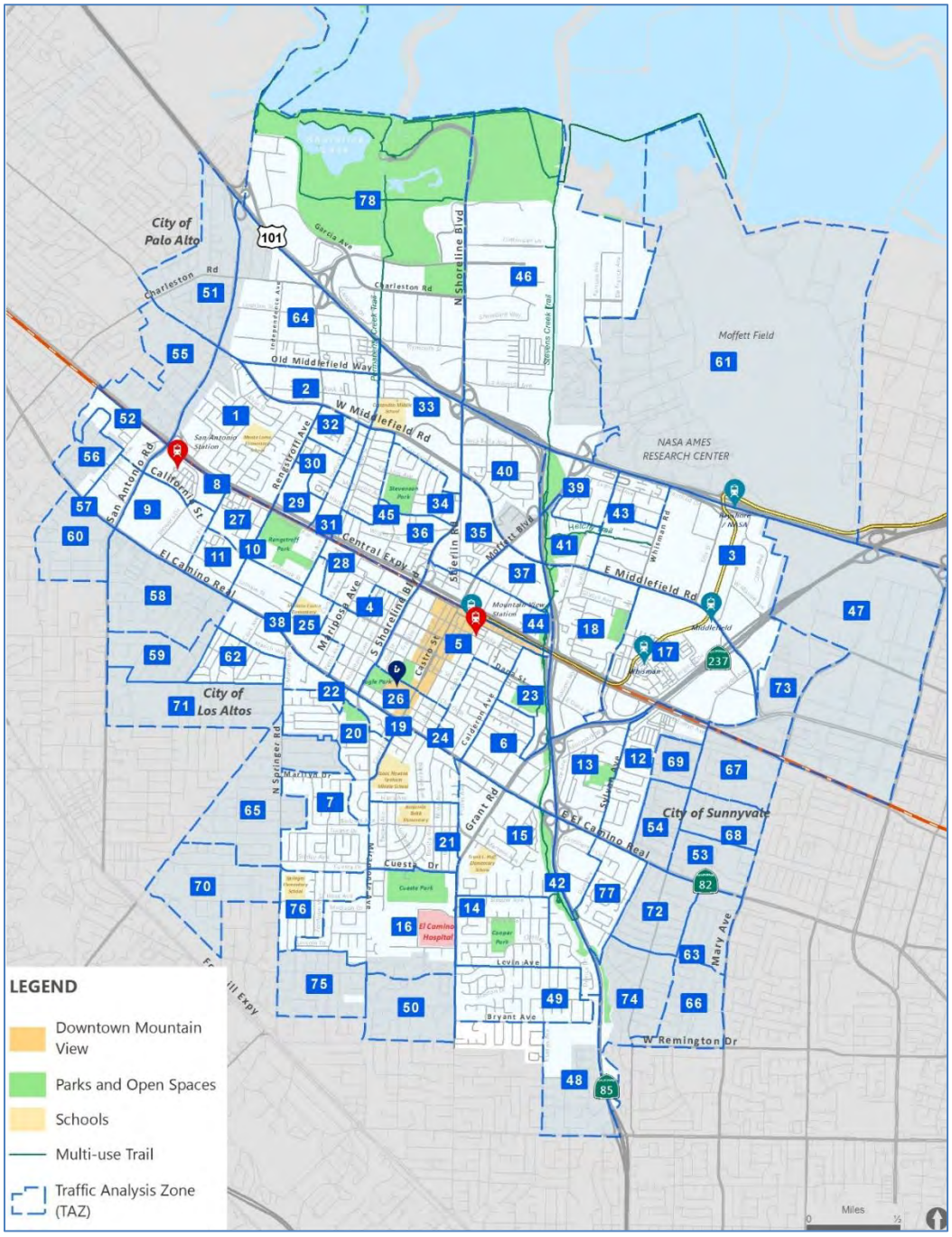
Streetlight data[1] is a web based software product that allows transportation planners, modelers, and engineers to run dynamic analytics on billions of bits of travel information gathered from multiple sources (referred to as Big Data). TJKM is utilizing Streetlight Data for the O-D analysis in Mountain View.

The first step is to identify key destinations and key origins or residential locations within Mountain View. TJKM identified key census block groups that form Transportation Analysis Zones (TAZs) from the Census Transportation Planning Products. Also, additional TAZs in the neighboring cities such as Los Altos and Sunnyvale are included in the analysis.

[1] *More information available at https://www.streetlightdata.com/*

TJKM divided the City of Mountain View into 78 TAZs, as shown in the map below:

Figure 1: City of Mountain View O-D TAZs



Moffett Park was split into two zones due to its size for better analytical purposes.

A Streetlight O-D analysis was set up using data from Spring 2018 and Fall 2018 (April to June, September to October). Three types of travel were analyzed; all vehicle modes[2], bicycles only, and pedestrians only. The data source comes from location based services, such as Bluetooth beacons (cell phones and the like) along with pass through data between zones. For time period selected, each day is sorted out into all days, weekday only (Monday to Thursday) or weekend only (Saturday to Sunday). Within each day 16 hourly splits were considered starting from 6am-10pm. An additional all day analysis was also included.

It is important to mention that the Streetlight data are not total trips but a sample which gives an idea of trip proportionality between zones.

ORIGIN DESTINATION TRIP ANALYSIS

The 2018 Streetlight Data Analysis produced a matrix of various type of trips between each origin and destination TAZ. Four types of trip attributes were exported from the Streetlight Data:

Trip Duration: This is the trip time summarized into minute bins between the origin zone and the destination zone.

Trip Length: This is the trip length in miles starting at the origin zone and ending ad the destination zone. Once again, they are split into bins ranging from one mile to five miles.

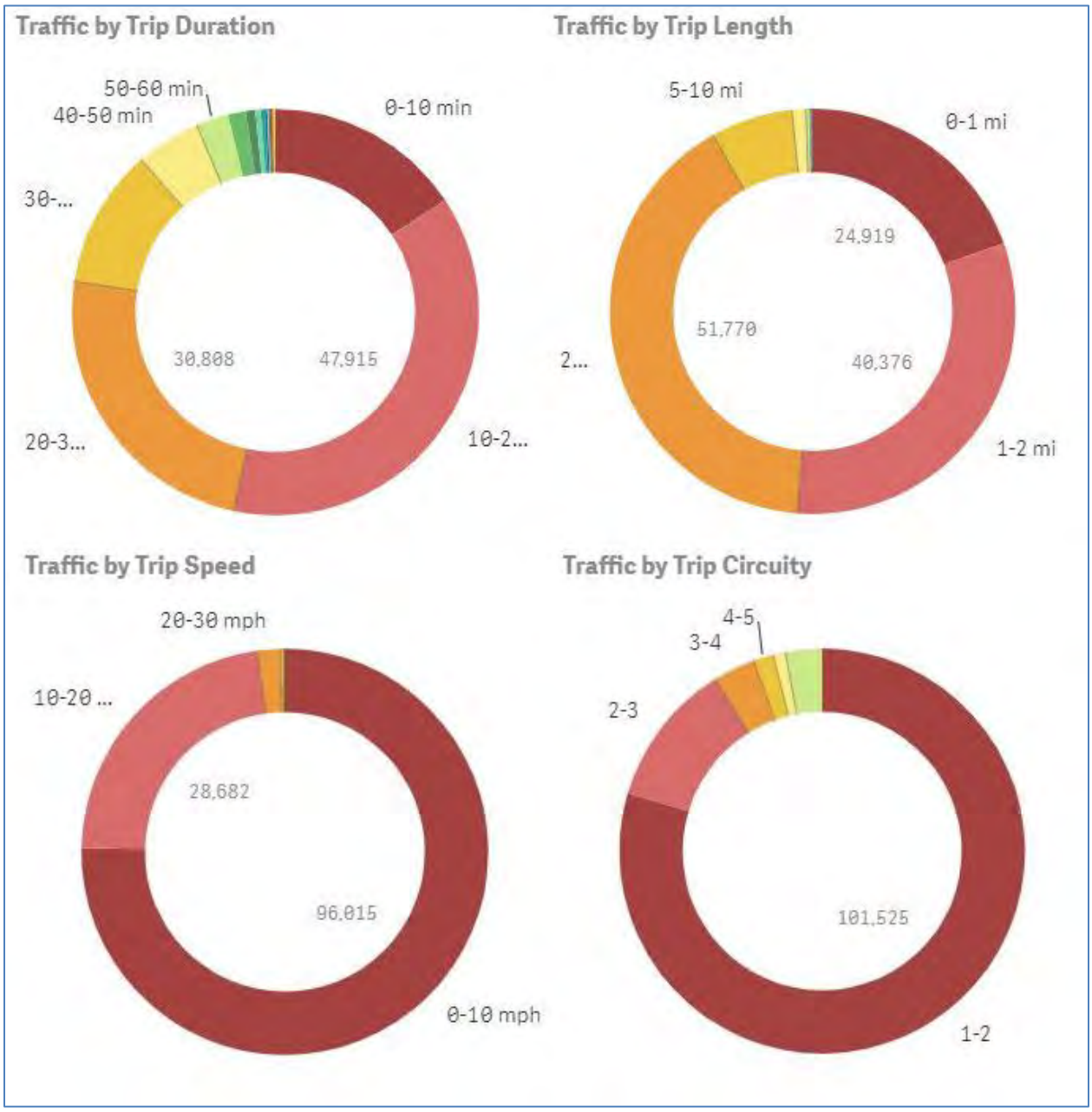
Trip Speed: This is the average speed in mph per trip starting at the origin zone and ending at a destination zone. These are split into bins of 10mph.

Trip Circuity: This is the ratio of the trip length to the direct distance between the end points of trips starting at an origin zone and ending at a destination zone. The lower the trip circuity, the more direct of a trip that was taken between the zones.

A total of **142,134** vehicle trips were collected by Streetlight during the entire time frame selected in 2018. The following figure shows various trip attributes for those vehicle trips.

[2] *All vehicles refers to automobiles, commercial trucks and buses*.

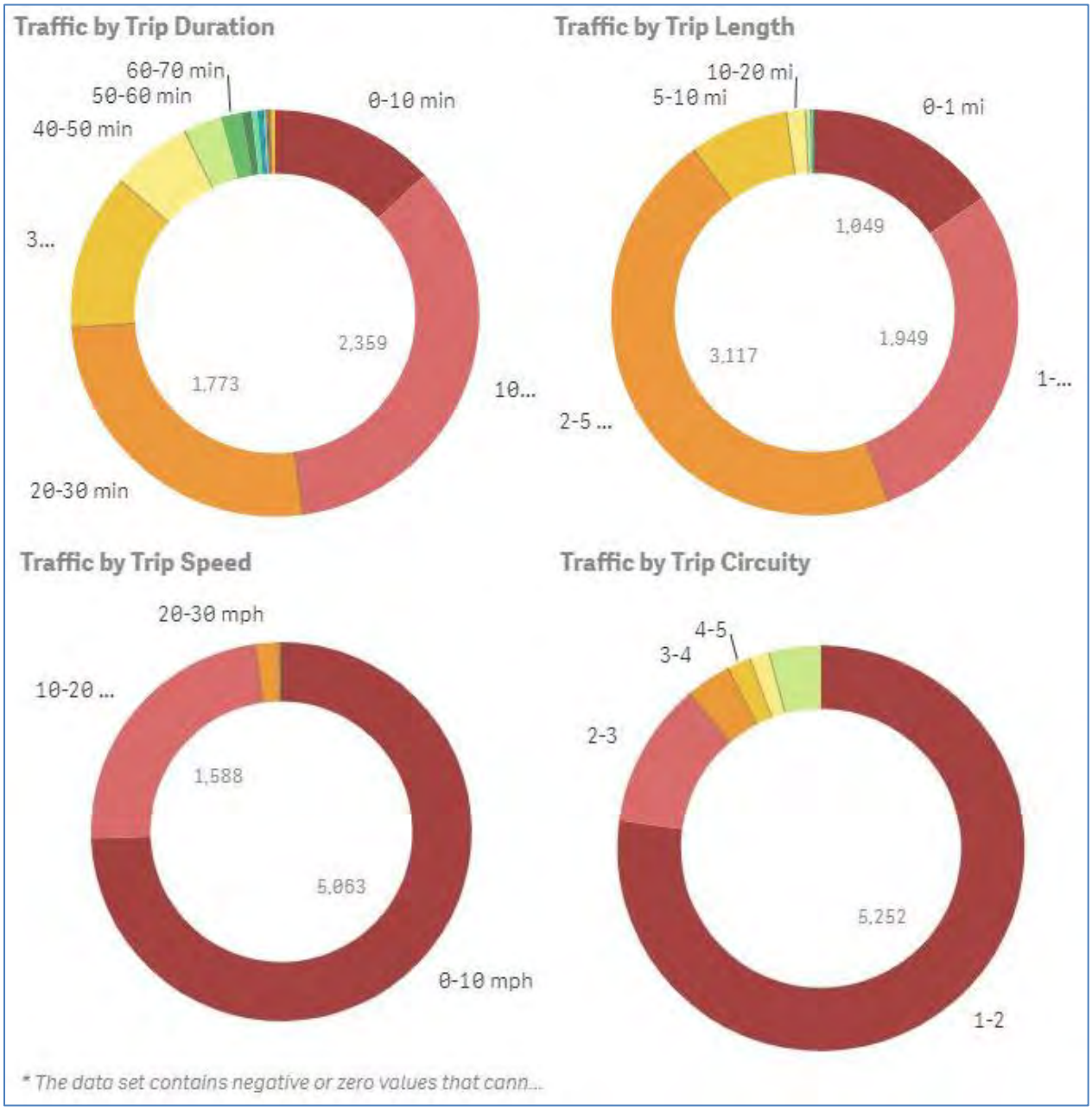
Figure 2: Trip Attributes for Daily All Vehicle Analysis (2018)



A majority of the trips made between the 78 TAZs were under 20 minutes and were within two miles in length. Most trips averaged less than 10mph even when accomplished by a vehicle.

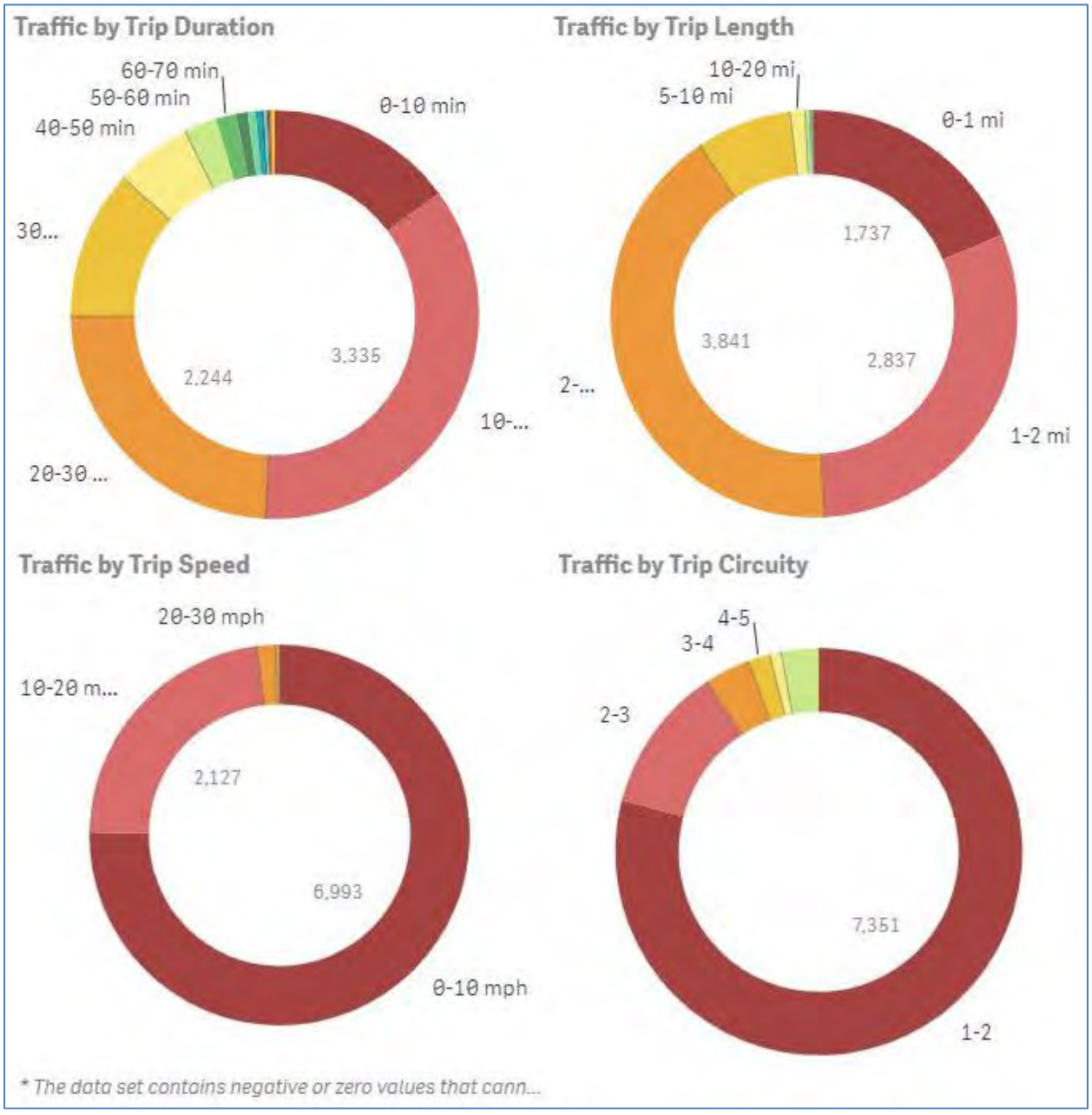
The following figures shows trip attributes for all vehicles in the 2018 analysis in the AM peak hour (8am-9am) and the PM peak hour (5pm-6pm) time periods.

Figure 3: Trip Attributes for AM Peak Hour All Vehicle Analysis (2018)



In AM Peak hour a total of **9,991** trips were collected by Streetlight, made by all vehicles. Once again, a large majority of the trips were within five miles and were under 20 mph. Most of these trips took less than 30 minutes to complete.

Figure 4: Trip Attributes for PM Peak Hour All Vehicle Analysis (2018)



In PM Peak hour total **13,022** trips were collected by Streetlight, made by all vehicles. Once again, a large majority of the trips were within five miles and were under 20 mph. Most of these trips took less than 30 minutes to complete.

For the Bike analysis portion of the study, a total of **21,560** trips were captured by Streetlight during the time period observed from the Streetlight Data. The following figure shows trip attributes for bike only trips between the 78 study TAZs for all time periods (daily).

Figure 5: Trip Attributes for Bicycle Only Analysis Daily Time Period (2018)

Similar to the all vehicles analysis, most bike trips were under five miles in length and were under 20 minutes in duration. Over 75% of the trips made on a bicycle had a trip circuity of one to two, meaning that bike trips were mainly made on a direct route basis.

For the Pedestrian analysis portion of the study, a total of **475,474** trips were captured during the time period observed from the Streetlight Data. The following figures show trip attributes for pedestrian only trips between the 78 study TAZs for all time periods.

Figure 6: Trip Attributes for Pedestrian Only Analysis Daily Time Period (2018)

Similar to the bike analysis, most pedestrian trips were under five miles in length. In addition, all pedestrian trips were under 10mph, as to be expected. However, the trip duration varied widely, with some trips taking upwards 30 to 50 minutes to complete.

ORIGIN DESTINATION TRAVELER ANALYSIS

Four types of traveler attributes were exported from the Streetlight Data:

Household Income: This represents what household income bracket the travelers are in.

Education: This represents the highest education level of travelers over the age of 25.

Race: This represents the self-identified race of travelers.

Family Status: This represents the household family status of travelers.

The following figures detail the percentage breakdowns of traveler attributes for daily all vehicles, daily bicycles, and daily pedestrian trips.

Figure 7: Traveler Attributes for Daily All Vehicle Analysis (2018)

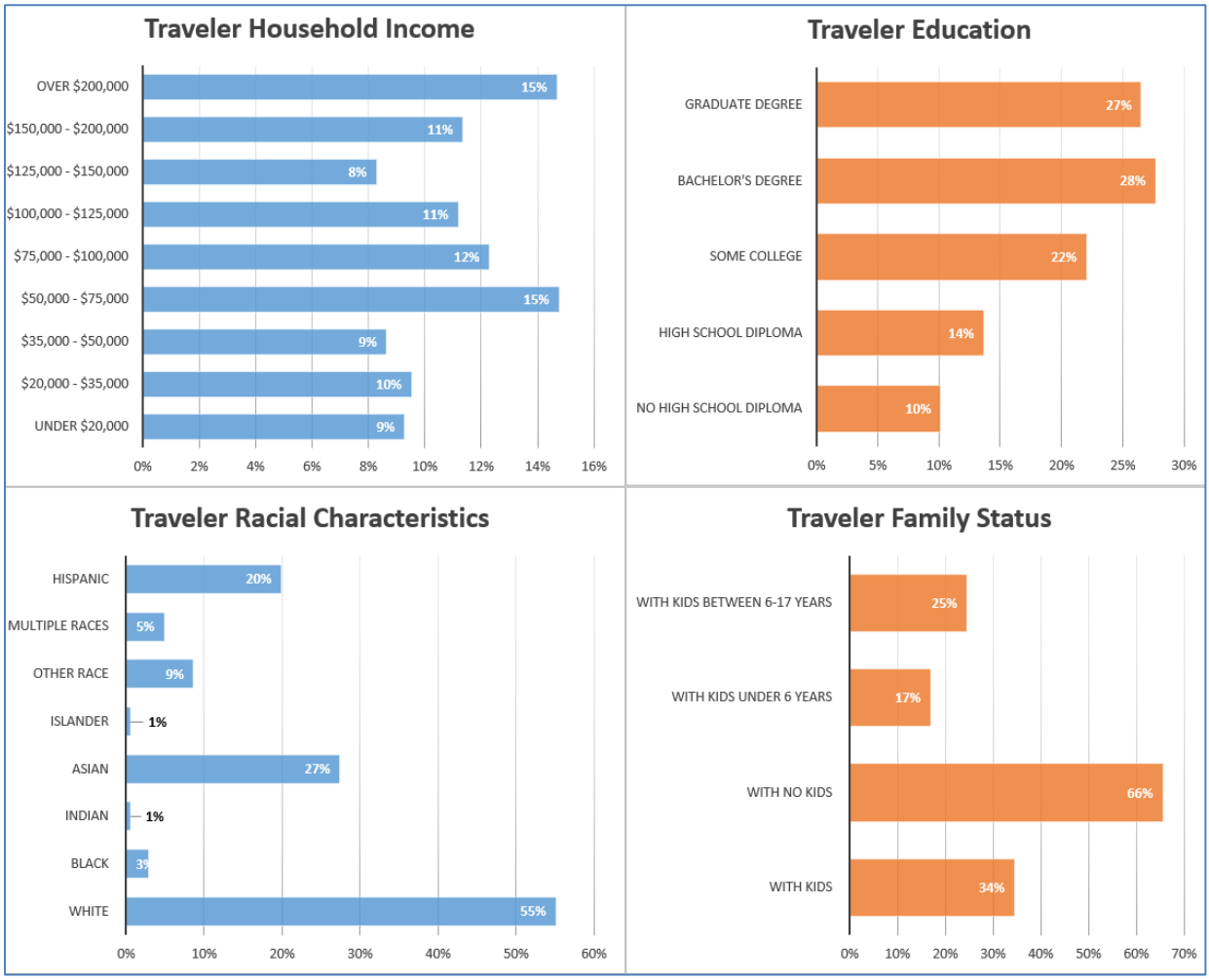


Figure 8: Traveler Attributes for Bicycle Only Analysis Daily Time Period (2018)

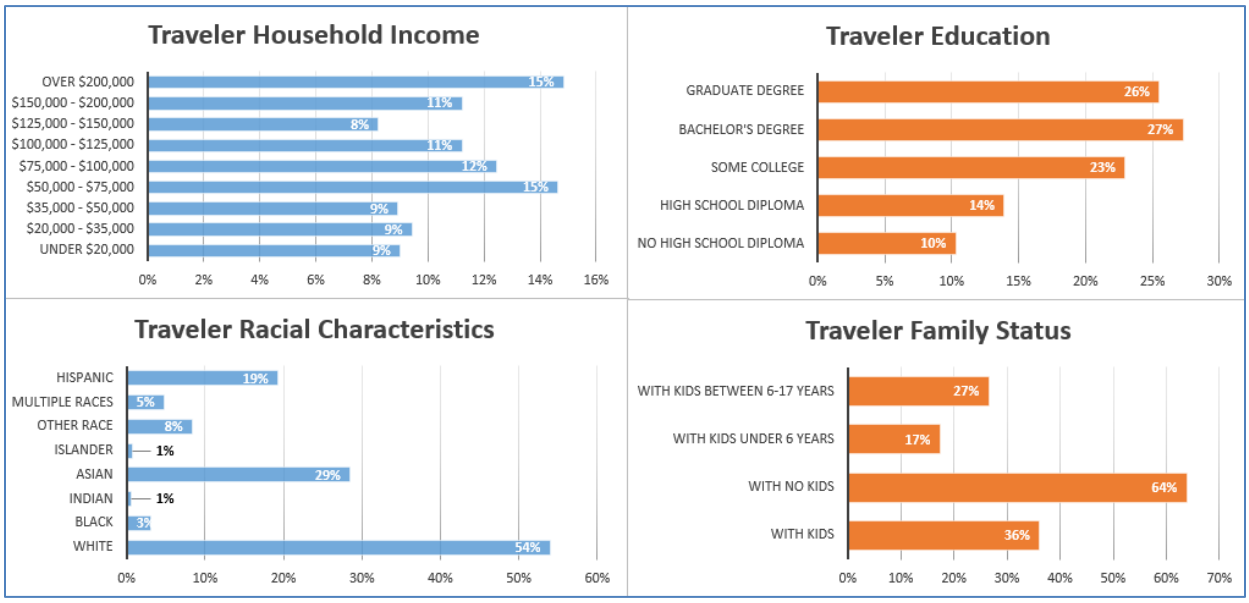
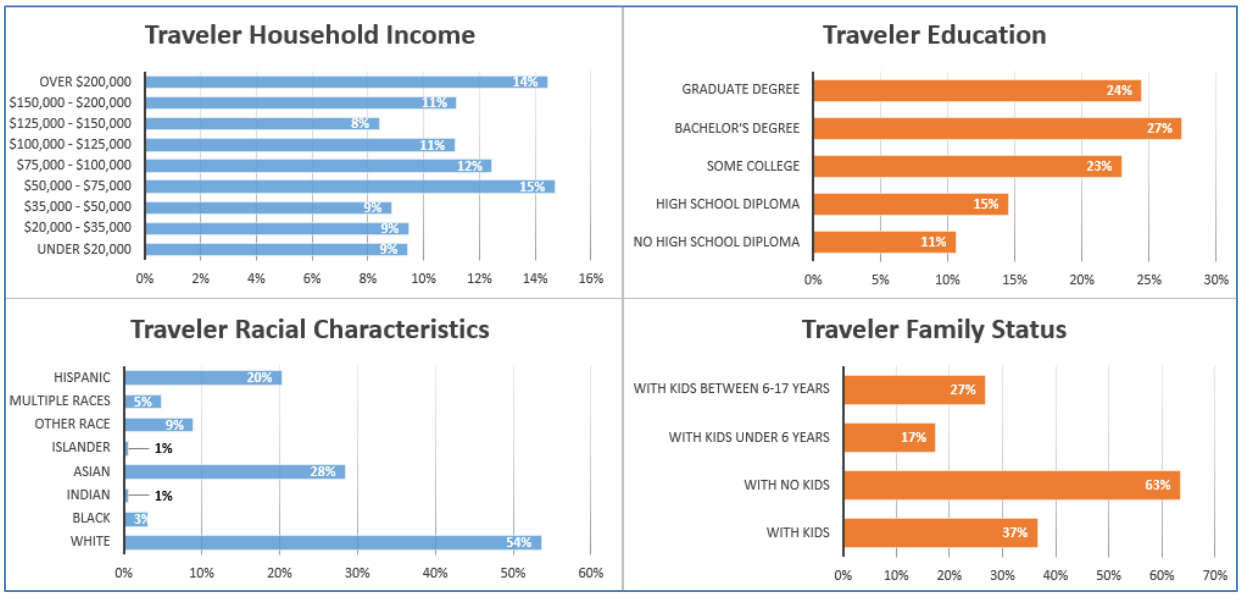


Figure 9: Traveler Attributes for Pedestrian Only Analysis Daily Time Period (2018)



The traveler attributes are very similar across all four categories for the three different types of travel modes.

ORIGIN DESTINATION VISUM ANALYSIS

The 2018 Streetlight Analysis produced a matrix of various type of trips between each origin and destination TAZ. The data table produced was placed in a VISUM (travel demand modeling) analysis to determine the volume flow of trips made between the 78 origin and destination TAZs for all vehicles, bicyclists, and pedestrians.

The following figures shows the daily volume flows for all vehicles captured by Streetlight between the 78 TAZs. In addition, the TAZ boundaries are shown, along with locations of notable transit stops. For daily volumes, the scale on the map is set in ranges starting from 0 to 100 and all the way to over 4,000.

Additional peak hour figures for all vehicle volume flows from VISUM are included for comparison purposes. For peak hour maps, the scale of the map is set between zero to over 500.

The AM and PM peak hour vehicle trip volumes are substantial, and most trips are made around major transit hubs (such as the downtown Caltrain station), major employment centers such as Google, and major shopping/retail areas such as the San Antonio Center.

Figure 10: Origin-Destination (Daily, Weekday, All Vehicles 2018)

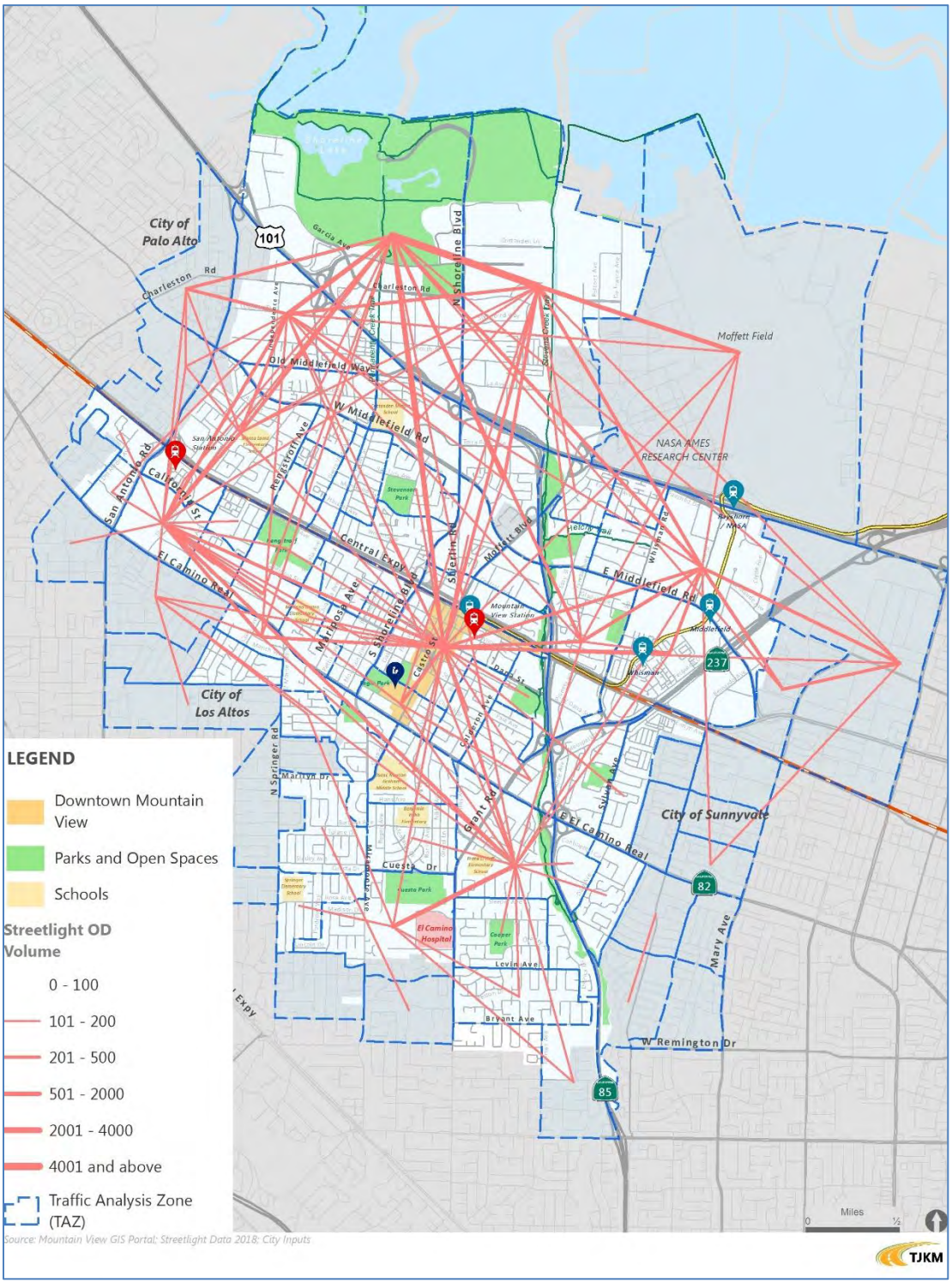


Figure 11: Origin Destination (AM Peak Hour 8am-9am, Weekday, All Vehicles 2018)

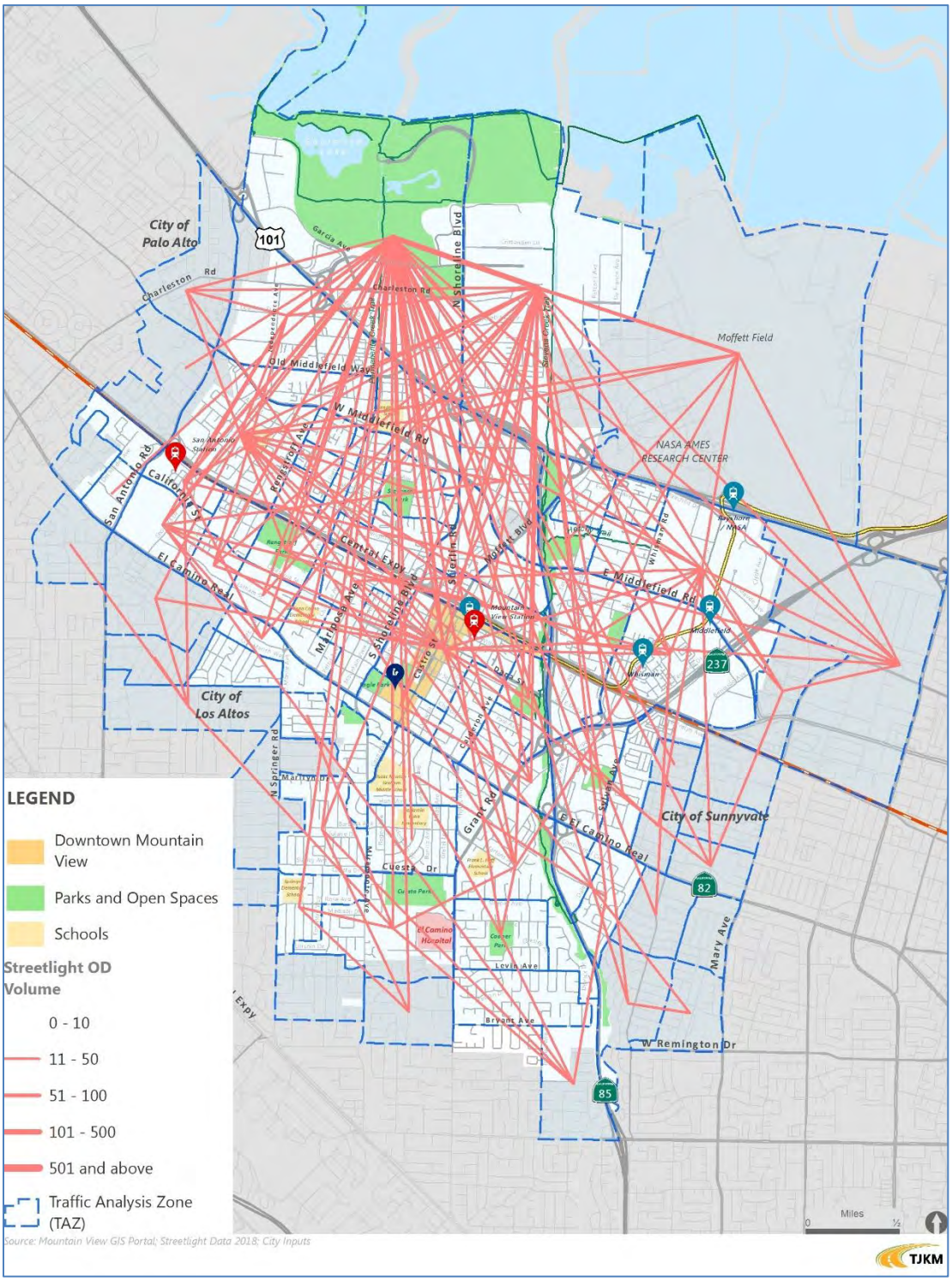
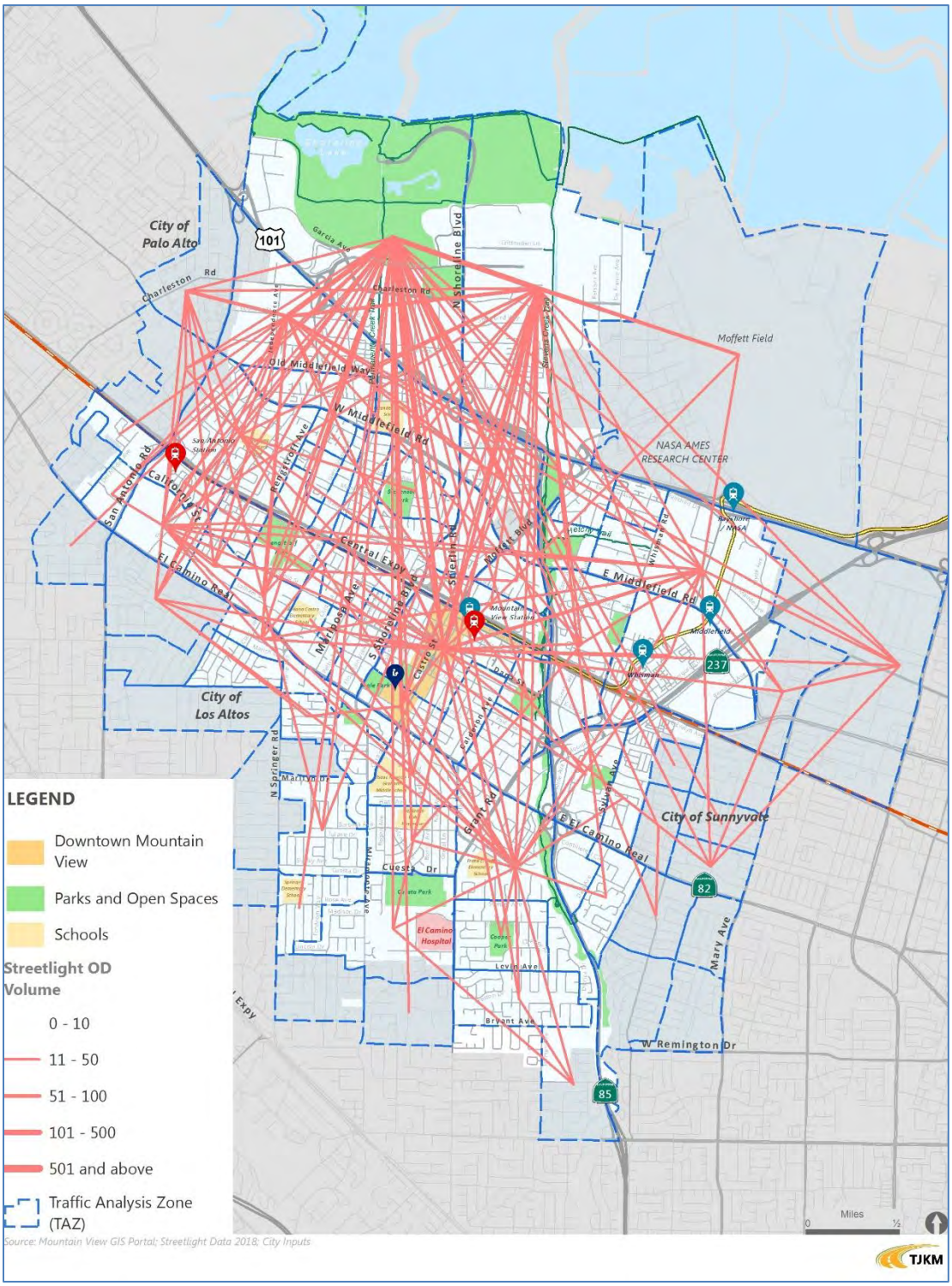


Figure 12: Origin Destination (PM Peak Hour 5pm-6pm, Weekday, All Vehicles 2018)



The following figures shows the daily volume flows for bicycle trips and pedestrian trips captured by Streetlight between the 78 TAZs.

Figure 13: Origin Destination (Daily, Weekday, Bicycles Only)

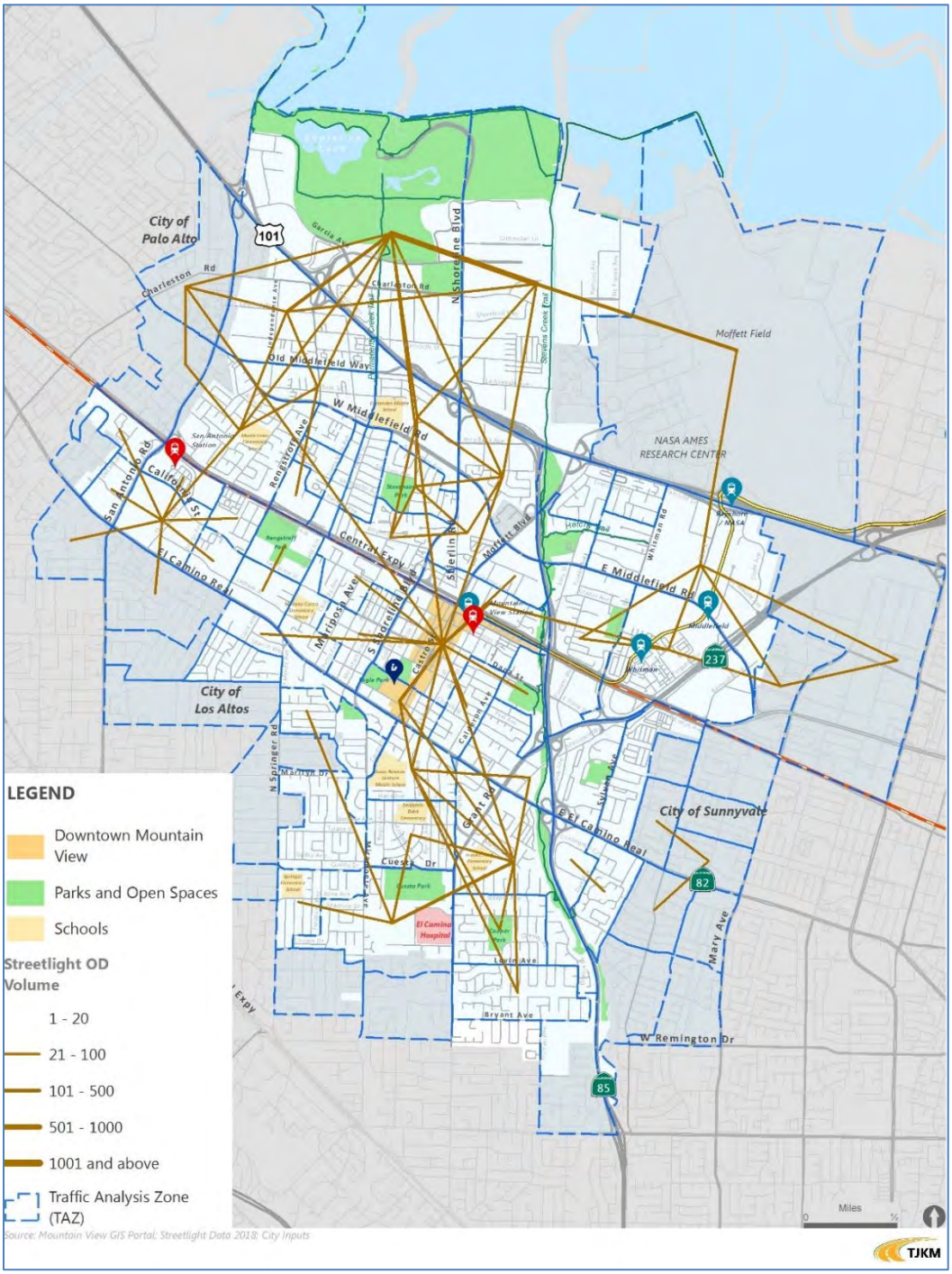
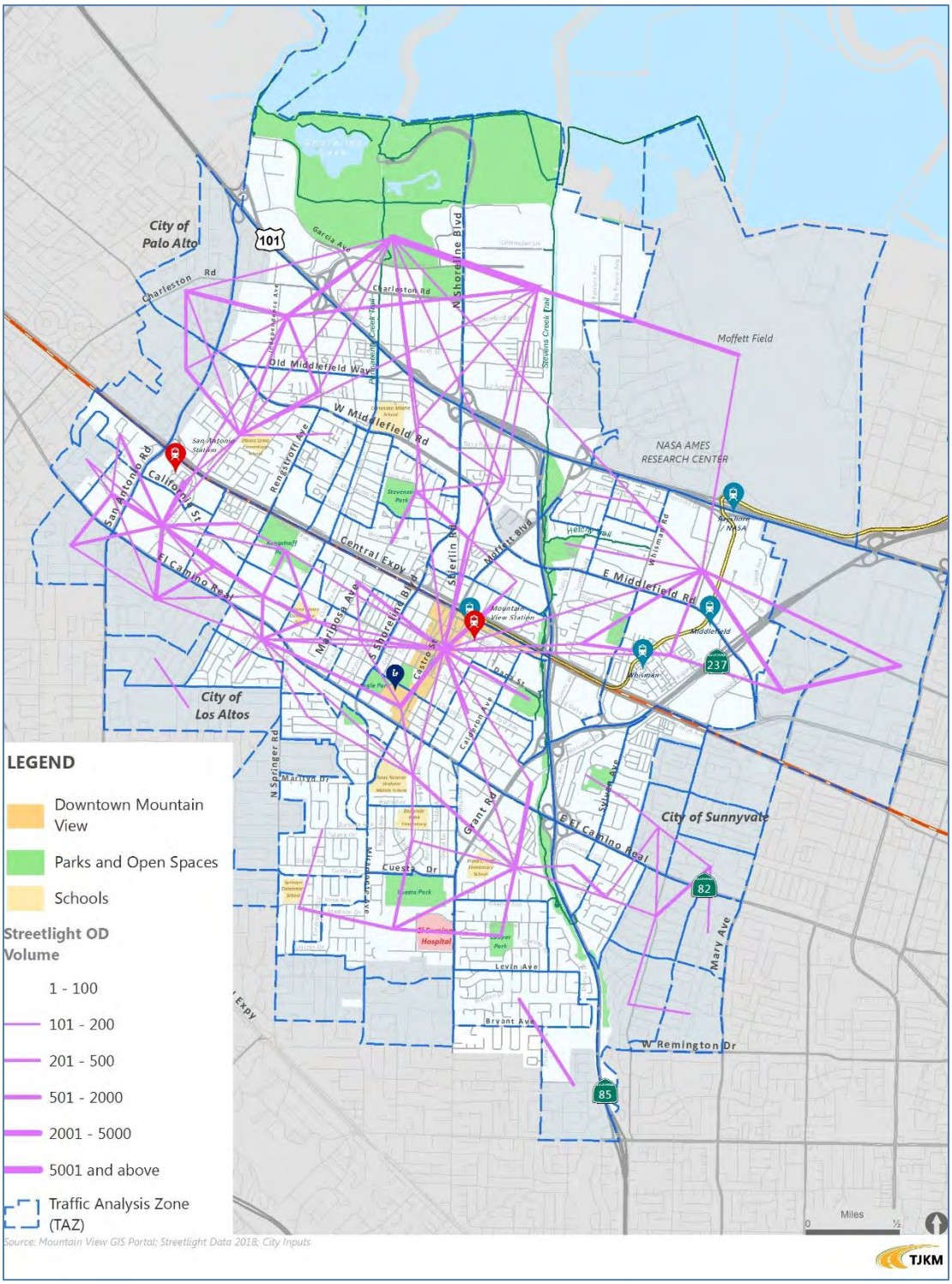


Figure 14: Origin Destination (Daily, Weekday, Pedestrians Only)



The bicycle and pedestrian trips are much more spread out when compared to the vehicular trips. However, these types of trips are still concentrated on major transit centers, major employment centers, and major retail/service centers.

CONCLUSIONS

From the Streetlight O-D analysis, the following determinations can be made:

1. Length of trips, even when made with a personal vehicle within the City of Mountain View on the average is under five miles.
2. Travel time for trips made by vehicles between the 78 TAZs on the average is under 20 minutes per trip.
3. Speed of trips made by vehicles between the 78 TAZs on the average is under 20 miles per hour.
4. A large number of daily trips had a circuity count of two, which means the trip used a direct route between TAZs.

These attributes (under five miles, 20 minutes per trip, 20 miles per hour speed) are ripe conditions for expansion of the Citywide Shuttle Service. Bus transit works best when they are of a certain length and frequency. For example, the *Transit Capacity and Quality of Service Manual* published by the Transportation Research Board specifies a headway maximum of 20 minutes in order to achieve a level of service C. In addition, a maximum transit travel time of 30 minutes also falls under the level of service C criteria. The O-D analysis shows that majority of trips made within the city meets both headway and travel time passing levels of service in regards to transit.

In addition, expansion of the shuttle service can better serve bicycle and pedestrian needs, as majority of those type of trips as shown in the O-D analysis also fall under the common criteria mentioned above which can be better served with extended shuttle services.

TJKM recommends expanding the Mountain View Community Shuttle Service from its current hours of 10am-6pm to 8am-8pm. By expanding the service, the shuttle will capture more demand in both the AM and PM time periods. In addition, the VISUM analysis show that popular destination zones are where most of the trips made are also where current shuttle stops are located. Extended service times will increase passenger satisfaction.

The following appendices include origin destination VISUM analysis maps showing volume flows by the hour within the 78 TAZs for comparison purposes. Bicycle and Pedestrian O-D flow maps are also included.

APPENDIX A: O-D VISUM ANALYSIS HOURLY MAPS ALL VEHICLES

Figure A-1: Origin-Destination (6am-7am, Weekday, All Vehicles 2018)

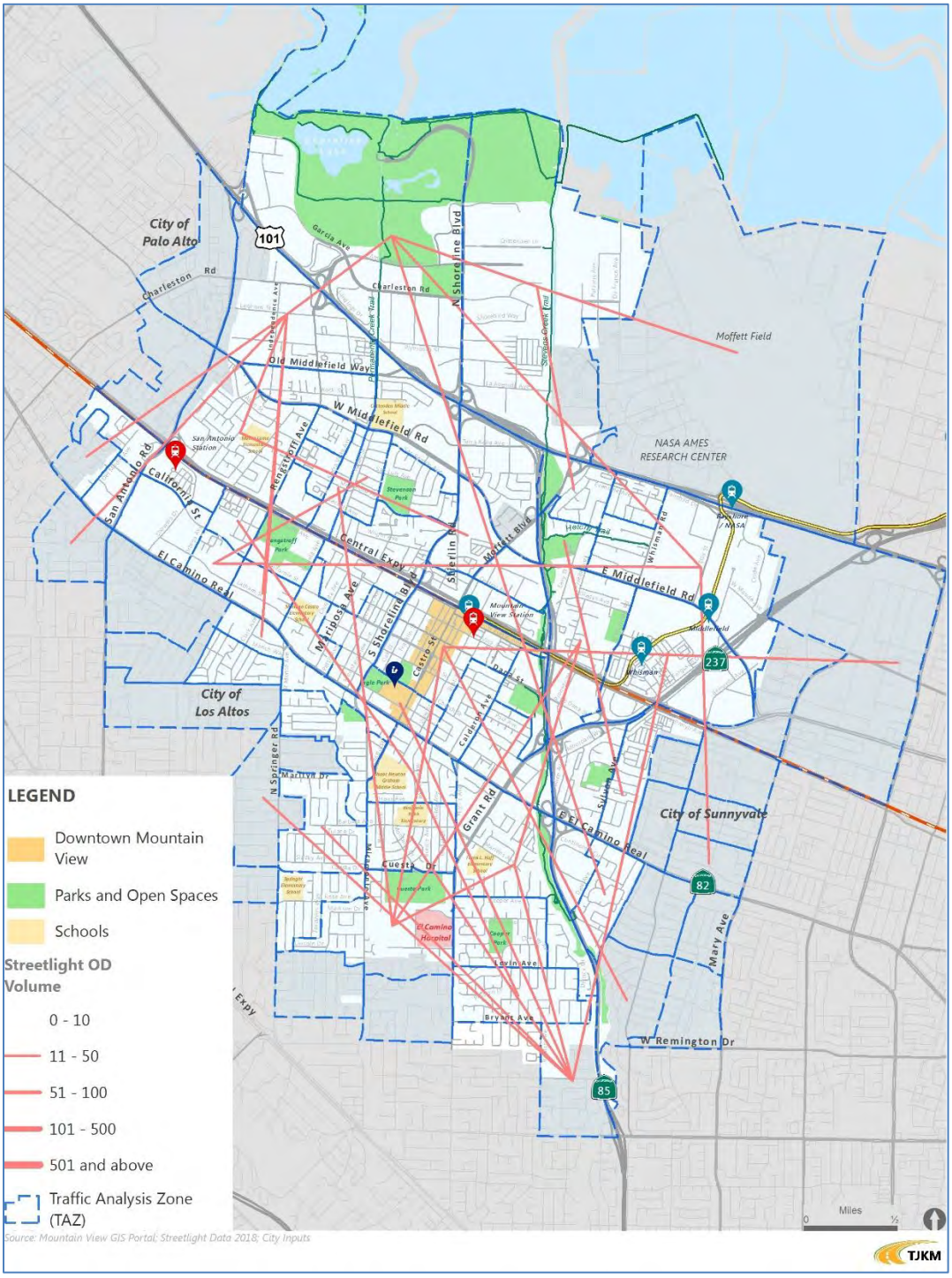


Figure A-2: Origin-Destination (7am-8am, Weekday, All Vehicles 2018)

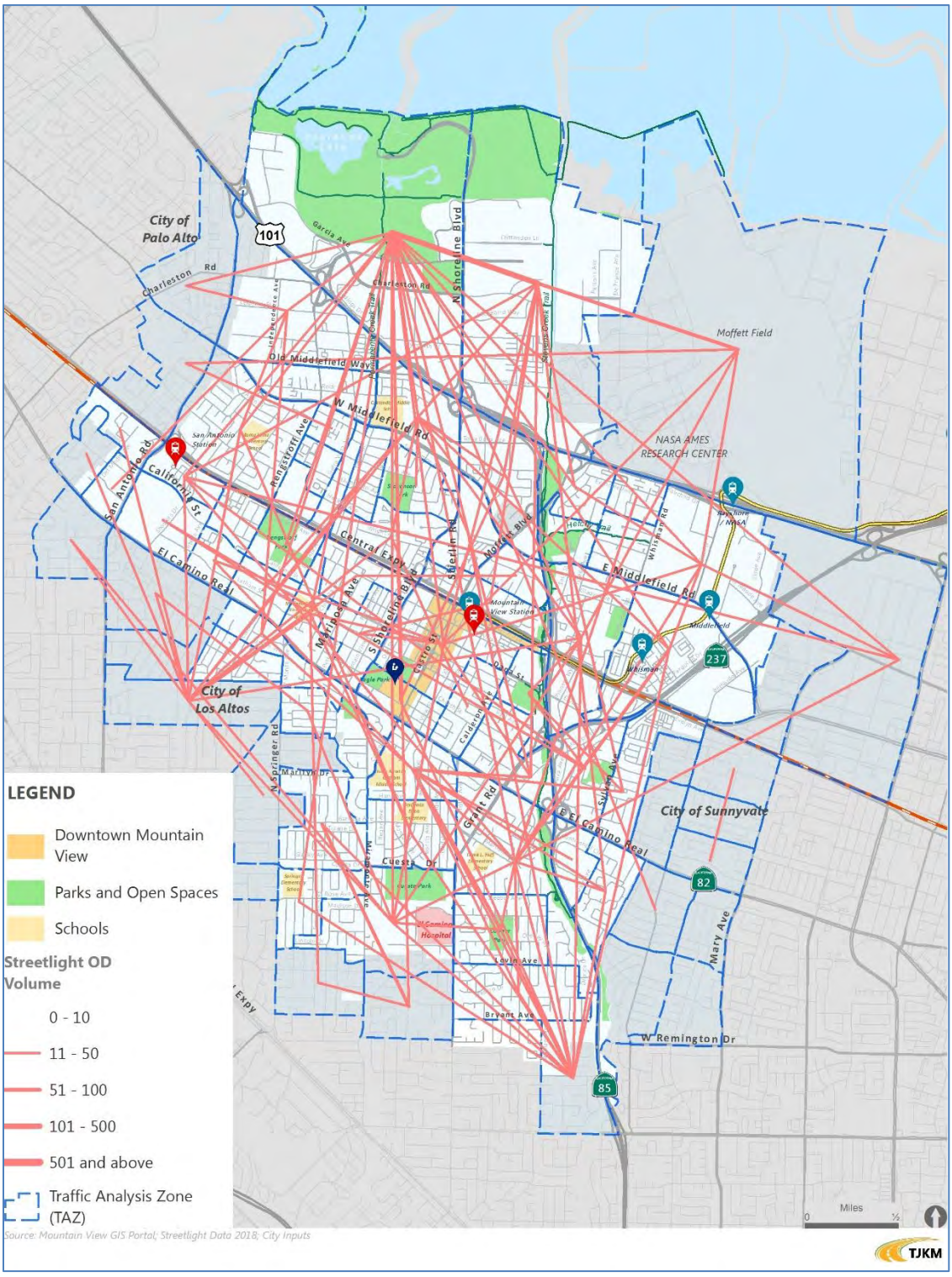


Figure A-3: Origin-Destination (8am-9am, Weekday, All Vehicles 2018)

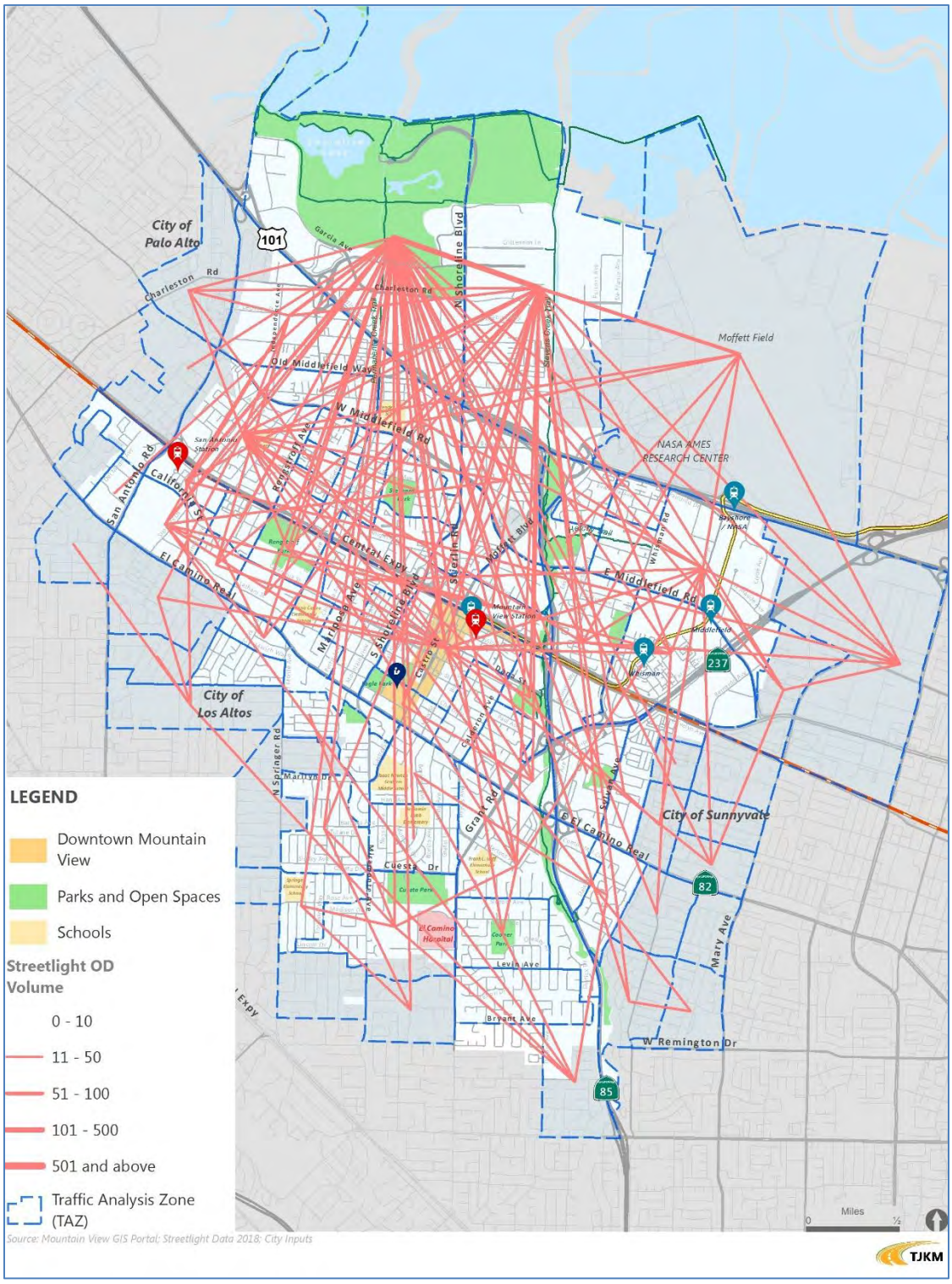


Figure A-4: Origin-Destination (9am-10am, Weekday, All Vehicles 2018)

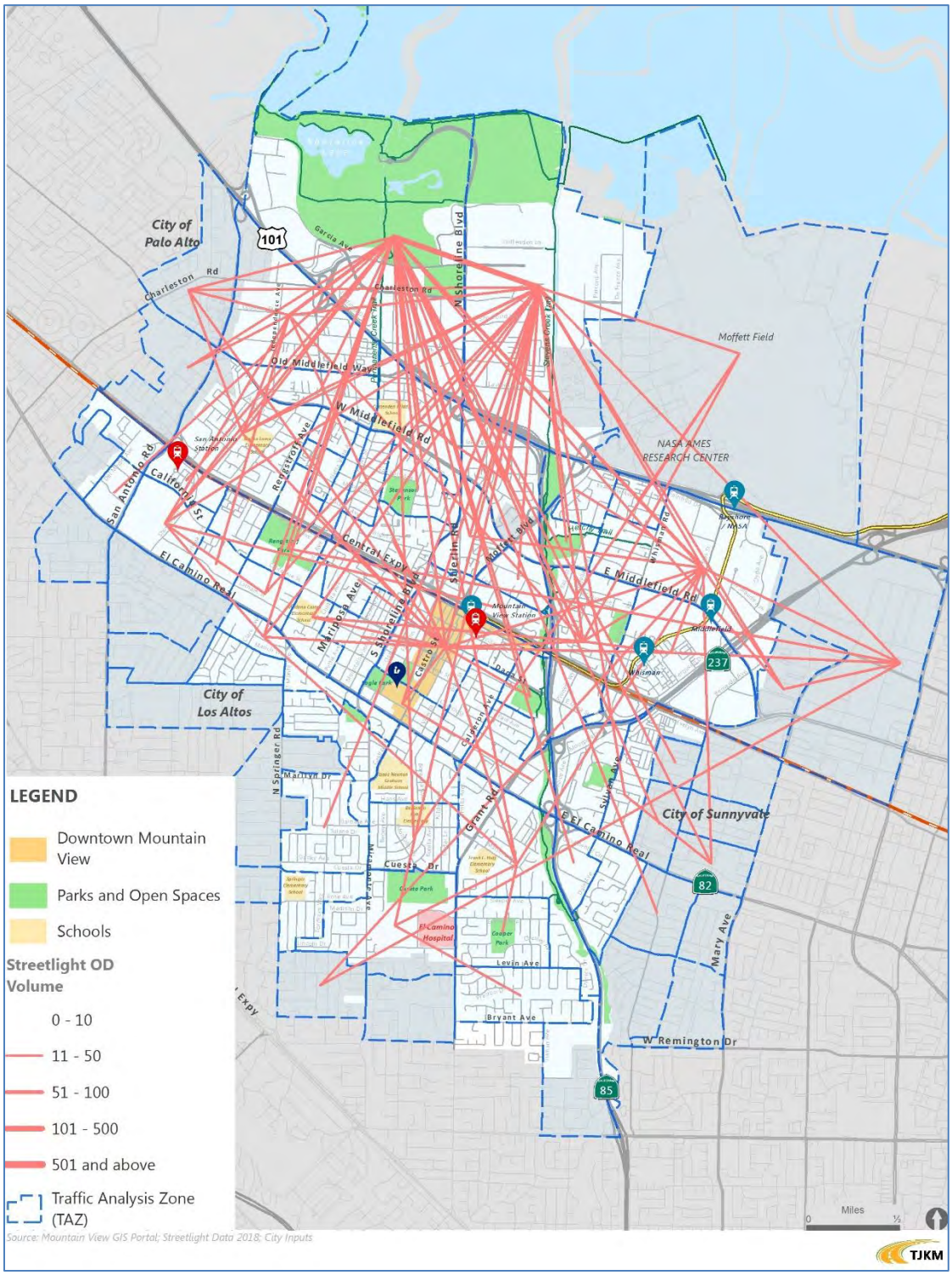


Figure A-5: Origin-Destination (10am-11am, Weekday, All Vehicles 2018)

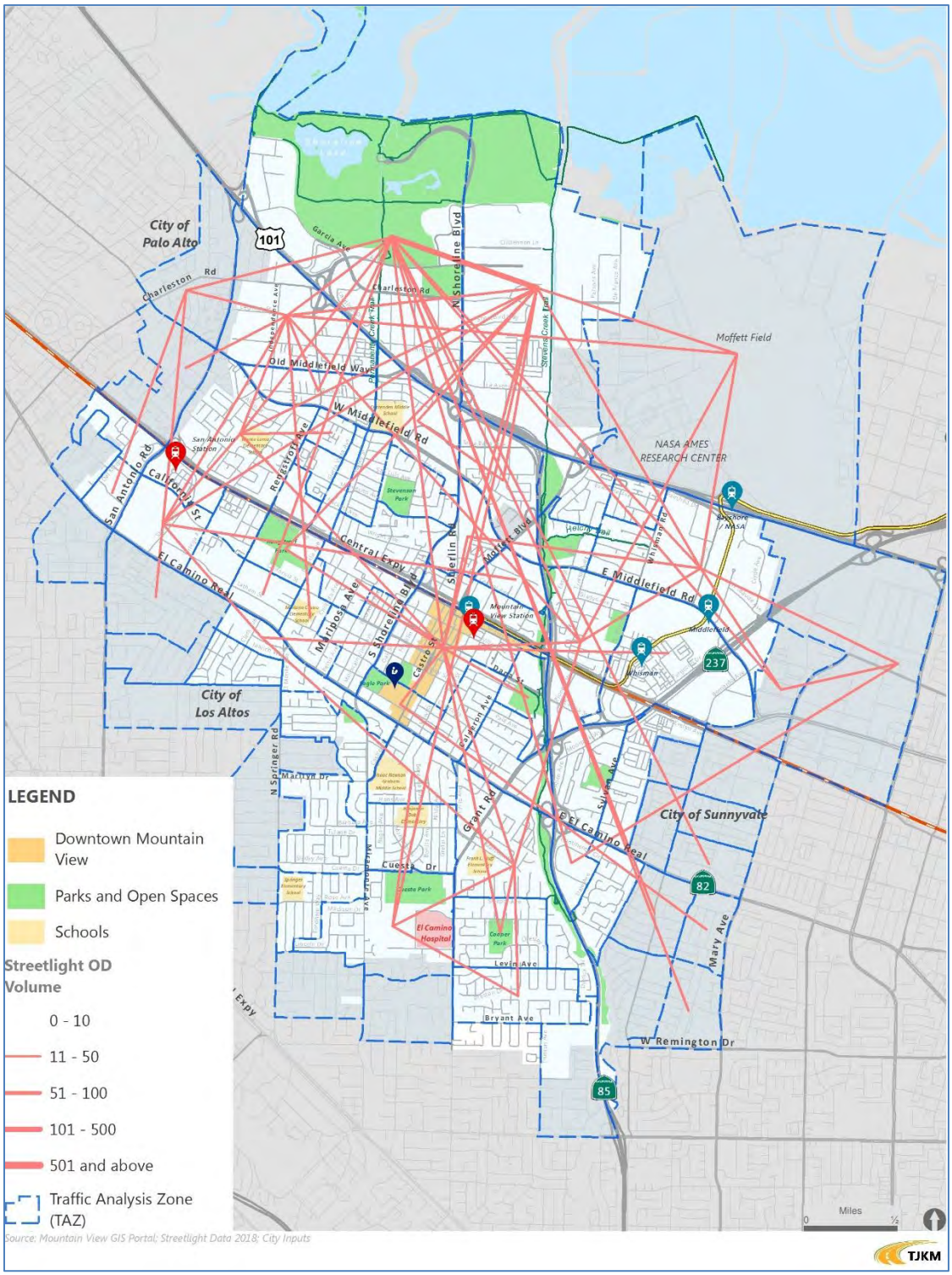


Figure A-6: Origin-Destination (11am-12pm, Weekday, All Vehicles 2018)

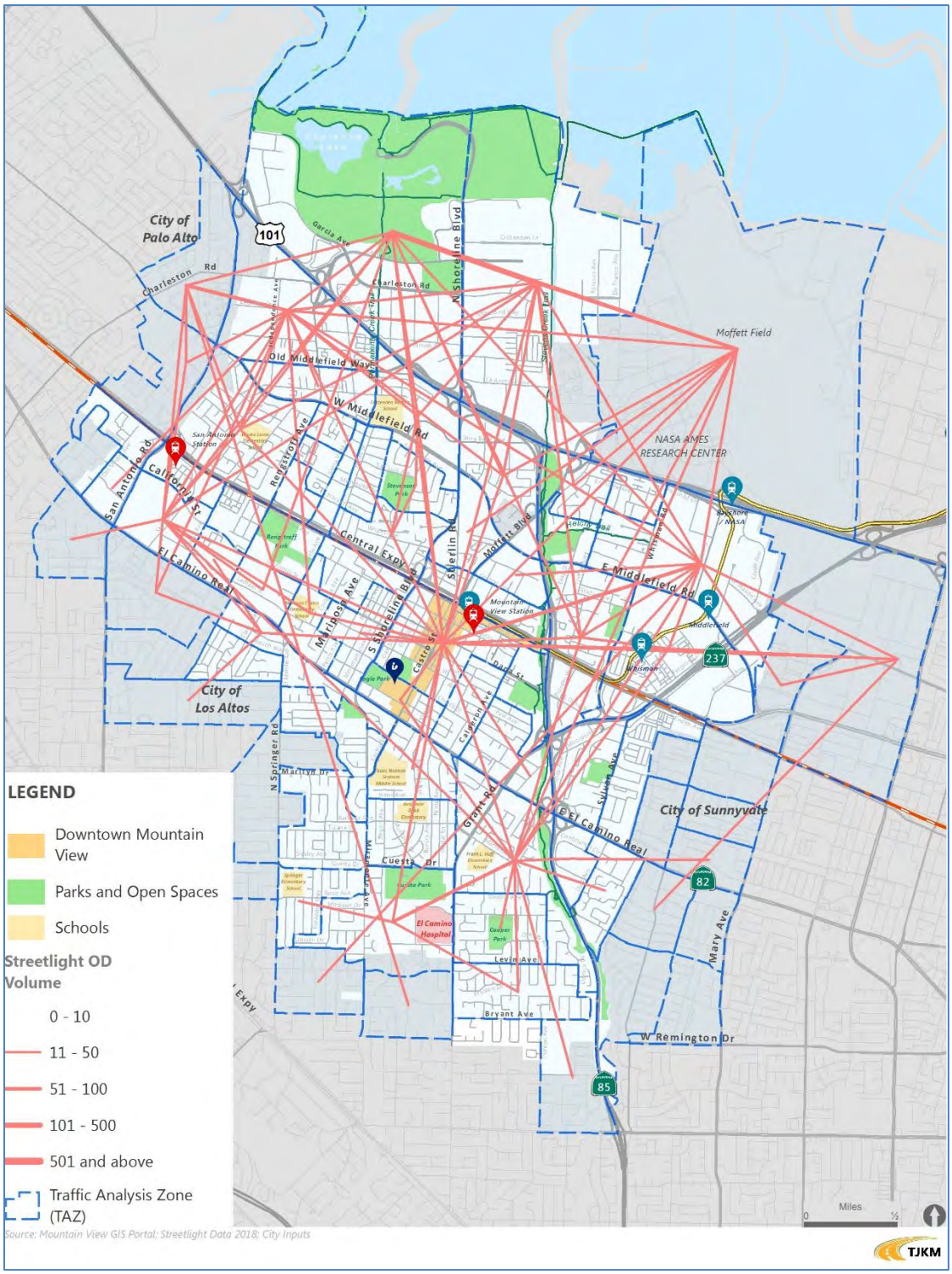


Figure A-7: Origin-Destination (12pm-1pm, Weekday, All Vehicles 2018)

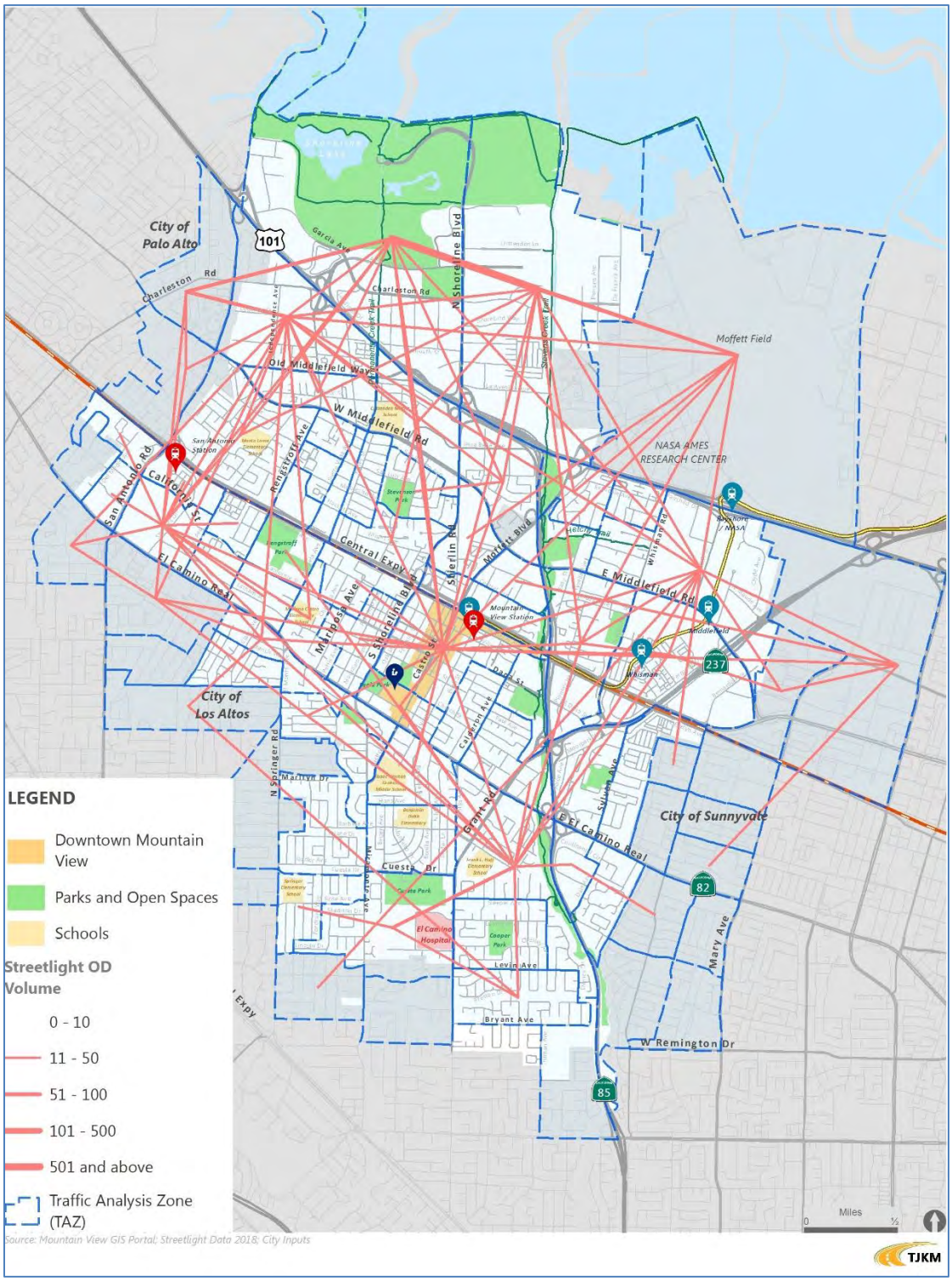


Figure A-8: Origin-Destination (1pm-2pm, Weekday, All Vehicles 2018)

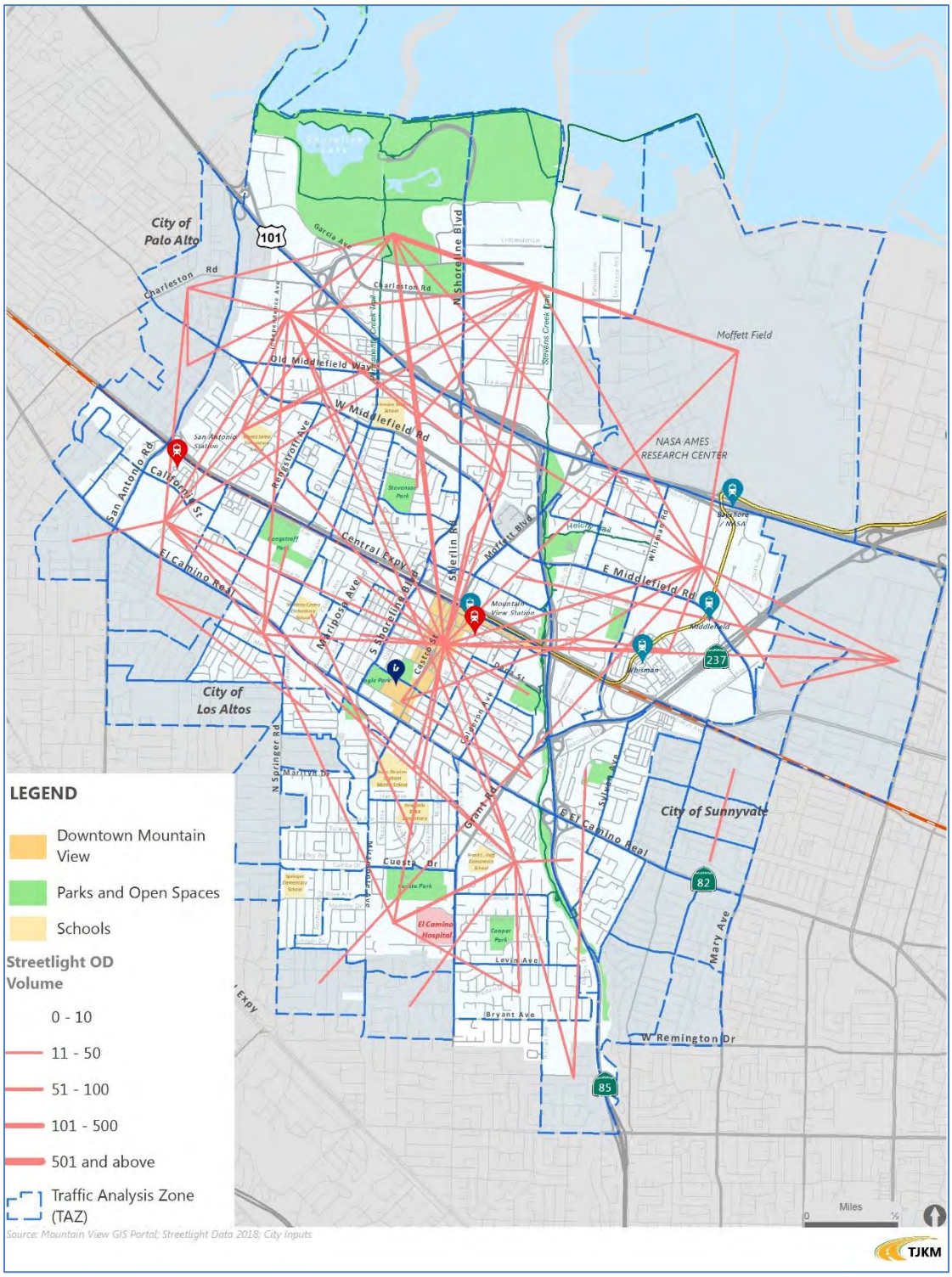


Figure A-9: Origin-Destination (2pm-3pm, Weekday, All Vehicles 2018)

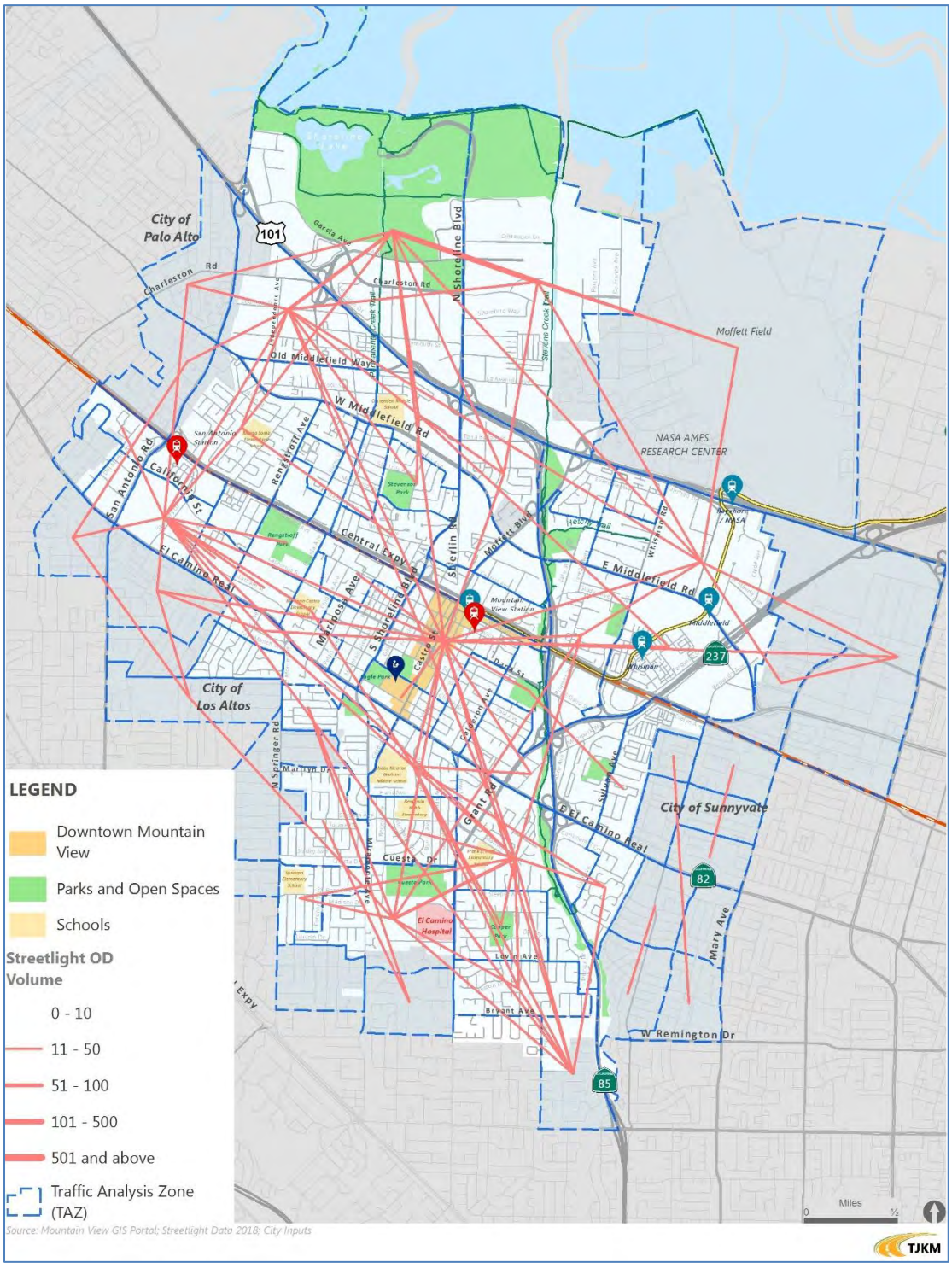


Figure A-10: Origin-Destination (3pm-4pm, Weekday, All Vehicles 2018)

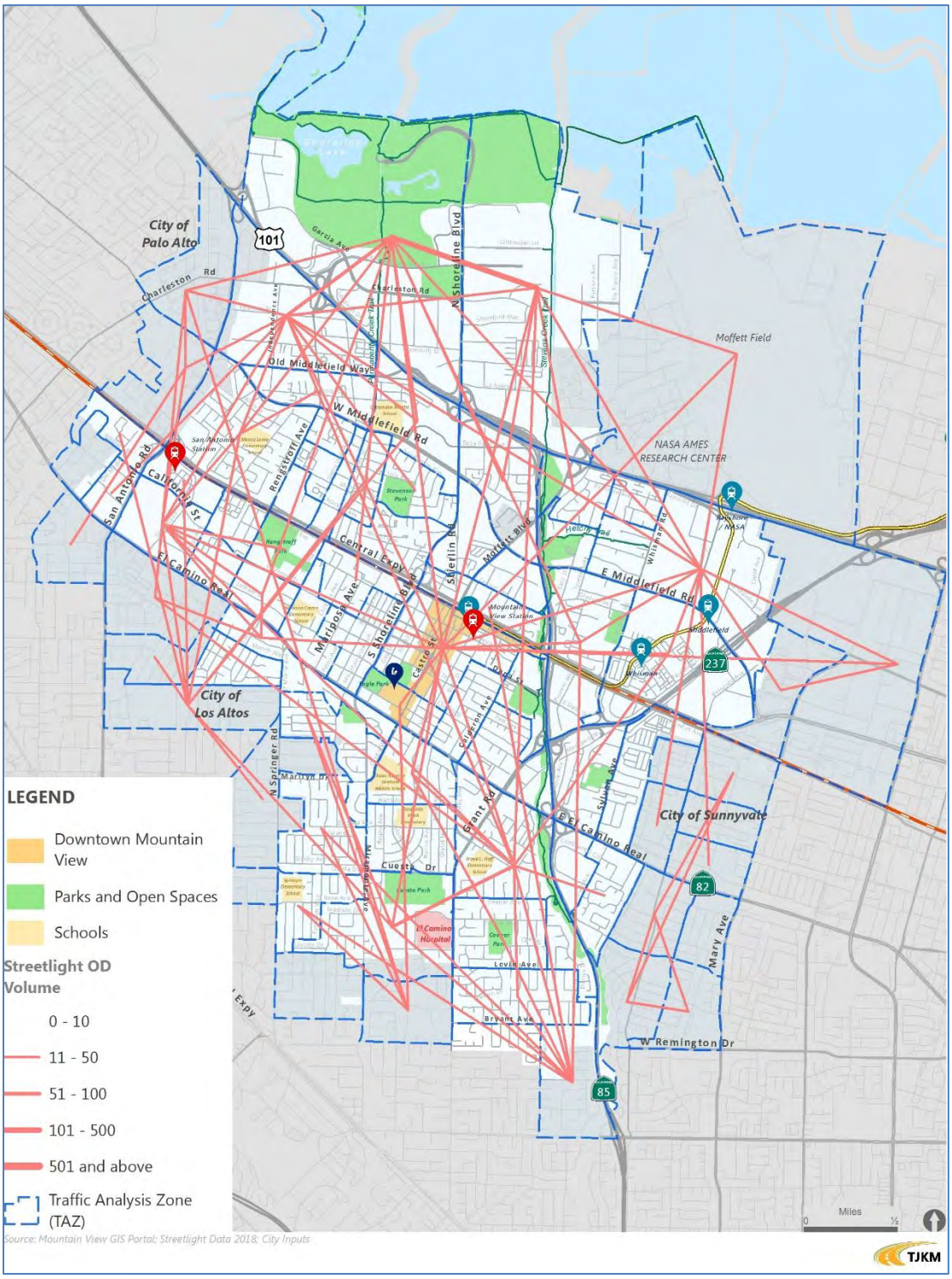


Figure A-11: Origin-Destination (4pm-5pm, Weekday, All Vehicles 2018)

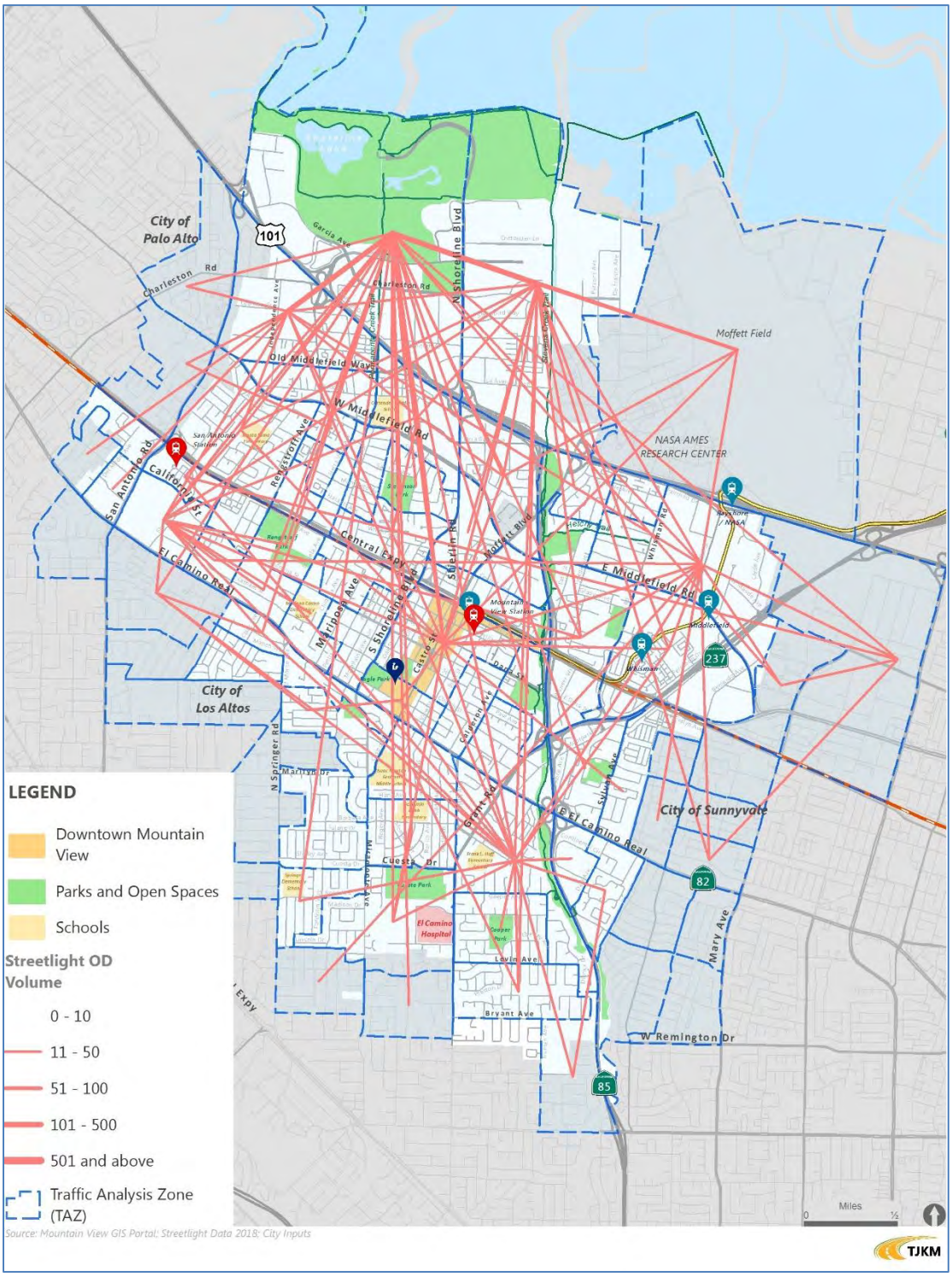


Figure A-12: Origin-Destination (5pm-6pm, Weekday, All Vehicles 2018)

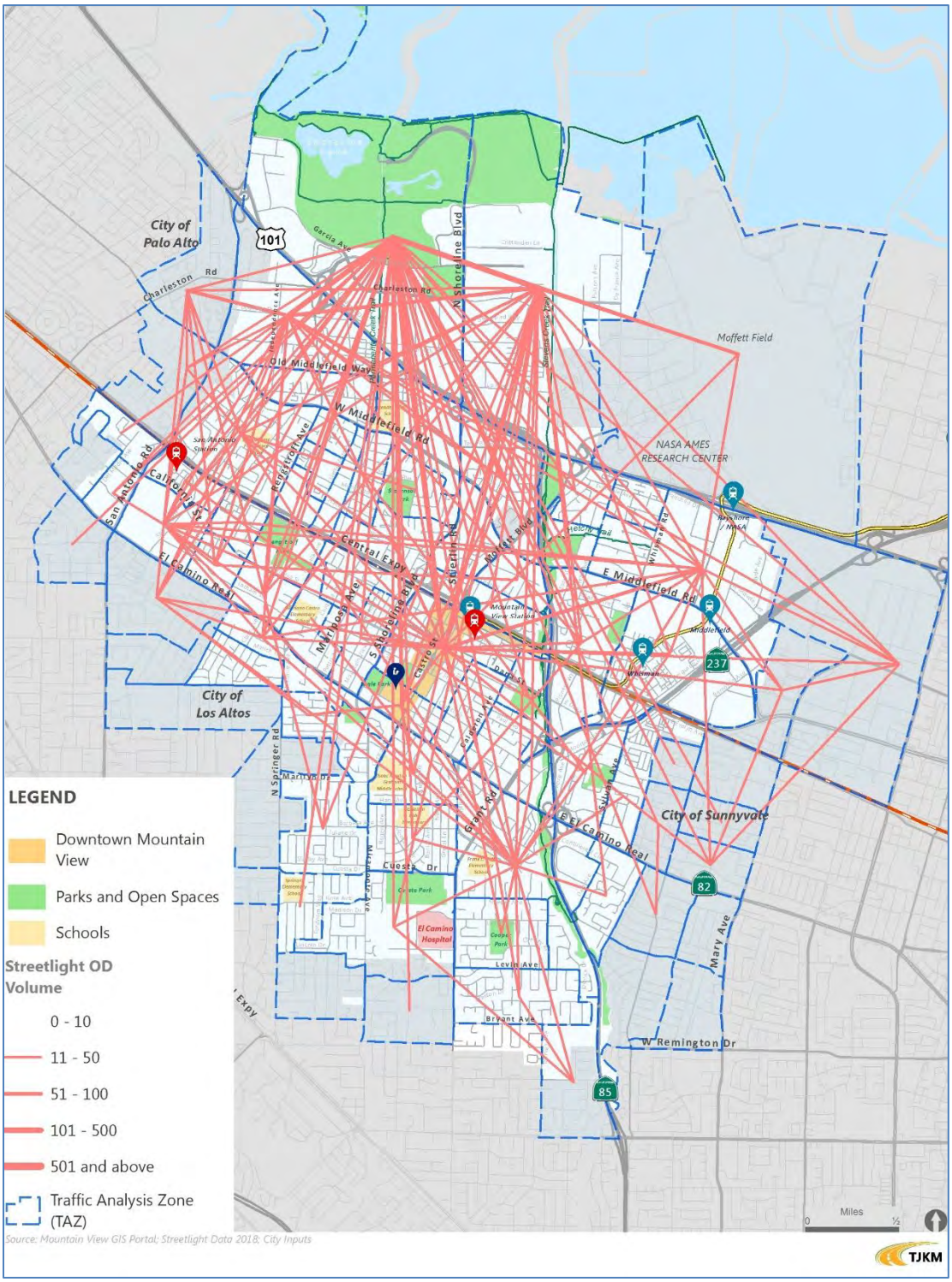


Figure A-13: Origin-Destination (6pm-7pm, Weekday, All Vehicles 2018)

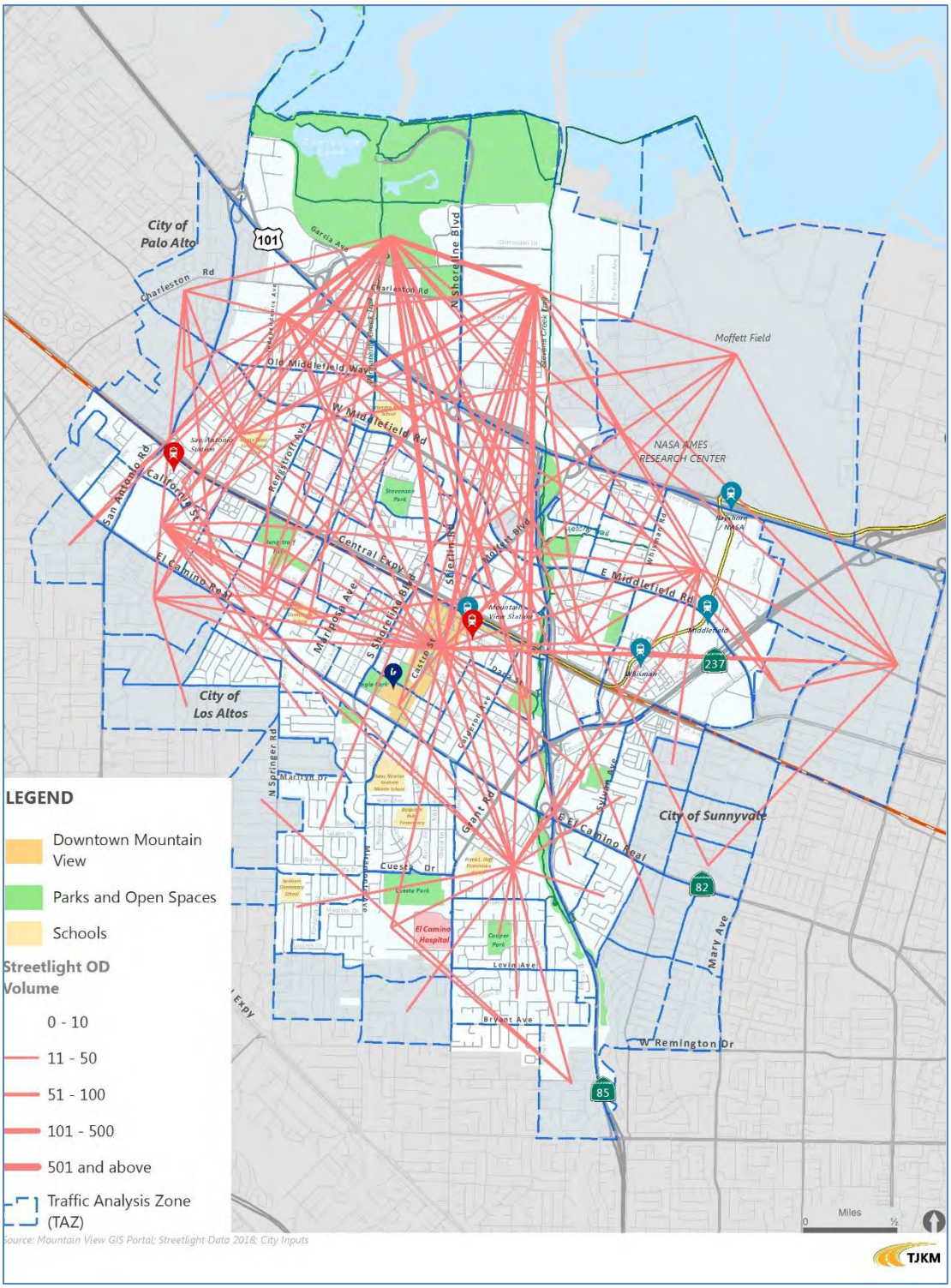


Figure A-14: Origin-Destination (7pm-8pm, Weekday, All Vehicles 2018)

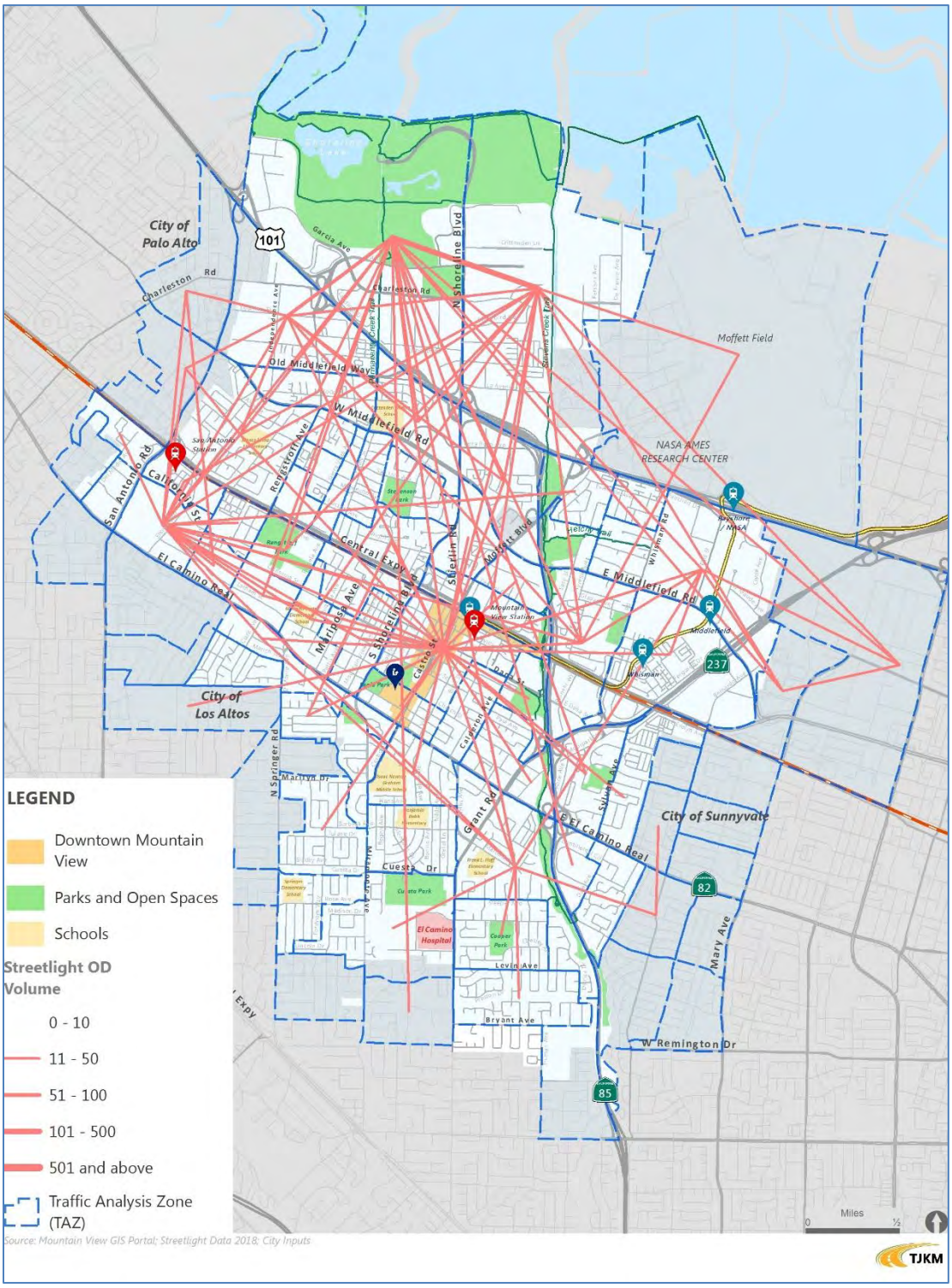


Figure A-15: Origin-Destination (8pm-9pm, Weekday, All Vehicles 2018)

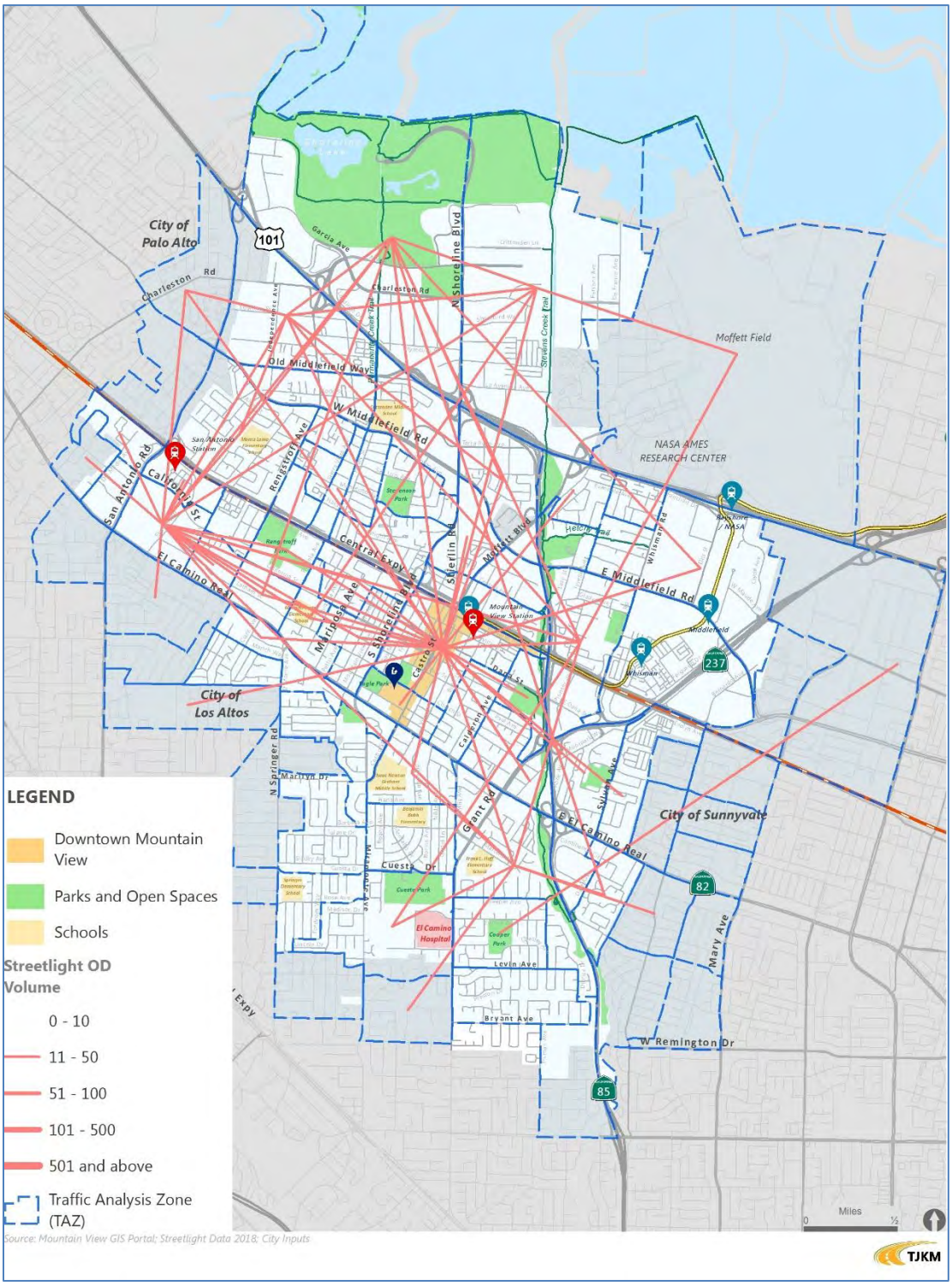
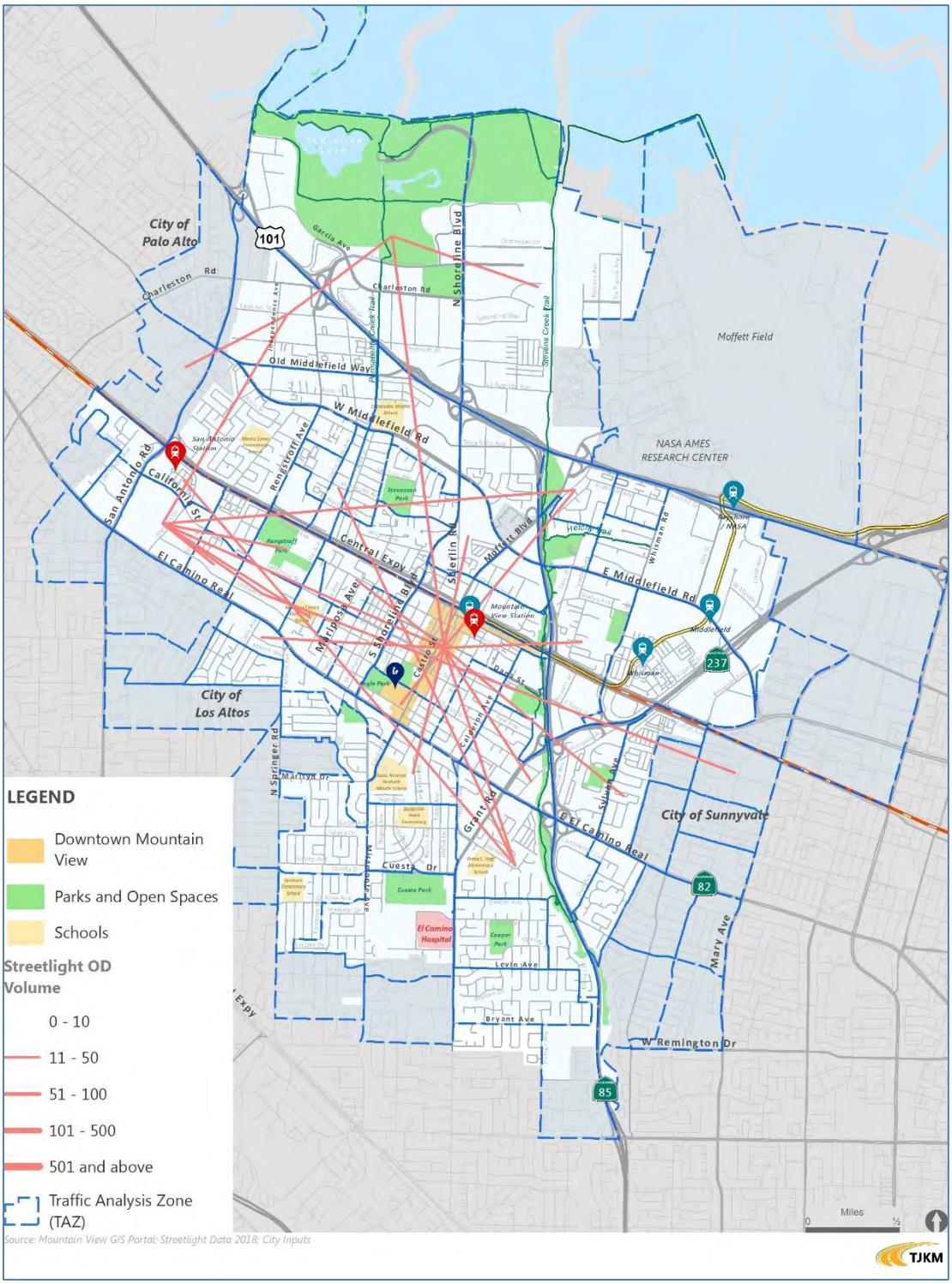


Figure A-16: Origin-Destination (9pm-10pm, Weekday, All Vehicles 2018)



APPENDIX B: O-D VISUM ANALYSIS HOURLY MAPS BICYCLES ONLY

Figure B-1: Origin-Destination (6am-7am, Weekday, Bicycles Only 2018)

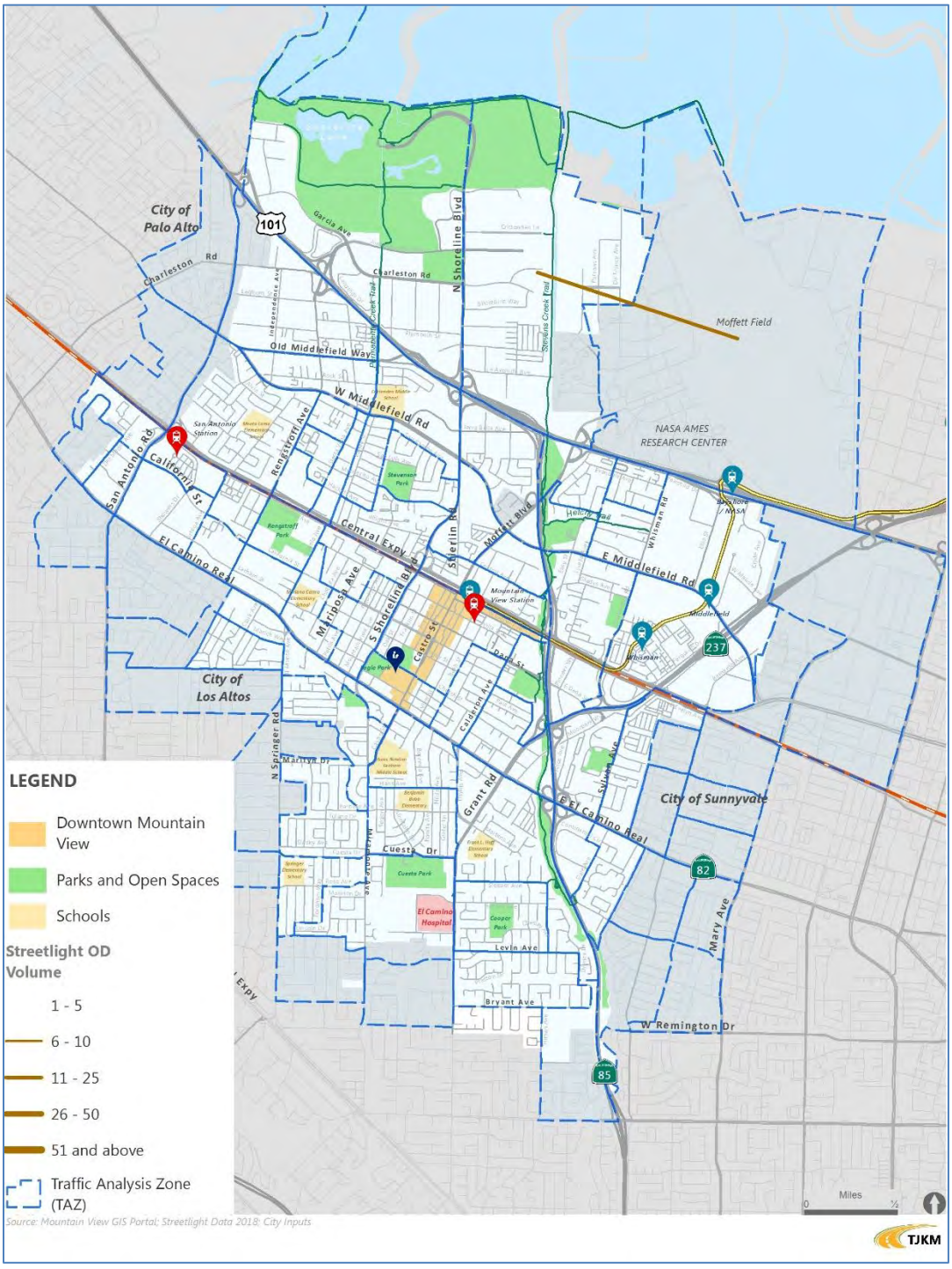


Figure B-2: Origin-Destination (7am-8am, Weekday, Bicycles Only 2018)

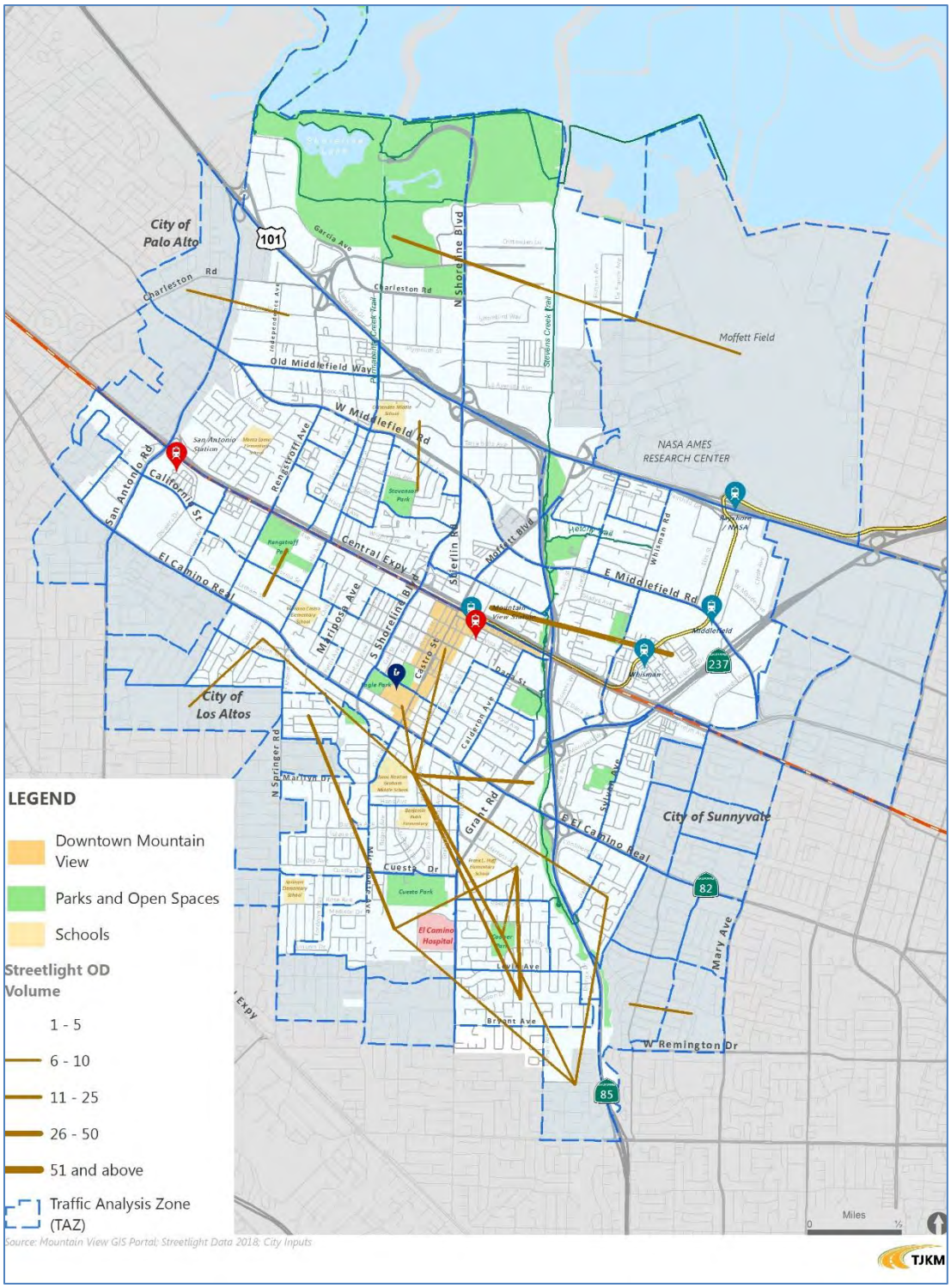


Figure B-3: Origin-Destination (8am-9am, Weekday, Bicycles Only 2018)

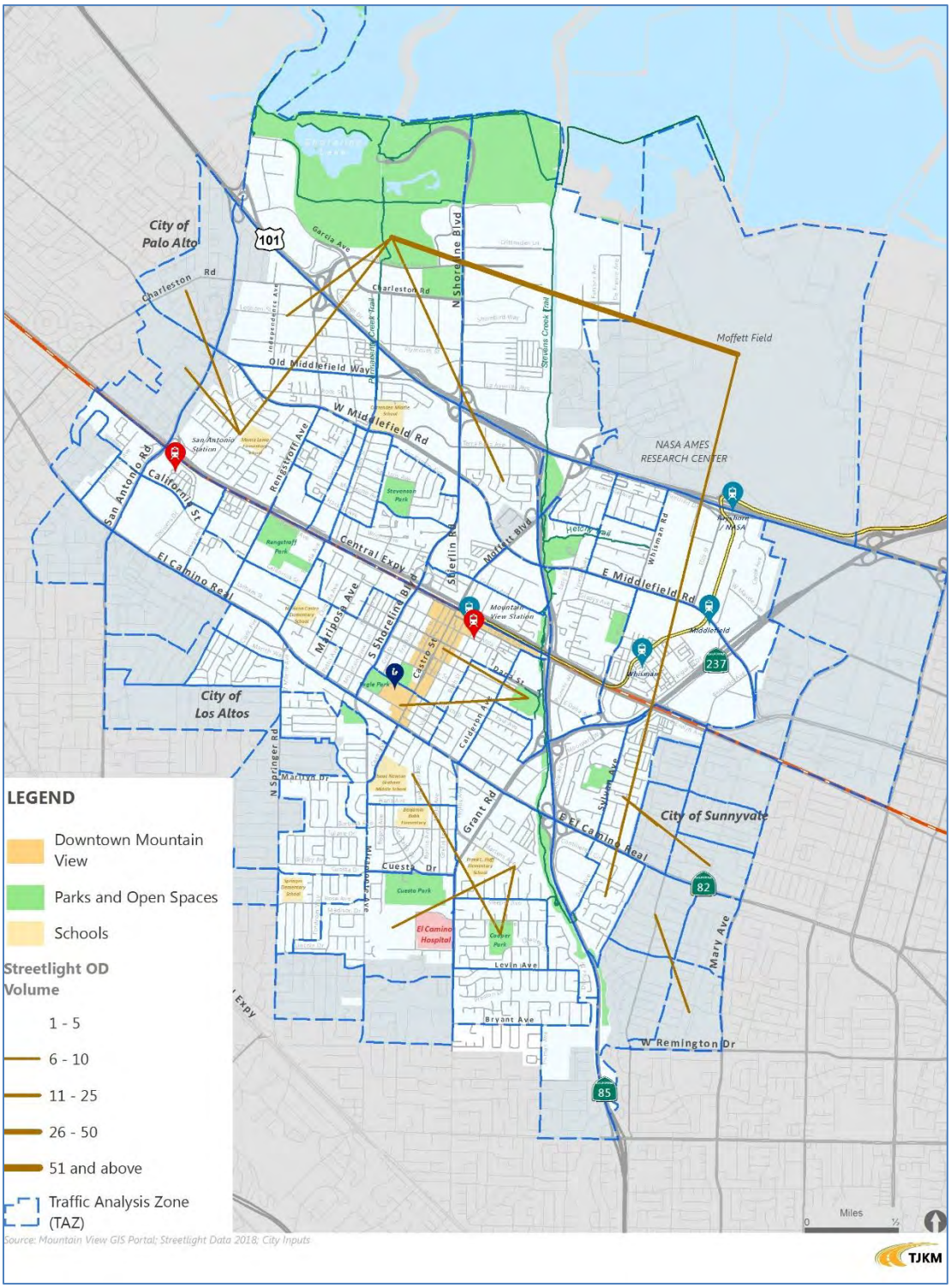


Figure B-4: Origin-Destination (9am-10am, Weekday, Bicycles Only 2018)

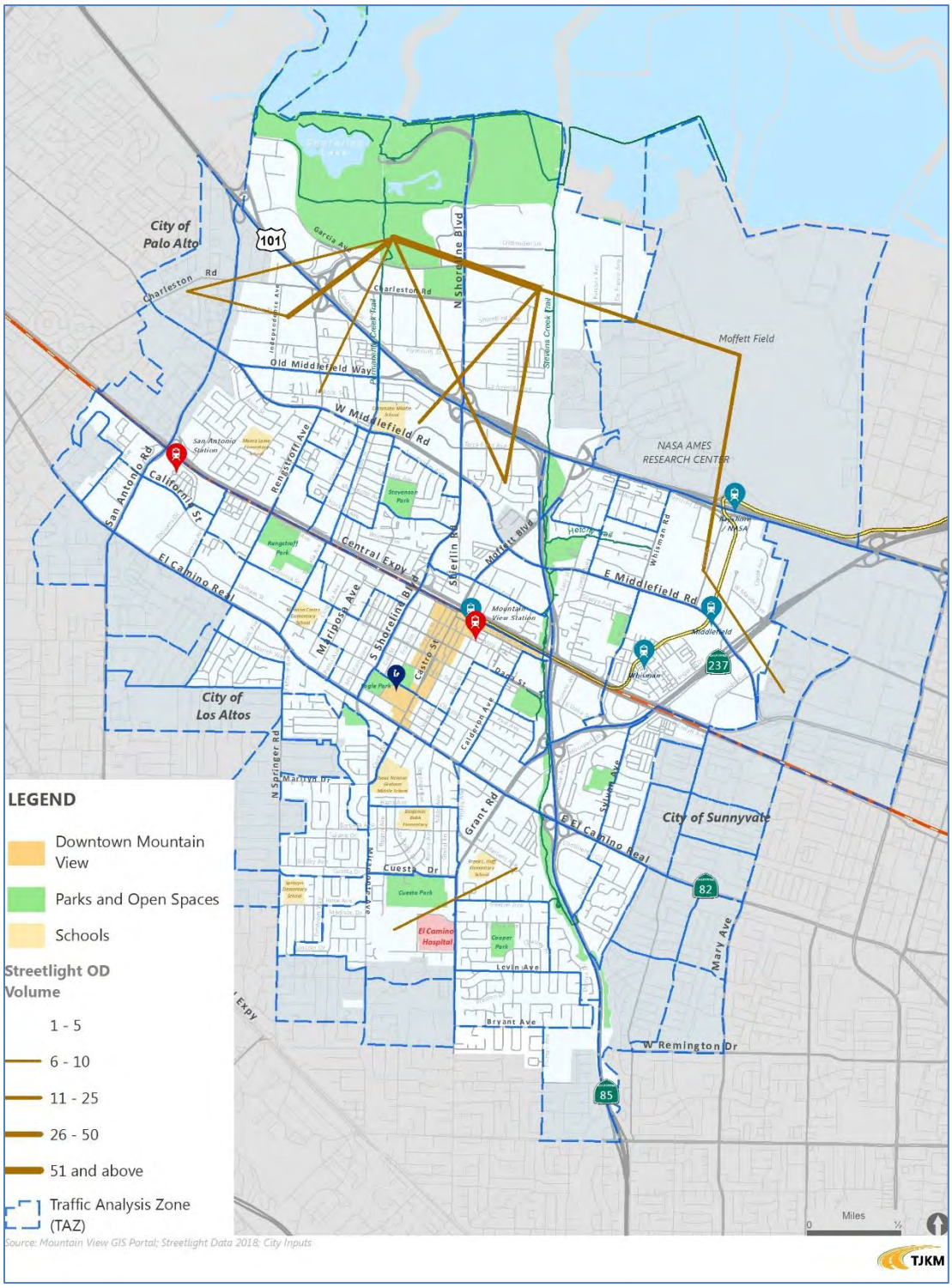


Figure B-5: Origin-Destination (10am-11am, Weekday, Bicycles Only 2018)

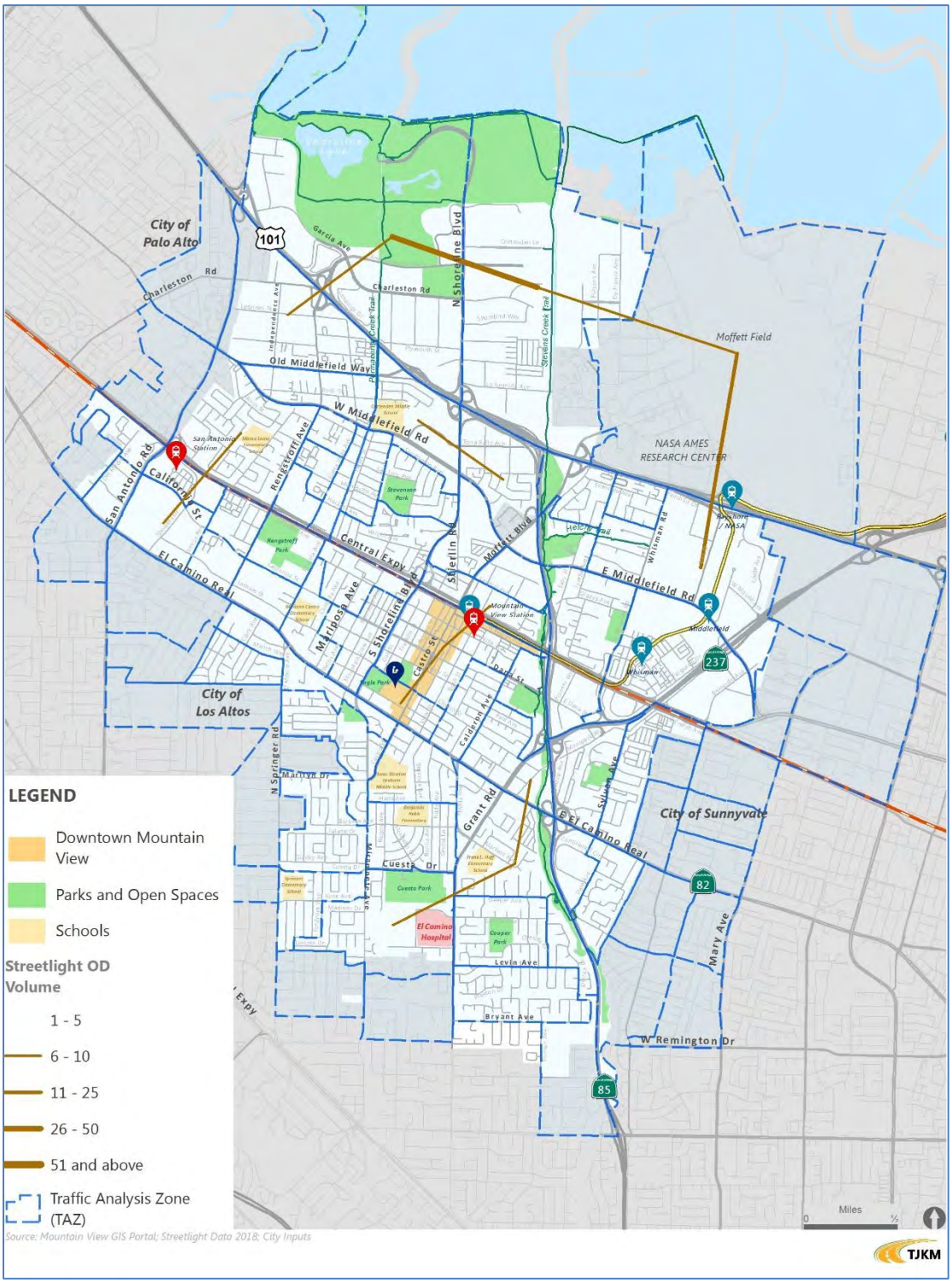


Figure B-6: Origin-Destination (11am-12pm, Weekday, Bicycles Only 2018)

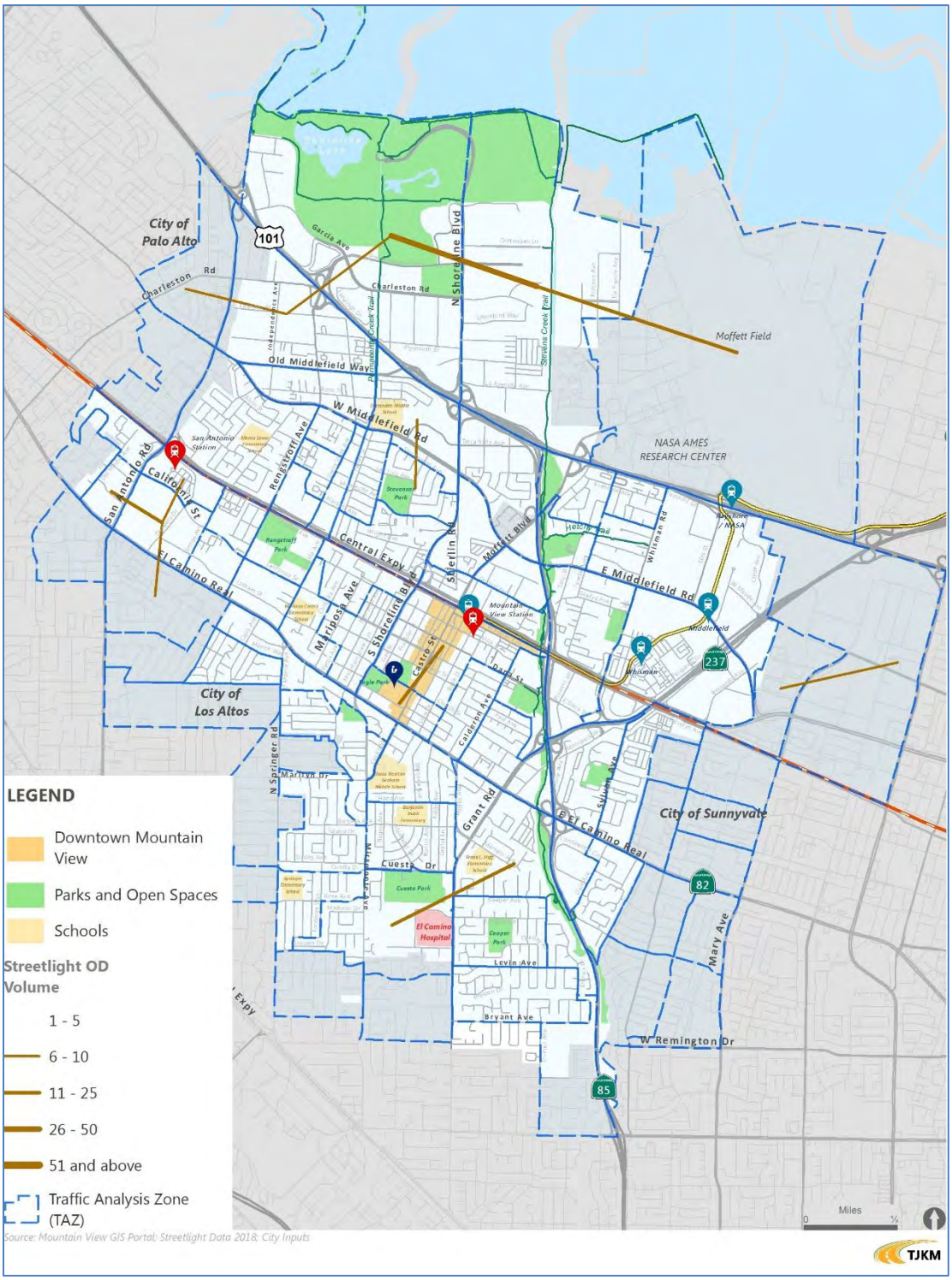


Figure B-7: Origin-Destination (12pm-1pm, Weekday, Bicycles Only 2018)

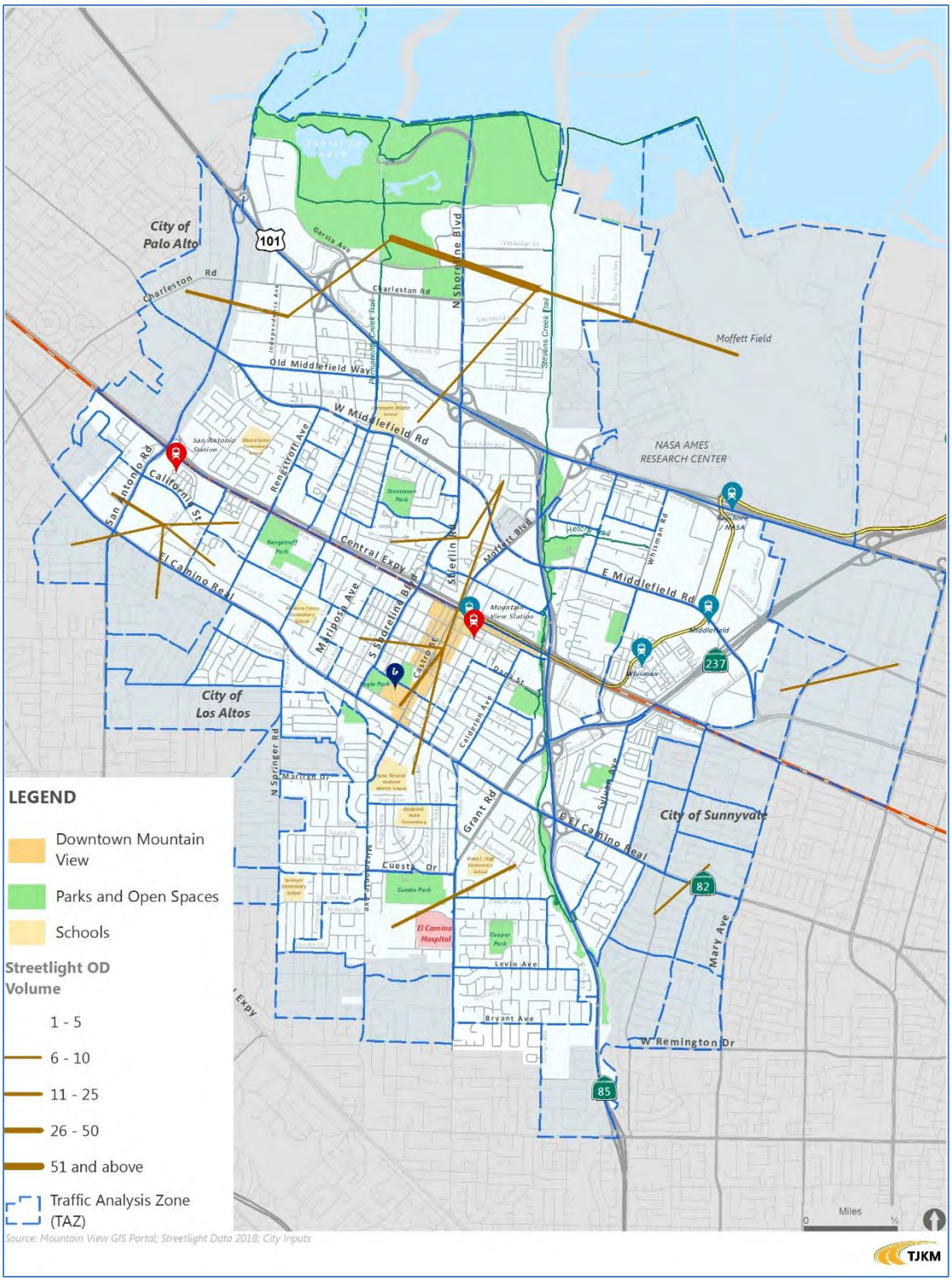


Figure B-8: Origin-Destination (1pm-2pm, Weekday, Bicycles Only 2018)

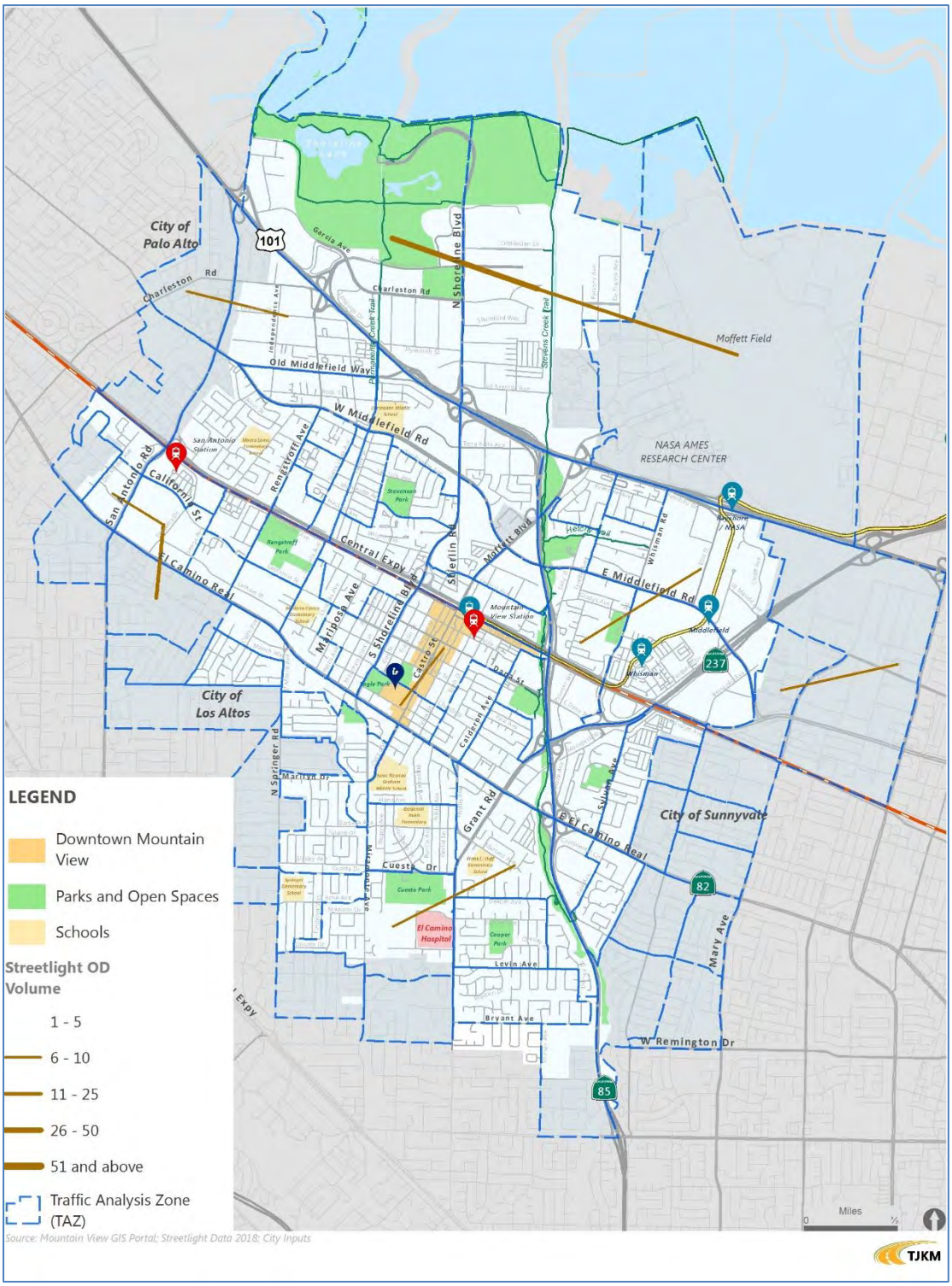


Figure B-9: Origin-Destination (2pm-3pm, Weekday, Bicycles Only 2018)

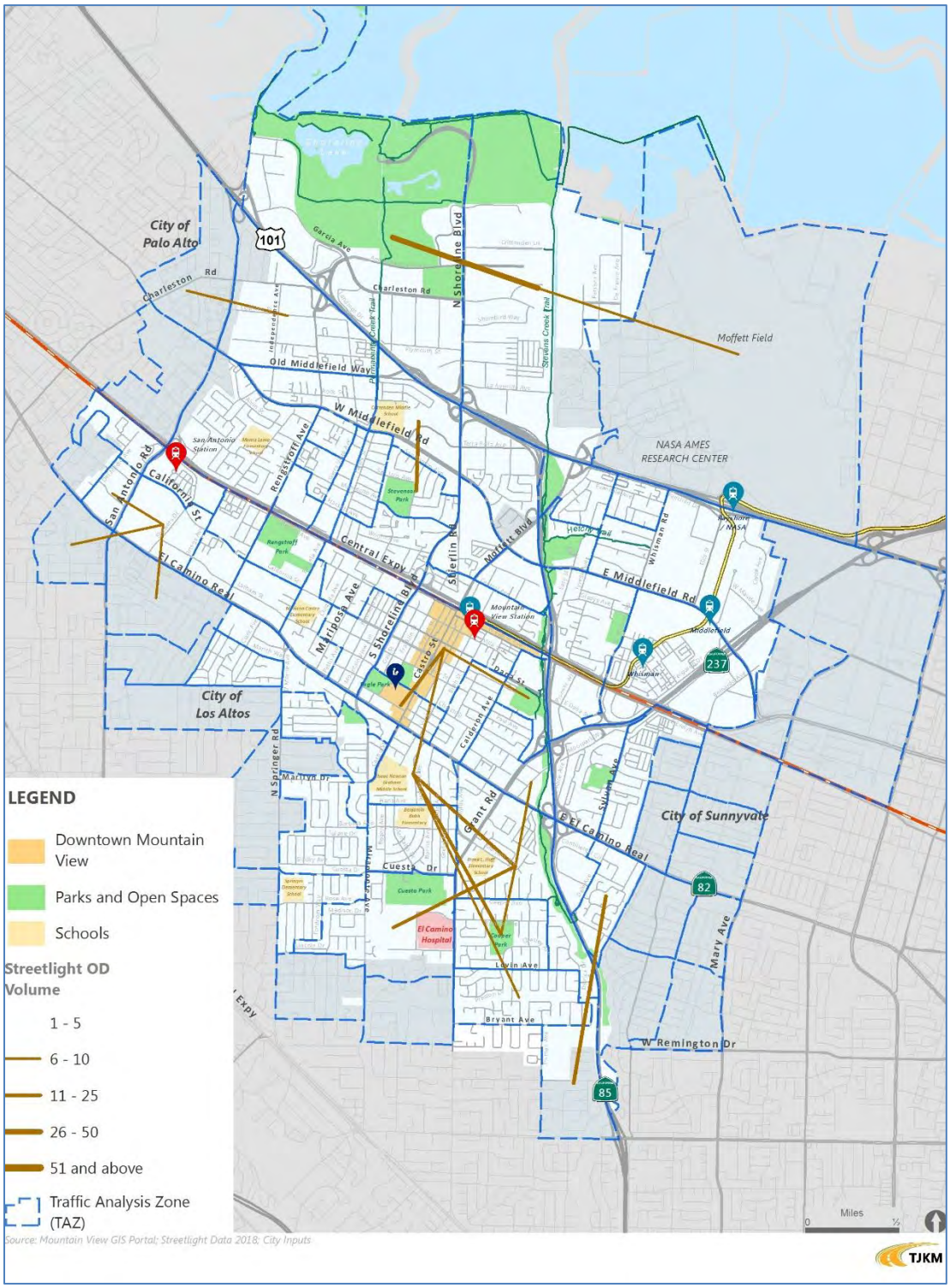


Figure B-10: Origin-Destination (3pm-4pm, Weekday, Bicycles Only 2018)

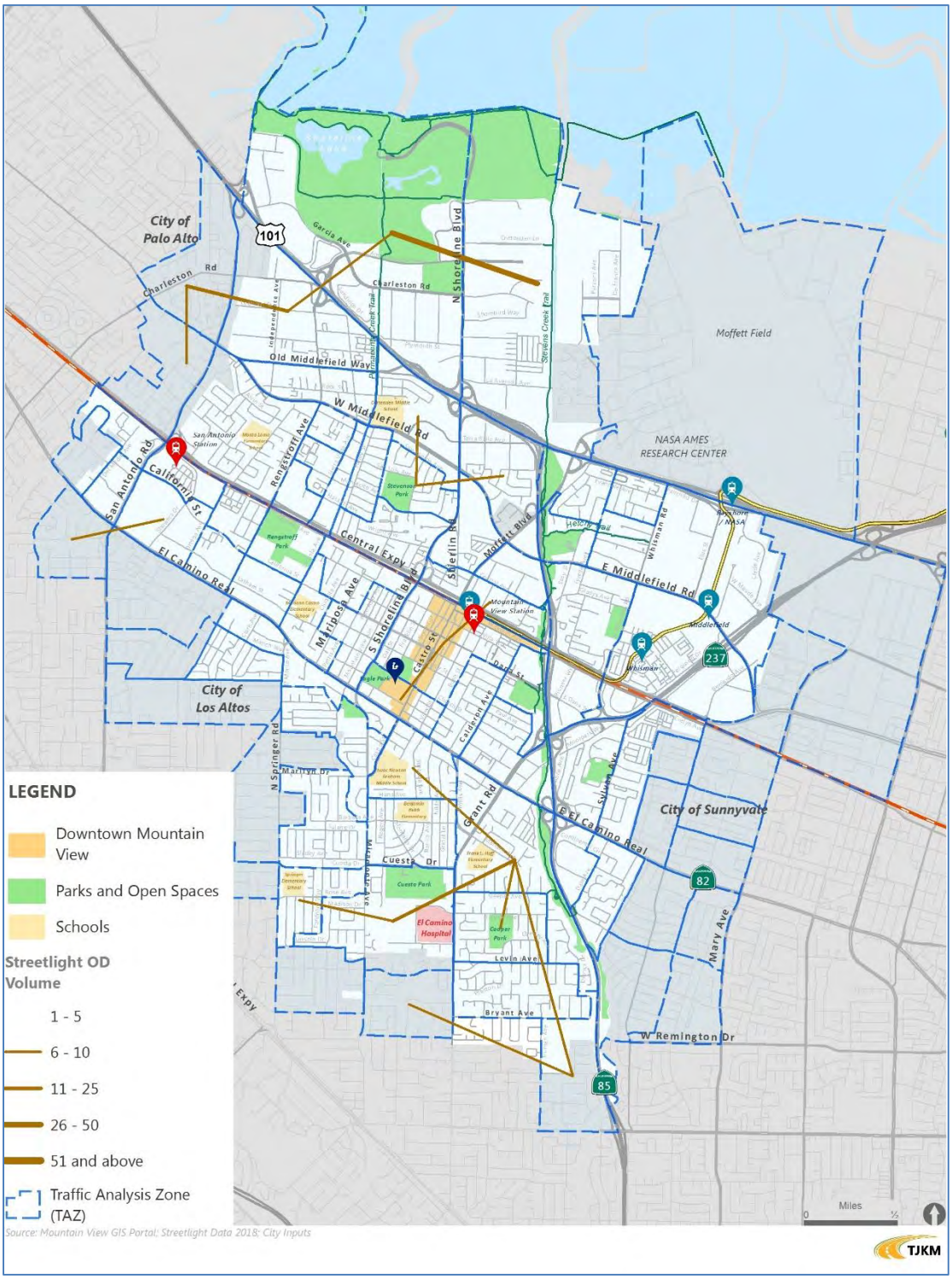


Figure B-11: Origin-Destination (4pm-5pm, Weekday, Bicycles Only 2018)

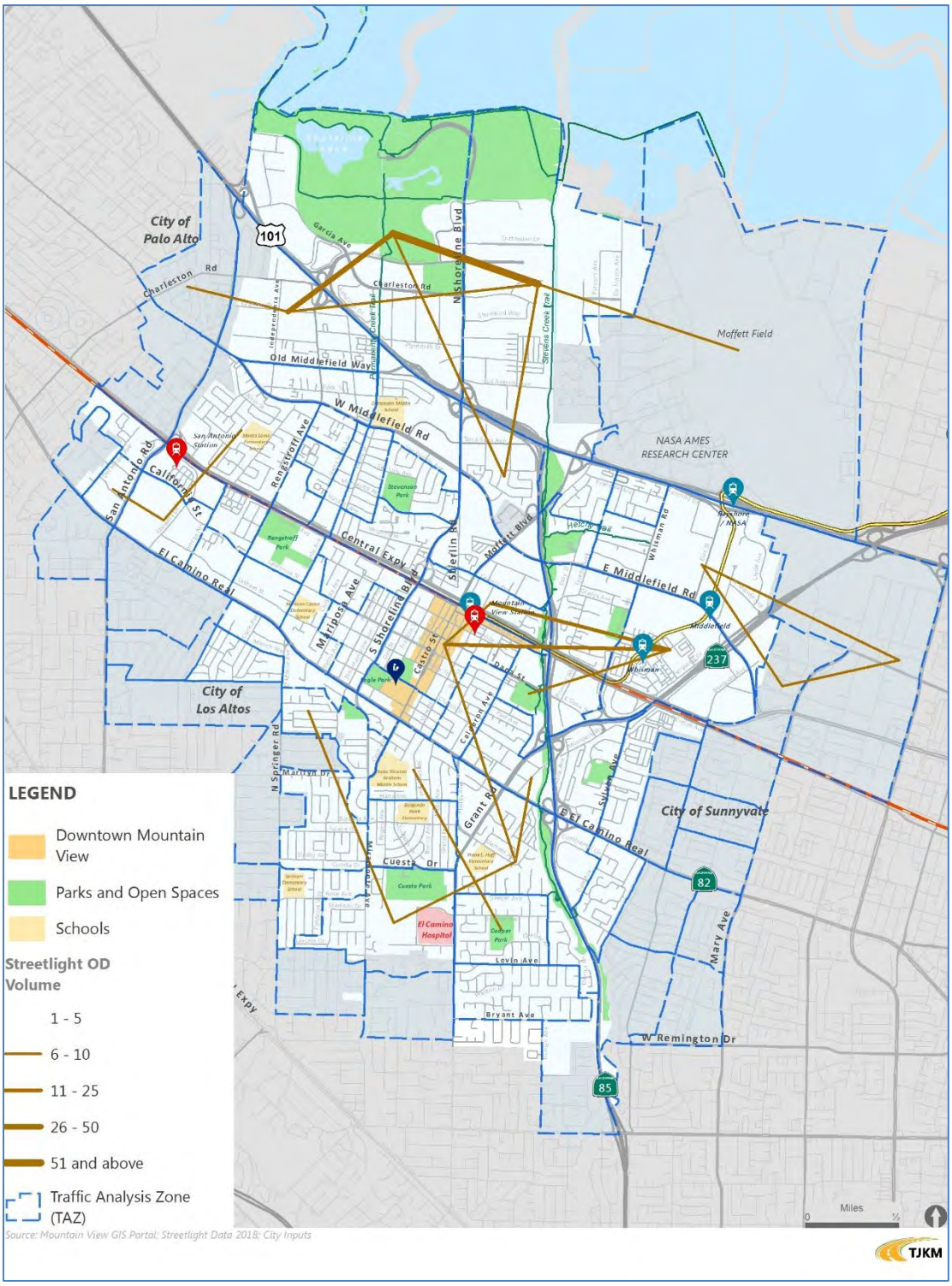


Figure B-12: Origin-Destination (5pm-6pm, Weekday, Bicycles Only 2018)

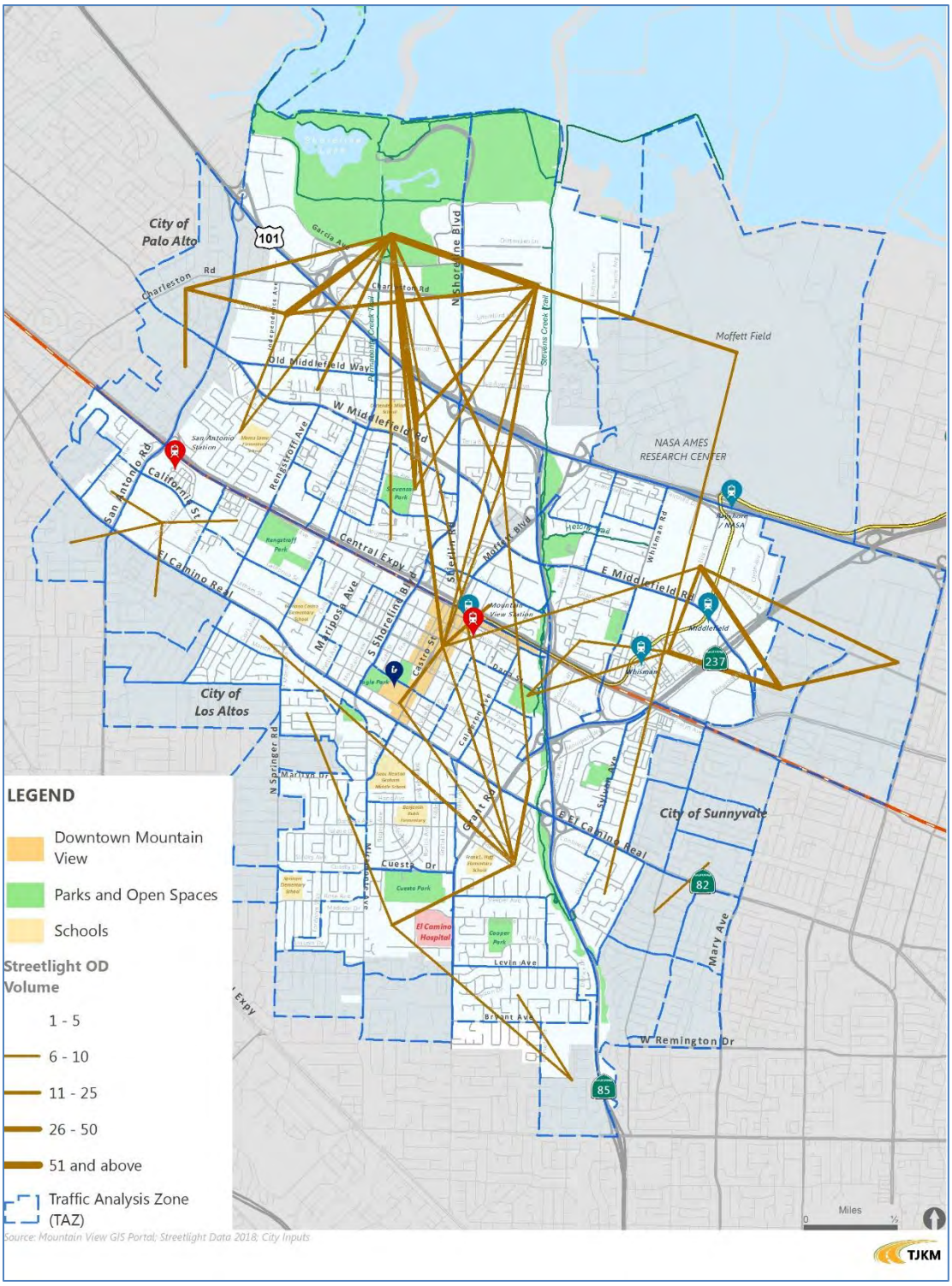


Figure B-13: Origin-Destination (6pm-7pm, Weekday, Bicycles Only 2018)

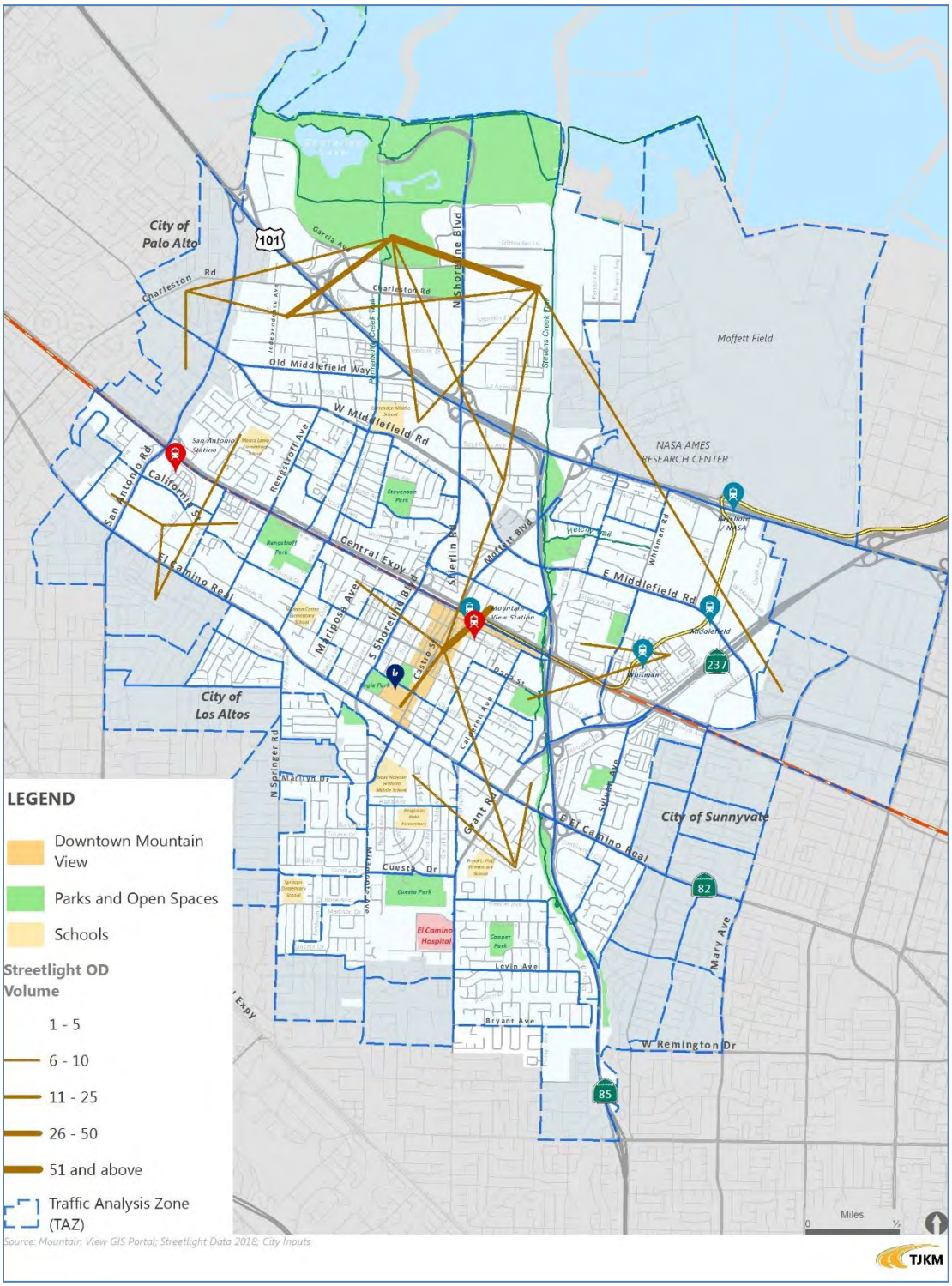


Figure B-14: Origin-Destination (7pm-8pm, Weekday, Bicycles Only 2018)

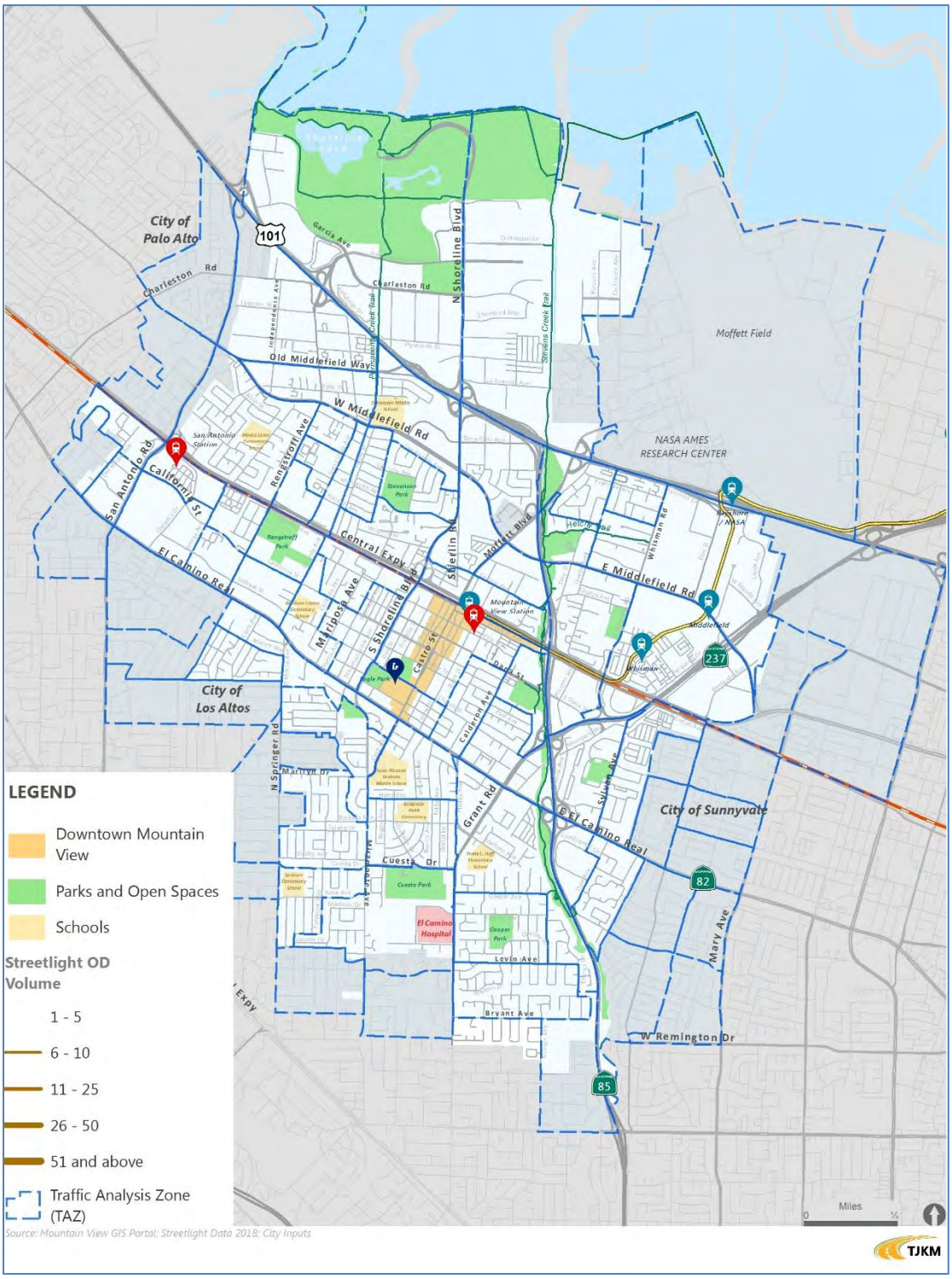


Figure B-15: Origin-Destination (8pm-9pm, Weekday, Bicycles Only 2018)

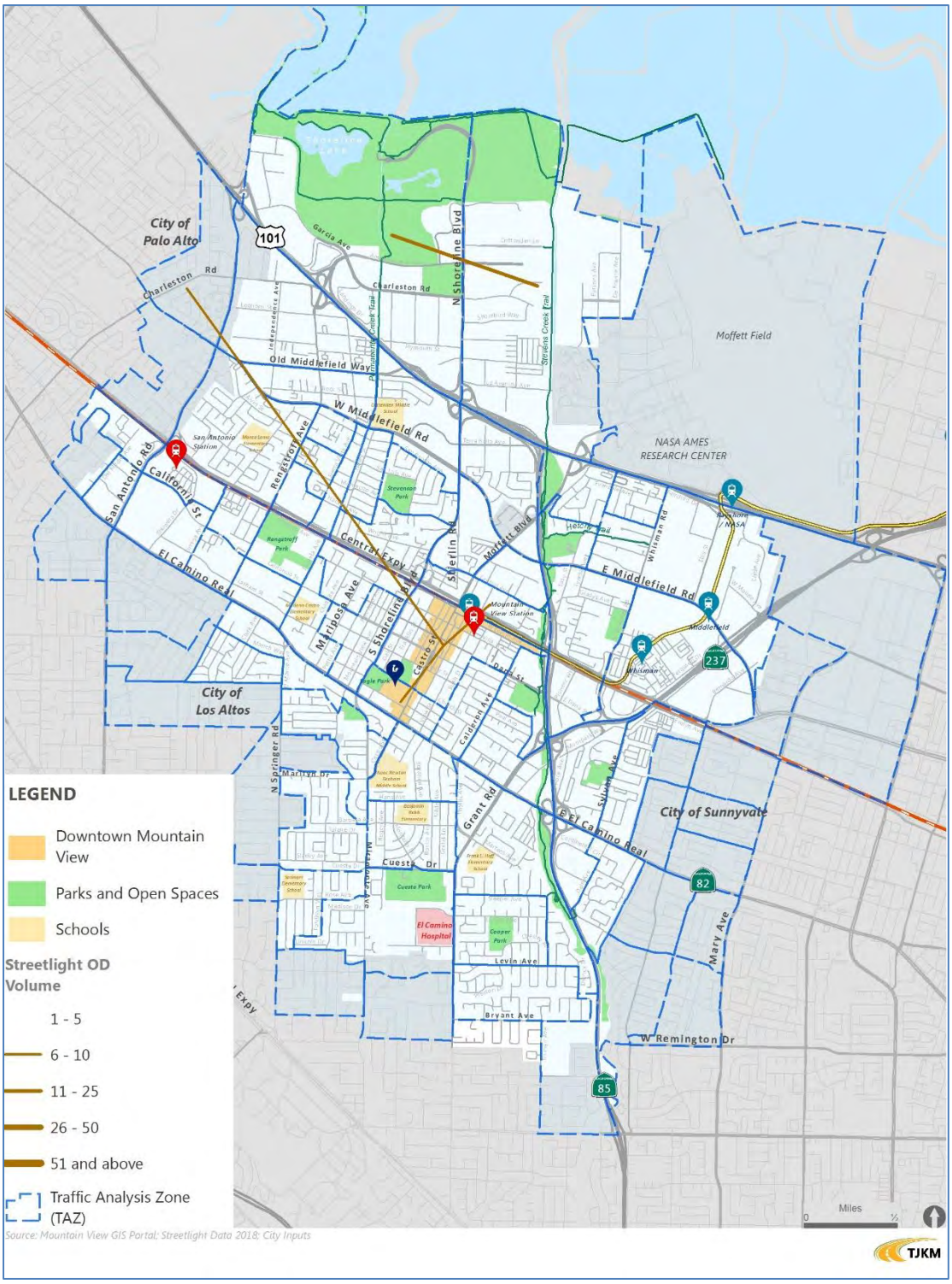
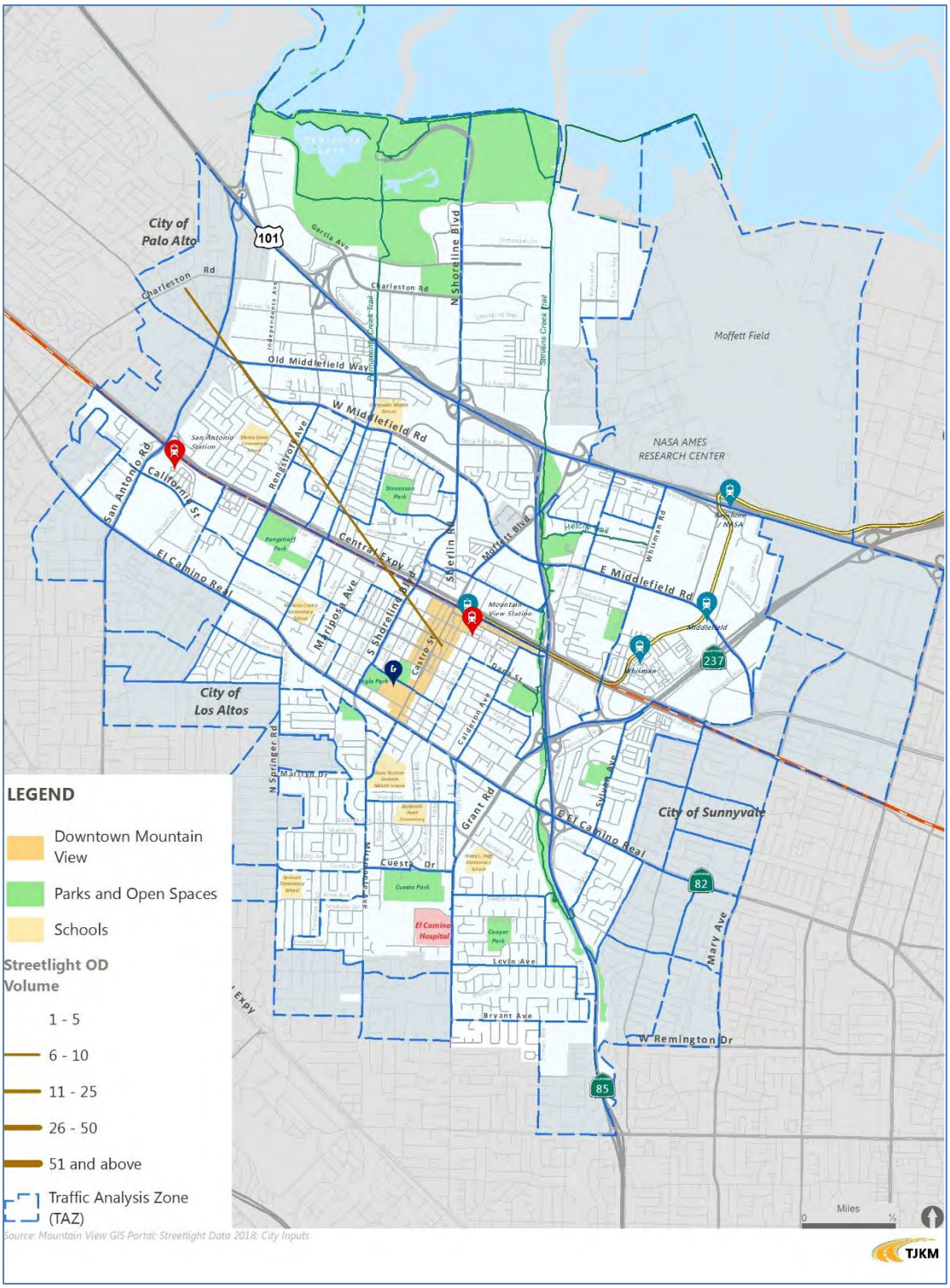


Figure B-16: Origin-Destination (9pm-10pm, Weekday, Bicycles Only 2018)



APPENDIX C: O-D VISUM ANALYSIS HOURLY MAPS PEDESTRIANS ONLY

Figure C-1: Origin-Destination (6am-7am, Weekday, Pedestrians Only 2018)

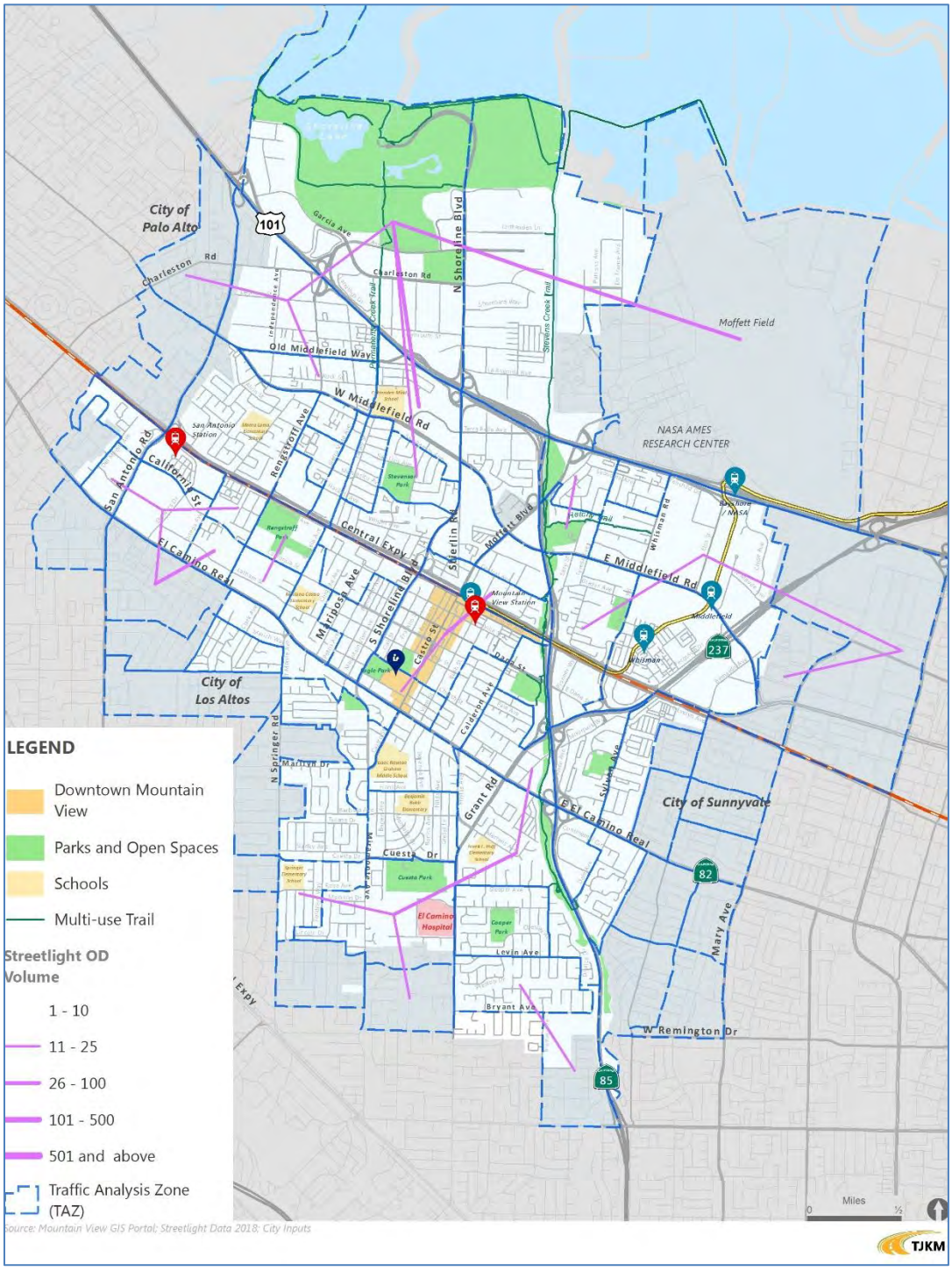


Figure C-2: Origin-Destination (7am-8am, Weekday, Pedestrians Only 2018)

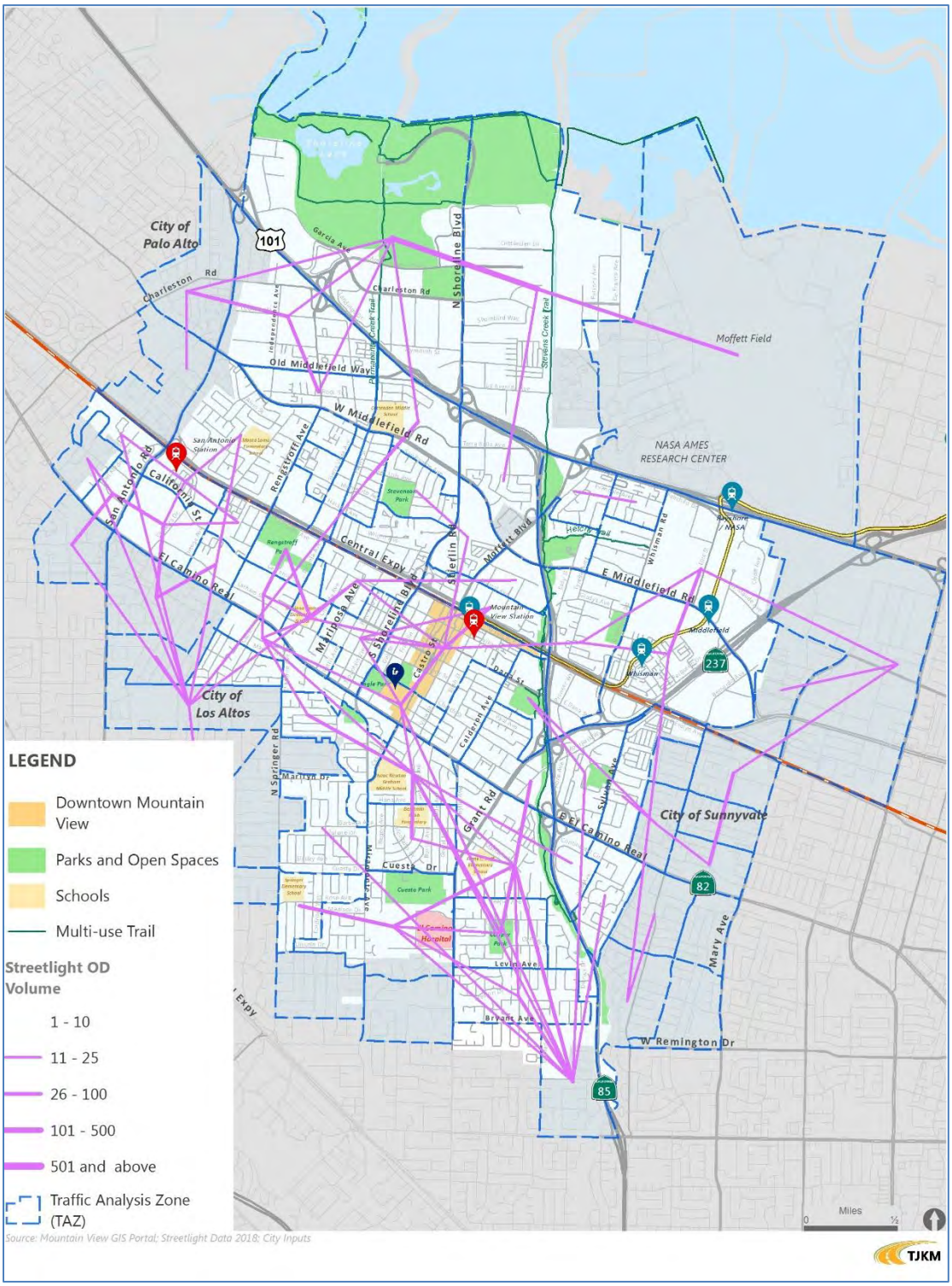


Figure C-3: Origin-Destination (8am-9am, Weekday, Pedestrians Only 2018)

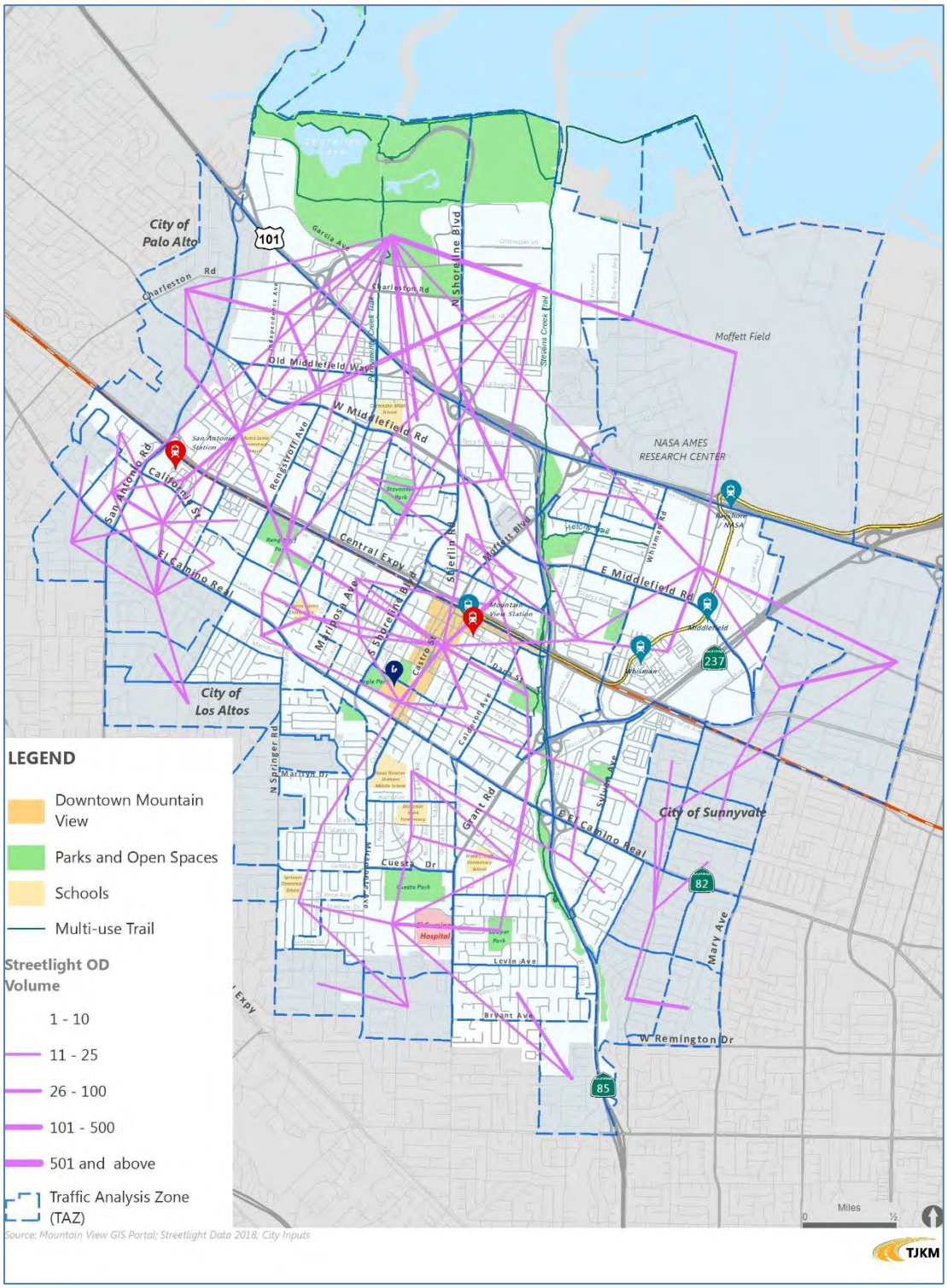


Figure C-4: Origin-Destination (9am-10am, Weekday, Pedestrians Only 2018)

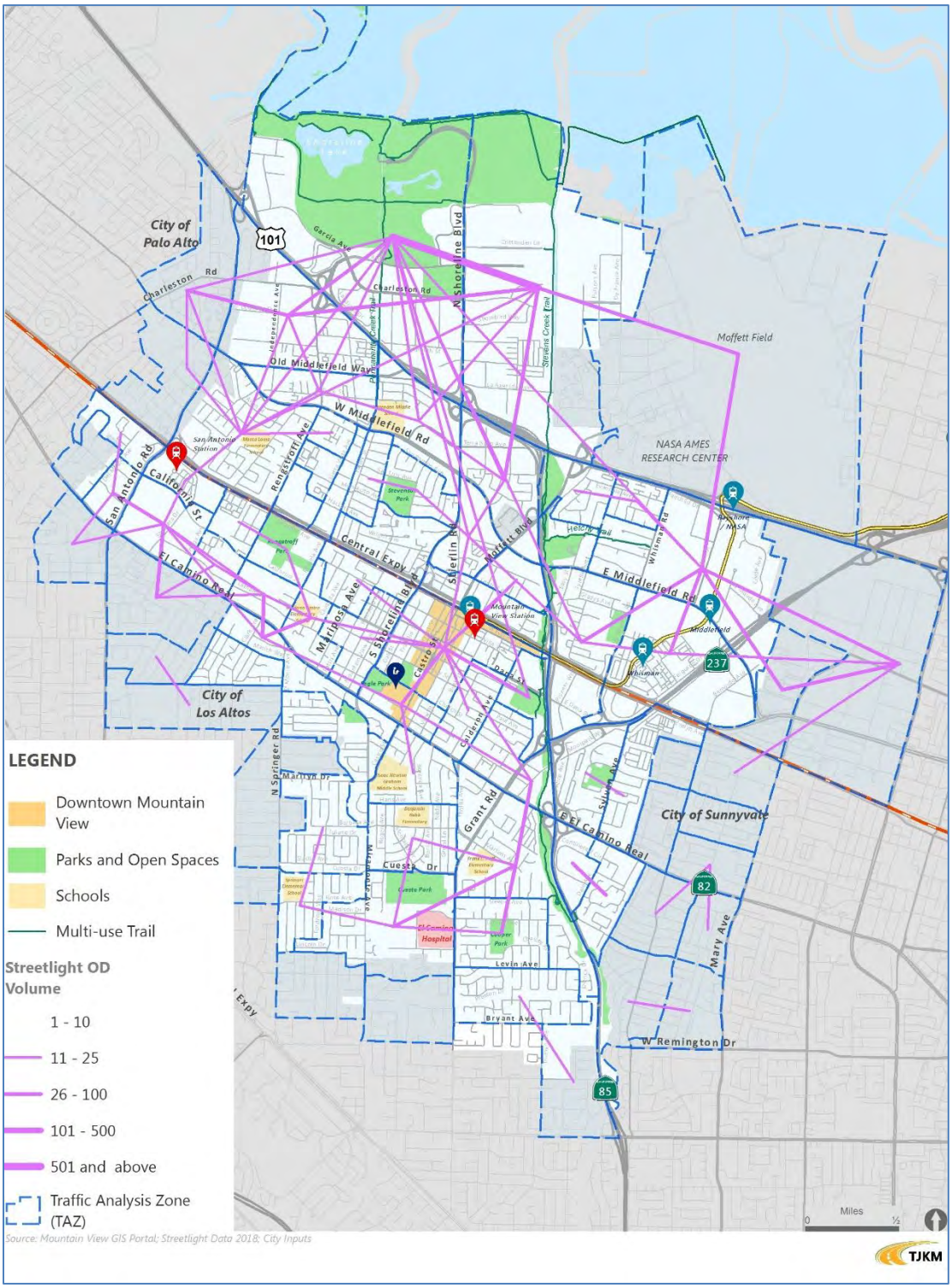


Figure C-5: Origin-Destination (10am-11am, Weekday, Pedestrians Only 2018)

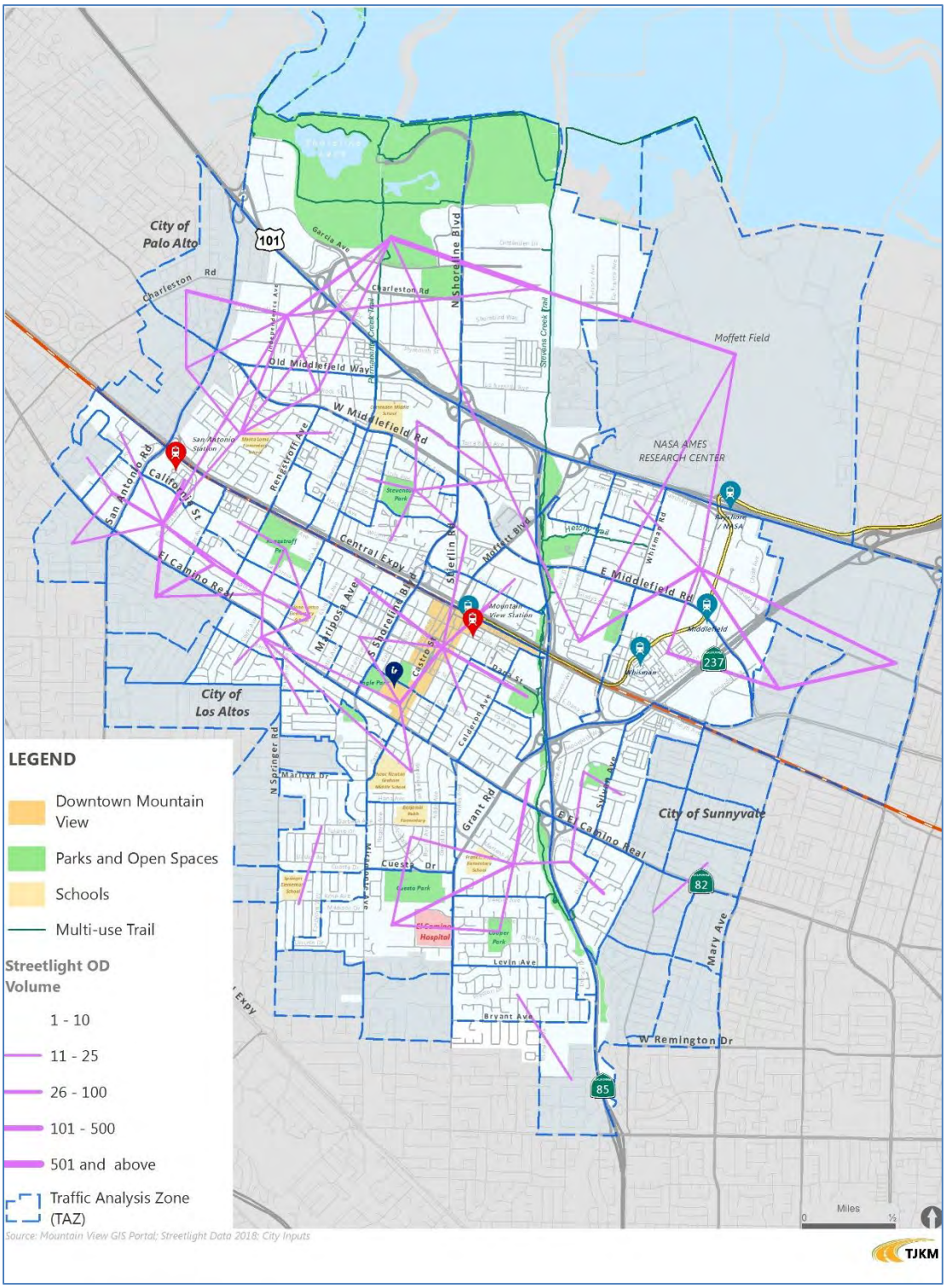


Figure C-6: Origin-Destination (11am-12pm, Weekday, Pedestrians Only 2018)

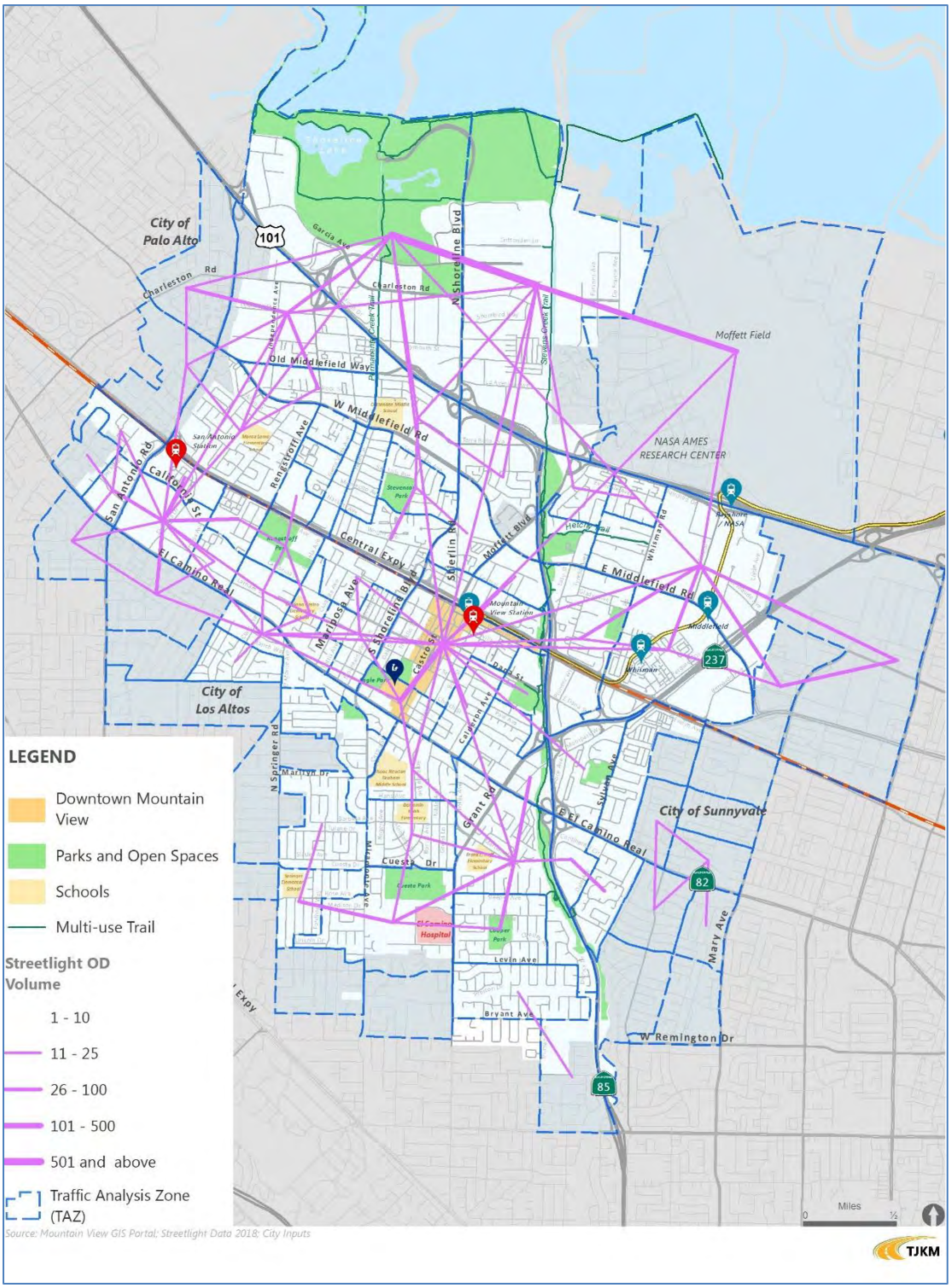


Figure C-7: Origin-Destination (12pm-1pm, Weekday, Pedestrians Only 2018)

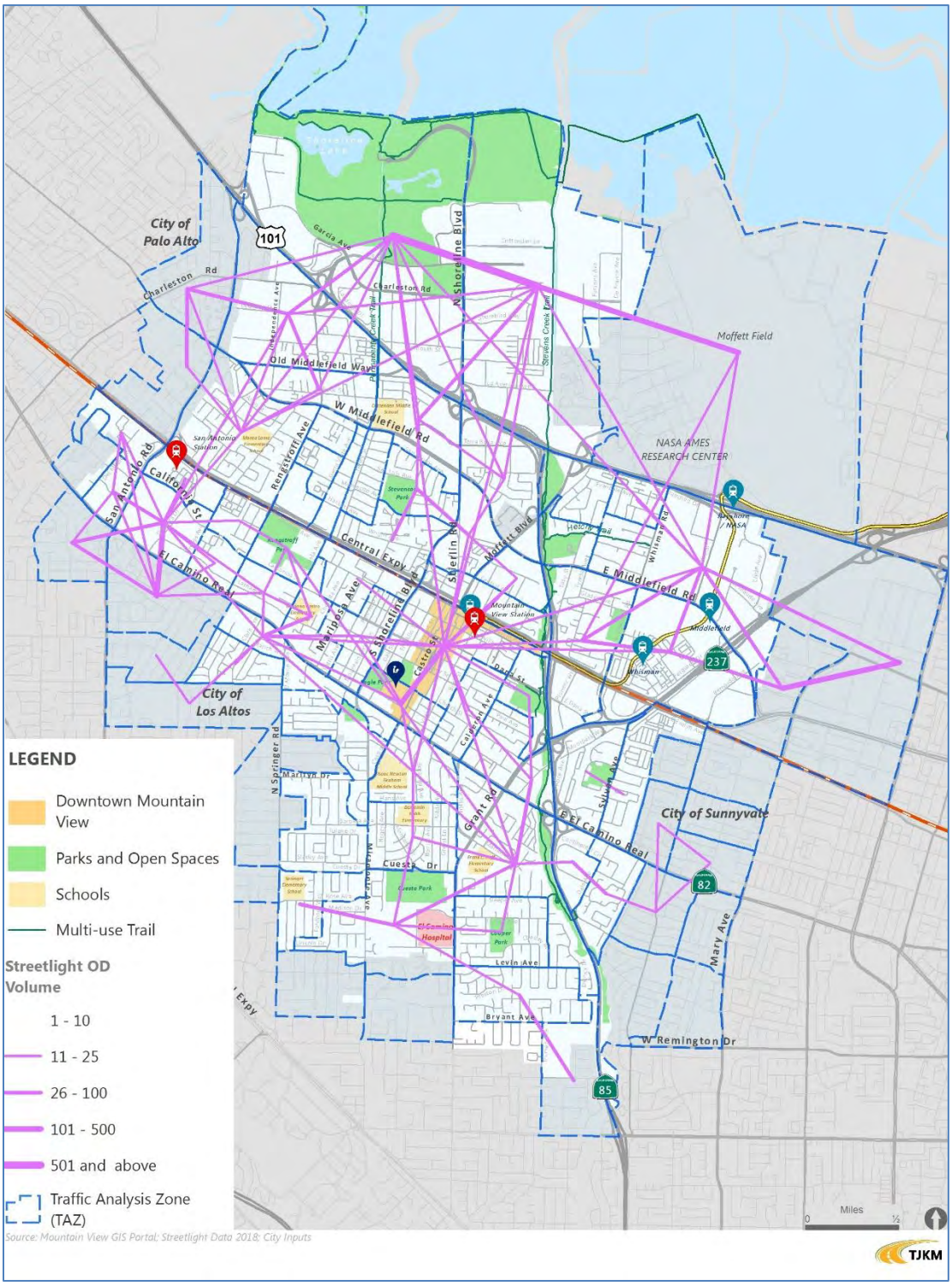


Figure C-8: Origin-Destination (1pm-2pm, Weekday, Pedestrians Only 2018)

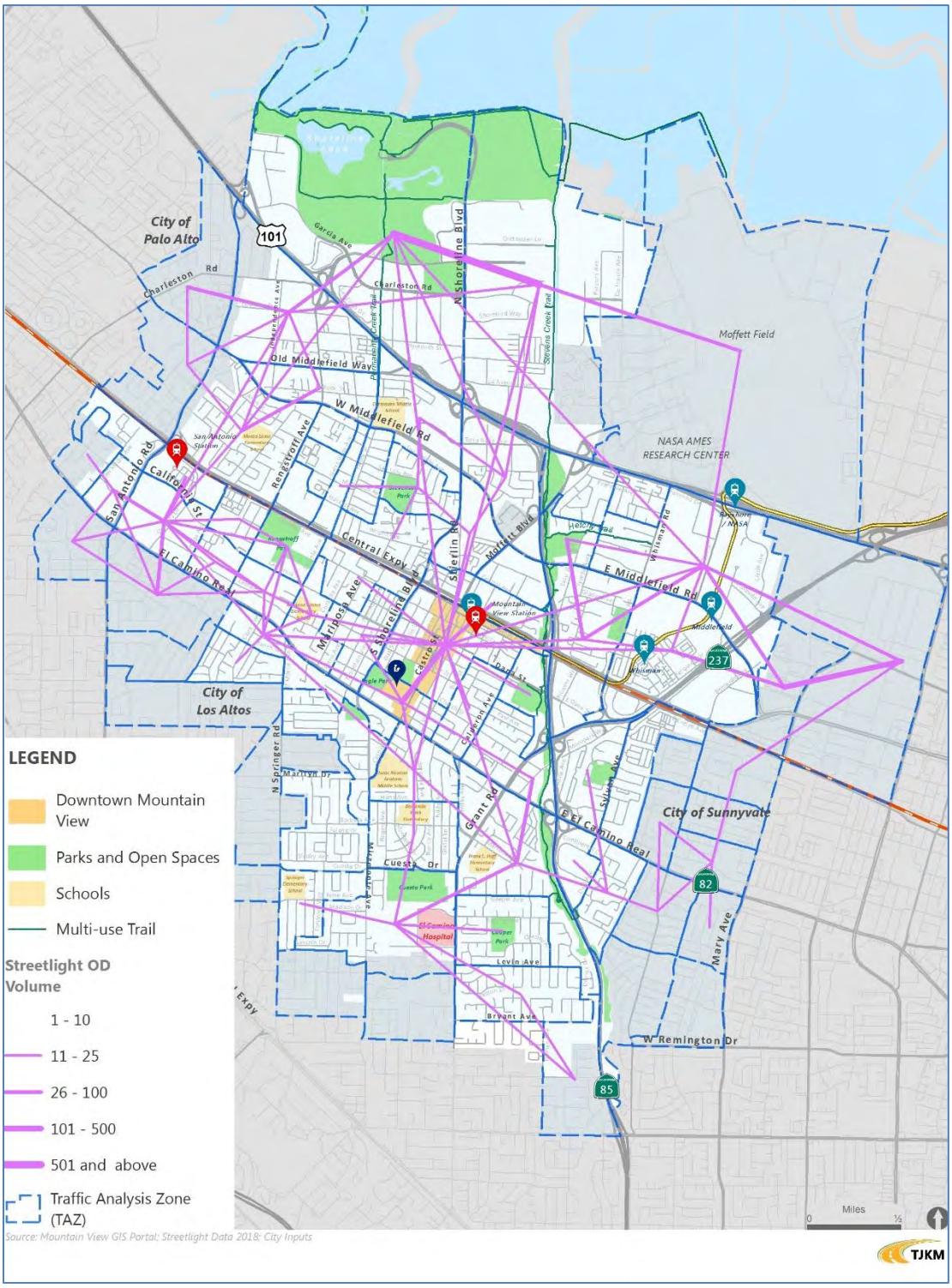


Figure C-9: Origin-Destination (2pm-3pm, Weekday, Pedestrians Only 2018)

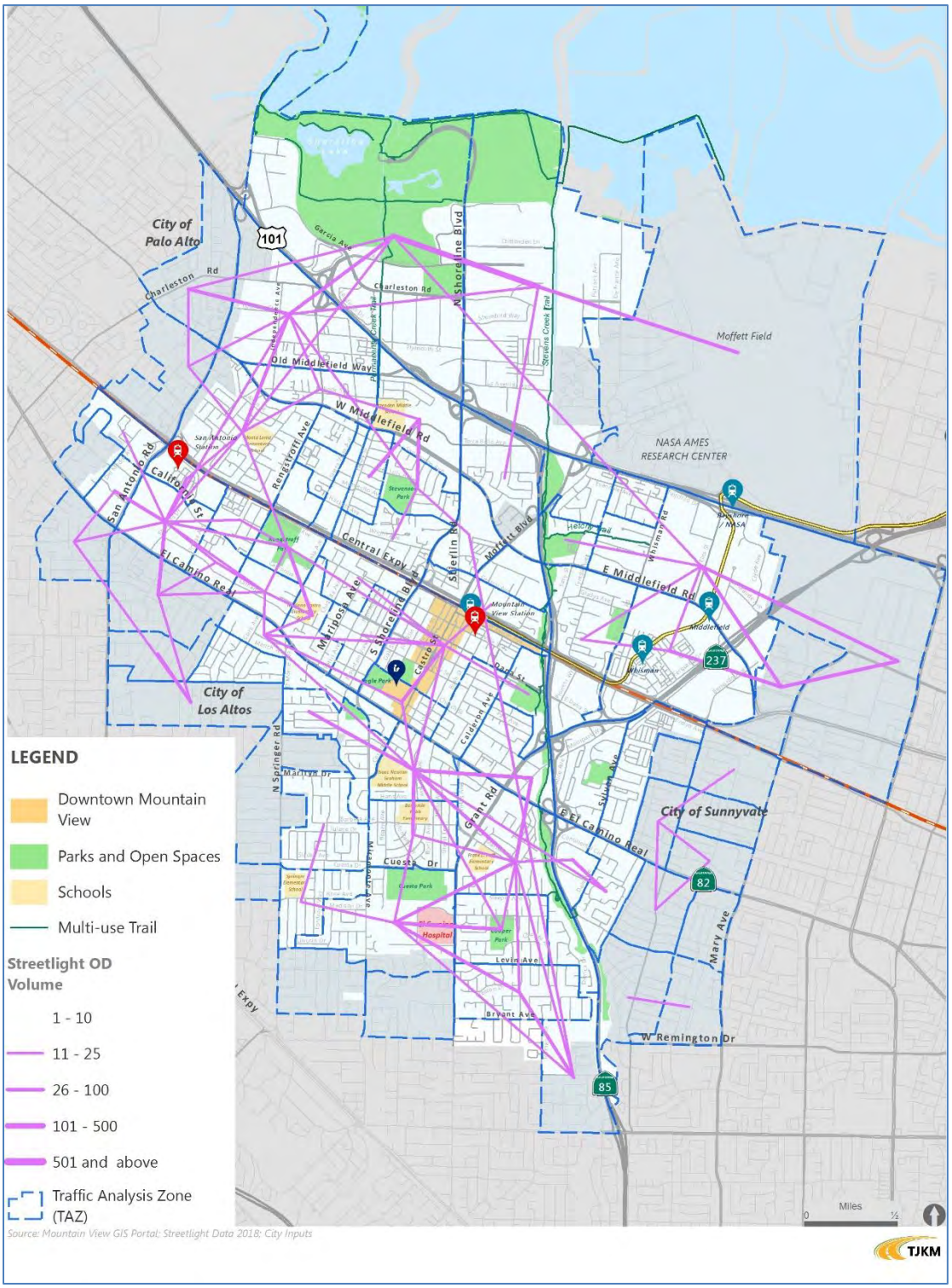


Figure C-10: Origin-Destination (3pm-4pm, Weekday, Pedestrians Only 2018)

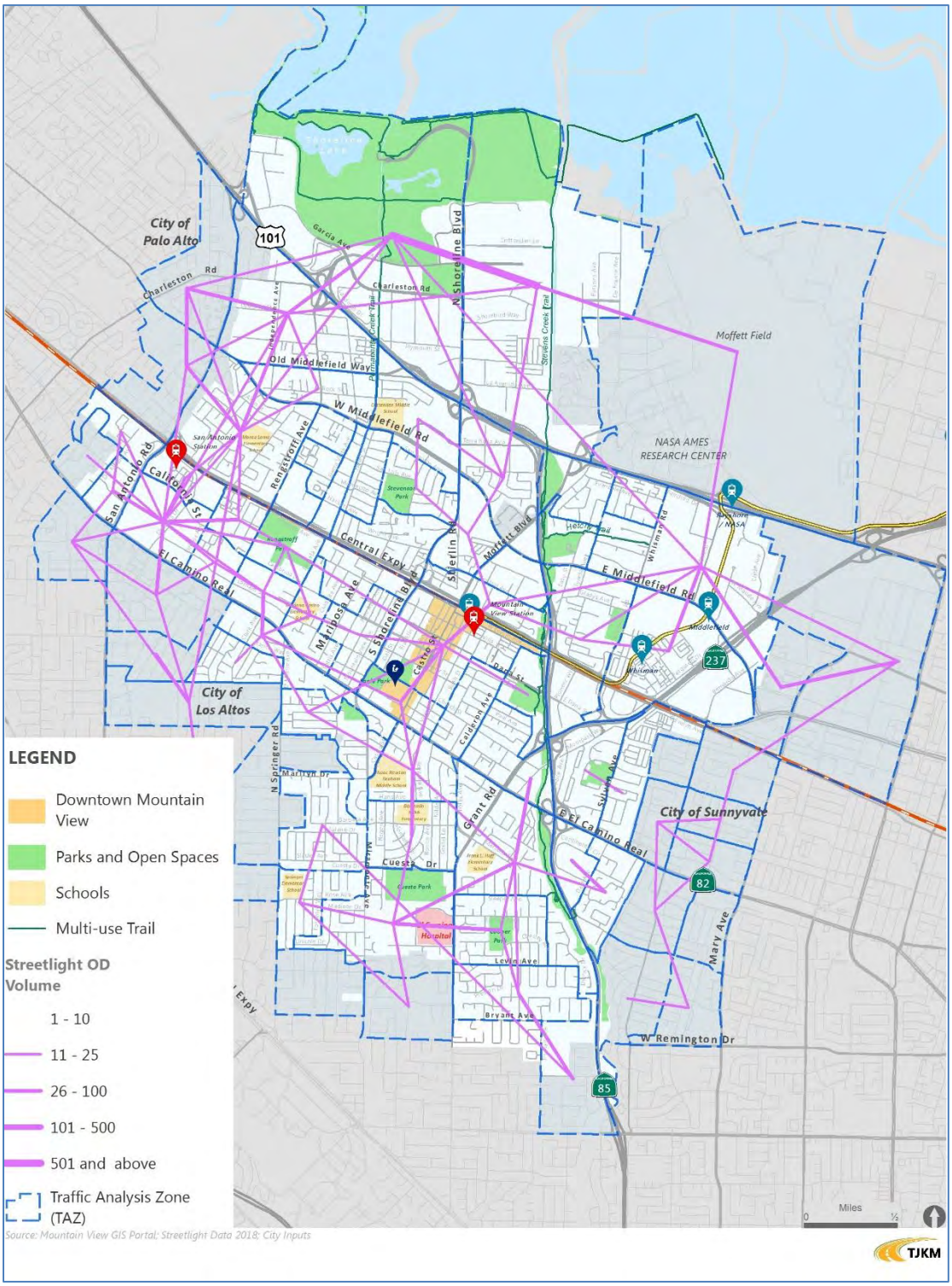


Figure C-11: Origin-Destination (4pm-5pm, Weekday, Pedestrians Only 2018)

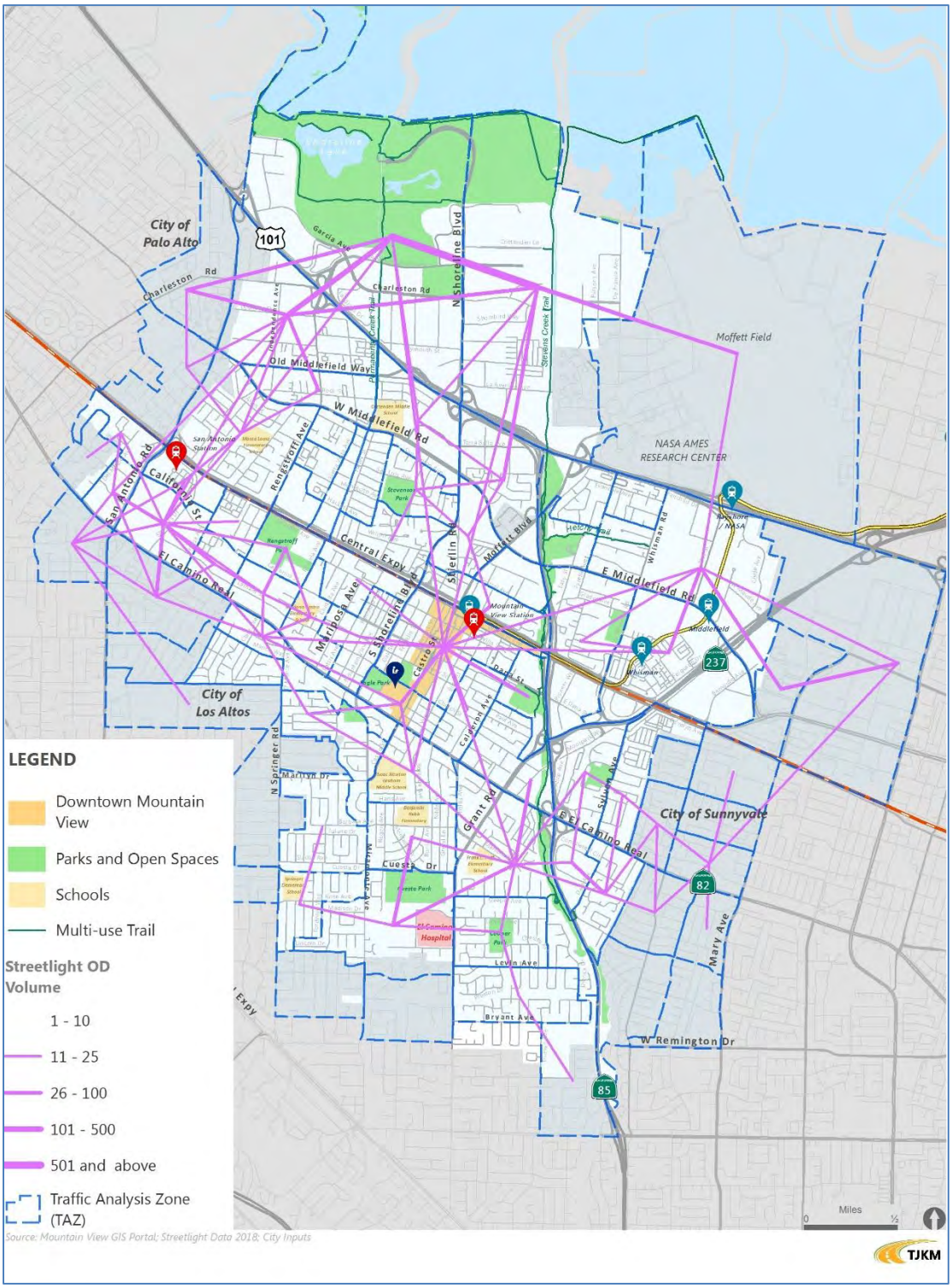


Figure C-12: Origin-Destination (5pm-6pm, Weekday, Pedestrians Only 2018)

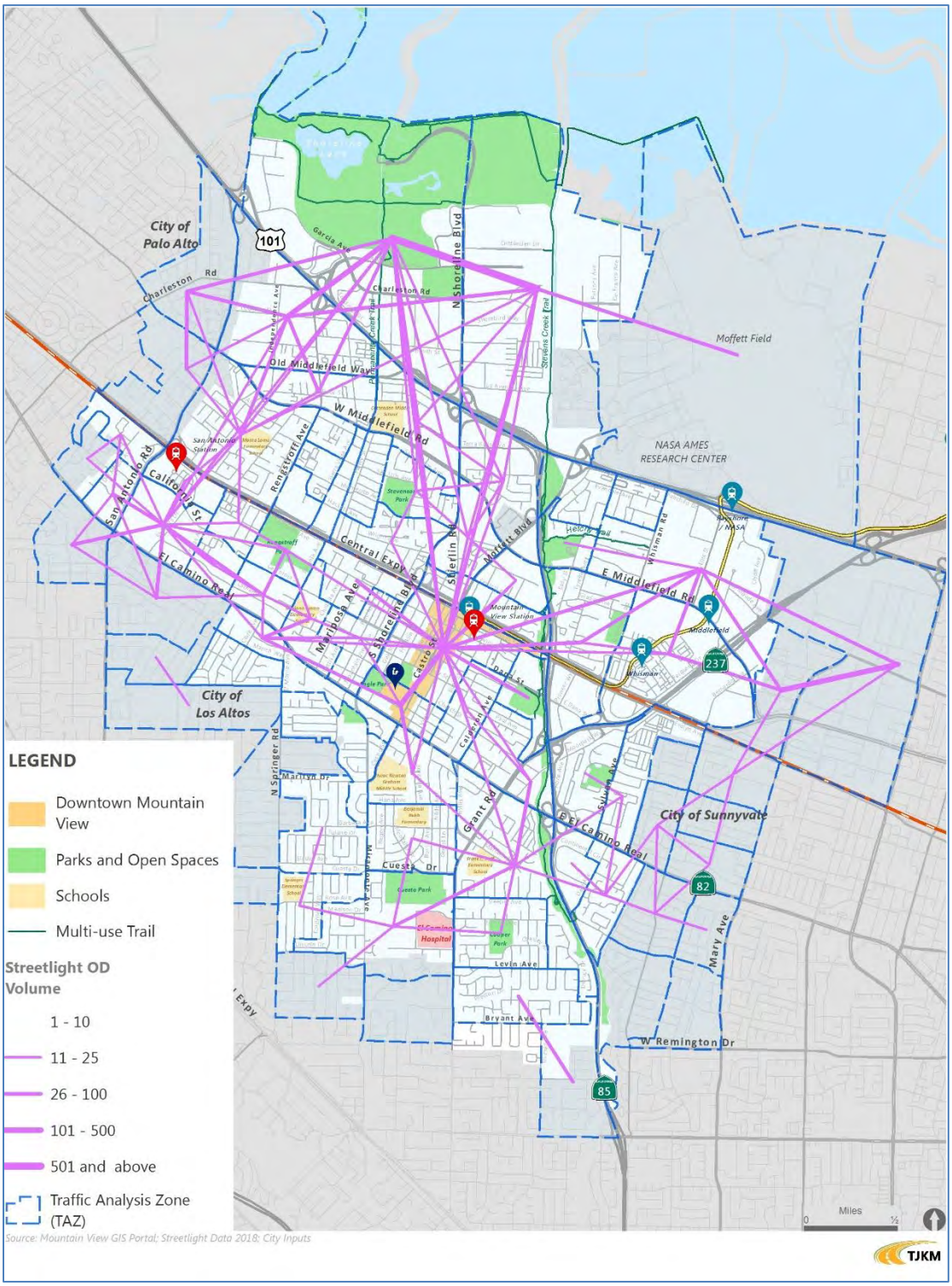


Figure C-13: Origin-Destination (6pm-7pm, Weekday, Pedestrians Only 2018)

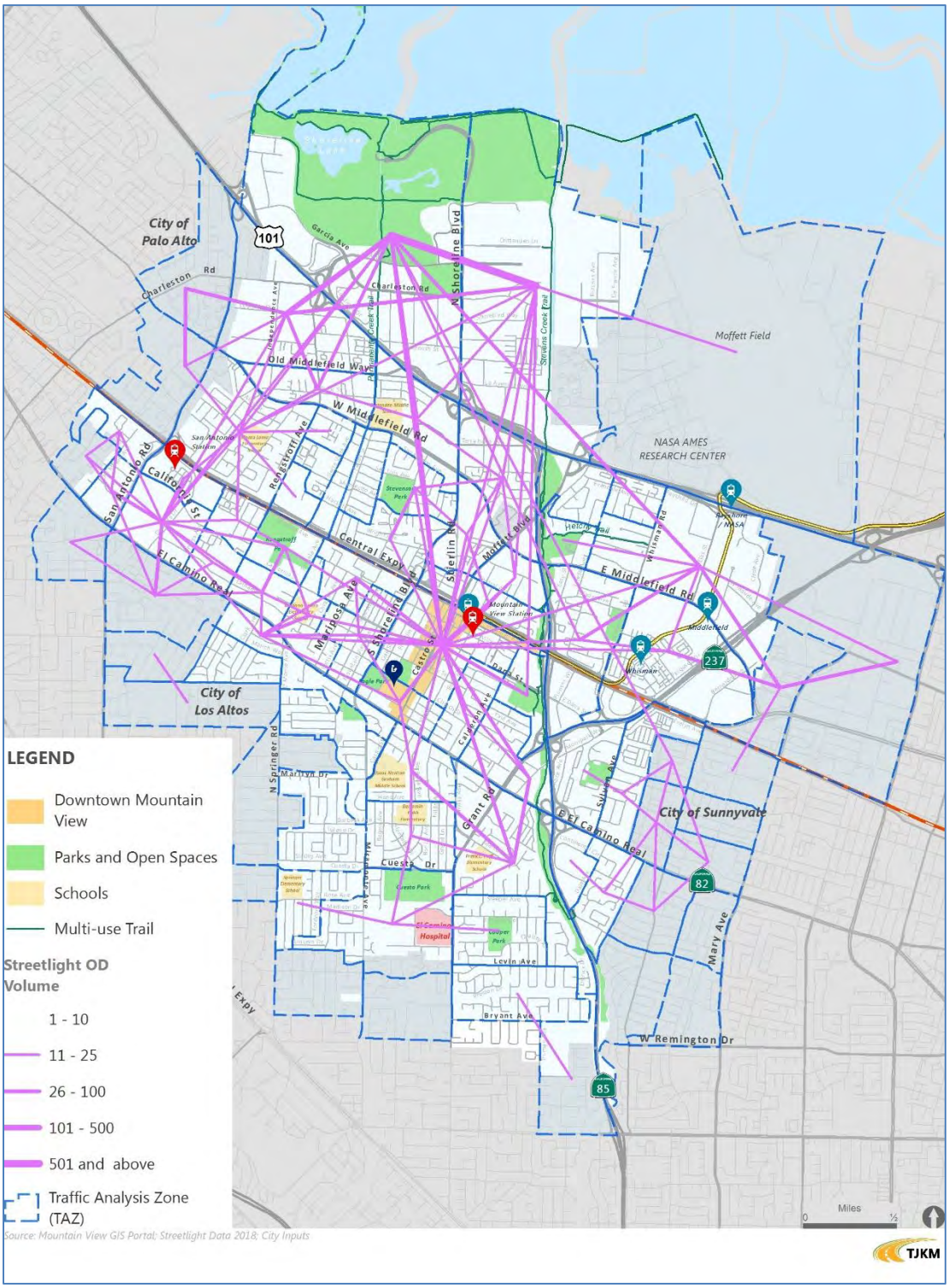


Figure C-14: Origin-Destination (7pm-8pm, Weekday, Pedestrians Only 2018)

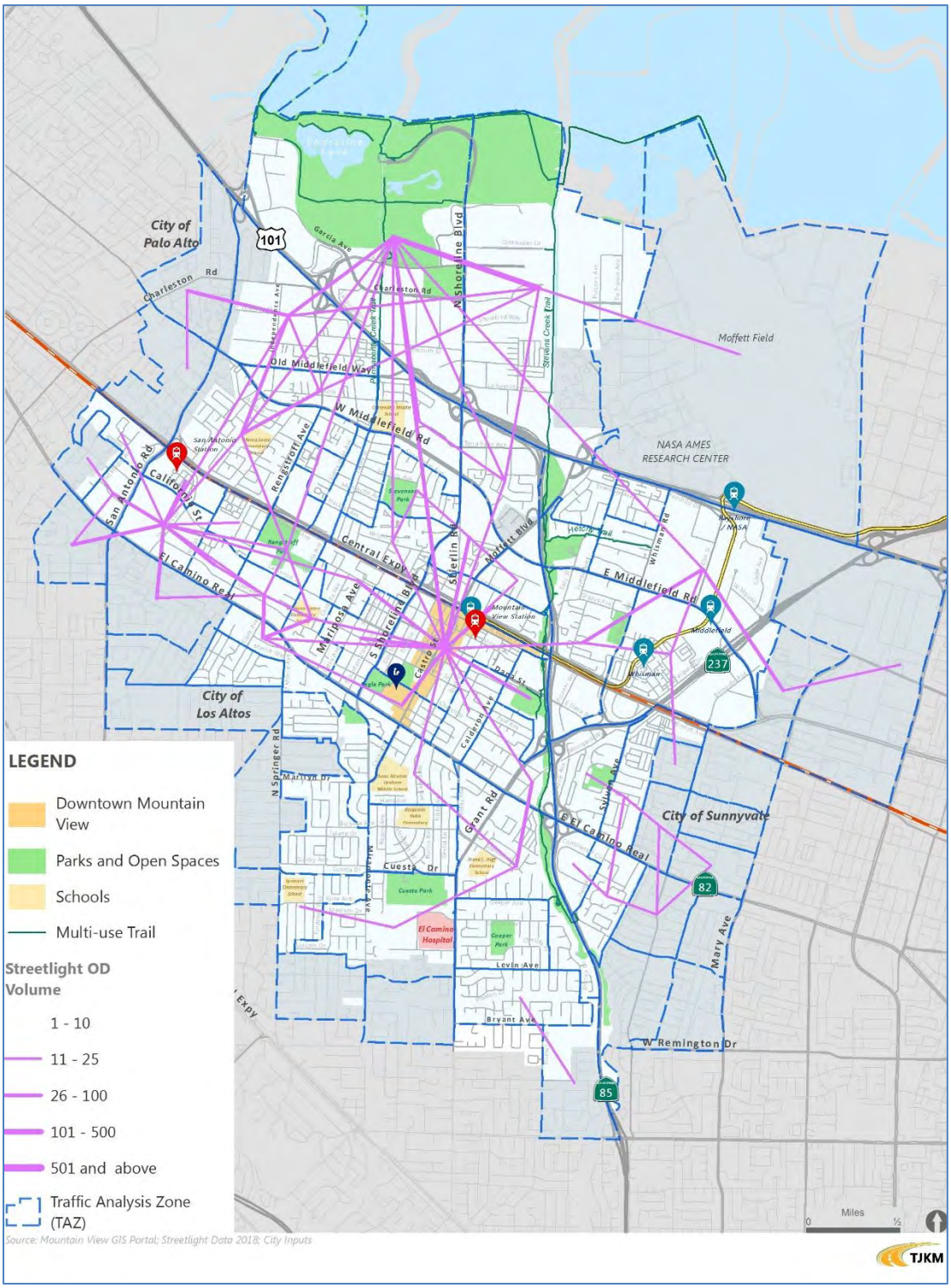


Figure C-15: Origin-Destination (8pm-9pm, Weekday, Pedestrians Only 2018)

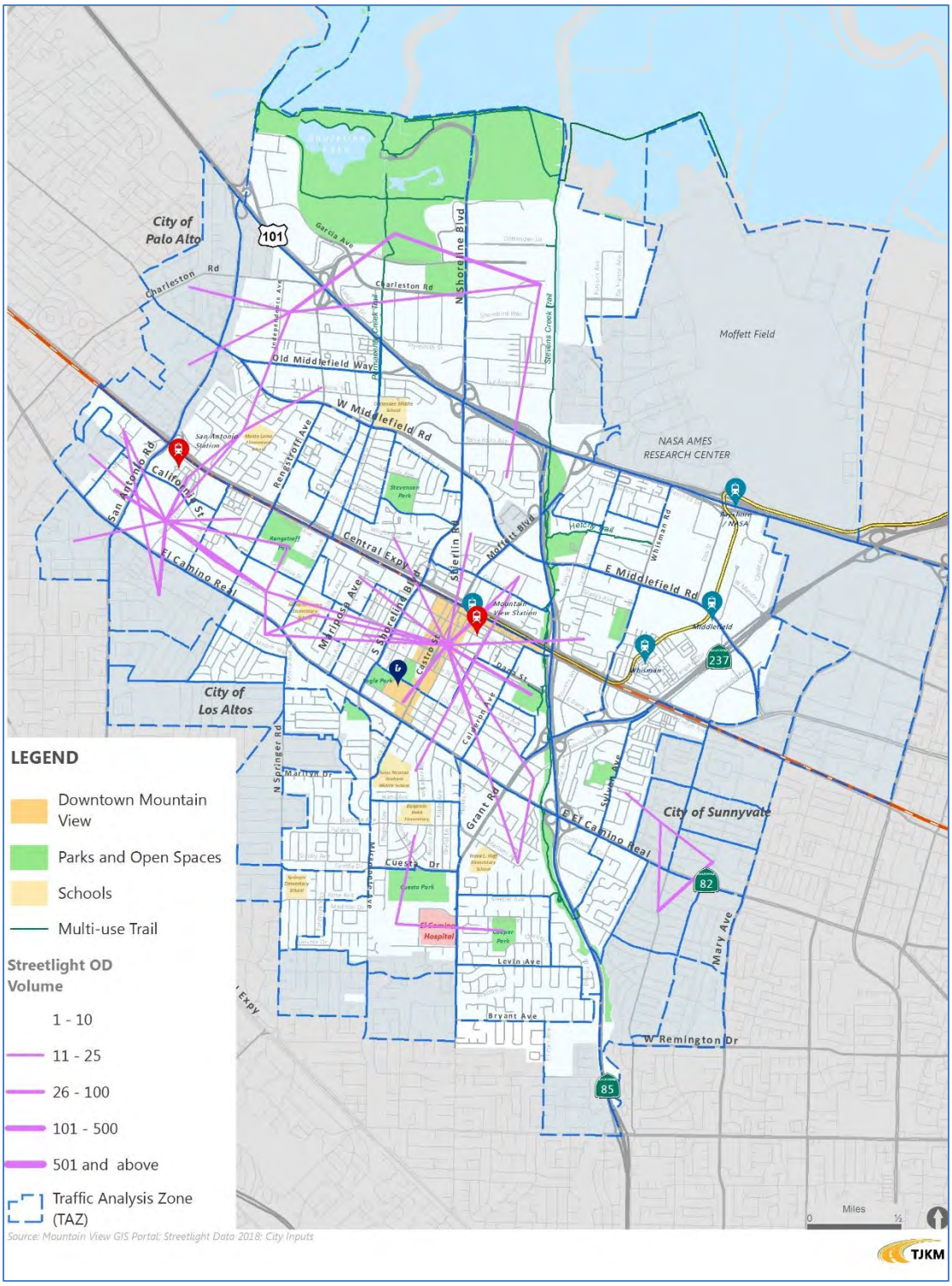
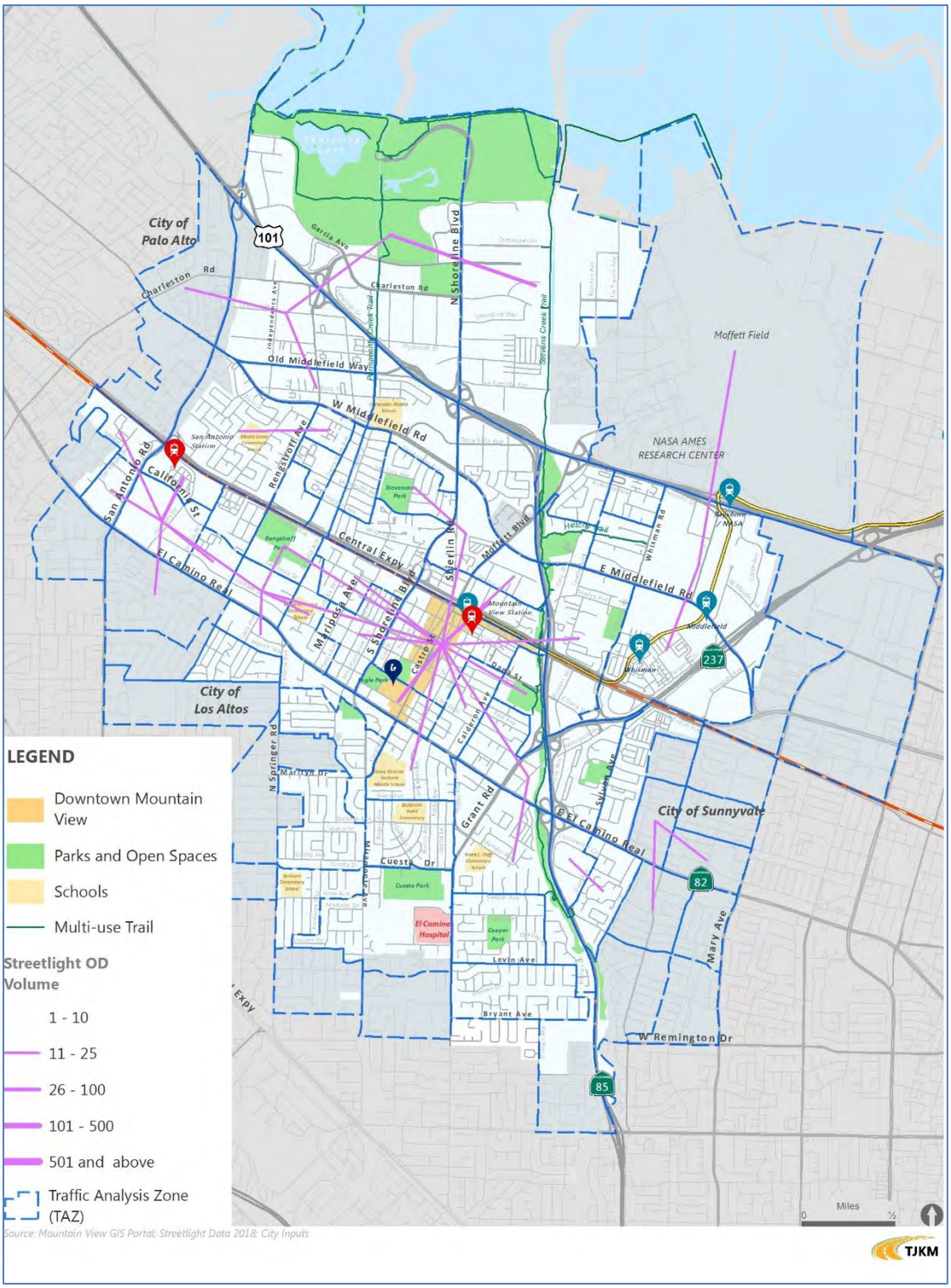


Figure C-16: Origin-Destination (9pm-10pm, Weekday, Pedestrians Only 2018)



Appendix B: Community Engagement

B. Appendix B Community Engagement Meeting Minutes

Location: Zoom Meeting

Date: February 18, 2021

Time: 6:30 pm to 8:00 pm

Re: AccessMV: Community Meeting

Attendees:

- City of Mountain View: Ria Lo, Transportation Manager; Aruna Bodduna, Transportation Planner
- Alta: Sam Corbett, Project Manager; Vesna Petrin, Planner
- 35 community members

Meeting Minutes

Introduction & Community Engagement Summary

- City of Mountain View welcomed attendees and introduced the project.
- Alta began the presentation by providing an overview of community responses to the survey received during the first round of engagement.

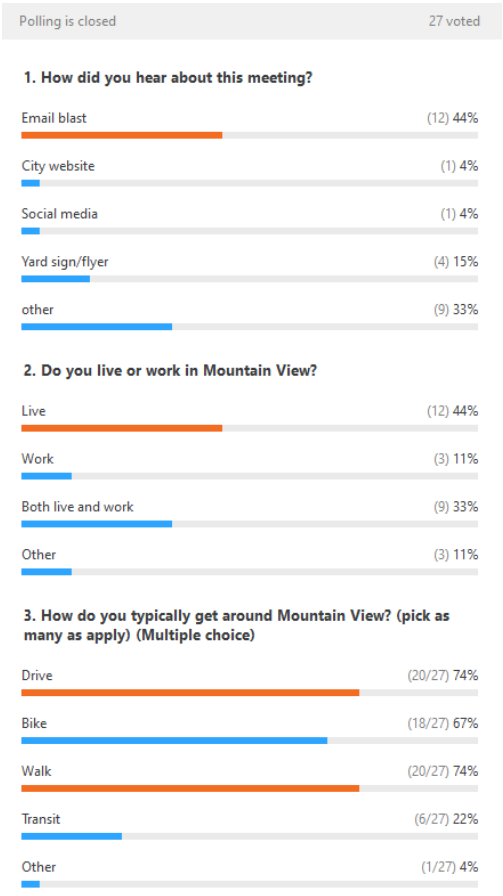
Poll Questions 1-3

- Community members responded to the first two polls, answering how they heard about the meeting, if they live or work in Mountain View, and how they typically get around Mountain View.
- "Other" response to question 1 included seeing a sign advertising the meeting near City Hall.
- The majority of attendees heard about the meeting via an email blast (44%), live in Mountain View (44%), and drive and walk in Mountain View (74%) (Figure 1).

Project Background

- Alta provided an overview of the work completed to date, including the pedestrian quality of service (PQOS), bicycle level of traffic stress (BLTS), and gaps and inconsistencies analyses.
- The City responded to a community comment regarding when the projects would be implemented. Some projects

Figure 1. Poll Results 1-3



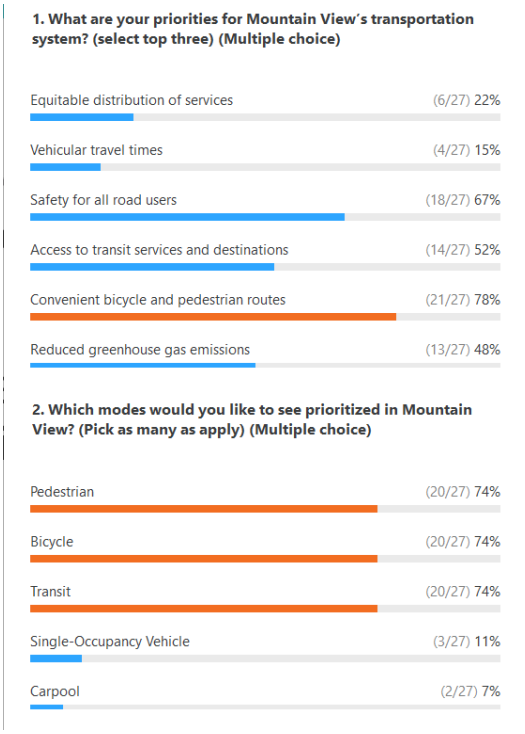
could be implemented thorugh pilots or quick build projects. The City has not traditionally done these types of projects in conjunction with repaving efforts, but that will be part of this planning effort.

- Alta/City clarified inconsistencies related to Middlefield and Central Expressway.

Poll Questions 4-5

- One community comment noted that creating a smaller safe network of slow streets that are oriented towards active modes is more important than making changes to all roads.
- Community members voted that convenient bicycle and pedestrian routes are the highest priority (78%) (Figure 2). Similary, community members would like to see pedestrians, bicyclists, and transit riders prioritized in the city (74%).

Figure 2. Poll Results 4-5

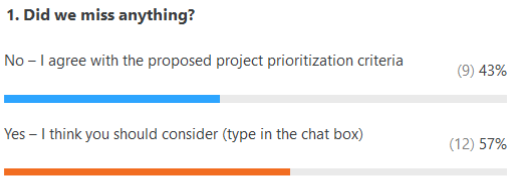


Network Prioritization

- Alta provided an overview of the network prioritization process that was used to prioritize corridors, including the criteria used for the prioritization. The approach and criteria were previously presented at a community meeting in October 2020. The criteria were refined in response to community and stakeholder feedback in fall 2020.
- Alta shared the results of the network prioritization process and then allowed community members to ask questions.
- The City clarified what type of activity will be occuring along El Camino Real as part of Caltrans' repaving project. The City is providing funds to integrate protected bikeways into the repaving project for a section of ECR.
- The City also clarified how the results of the corridor prioritization will be used in project prioritization process.
- A number of community comments were received regarding the importance of and desire for implementing green streets and vegetation.
    - Community members would like to see green streets integrated into the City's Complete Streets policy.
    - One community member shared a resource from Sierra Club outlining how to incorporate green streets into City planning priorities.
    - The City noted it will be updating its Tree Master Plan in the near future.
- Community members also noted the importance of slowing vehicular traffic to create safer streets for biking and walking.

Figure 3. Poll Results 6

Project Prioritization



- Alta provided an overview of the proposed project prioritization criteria and then asked community members to vote on whether the project team missed anything.
- Overall, just over half of attendees noted that there are additional factors that should be considered as part of the project prioritization process (Figure 3).
- The majority of community comments were related to the the incorporation of green complete streets, trees, shade, and vegetation.
- Additional comments included:
    - Sidewalks (The City noted that sidewalks will be addressed in the upcoming Pedestrian Master Plan Update);
    - Gap closure (Alta noted the gap closure element was included in the corridor prioritization process);
    - Timing: how long will it take for the project to be done

Next Steps

- Alta provided an overview of the next steps for the project, including presentations to B/PAC and City Council later this spring.

Additional Q&A

- One community member asked for clarification on which projects will be completed in the next 1-2 years. The City clarified those are projects that are already moving forward, e.g., Shoreline reversible transit lanes, and others in North Bayshore. The City noted that this process is looking beyond those near-term projects.
- One community member noted slow streets promote bicycling and walking, and reducing traffic speed should be prioritized more as a way to encourage mode shift to active modes. Implementing green streets are also an important component of promoting this mode shift.
- Two community members noted more east-west corridors should be prioritized highly in addition to El Camino Real.
- One community member noted that the recommendations made by the Environmental Sustainability Task Force two years ago should be recognized and incorporated into the prioritization framework.
- Another community member noted support for road diets to be prioritized throughout the city.
- One community member asked specifically about upgrades to the trail network. The City noted they are working on some projects related to improving trail crossings in the city.
- One community member noted the importance of addressing the roadway network at city boundaries, and that connectivity to neighboring cities could be improved. The City noted that they have been meeting with Los Altos to discuss pedestrian improvement projects at city boundaries.

The City clarified that the presentation slides will be posted to the City's website and encouraged community members to send any additional comments via email. All written comments received during the meeting are included in Table 1.

Table 1. Written Comments

Number	Comment / Question
1	What percentage of Mountain View residents have responded in your Community Engagement actions?
2	I don't believe that chat is available.
3	other: I saw a sign advertising the meeting near city hall last week
4	Convenient ped and bike routes +safety are the top concerns, We find, post COVID, that a CONNECTED SLOW SAFE NETWORK of green streets , where auto traffic is very slow, is what really is needed to get .
5	to get people out walking and kids biking
6	I am a map person and on a large screen, it is difficult to read, can you expand?
7	A great resource, developed post COVID, for analysing most cities is https://www.sierraclub.org/sites/www.sierraclub.org/files/sce-authors/u4142/Green%20Streets%20Presentation%20-%201-20-21%20DC.pdf
8	these slides will be posted?
9	It's hard to read the maps. Any way to get a link to the maps where we can zoom in?
10	What's the anticipated year that the Bicycle Level of Traffic Stress map on the right will be achieved?
11	How realistic is a bike path down permanente creek? Especially when it is on private property? If unlikely, is a consideration of improving the bike route along Miramonte on the table?
12	What is the status of Central Expy re bikes? It is not clear re colors.
13	Can you explain the inconsistency among plans and the gaps along Middlefield Rd. where I live?
14	Is Colony St. to Permanente Creek Trail connection part of the plan?
15	rather than try to do almost all roads, woudl it be better to try to get a REALLY SAFE network first of some roads
16	And proioritize this network with an integrated approach of ped and bike first, trees, green infrastructure ot water the trees and use native trees and plants to also create a healthy ecology.
17	How much money does Mountain View anticipate to invest in the proposals in this plan?
18	What's currently planned for Middlefield?
19	Are city facilities- like library, pool, etc access considered when prioritizing gaps in "family friendly" routes.
20	In my experience, there are usually cars parked in the bike lane on the north side of Middleffield, rendering the bike line unusable. Do you have plans to take things like that into account?
21	I agree with that comment re getting a really solid safe network implemented sooner and fully support the quick-build approach. Are there still plans for a quick build on California?

Table 1. Written Comments

Number	Comment / Question
22	I would like to see bike/ped routes to schools that do not overlap with car drop off- possibly access to the back of schools.
23	I'd like to second the comment about adding the "green" into the complete streets policy priority. Makes sense to approach street design from a more holistic and integrative lens.
24	I wish you had include complete street as multimodal option as a priority
25	Plant more trees for a pleasant experience when walking or biking
26	Is this supposed to be only about moving within MV or how MV handles transit needs which includes the tens of thousands of cars coming here from 3 major expys? If the former, how can we plan anything without considering day workers in massive numbers?
27	someone on social media just asked about when the first steps toward protected bike lanes on ECR would be implemented
28	I agree with the several comments about adding "green" into the complete streets policy. So much more attractive, which will encourage people to use active transportation. Good for people health, and health of our environment. Plus, by creating linear parks, this addresses city's goal to add additional park space.
29	No one coming from Los Gatos or Hayward is coming by bike.
30	Should there be language around (green) complete streets in the Goals and Priorities from the General Plan?
31	..... (clarifying) Green infrastructure (using bioswales) that will use the storm water beneficially to water the plants and trees, using native plants and trees for biodiversity. These steets are actually loved by peds and bikers as they are SHADY and attractive to use, these streets shoudl have a 15mph MAX speed limit for cars. This woudl be a PRIORITY network which is SAFE and SLOW rather than trying ot do all the streets for every mode
32	The point system shoudl include: Opportunity to get a seperated bike lane (Vision Zero) , a wide pedestrian path, Shade trees along the route (very important we find!), This will bring out peds and bikes that have never felt like wolkign or bikingsafely
33	Agreed. Wondering if prioritization could focus on increasing opportunities to improve streets with protected bikeways and wider pedestrian paths. What are thoughts into looking into "opportunity streets" where people in general and active, emission-free travelers could benefit, including where streets may be underutilized?
34	Usage data just confirms current route safety. There are routes we don't use BECAUSE they are not family friendly- but wish we could use.
35	Do you have a list of the corridors (in addition to the map) for the Corridor Prioritization Results?
36	The entirety of ECR is getting addressed soon during the Caltrans work, right?
37	What are we doing about improving connectivity with our neighbor cities? In particular connectivity to Los Altos. Many MV kids have to cross El Camino to get to school?
38	To be clear - these top priority corridors will be bumped up in the CIP to an earlier year?
39	Will some projects that are currently in the CIP get bumped for some of these high priority projects? Will this work be done in time for the CIP planning process this year?
40	Can you review again the enhanced safety scoring?

Table 1. Written Comments

Number	Comment / Question
41	Don't need an answer hear but the north end of the Ringstroff priority 1 corridor terminates into three tier 4 corridors- That intersection is extremely hazzardous for bikes, peds and vehicles as well.
42	Love the scoring approach, it's really a good approach - however, its missing some critical items I mentioned above "The point system should..." .
43	Which were the east-west corridors that have been identified as high priority? I think I saw mostly north-south…
44	Shouldn't routes with no bike lanes at all be higher priority than routes that already have bike lanes? E.g. it is very dangerous on Miramonte from Park to ECR, Grant from Phyllis to ECR, etc.
45	I like the scoring approach, but don't cannot understand why California St. received a low enhanced safety score?
46	Is Montecito on there in the 2nd tier?
47	How does this prioritiziation approach incorporate future separate bike paths (Permanante Creek, Stevens Creek extension)? Do they just score very low, or do they show up elsewhere (e.g., the Diercix Rd score for Stevens Creek)?
48	Add my support to green street especially trees to corridor prioritization
49	I heard that trees are being cut down to accomodate bike lanes - this is very wrong
50	Even if El Camino is lined with class 4 bike lanes, I would avoid this road due to vehicle fumes in addition to safety reasons. Why are bicycle corridors not located on quieter streets that are parallel and within a block or two of El Camino?
51	Corridors extending into west MV don't look that great. Why is this?
52	I agree with bringing green space infrastructure into the plans.
53	I think that bike riders (which I am) tend to be more vocal than seniors (which I also am) who would better benefit from better transit (community shuttles) than better bike paths. As we all age, I think that better transit is imperative.
54	Will the final list of priority projects be ready in time for the coming CIP planning this spring?
55	Why isn't greenhouse gas emission reduction potential a project related goal?
56	Not sure if the moderators have noticed this - sorry if I'm pointing out something that's already known - liking a comment seems to bump it up in the list so perhaps it might not get noticed. :)
57	Challenges with our public streets cross many disciplines, not soley on transportation, and our solutions will need to be as well. Quick look on Alta's website shows many types of projects that include trails, greenways, placemaking, bike boulevards, etc. Looking forward to seeing how the consultant works with inter-departmental staff to make the best use of our public streets!
58	I'd like to see green complete streets added in please!!
59	Will bicycles be allowed back on Castro Street after the pandemic emergency is over?
60	I was hoping to see discussion about sidewalks specifically.
61	Add opportunities to add more trees & vegetation

Table 1. Written Comments

Number	Comment / Question
62	How much are priorities being determined by public input rather than actual surveys of what is needed?
63	What is missing - Time scale..how long will it take for project to be done?
64	Did not talk about the transit center and a need for a competitive design for a world-class outcome.
65	well done! i need more time to review the proposed priorities list before commenting.
66	re: bicycle facilities on ECR, there are many destinations on El Camino, so other streets are often not good substitutes
67	I second that question re quieter streets as well - I'd like to see a 2nd E-W corridor as a second option. Perhaps Montecito + Central Ave which I believe is a bike boulevard and connects to the Ellen Fletcher Blvd on the PA side.
68	Need a priority on street trees - connectivity for pollinators and birds
69	I get the numerical approach. But I think that it was built on some assumptions- that bikes want to share roads with cars (that universal access is a positive instead of a negative), and that destinations for bikers were not a high consideration- Stephen's Creek Trail, the city library, city hall, pools, etc. There is no way to access city services safely with a family on bikes from south Mountain View.
70	Much as I like biking, in practice (shopping, bad weather, limited mobility) a good transit system is what moves communities ahead.
71	If the projects include Trees/Green, this could add additional park space, esp. in areas that are low on park space.
72	Please also examine GREENING our accessways, whether it's large trees to provide shade, buffers using plants, trail-like walking and biking, etc.
73	Gap closure?
74	FActors to include: Can we slow the car traffic on this street? (Slow traffic makes it safe to allow your kids to use and for all peds and bikers) Can we capture MORE space for peds, trees, and bike lanes with protection, within the right-of-way, by narrowing the auto lanes (and slowing traffic as a result)
75	When will MV get started on the Ped Plan update?
76	Corridors into west side of Mountain View lack emphasis.
77	Thank you very much for all the work on AccessMV!! Since transportation routes are a huge part of the city's public realm, i'd really be interested in seeing a ecosystem health/urban nature more weaved into prioritization if possible (geographic distribution, community support?)

Table 1. Written Comments

Number	Comment / Question
78	My last comment related to the survey. Corridors into west side of Mountain View lack emphasis.
79	Another Proposed Project Priority consideration- Time Scale: How long will it take for project to be done
80	Concrete barriers meant to protect bike lanes can contribute to stress for bicycle commuters by constraining them, mixing them with pedestrians, preventing passing, and forming rock-hard obstacles to trip over and fall on.
81	Can you giive a brief overview of the projects selected for the next 1-2 years?
82	When choosing corridors, did you consider trails as well as roads? It would be nice if we could take the Permente Creek Trail up to the bay without having to stop and cross a road
83	what % of trips in MV are less then 3-5 miles? is this known?
84	Where can one find the list of projects that are in the Construction phase (and other phases of course)?
85	Sidewalks are being somewhat ignored in favor of bike lanes- woudl like to see the ped master plan, integrated with street trees for shade, and slow traffic network. Slow autos need narrow lanes 8'-10' - this will allow the sidewalks and bike lanes to capture more space and preserve parking along curb.
86	Consider repriortization of Siera Vista to a corridor of Farley to the tunnel under Central Expy/RR to Escuela to El Monte to Foothill Expy.
87	What was the city's website again?
88	Wanted to say “thank you” for AccessMV as well - it’s really nice to see thought going into prioritization!
89	Very excited about the improvements to the network for bikes and peds.
90	I like g dev’s comments re slowing traffic re road diets!!
91	Yes to heirarchy of streets! Diversity of street typologies, with each mode having a dense and connected network throughout to the city.
92	Is Sleeper Ave on the map as a possible bike route with enhanced safety, sidewalks & trees? The street is really wide.
93	If I remember correctly , wasn't the nexus of the comprehensive modal plan was to take all the transit providers in Mountain View and overlay their routes to reduce duplication. One of the goals was to improve transit so that we could reduce single vehicles travel, traffic congestion and green house gases.

Table 1. Written Comments

Number	Comment / Question
94	Echoing Greg Unangst's comment. I vote for improving the bike blvd that matches up with the Ellen Fletcher bike blvd on the MV side. There's a difficult crossing on San Antonio by the Google Campus. A bicyclist needs to use the ped signal there. Also on the stretch by the Safeway at Shoreline, it's rather unsafe.
95	Yes, like the idea of connecting Farley to Escuela to outside the city
96	Regarding connectivity to Los Altos, El Monte should provide an option, correct?
97	can we submit questions & comments by email in the next few days?
98	Isn't there going to be a new school on California?
99	When will the next Transit Center update/ public input meeting occur? It's such an important and complicated project and am curious where we are on its design. THx!
100	Do you anticipate the transportation budget being reduced to address other city spend related to covid recovery?
101	Thanks for this session!!
102	I was pleased to see the transition in the process from the term Community Engagement in determining the Corridors to Community Support in determining the projects. Two comments- first you skipped over Community Participation, the involvement of persons and residents, and second, how do you plan to measure/monitor Community Support?
103	Thank you!

October 22, 2020

Virtual Community Workshop
Meeting Notes

Attendees

Ria Lo, City of Mountain View

Aruna Bodduna, City of Mountain View

Damian Skinner, City of Mountain View

Sam Corbett, Alta Planning + Design

Vesna Petrin, Alta Planning + Design

21 community members

Actions/Next Steps

- City to connect with traffic team re: evaluating all existing street widths.

Notes

Project Overview

- The City of Mountain View opened the meeting by welcoming all attendees and providing an introduction to the project.
- Alta provided an overview of the project purpose and approach, as well as an overview of the analyses completed to date, including maps by mode, pedestrian quality of service (PQOS), bicycle level of traffic stress (BLTS), and bicycle low stress islands.
- The presentation was opened up for live poll questions 1-4.
- Poll results:
    - Do you live or work in Mountain View?
        - Live (4) (33%)
        - Work (2) (17%)
        - Both Live and Work (6) (50%)
        - None (0) (0%)
    - How do you typically get around Mountain View? Pick as many as apply
        - Drive (9/12) (75%)
        - Bike (7/12) (58%)
        - Walk (9/12) (75%)
        - Transit (2/12) (17%)
        - Other (0) (0%)
    - What are your priorities for Mountain View's transportation system? Pick top three
        - Equitable distribution of services (2/12) (17%)
        - Vehicular travel times (5/12) (42%)

        - Safety for all road users (9/12) (75%)
        - Access to transit services and destinations (3/12) (25%)
        - Convenient bicycle and pedestrian routes (9/12) (75%)
        - Reduced greenhouse gas emissions (7/12) (58%)
    - Which modes would you like to see prioritized in Mountain View? Pick as many that apply
        - Pedestrian (9/14) (64%)
        - Bicycle (12/14) (86%)
        - Transit (10/14) (71%)
        - Single-Occupancy Vehicle (1/14) (7%)
        - Carpool (2/14) (14%)

Prioritization Process

- Alta provided an overview of the prioritization process and proposed criteria, including:
    - General Plan goals and policies
    - Proposed network criteria and metrics
    - Example of how the proposed criteria are applied to a segment of California Street
- The presentation was opened up for live poll questions 5-6.
- Poll results:
    - Do you concur with the presented metrics?
        - Strongly support (3) (23%)
        - Somewhat support (6) (46%)
        - Somewhat oppose (3) (23%)
        - Strongly oppose (1) (8%)
    - Do you concur with the weights suggested by the scoring system for each metric?
        - Strongly support (3) (21%)
        - Somewhat support (7) (50%)
        - Somewhat oppose (4) (29%)
        - Strongly oppose (0) (0%)

Discussion

The presentation was opened up for a live Q+A discussion. Participants were given the opportunity to ask questions by writing them in the Q+A box or live by raising their hand. The key comment and question themes and discussion are presented below. A full list of written questions and comments are included in the following section.

Timeline for Improvements

Several questions were related to the timeline for implementing the improvement projects. The City made clear they need to proceed further into the prioritization process to identify what the specific barriers are for implementing the projects. Some of the work that has gone into the project, e.g, the High Injury Network, has already been incorporated into the Capital Improvement Program.

Regional Connectivity

One community member asked if the project is considering destinations in neighboring cities as part of its prioritization process. The City noted that they are working with other agencies to incorporate destinations beyond Mountain View.

Prioritization Process

Process

One community member asked how the prioritization metrics were established, and whether they followed industry standards. Alta noted that the criteria follow the City's General Plan as a guiding document, and that the criteria and metrics are more robust than most industry examples. The City noted that Mountain View does not currently have a prioritization tool.

Cost and Feasibility

Several comments were related to how cost and feasibility will be integrated into the prioritization process. The City noted that cost and feasibility will be weighed as part of the Plan's project prioritization process. Cost and feasibility will also be explored as part of the Capital Improvement Program. The AccessMV project team is also updating cost estimates as part of this effort.

Ridership and Usage Numbers

Several community members noted that it is important to consider how many people would use a certain improvement project as part of the prioritization process. Mountain View requires bike and pedestrian counts as part of the general traffic counts it requires for development projects. While the City does not have a formal count program in place, they are working to create one.

Other Modes for Consideration

Community members noted that additional modes that should be considered are micromobility devices like scooters and skateboards as well as autonomous vehicles.

Community-Identified Desires

Community members noted they felt that Class IV protected bikeways were safer than Class II bike lanes, and noted they would welcome more protected bikeways that are separated from vehicles. Some participants also mentioned the desire for more street trees.

Community-Identified Concerns

One community member expressed concern about the traffic impacts of development projects. The City noted that they are working to encourage alternative modes as a way to reduce congestion.

Location-specific concerns related to biking included California Street and Fairchild.

Other Comments

One participant asked if the City is evaluating all existing streets to understand whether they are currently wider than needed. The City noted that this is not part of the scope of the AccessMV project, but they will discuss the idea with the City's traffic team.

One community member asked how educational campaigns relate to the AccessMV project. The City noted that education campaigns are part of the City's Vision Zero work which is funded separately from infrastructure projects, and that they welcome comments on which aspects of educational projects should be prioritized.

Written Questions and Comments

1. Does the transit propensity just cover residential households or also destinations?
2. How can you tell which streets lack sidewalks in the maps?
3. Fairchild is very poor for biking, and it's unclear to me when that will be repaved and better lit. Will the new project proposal for Ellis/Fairchild help to prioritize those improvements?
4. What is the point of asking about live/work status in the midst of a pandemic where most are working and going to school at home???
5. When will the new, planned, low-stress islands be in place? What is the target date?
6. Why not ask if someone uses bikes for recreation, shopping or work access? All are very, very different needs and uses.
7. Re Poll 4, the mode I would really like to prioritize is Driverless Uber/Lyft, which is soon to be tested without human safety drivers in AZ and NV.
8. Comment: Interesting in the poll that pedestrian mode fell relatively low, given that nearly everybody walks!
9. Does the general plan also talk about non-GHG emissions (e.g., NOX, tire/brake dust, etc.)?
10. California isn't a suggested route for Castro?
11. Thank you for your response but you did NOT ask the question about what people do non-pandemic per live/work. Where was this meeting and content advertised besides the city website and what is the # of responses on this meeting and online? How do these numbers represent community "agreement"???
12. I missed the earlier presentation, but will the city be evaluating all existing streets that are currently wider than needed for possibilities to make the highest use of them?
13. And when do you expect the 1st projects to start?
14. I believe it came up at the BPAC, but what are the current thoughts on prioritizing project cost. E.g., I assume protected bike lanes are (typically) much cheaper than, e.g., new overpasses/bridges, even though the latter may close more critical gaps.
15. Do you have data on how many people ride each VTA line (and light rail,) and the MVgo buses, and the workplace shuttles (pre-COVID)?
16. Does the City have specific goals for mode-share (e.g., less than 50% SOV for all trips, or less than X total VMT)?
17. VTA lines can be found on data.vta.org if you are curious, and MV community shuttle (and I think MVGo?) have data on their websites.
18. How were the variables and their weights determined? Were any existing prioritization tools explored? Are there any industry standards for establishing priority?
19. Comment: driverless vehicles don't help VMT, emissions, equity directly.
20. MVgo did share rider data as part of the study
21. As a comment, I do look forward to seeing more solid cost estimates/feasibility estimates for all these projects so that we can get an idea of what can be done quickly and get improvements on as short a time-frame as reasonable. It's a bit hard to wrap one's head around just the prioritizations without that context.

22. Does the city do bike or pedestrian counts on California Avenue and other corridors?
23. Comment: I actively add distance to trips (or don't make trips) to avoid streets like California, so I'd never be counted there.
24. I find it impossible to imagine a prioritization process that doesn't include 1) the number of people who will use the "new thing" and 2) the cost of the "new thing."
25. Since most residents live within 1-2 miles of our border and have a high percentage of trips to neighboring cities, what is the plan to connect to networks in those cities?
26. Did I understand correctly that projects will be "corridor"-sized chunks, and that most corridors will be ½-1 mile in length? Does it seem like that might cause lots of short, unconnected segments to be completed, somewhat counter to the goal of overall connectivity at least in the short term?
27. In the past the city has considered creating bike boulevards similar to the Bryant Street bike boulevard in Palo Alto. Latham St. seems like the ideal location. Is that still under consideration (at Latham or elsewhere)?
28. As a follow-up question regarding educational campaigns, I'm still unclear on whether funding for those sorts of programs AND infrastructure projects come from the same pot of money. If so, how would educational campaigns be impacted by the priority tool?
29. Please do add lots of trees, and as much protection of bike lanes as you can.
30. The Memo said: "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." This makes sense, but 1) your definition of "intra-City transit" is rather limited. For instance, Moffett Field is not included since officially it's not a part of MV, but it's one of major destinations. 2) the absence of "spatial gaps" is not enough to make intra-City transit efficient. For instance, both alternatives A and B in Community Shuttle Study kept the "loops" that would make shuttle impractical for daily commutes since the trip time to/from major destinations would be too large for many riders. I don't see any recommendations to address this issue. 3) the Community Shuttle Study recommendations would address temporal gaps only partially, by extending service hours. This is not enough. Frequency should also be increased to reduce intervals between shuttles at least to 10 minutes, otherwise it will remain nearly useless for most people (maybe except seniors who are less constrained in time, and this is just maybe). How and when will these significant issues be addressed?

Date: November 17, 2020

Re: AccessMV Survey Results

Survey Results

The AccessMV survey received 80 responses between October 22 and November 13, 2020. Summaries of responses by question are included in the following pages. All open-ended responses are included under Question 7.

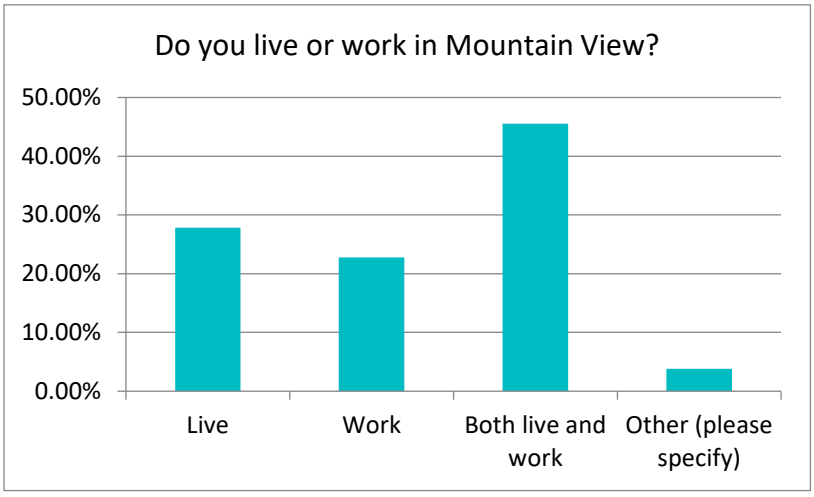
Key open-ended comments/themes include:

- The survey was too technical and complex; several respondents noted they had a hard time understanding the metrics
- Pedestrian/bike safety (in particular SRTS routes) should be prioritized
- Connectivity with adjacent cities and destinations should be prioritized

Question 1

Do you live or work in Mountain View?

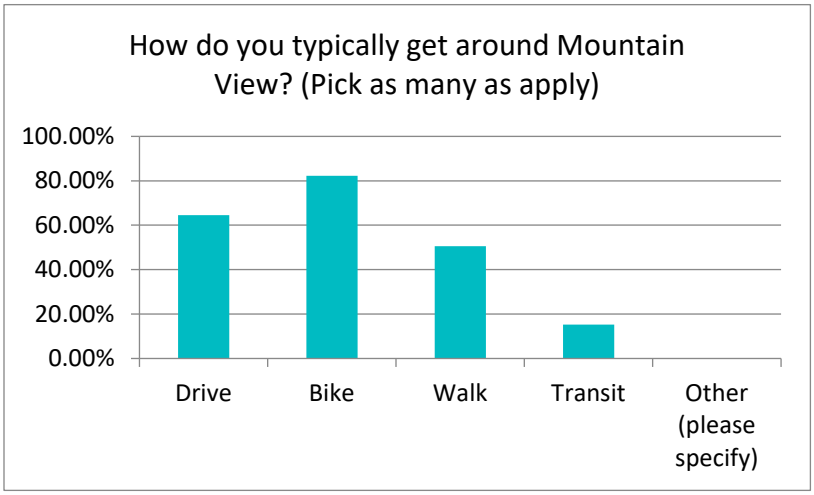
Answer Choices	Responses	
Live	27.85%	22
Work	22.78%	18
Both live and work	45.57%	36
Other (please specify)	3.80%	3
	Answered	**79**
	Skipped	**1**



Question 2

How do you typically get around Mountain View? (Pick as many as apply)

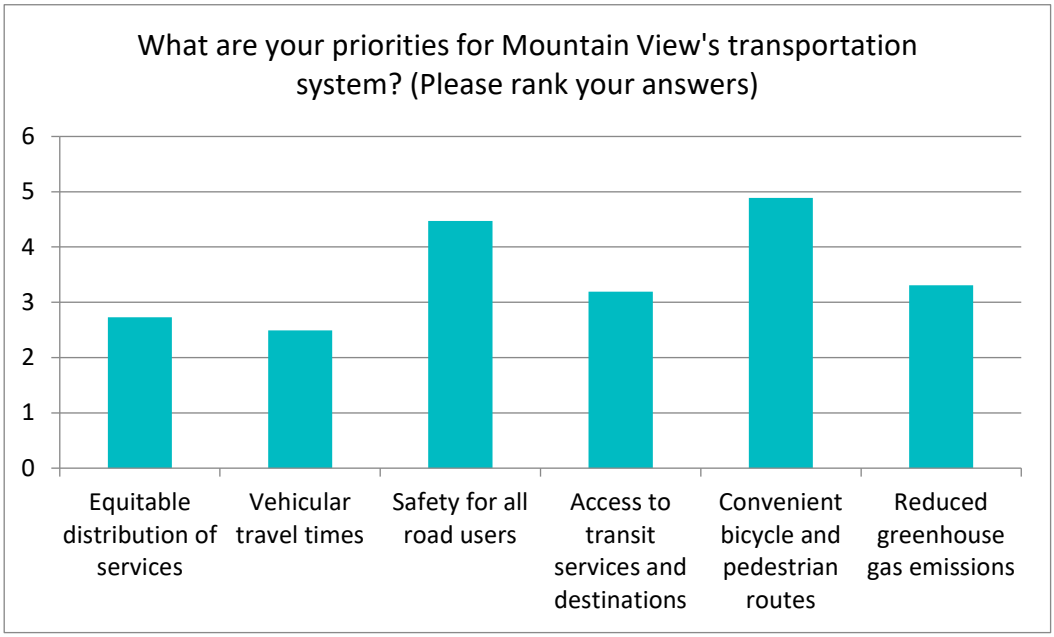
Answer Choices	Responses	
Drive	64.56%	51
Bike	82.28%	65
Walk	50.63%	40
Transit	15.19%	12
Other (please specify)	0.00%	0
	Answered	**79**
	Skipped	**1**



Question 3

What are your priorities for Mountain View's transportation system? (Please rank your answers)

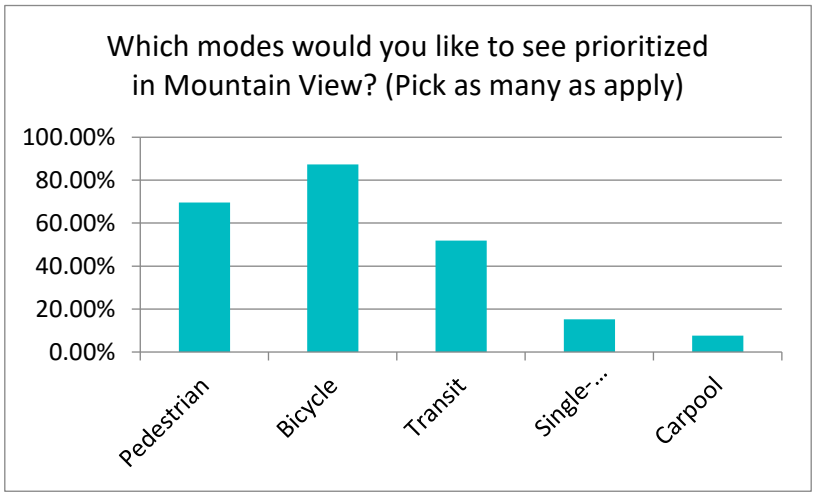
	1		2		3		4		5		6		Total	Score
Equitable distribution of services	5%	4	9%	7	13%	10	21%	16	27%	20	24%	18	75	2.73
Vehicular travel times	9%	7	5%	4	8%	6	18%	13	20%	15	39%	29	74	2.49
Safety for all road users	21%	16	36%	27	25%	19	8%	6	9%	7	1%	1	76	4.47
Access to transit services and destinations	6%	5	8%	6	21%	16	35%	27	23%	18	6%	5	77	3.19
Convenient bicycle and pedestrian routes	50%	38	18%	14	14%	11	9%	7	4%	3	4%	3	76	4.89
Reduced greenhouse gas emissions	9%	7	24%	18	19%	14	8%	6	16%	12	24%	18	75	3.31
													Answer	**78**
													Skip	**2**



Question 4

Which modes would you like to see prioritized in Mountain View? (Pick as many as apply)

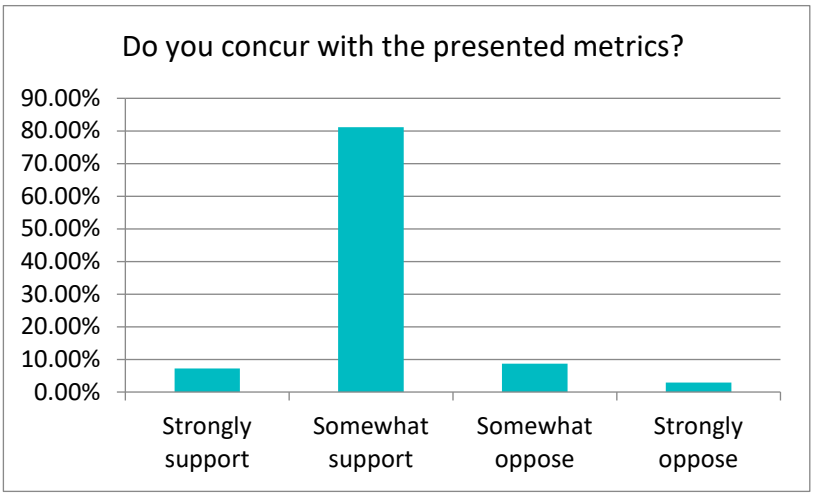
Answer Choices	Responses	
Pedestrian	69.62%	55
Bicycle	87.34%	69
Transit	51.90%	41
Single-Occupancy Vehicle	15.19%	12
Carpool	7.59%	6
	Answered	**79**
	Skipped	**1**



Question 5

Do you concur with the presented metrics?

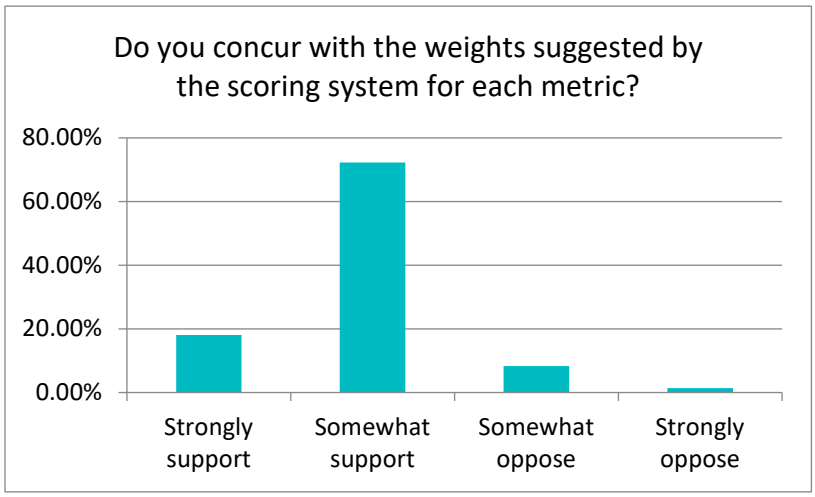
Answer Choices	Responses	
Strongly support	7.25%	5
Somewhat support	81.16%	56
Somewhat oppose	8.70%	6
Strongly oppose	2.90%	2
	Answered	**69**
	Skipped	**11**



Question 6

Do you concur with the weights suggested by the scoring system for each metric?

Answer Choices	Responses	
Strongly support	18.06%	13
Somewhat support	72.22%	52
Somewhat oppose	8.33%	6
Strongly oppose	1.39%	1
	Answered	**72**
	Skipped	**8**



Question 7

Do you have any other comments?

Answered	**33**
Skipped	**47**

- I don't understand the Equity section of the metrics or understand what the High-Injury Network is, even after finding the slides on the website. You need to define the jargon that you're using (HIN, Transit Propensity Score, CalEnviroGreen). That said, I'm highly supportive of improving cycling and walking safety and extending Mountain View's network of separated cycle routes.
- It's good. 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.
- worth thinking through policy for trails too. Bay Trail and Stevens Creek Trail are nice but parts close at sunset. Should lose significant points if during specific hours (and ironically, the most dangerous ones), bicyclists and pedestrians are forced back on e.g. Shoreline and Central.
- I think that if we can promote mixed use zoning or increased housing density along with this it would be great. If there is little need to travel at all to access essential services like food, groceries etc, then the scale of the project can be reduced. Further, if we can increase housing density, then the impact of the same project will be increased.
- I feel like the mobility score doesn't take into account that separating out different modalities can make moving around more comfortable for the different modes, i.e. if Castro Street remained closed for vehicles, that makes it more comfortable as a pedestrian/cyclist on Castro Street, and parallel streets can serve the vehicular traffic. This example obviously has other issues around routing cars through predominantly residential areas, but a wider thinking around providing separate facilities for cars/buses and pedestrian/bike is much preferable to me than a busy road (like Shoreline) with bicycle facilities.
- I've had several close calls crossing Rengstorff Ave at Rock St with the blinking lights. I've switched to crossing at Montecito Ave where there's a proper traffic light, particularly when it's dark. Please try to arrange bike routes to use proper traffic signals when crossing major roads. Safety first!
- I like having bike routes, so I can get around without running into cars. Having bike lanes on roads is good too.
- I did not understand questions 5 or 6, so I just answered randomly.
- Questions 5 and 6 are a touch technical, and I'm not confident that I fully understood them.

  I also think it is important for Mountain View to coordinate with surrounding counties to connect bike infrastructure. For example, the Stevens Creek Trail is a great connector from the South for MV residents, but for people coming from further south, it begins kinda abruptly in a neighborhood that is only really accessible to confident road cyclists.

Partnering with Sunnyvale for a paved trail that connects to the Guadalupe Creek Trail would be awesome to pull residents from San Jose, and maybe even Campbell or Los Gatos.

Accessing Palo Alto and Los Altos to the West is also very difficult on bike.

- Question 5 is a bit to get through an understand. Was there a different way to ask it, or more specific questions that could have been asked instead which require less research and context?
- Any plans should have a easy-to-find location on how its progressing, as well as expected costs and desired funding sources.
- Pleased that walkability / bikeability is weighted relatively high
- could not find the docs to refer to that were mentioned. it would be much better if all of the information could just be presented in each question rather than trying to hunt down external documents.
- Honestly, I did not understand these questions. They are so technically written. So I stopped and reviewed the documents on the citys website. (I'm a college graduate not a Phd.) Then I read the staff report. That too was so technically written. Before you put a survey like this out on Next Door, maybe you should have an explanation of what your questions really mean. In one of the first questions, we are asked to rate different attributes without any guidance on what those choices mean. That is ridiculous. If you want a valid survey, you need to communicate better.
- Complex survey when it comes to metrics ... u need to design better surveys . Everyone knows the priority modernize our transportation infrastructure to self driving transit PODS that lesser cars can be on a the major artifires
- I did not understand your metrics at all. I was unable to answer the questions above because of that. Please be aware that not everyone can ride a bicycle; the older I get the more that is apparent to me. And public transit is insufficient to be a realistic alternative. Please do not operate on the false assumption that if you eliminate parking spaces people will not drive. That is wishful thinking and not based on reality.
- The main reason that my score is only 'somewhat support' is I'm concerned about the 'number of modes supported' I am in favor of bike + ped paths that are not accessible by car, and I'm worried that this scoring would disadvantage such improvements.
- Need to make bicycle travel accessible and safe for all age levels - not just adults.
- Need to get people out of their cars.
- One of the largest concerns for pedestrians and bicyclists tends to be personal and road safety. Please give this metric more points.
- I would like to see middle and high school routes prioritized. Kids at that age have more mobility to ride bikes. I don't think MV does enough to recognize the routes that LAHS students take when riding bikes to school.
- I want the city to ease up traffic and parking for residents affected most by transit enhancement before my and other residents full BUY IN. Make the streets a priority for residential parking, not commuter and office worker. Also the narrower streets have become highways. FIX THAT, then we can talk buy in for other things like transit. Otherwise mess on top of mess and more disgruntlement

- "The metrics are so complex that its confusing to pick out what's more heavily weighted. You bundling groups of choices together, not allowing, for instance, that I weigh rail most heavily, and bus the least important."
- I don't think I took this survey previously, but I did respond to some or all of these in a recent online session with Staff and the consultant.
- In the metrics for Question 5, I propose assigning 10 points instead of 5 points to corridors on a suggested route to school. School children need a little more protection than adults, since they are not as aware of their surroundings and not as predictable as adults. To account for this change, there should be 30 total possible points for Safety in Question 6. Thank you!
- Thanks for providing an opportunity to participate. The new major intersection green striping for bike lanes is MUCH appreciated, as is the bike-detection traffic-light change controls on the streets - so nice to ride a bike onto it and have the lights change for us! MV seems a little ahead of the game compared to other cities - that's something we locals love about MV! My wife and I do MOST errands locally by bike - Farmer's Market, daily newspaper, PEETS, AVA's shopping, and appreciate the general riding safety. One more thing would help - cleaning up the fallen leaves - now helps us avoid hitting plastic/recycling debris the leaves HIDE, and clean-up before rain helps us avoid the dangerous, slippery leaves walking or biking. They are a hazard and MV streets seems to be way behind (e.g. Eagle Park surround) - maybe not understanding the hazard or benefits of clean-up. I hope you can share this with them. It would really help.
- it is too complicated for me to make such a strong statement on such a technical document. I have to trust the expertise and good will of the city staff
- Please prioritize safe bike lanes!
- "The focus on ""scared cyclists"" may lead to the design of facilities which are costly, and create other hazards (accumulation of debris, having no ""escape route"" when cars turn in front, collision hazard, etc.). The Bike Plan gives the views of non-cyclists too much weight (what do we need to do to get them to ride), as opposed to soliciting the views of long-time riders, for improvements *they feel* will improve cycling. Just because one is comfortable riding in traffic does not detract from their ability to give input which will help *all* cyclists."
- Students should have a safe route to bike to and from Mountain View High School. As it is now, they have to ride their bikes between the parked and moving cars. There is a significant chance that a student could be hurt badly by having someone open a car door in front of them, being hit by a moving car, or both. Please prioritize safe bike routes to our schools.
- Cross border connectivity and the high injury network seem to be underweighted.
- "The memo said: ""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."" This makes sense, but 1) your definition of ""intra-City transit"" is rather limited. For instance, Moffett Field is not included since officially it's not a part of MV, but it's one of major destinations. 2) the absence of ""spatial gaps"" is not enough to make intra-City transit efficient. For instance, both alternatives A and B in Community Shuttle Study kept the ""loops"" that would make shuttle impractical for daily commutes since the trip time to/from major destinations would be too large for many riders. I don't see any recommendations to address this issue. 3) the Community Shuttle Study recommendations would address temporal gaps only partially, by extending service hours. This is

not enough. Frequency should also be increased to reduce intervals between shuttles at least to 10 minutes, otherwise it will remain nearly useless for most people (maybe except seniors who are less constrained in time, and this is just maybe). I'd like to know how and when these significant issues will be addressed."

- "THIS SURVEY IS UNREADABLE.

Appendix C: Shuttle Study

CITY OF MOUNTAIN VIEW

City of Mountain View Shuttle Study

October 2019

TMD
TRANSPORTATION MANAGEMENT & DESIGN, INCORPORATED

PHOTO: MOUNTAINVIEW.GOV

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Introduction

The City of Mountain View is committed to proactively working toward its goal of reducing greenhouse gas (GHG) emissions while ensuring sustainability and equitability and improving the quality of life for all residents. In 2009 and 2010 the City Council adopted community-wide and municipal operations carbon targets, setting a bold overall target of an 80 percent reduction of the 2005 emission levels by 2050. A significant shift in transportation usage is critical to meeting this target, and the City has identified reducing the mode share of single-occupancy vehicle (SOV) trips as a primary strategy. In order to change consumer behavior, convenient, affordable transportation alternatives, including effective public transit service, must be funded and promoted.

Since 2015, the City of Mountain View has partnered with Google to offer free service on the Mountain View Community Shuttle. Google has committed to continue funding the Community Shuttle through 2024, with overall management of operations shifting to the City. This commitment provides the City with an opportunity to evaluate the service's role in the local and regional transportation networks and build a sustainable framework for its long-term success.

The Community Shuttle compliments the other public transportation providers serving the City of Mountain View. The Santa Clara Valley Transportation Authority (VTA) provides fixed route bus service throughout Santa Clara County, accommodating both internal trips within Mountain View and regional trips to adjacent communities in Santa Clara County. The Mountain View Transportation Management Association's (MVTMA) MVgo shuttles connect Caltrain with major employers throughout the City and all services are open to the general public. Caltrain is a regional rail service operating between San Francisco and San Jose with limited service extended to Gilroy and has two stations within Mountain View.

This *Shuttle Study* assesses existing transit service conditions in Mountain View so the City can determine demand and strategize how to best address that demand in the short and long terms. To evaluate existing conditions, this study identifies existing services, explores their effectiveness, and offers findings from community and stakeholder engagement processes. This study is one component of a broader planning process, which will continue with the identification of service alternatives and development of a preferred service plan.

This report summarizes the work completed thus far – including a review of prior studies and reports, a market analysis, an assessment of existing transit conditions, and takeaways from stakeholder interviews and a community survey. This report also introduces upcoming work including possible service alternatives and financial considerations.

Review of Prior Studies and Reports

A review of related studies and planning efforts provides important context to understanding existing transit services in Mountain View. Two studies considered especially relevant to this study include findings from Caltrain's 2016 onboard survey and the final report issued by the Mountain View City Council's Environmental Sustainability Task Force, which met from 2017 through 2018.

2016 On-Board Survey by Caltrain

Caltrain is a commuter rail line operating on the San Francisco Peninsula and through the Santa Clara Valley, providing service to communities between San Francisco and San Jose (with select trips to Gilroy). Connectivity to Caltrain service is a critical component of a functioning transit network in Mountain View. A key finding of the 2016 Caltrain on-board survey was the demand for first/last mile connections to the Mountain View Transit Center, which is served by both Caltrain and the VTA Green Line light rail, as well as the San Antonio Caltrain station.

At the time of the 2016 Caltrain survey, the Mountain View Transit Center supported about 4,500 daily boardings and a comparable number of alightings (arriving passengers). First/last mile needs differ based on whether the customer is accessing (outgoing) or egressing (arriving) the station.

Most of the customers accessing Caltrain at the Mountain View Transit Center are Mountain View residents (72 percent), with other riders traveling from adjacent areas of Los Altos, Sunnyvale, and Cupertino. For Mountain View customers using Caltrain to access destinations outside of the city, approximately one-third are accessing Caltrain service using the park-and-ride facility. Other access modes included walking (23 percent), drop-off (22 percent), biking (15 percent), and transfer from other transit service (8 percent). Park-and-ride demand exceeds the supply of spaces, and approximately two-thirds of customers biking to the Mountain View Transit Center take their bike on the train. Given the location of the Mountain View Transit Center, drop-offs, biking, and transfers from other transit service could potentially account for larger access mode shares in the future.

For customers arriving in Mountain View (approximately 1,800 during morning peak hours), about 40 percent are connecting to shuttle and bus service at the Mountain View Transit Center. Walking and biking account for 24 and 15 percent of egress, respectively. Another 18 percent are transferring to VTA light rail service. Planned improvements to the Transit Center facilities should increase the capacity for public and private shuttle service.

With the planned expansion of Caltrain service, ridership at Mountain View Station is expected to more than double, increasing the demand for first/last mile service to the Mountain View Transit Center. Demand is also expected to increase at the San Antonio station, though potentially at a lower rate.

Final Report of the 2017-2018 Environmental Sustainability Task Force 2

In September 2017, the Mountain View City Council formed an advisory body tasked with evaluating the City's existing sustainability efforts and adding capacity to City sustainability staff's outreach, advocacy, and regional collaboration efforts. The Environmental Sustainability Task Force 2 (ESTF-2) was comprised of community members who live and/or work in Mountain View. After ten months of community engagement, plan review, and brainstorming, ESTF-2 issued its final report of 36 recommendations to meet the City's sustainability goals.

The ESTF-2 report recommendations address the rising emissions challenge from multiple fronts: transportation; buildings and land use; circular economy; outreach, regional collaboration, and advocacy; measurement and metrics. With transportation accounting for 60 percent of the total GHG emissions generated in Mountain View, some of the highest-priority recommendations were related to shifting the transportation mode split away from single occupancy vehicles.[1]

[1] *Final Report of the 2017-2018 Environmental Sustainability Task Force.* City of Mountain View, 2018, p. 9. Accessed online: http://laserfiche.mountainview.gov/WebLink/0/edoc/219376/ESTF-2%20Sustainability%20Recommendations%20Report%20-%20June%202018%20-%20FINAL.pdf

Among the highest-priority recommendations, three were focused on transportation:

- Priority #2: Revolutionize transportation in Mountain View
- Priority #5: Solve the local solo-trip problem: Pilot discounted pooled ridesharing
- Priority #12: Solve the local solo-trip problem: MV Shuttle 2.0 and 3.0

Other lower-priority recommendations related to transportation included:

- Restrict parking to encourage and fund alternative modes
- Support bicycling as a primary mode of transportation
- Expand EV charging infrastructure on public property and rights-of-way
- Expand transportation demand management (TDM) to all of Mountain View
- Implement group-buy programs to expand personal electric vehicle (EV) adoption

The clear message from the ESTF-2 report is that single-occupancy vehicle driving must be decreased but, to accomplish this, Mountain View must offer viable alternatives. Furthermore, with the commute trips accounting for less than a third of trips and less than half of all vehicle miles traveled (VMT), mobility alternatives must provide for trips all day and for all purposes. Addressing the "solo-trip problem" involves two components: piloting discounted pooled ridesharing (Recommendation T4B) and providing transit service via MV Shuttle (Recommendation T4A). City staff did not recommend pursuing T4B however did support T4A.

This Mountain View Shuttle Study directly addresses Recommendation T4A of the ESTF-2 report. Its recommendation for leveraging existing MV Shuttle service included redesigning routes, expanding coverage and frequency, and expanding hours of operation/service span. These suggestions will be taken account in the future recommendation phase of this study.

Market Analysis

Population and household density data from the 2017 American Community Survey (ACS) were used as the foundation for mapping transit propensity across the City of Mountain View. Transit propensity is a measure of the likelihood of a person or population to use transit services. Certain demographic groups are considered more likely to use transit service than the general population. Demographic predictors include:

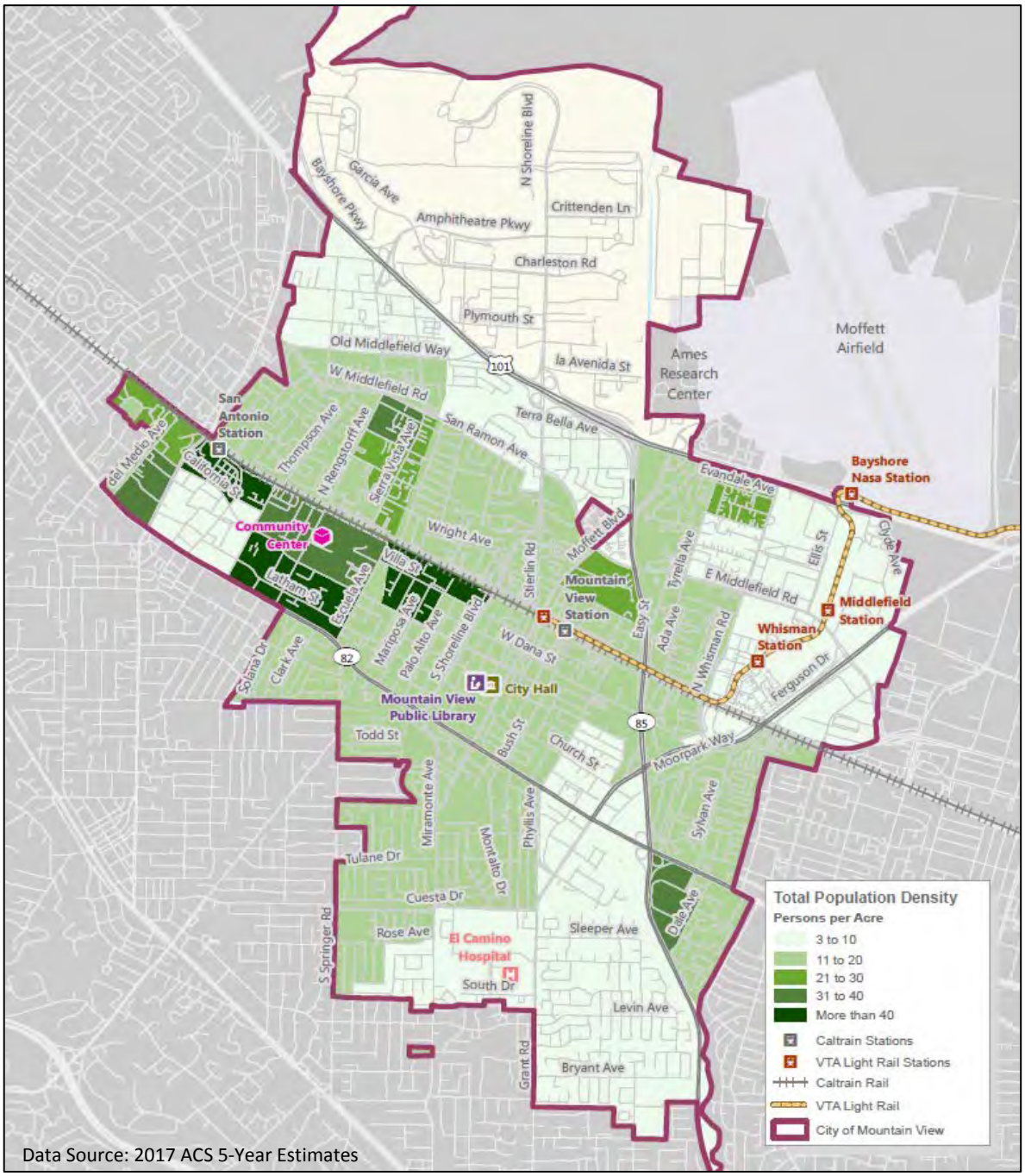
- Minority populations
- Low-Income Households
- Zero-Vehicle Households
- Youth/Populations Age 18 and Under
- Seniors/Populations Age 65 and Over

The distribution of these populations can indicate areas with greater mobility needs or transit dependence. The following maps show the current geographic distribution of these key demographic groups that may be more likely to use and/or rely on transit.

Population Density

Higher density of population is more conducive to transit usage, making transit more effective in these areas. Most of Mountain View has the moderate density typical of suburban communities. Pockets of higher density (more than 40 persons per acre) are located west of Downtown, between the Caltrain line and El Camino Real. See Figure 1. Multi-family housing is more prevalent in these neighborhoods than other areas of the city. Current zoning is likely to sustain this pattern with the exceptions of North Bayshore and possibly the Whisman area, where local plans call for the introduction of medium- to high-density housing.

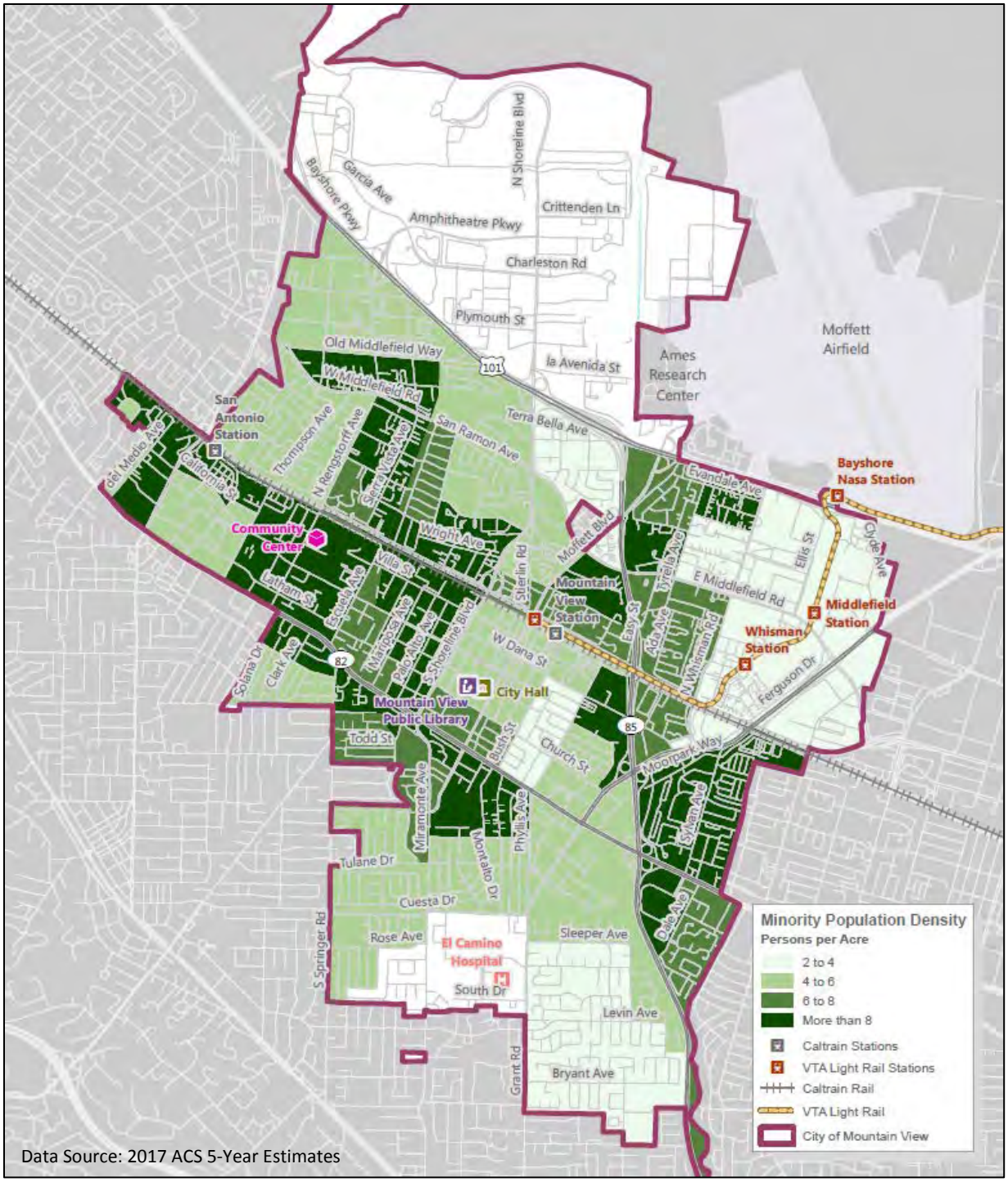
Figure 1: Map of Population Density



Minority Population

Mountain View is a diverse community, with minority residents living across the city. Most census block groups have a minority population density of at least four persons per acre. However, unlike other demographic groups, the census block groups with the highest density of minority populations are spread throughout the City.

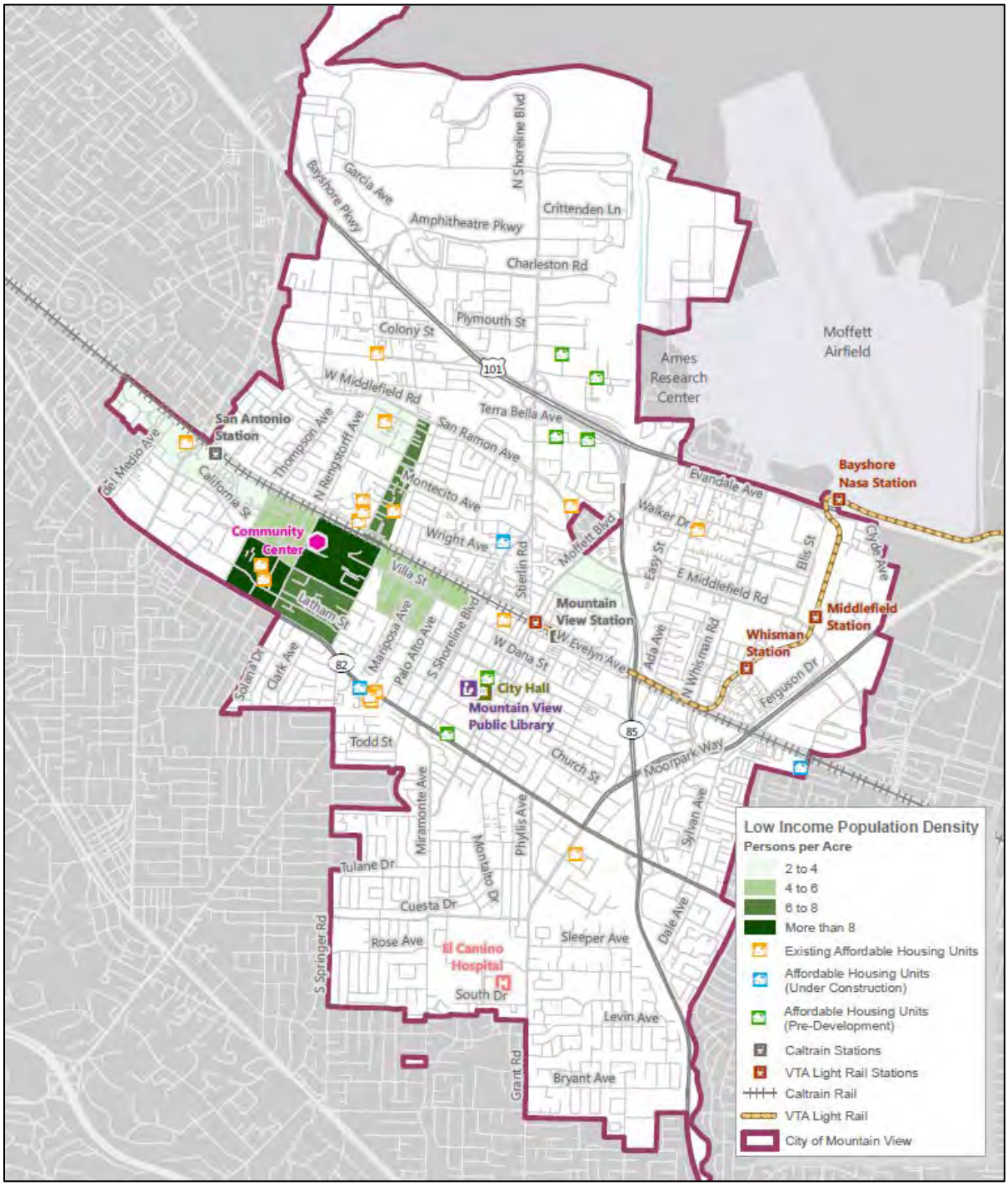
Figure 2: Map of Minority Population Density



Low-Income Households

Low-income households are most dense in two areas: east and west of Rengstorff between the Caltrain line and El Camino Real. The census block group with the next-highest density is a narrow block group bounded by Sierra Vista, Middlefield, Permanente Creek, and the Caltrain line. Three subsidized housing projects under construction are located outside of the denser low-income block groups identified in dark and medium green in Figure 3.

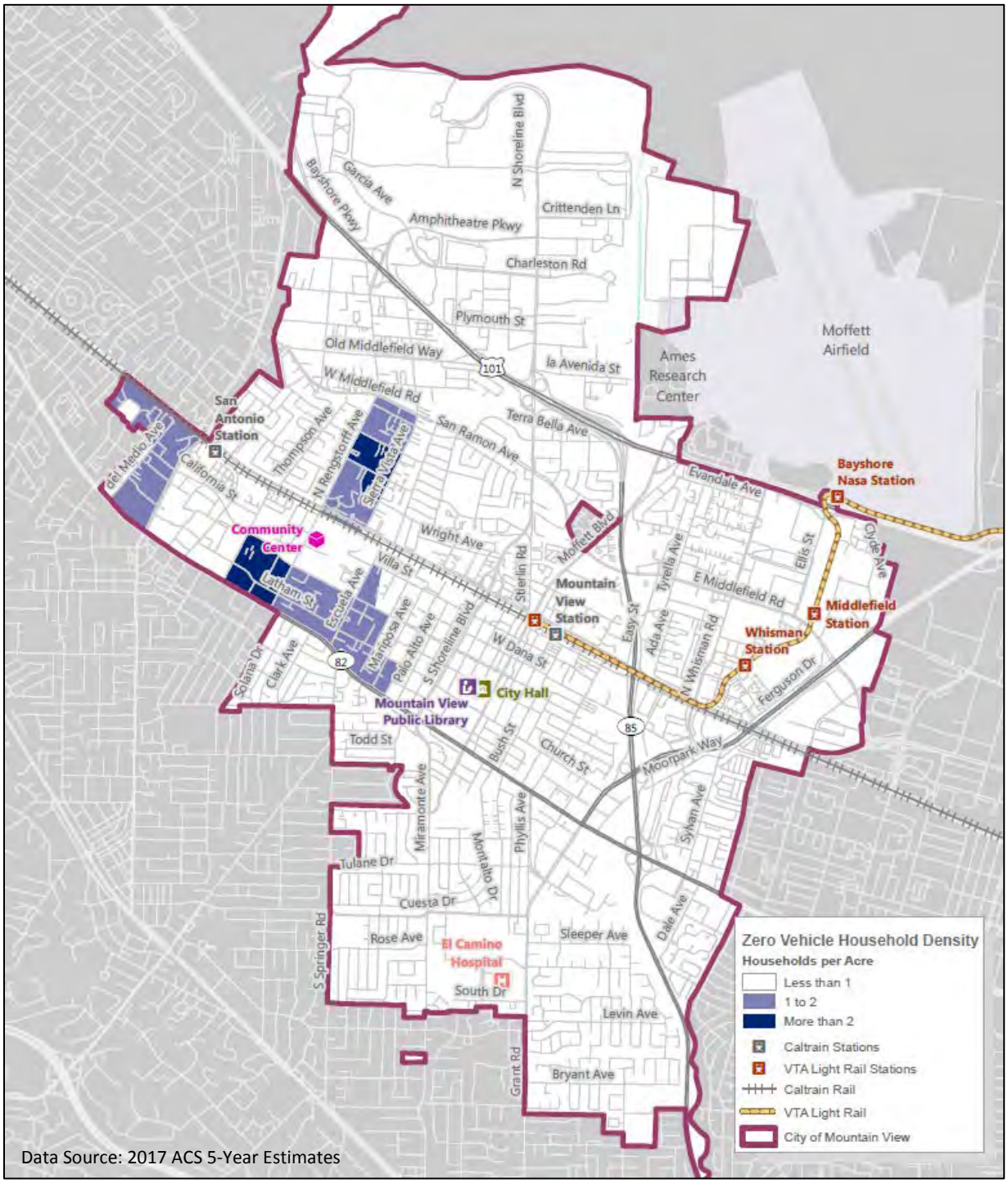
Figure 3: Map of Low-Income Household Density



Zero-Vehicle Households

Six percent of households in Mountain View do not have access to a personal vehicle. These households are concentrated in three discrete areas west of Downtown and more closely match the population density map than the low-income or senior population density maps.

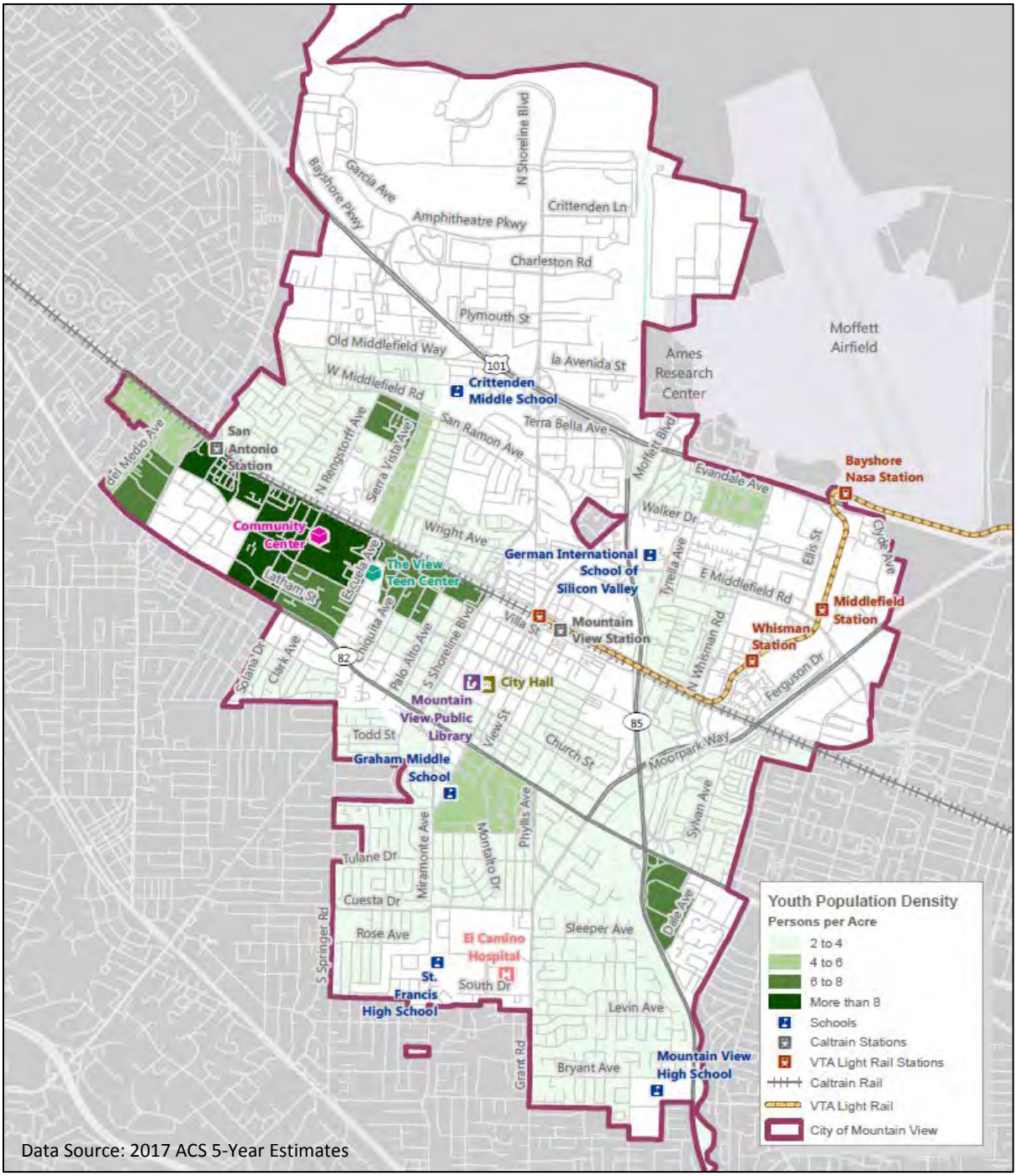
Figure 4: Map of Zero-Vehicle Household Density



Youth/Populations Age 18 and Under

Youth population density correlates with overall population density. Twenty one percent of Mountain View's population is under the age of 19. Areas where multi-unit housing is the dominant residential form have the highest concentration of youth. However, most households in lower-density neighborhoods, where single-family homes are more prominent, are also likely to include children within the household.

Figure 5: Map of Youth Population Density

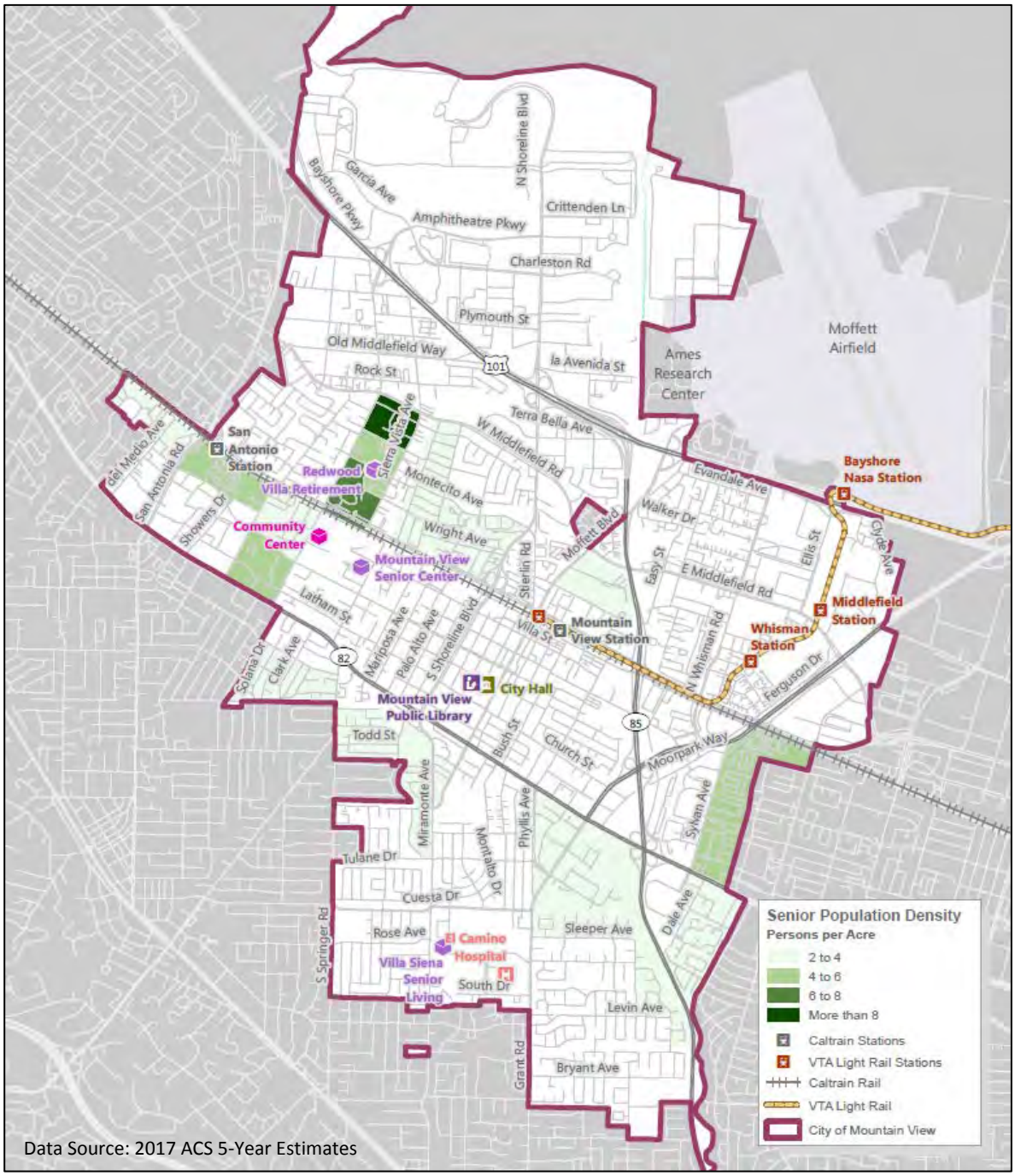


Data Source: 2017 ACS 5-Year Estimates

Seniors/Populations Age 65 and Over

Mountain View's population skews younger, with seniors (age 65 and older) accounting for just 11 percent of the city's population. The highest concentration of seniors is in the census block group bounded by Rengstorff, Middlefield, Sierra Vista, and the Caltrain line. Monte Vista Apartments – which includes 149 subsidized units for seniors and persons with disabilities – is located on Grant Road, south of El Camino Real. This area is in a census block group that otherwise does not reflect high senior population density; however, the Shuttle stop closest to these apartments is one of the busier stops.

Figure 6: Map of Senior Population Density



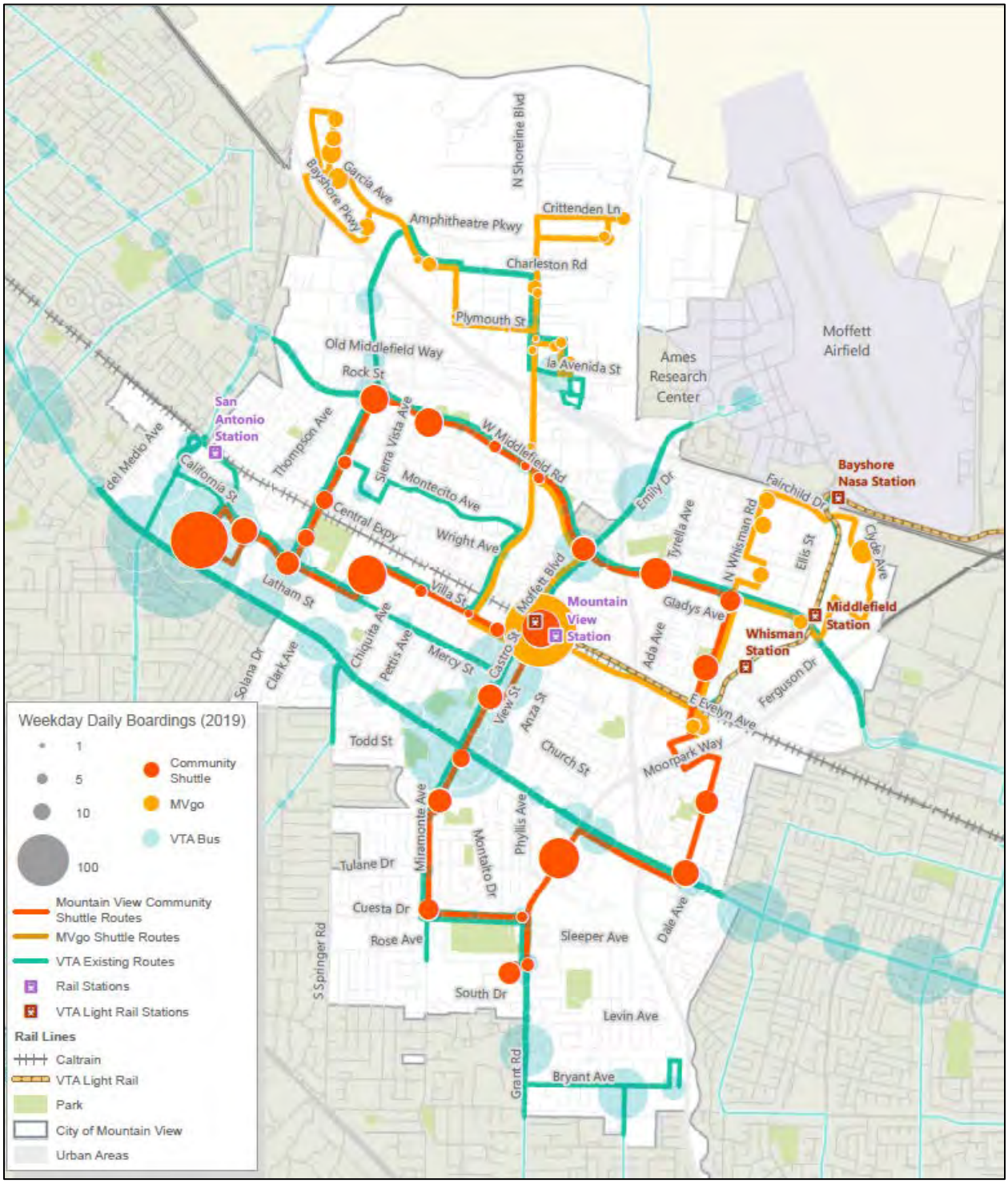
Data Source: 2017 ACS 5-Year Estimates

Existing Transit Service Conditions

Due to its location within the Bay Area, the City of Mountain View is served by multiple transit providers. In addition to regional service by VTA bus and light rail and Caltrain commuter rail, Mountain View is also served by the Mountain View Community Shuttle, the focus of this study, and the MVgo shuttle. Several key destinations are served by multiple transit providers, such as the Mountain View Transit Center, which serves as the Mountain View station for Caltrain and VTA light rail, as well as the San Antonio Station and Middlefield Road. See Figure 7 for the comprehensive map of transit services and ridership in Mountain View.

With each transit provider operating independently, under its own governance and funding structures, service schedules have not been synced to optimize multimodal connections. As VTA–the main provider of transit service in Santa Clara County–plans to restructure its local bus service in late 2019, it is important to develop an integrated transit plan for the City to ensure all Mountain View residents have easy access to public transportation.

Figure 7: Map of Current Transit Service and Ridership in Mountain View



Mountain View Community Shuttle

A partnership between Google and the City of Mountain View, the Mountain View Community Shuttle was designed as a pilot program to provide free transportation connections between residential neighborhoods and key destinations in Mountain View as well as connections to the regional transportation network. In 2019, Google announced it was extending funding of the current Community Shuttle operations through 2024.

The current fleet consists of four all-electric, 16-seat shuttle vehicles, each equipped with a wheelchair lift, exterior bicycle racks, and free on-board Wi-Fi. The shuttles operate in a bi-directional loop every day between 10 AM and 6 PM, with 30-minute frequency on weekdays and 60-minute frequency on weekends. Trips in the clockwise direction are considered the Grey route, while counterclockwise is the Red route. See service summary in Table 1.

Table 1: Community Shuttle Service Spans and Frequencies

Route	Weekdays		Weekends	
	Frequency in Minutes	Service Span	Frequency in Minutes	Service Span
Gray Route (Clockwise)	30	10 AM - 6 PM	60	10 AM - 6 PM
Red Route (Counterclockwise)	30	10 AM - 6 PM	60	10 AM - 6 PM

The initial routing, which is still in effect today, connects most major destinations within the City, including: city offices, libraries, medical offices, shopping centers, entertainment venues, and parks and recreational facilities. On weekends, the route is slightly adjusted to serve the movie theater located off Shoreline Blvd. Of the 50 Community Shuttle stops, those with the highest activity (across both the Gray and Red routes) include: San Antonio Center, Mountain View Transit Center, the Senior/Teen Center, and the intersection of Grant and El Camino Real, near Monte Vista Apartments. Average weekday boardings are summarized in .

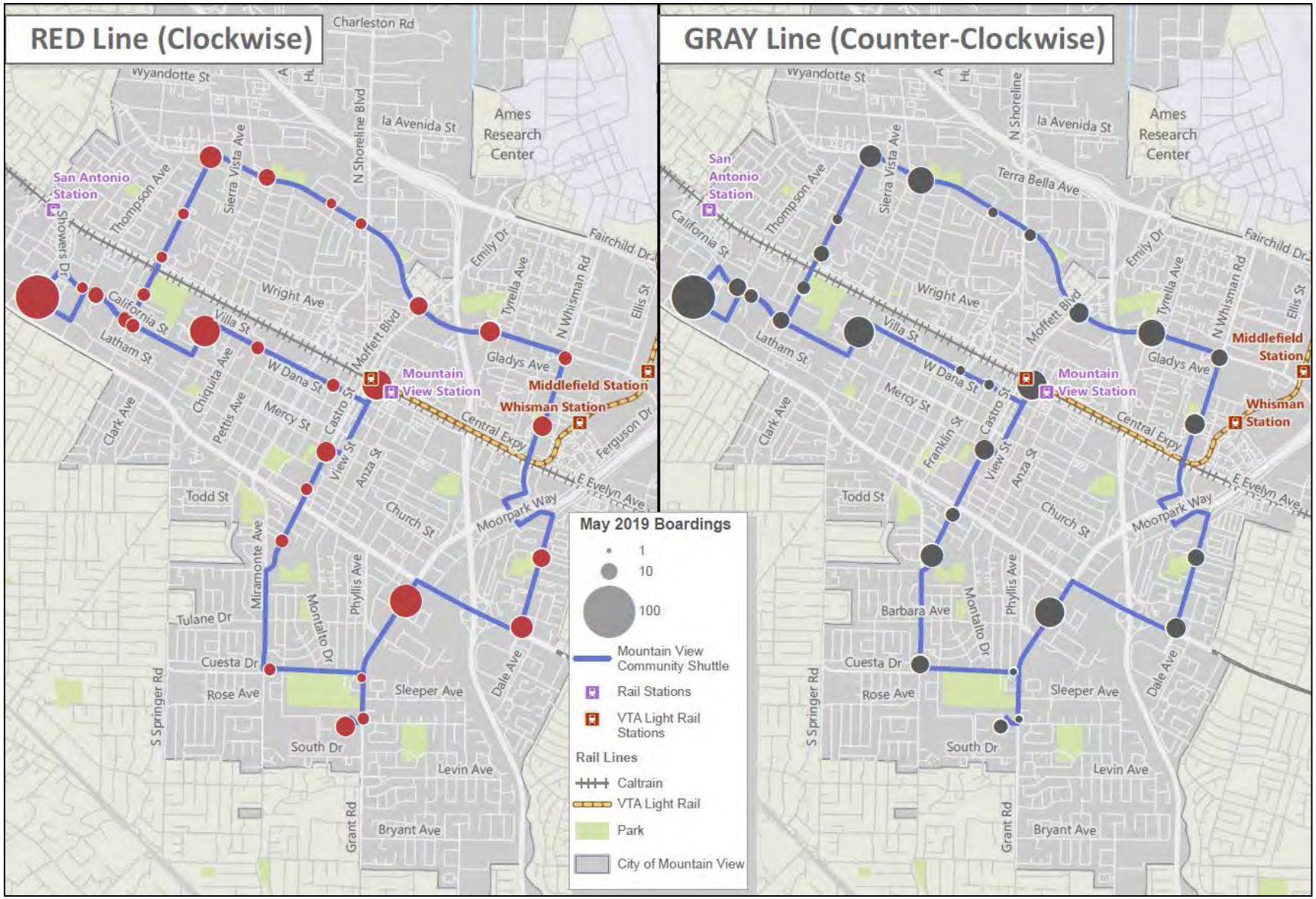
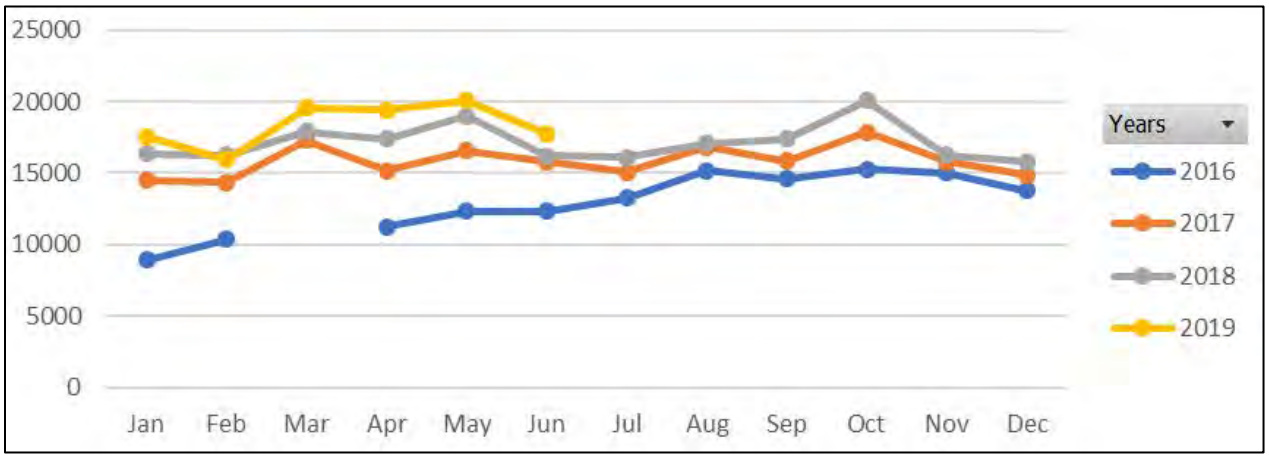


Figure 8: Average Weekday Boardings for Community Shuttle by Route/Direction

The Community Shuttle has seen a consistent year-over-year increase in boardings, as shown in . The Shuttle's highest monthly ridership occurred in October 2018 (20,088/month, 648/day), with its next three highest months in 2019: May (20,066/month, 647/day), March (19,554, 631/day), and April (19,403/month, 647/day).

Figure 9: Community Shuttle Boardings per Year



A strong indicator of a transit system's productivity is boardings per service hour: the total boardings within a given period divided by the total number of service hours operated by all buses within that same period. The Community Shuttle has logged impressive boarding per hour statistics. In May 2019 weekday productivity was an average 27.0 passengers per service hour (pph). The Community Shuttle has stronger performance than all VTA routes operating in the City, more details shown in Table 3. With less frequency, weekend productivity for Community Shuttle dropped to 17.9 pph on Saturdays and 15.3 pph on Sundays. Lower weekend productivity is typical/expected for most transit operations, with lower service levels on weekends.

Santa Clara Valley Transportation Authority (VTA)

VTA service accounts for the most boardings of all transit providers operating in Mountain View. VTA averages 3,609 daily weekday riders across seven fixed-route services. Routes 22 and 522, which offer 24-hour service on El Camino Real, carry the highest number of boardings. This is due, in part, to very frequent service. The combined Route 22-522 frequency on the El Camino Real corridor provides service every six to eight minutes, providing residents with convenient connections at the Palo Alto and Eastridge Transit Centers. Other key stops on VTA service are in Downtown Mountain View, at the Mountain View Transit Center (Caltrain and VTA stations), and near the middle and high schools. VTA service operating in Mountain View is summarized in Table 2.

Table 2: VTA Mountain View Service Spans and Frequencies

Service and Route Number	Route Description	Weekday		Saturday		Sunday	
		Frequency in Minutes (High/Low)	Service Span	Frequency in Minutes (High/Low)	Service Span	Frequency in Minutes (High/Low)	Span
Frequent Bus: **Route 22**	Palo Alto Transit Center to Eastridge Transit Center via El Camino	15 / 60	24-Hour	15 / 60	24-Hour	15 / 60	24-Hour
Local Bus: **Route 32**	San Antonio Shopping Center to Santa Clara Transit Center	30 / 60	5:45 AM - 8:30 PM	60	8:45 AM – 6:00 PM	–	–
Local Bus: **Route 34**	San Antonio Shopping Center to Downtown Mountain View	60	9:30 AM - 3:30 PM	–	–	–	–
Local Bus: **Route 35**	Downtown Mountain View to Stanford Shopping Center	30 / 60	5:45 AM - 10:00 PM	45 / 60	8:15 AM – 9:00 PM	60	8:15 AM - 8:15 PM
Local Bus: **Route 40**	Foothill College to Shoreline & La Avenida	30 / 60	6:00 AM - 10:00 PM	40 - 45	8:00 AM - 7:00 PM	60	9:30 AM - 6:30 PM
Local Bus: **Route 81**	Moffett Field/Ames Center to San Jose State University	30 / 60	6:00 AM - 9:00 PM	60	9:30 AM - 6:15 PM	–	–
Rapid Bus: **Route 522**	Palo Alto Transit Center to Eastridge Transit Center	<15 / 20	5:00 AM - 11:00 PM	15 / 20	6:00 AM - 11:00 PM	15 / 20	6:00 AM - 10:00 PM
Light Rail: **Green Line 902**	Mountain View to Winchester	15 / 30	5:00 AM - 12:30 AM	30	6:00 AM - 12:30 AM	30	6:00 AM - 12:30 AM

2019 Service Changes

In 2017, VTA adopted the *Next Network Plan*, a system redesign aimed at increasing ridership and improving the system's cost-effectiveness by improving the frequency on several routes. Due to changes in VTA's financial outlook in early 2019, the agency began developing a new transit service plan for Fall 2019 to complement the BART San Jose Berryessa service extension. The changes made in the *2019 New Transit Service Plan* provide some beneficial service improvements but also have some negative implications for routes operating within Mountain View. Service changes to VTA routes in Mountain View are summarized in Table 3.

Table 3: VTA Productivity and Service Changes by Route

Service and Route Number	Route Description	FY19 Q2 Productivity (pph)	Proposed Changes, *2019 New Service Plan*
Mountain View **Community Shuttle**	Internal circulator within the City of Mountain View	27.0	Under review as part of this study
Frequent Bus: **Route 22**	Palo Alto Transit Center to Eastridge Transit Center via El Camino	25.2	No Changes
Local Bus: **Route 32**	San Antonio Shopping Center to Santa Clara Transit Center	14.5	Merge with Route 35; Discontinue segment on Middlefield Road west of Moffett
Local Bus: **Route 34**	San Antonio Shopping Center to Downtown Mountain View	9.4	Discontinued
Local Bus: **Route 35**	Downtown Mountain View to Stanford Shopping Center	12.2	Merge with Route 32
Local Bus: **Route 40**	Foothill College to Shoreline & La Avenida	19.6	Route extended along Shoreline Blvd.
Local Bus: **Route 81**	Moffett Field/Ames Center to San Jose State University	15.9	Segments replaced by new route
Rapid Bus: **Route 522**	Palo Alto Transit Center to Eastridge Transit Center	20.5	No Changes

Ridership Impacts

Collectively, the service changes will eliminate service on Middlefield Road west of Moffett as well as on Montecito Ave. between Rengstorff and Shoreline. Service will also be eliminated on Escuela Ave. and Villa St. west of Shoreline. Positive outcomes of the service change include new all-day service along Shoreline Blvd. between the Mountain View Transit Center and the North Bayshore area.

The VTA service provided on Villa and Escuela that will be discontinued operates in one direction with only six trips each weekday. The Community Shuttle serves the entirety of this segment. The Community Shuttle also provides service along most of the segment on Middlefield Road that will lose VTA service. Unfortunately, the Community Shuttle has a shorter service span and cannot accommodate trips to

destinations in Sunnyvale or Santa Clara. It also does not serve the segment of Middlefield Road between Rengstorff and San Antonio. There will be no replacement service along Montecito, however, prior to the service change VTA only operated six trips per day on weekdays only, with minimal ridership. Based on analysis of the VTA service changes, only 19 customers will be more than a quarter-mile walking distance to a current or alternative bus stop. Figure 10 shows the VTA's proposed new alignments (purple) and discontinued routes (blue) within Mountain View. Despite these changes, Mountain View's key destinations will still be served by transit as seen by Figure 11.

Figure 10: Ridership Impacts of VTA 2019 New Transit Service Plan

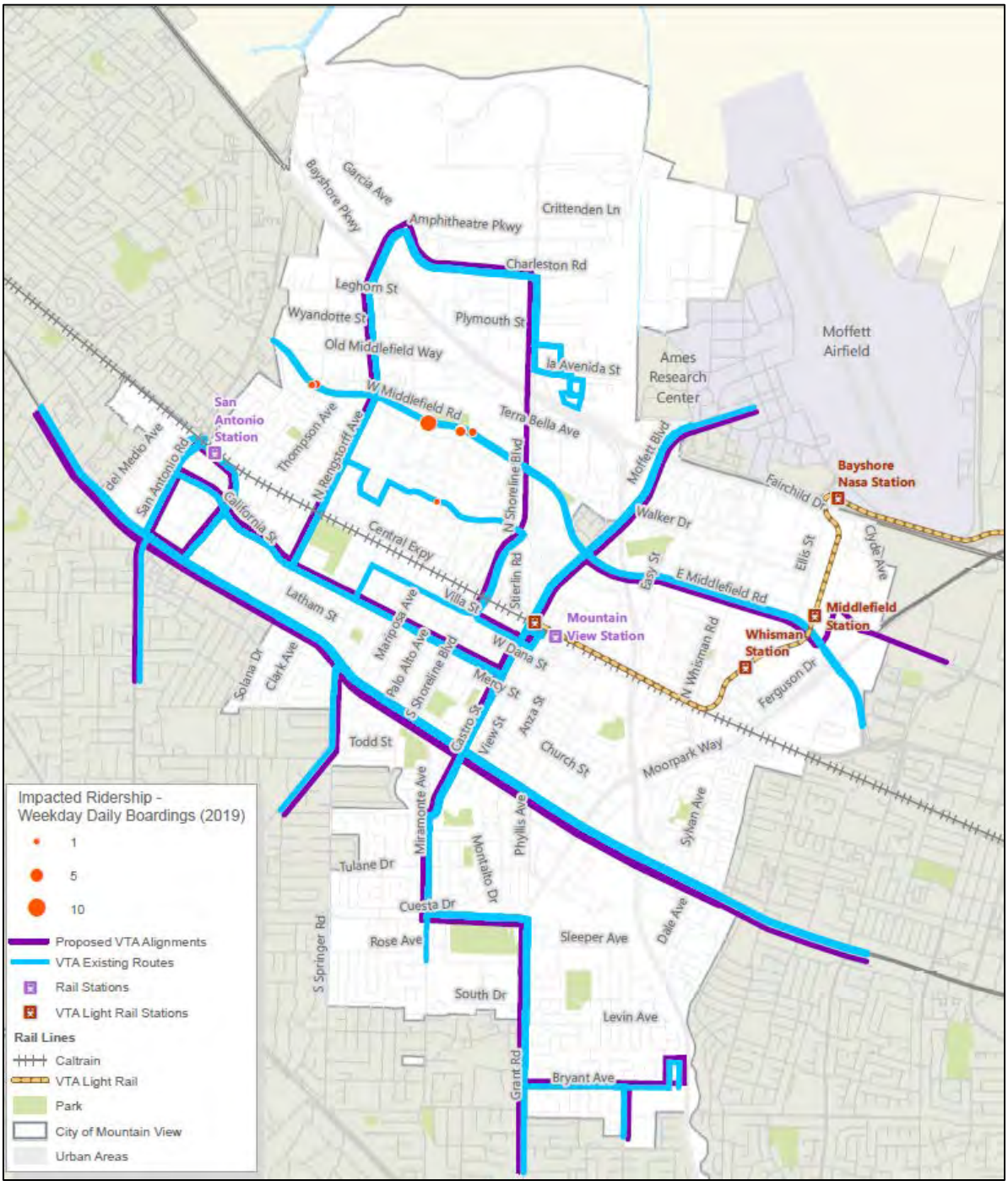
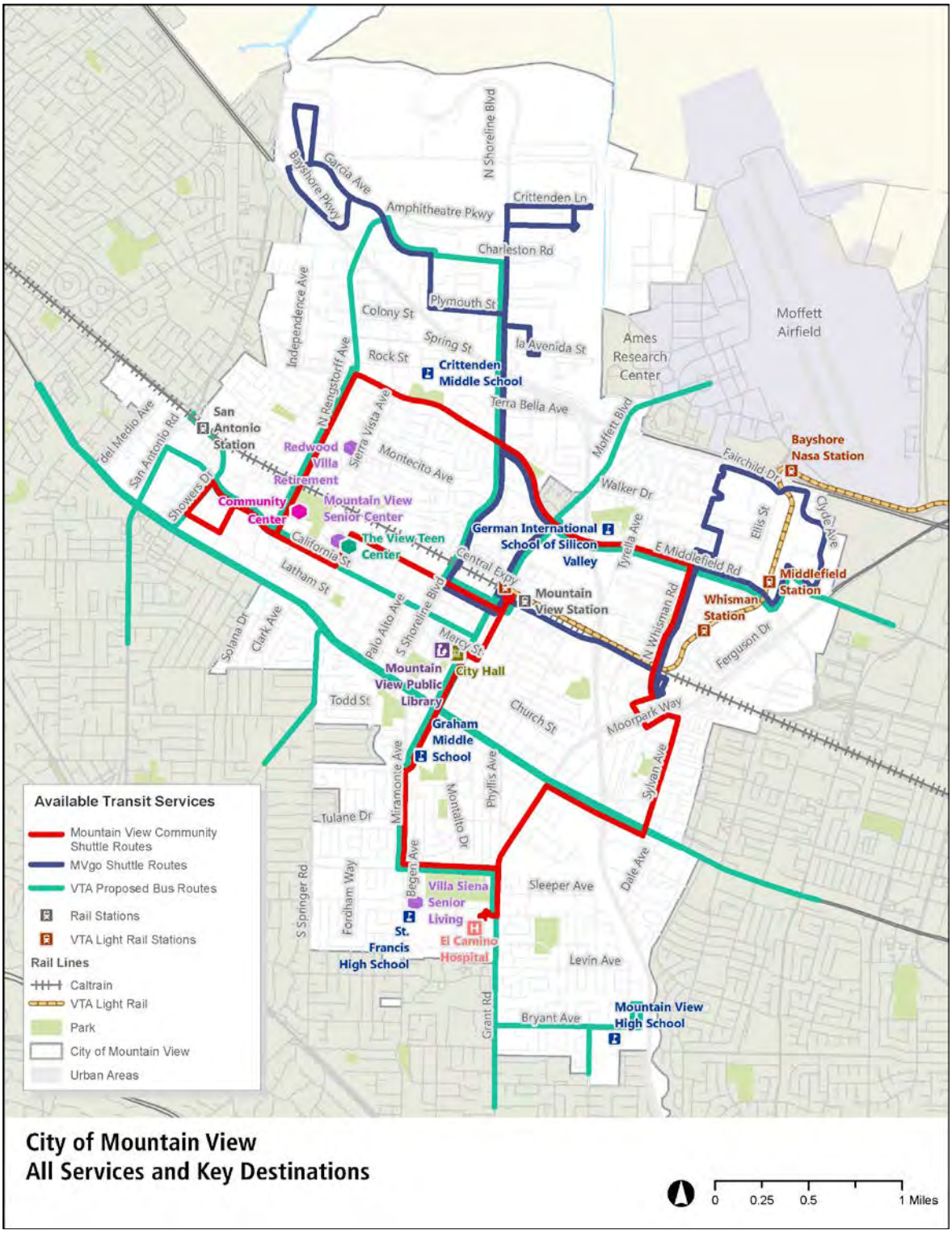


Figure 11: Map of Future Transit Service in Mountain View



MVgo

The MVgo shuttle service is operated by the Mountain View Transportation Management Association (MVTMA), a nonprofit organization supported by Mountain View businesses and landowners. MVTMA was established to reduce traffic on Mountain View streets, and the shuttle service is an important step toward that goal. All three MVgo shuttle routes operate between the Mountain View Transit Center and employment areas in the City during weekday commute hours. Spans and frequencies are summarized in Table 4. MVgo averages between 400 and 500 riders per day and about 9,000 to 10,000 riders per month. Every month of 2019[2] has seen a 10 to 20 percent decrease in ridership compared to the same month in 2018.

Table 4: MVgo Service Spans and Frequencies

Route	Weekday		Saturday		Sunday	
	Frequency	Span	Frequency	Span	Frequency	Span
East Bayshore	15 - 30	7:15 AM - 10:15 AM, 3:30 PM - 8:30 PM	–	–	–	–
West Bayshore	20 - 30	6:45 AM - 10:45 AM, 3:00 PM - 8:30 PM	–	–	–	–
East Whisman	15 - 25	7:15 AM - 10:45 AM, (Clockwise), 3:45 PM - 7:45 PM (Counter-Clockwise)	–	–	–	–

Caltrain

Caltrain is owned and operated by the Peninsula Corridor Joint Powers Board. Caltrain serves more than 30 stations between San Francisco and the City of Gilroy. The two Caltrain stations located in Mountain View–Mountain View Station and San Antonio Station–are considered the main transportation hubs within the City. Spans and frequencies for Caltrain service are summarized in Table 5.

Table 5: Caltrain Service Spans and Frequencies

Route	Weekday		Saturday		Sunday	
	Frequency (High/Low)	Span	Frequency (High/Low)	Span	Frequency (High/Low)	Span
Northbound Service	10 / 60	4:45 AM - 10:50 PM	30 / 90	7:30 AM - 10:50 PM	30 / 90	9:00 AM - 10:30 PM
Southbound Service	10 / 60	6:00 AM - 1:30 AM	30 / 90	9:30 AM - 1:30 AM	30 / 90	9:30 AM – 11:00 PM

[2] As of June 2019, the most recent data available at the time of this report's publication.

Stakeholder Interviews and Community Survey

To gather community input for this study, Mountain View held stakeholder group discussions and distributed a community survey. These outreach efforts were designed to gather feedback on local transit and shuttle services and will be used in the service planning process to design transit service that is optimized for Mountain View residents, employees, and visitors. Stakeholder discussions focused on seniors and students, acknowledging their unique transportation needs, which often fall outside of typical commute patterns/hours.

Stakeholder Interviews

Three stakeholder interviews were conducted to inform this study. To provide additional context to the City's sustainability goals the ESTF-2 taskforce contributed their input and suggestions. Additionally, the Youth and Senior Advisory Committees to the City Council were contacted to represent the needs of Mountain View youth and seniors.

Environmental Sustainability Task Force 2 (ESTF-2): The feedback from ESTF-2 was closely aligned with the findings they issued in their final report in June 2018. Discussion participants communicated the importance of reducing SOV trips to meeting the City's sustainability air quality goals. Participants suggested improved coordination between Caltrain and VTA to strengthen transit service and said first/last mile connections to the Caltrain stations are critical to reducing or eliminating SOV trips to and from park-and-ride facilities. Another recommendation was introducing local transit service connections to Shoreline Park and the Sunday Farmers Market.

Youth Advisory Committee (YAC): The youths participating in this discussion asked for shuttle extensions to Mountain View High and Los Altos High. Students reported VTA buses reaching maximum load and having to leave students behind. They suggested additional service supplementing VTA service could address the needs of these students. Students who use shuttle service reported that it otherwise generally met their needs, though they would like to see improved frequency.

Senior Advisory Committee (SAC): Instead of a formal meeting with the SAC, it was decided that interested seniors participating in activities at the Senior Center provide input. The seniors participating in this discussion focused on a longer service span both in the morning and early evening. Many activities at the Senior Center begin before 10 AM and some participants would like to use the shuttle to go out to dinner. Service to additional destinations such as Shoreline Park and unserved residential neighborhoods was also raised.

The youth and environmental sustainability groups both expressed a desire for more frequent service (every 15 to 20 minutes) and a longer service span. While seniors would also like more frequent service, a longer service span was the consensus top priority. Another shared concern was the accessibility of the service. Discussion participants reported a lack of information/publicity as a barrier to usage. For example, members of the ESTF-2 group were not aware that the MVgo shuttles were open to the public.

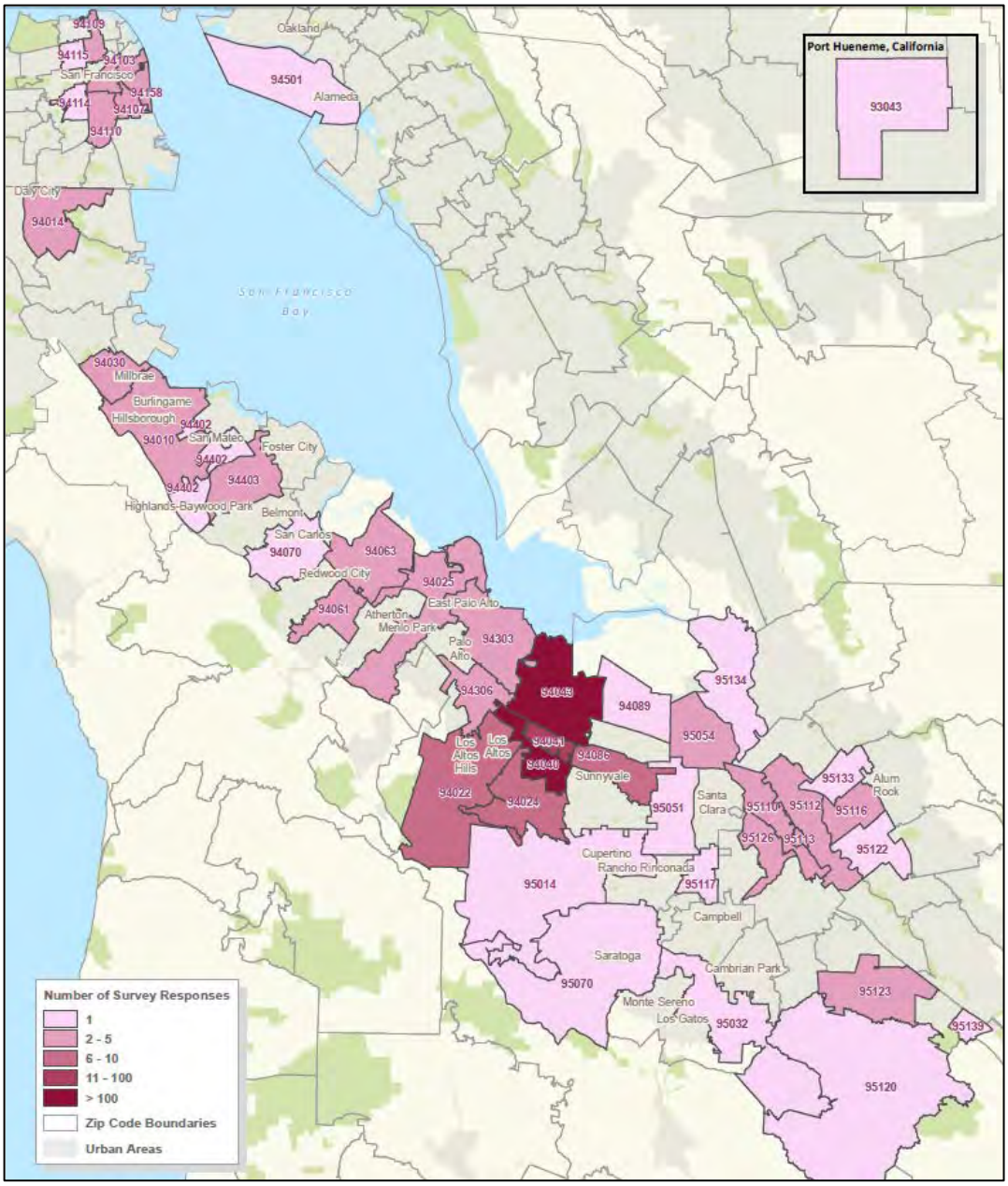
Community Survey

The survey was designed to gauge the mobility needs of residents, non-resident employees, and visitors to Mountain View. The survey was open for about one month, from July 29 to August 30, 2019. In addition to publishing digital and paper advertisements, a link to the survey was distributed to local schools and posted on the City's social media outlets. Paper copies were also available at locations throughout Mountain View: City Hall, Public Works, the City Library, the Mountain View Community Center and Senior Center, and The View Teen Center.

Respondent Distribution

In total, 628 people responded to the survey, with residents of ZIP codes 94040, 94041, and 94043 accounting for 70 percent of responses. (See Figure 12 for a map of the response distribution across the Bay Area by ZIP code.) Youth respondents (under 19 and over the age of 10) accounted for 10 percent of total responses. Eleven percent of all respondents and 13 percent of Mountain View respondents were seniors (ages 65 and older). Familiarity with the Mountain View Community Shuttle was higher among Mountain View residents (74 percent) when compared to all survey respondents (68 percent). Among Mountain View residents, 87 percent of those over age 65 were familiar with the shuttle and 71 percent of youth respondents indicated familiarity with the Community Shuttle.

Figure 12: Survey Responses by ZIP Code



Frequent Transit Usage by Provider

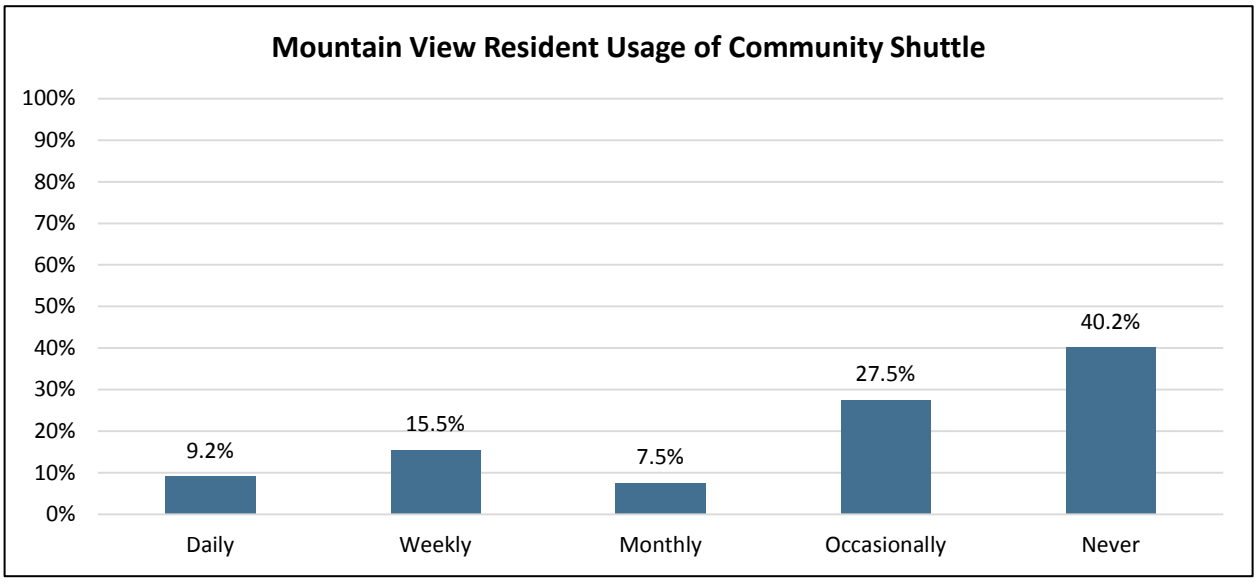
Respondents were asked which regional transit services they used at least once a week. Of all listed services (Community Shuttle, Caltrain, VTA bus/light rail, and MVgo shuttle), Caltrain had the most responses, as shown in Table 6.

Table 6: Respondent Transit Usage by Provider

Service Provider	All Respondents	All MV Residents	MV Seniors (Age 65+)	MV Youth (Ages 10-18)
Caltrain	36.2%	29.5%	17.3%	8.1%
Community Shuttle	22.1%	24.7%	32.1%	29.3%
VTA Bus/Light Rail	20.3%	19.9%	9.8%	26.3%
MVgo Shuttle	12.9%	6.9%	6.3%	0.0%

While the Mountain View Community Shuttle was the second most frequented form of transit among all respondents (22.1 percent) and City residents (24.7 percent), it was the most frequented form of transit for Mountain View seniors (32.1 percent) and youth (29.3 percent). Figure 13 shows the breakdown of Community Shuttle usage by all Mountain View residents. Less than ten percent of Mountain View respondents reported using the Community Shuttle daily.

Figure 13: Mountain View Resident Usage of Community Shuttle



Factors Contributing to Transit Use

Respondents were asked how changes to ten different service factors would impact their transit usage. Table 7 summarizes the results of respondents who indicated a change in the factor would make it "extremely likely" or "somewhat likely" they would use transit more frequently. The most influential factors were improved frequency, proximity to preferred destinations, longer service span, and proximity to home/trip origin. While the data for all respondents compared to Mountain View residents

were largely similar, there were noticeable trends among Mountain View seniors and youth, compared to the general populations. Overall, every factor was less likely to encourage City seniors to ride transit more frequently than the total respondent population, with the exception of providing more comfortable vehicles and bus stops. Youth respondents indicated accessible information and improved safety would make them more likely to use transit at a higher percentage than all City responses.

Table 7: Factors Contributing to Transit Usage

Factors	All Respondents	All MV Residents	MV Seniors (Age 65+)	MV Youth (Ages 10-18)
More Frequent Transit	91.5%	90.7%	80.8%	92.7%
Transit Closer to Places I Want to Go	90.0%	90.0%	83.3%	90.2%
Extended Transit Hours	85.3%	86.0%	76.9%	81.0%
Transit Closer to Home	80.1%	80.1%	75.0%	80.0%
Better Connections to Regional Transit	74.3%	72.7%	66.0%	64.1%
Traffic Congestion	60.8%	59.6%	56.9%	58.5%
Easier to Find/Understand Transit Information	56.0%	54.9%	50.0%	73.2%
Gas Price Increase	40.7%	39.4%	34.0%	39.5%
Vehicles and Bus Stops More Comfortable	40.1%	38.5%	46.0%	40.5%
Safer Transit	38.0%	38.0%	30.0%	51.4%

Mountain View Community Shuttle Interest by Time of Day and Day of Week

The Community Shuttle currently operates daily between 10 AM and 6 PM. This service span limits trip-making to midday and late afternoon trips. The survey asked respondents about the time of day and day of week they would be most interested in using transit service. The afternoon peak (between 3 and 7 PM) was the most popular time of day across all groups. The second most in-demand service period was the morning peak (between 6 and 9 AM). While most of the afternoon peak (three of the four hours) is covered by the current service span, none of the morning peak is covered. Respondents also indicated a sizable demand for transit service in the evening, after 7 PM. Responses are summarized in *Table 8.*

These results indicate that the current service span is not serving the full range of customer demand throughout the day. Expanding service earlier into the morning would enable students and commuters to use the shuttle for their trip to school or connection to Caltrain, respectively. Service later into the evening would capture regional commuters returning home to Mountain View after 6 PM on Caltrain or VTA as well as connecting non-resident employees in Mountain View to Caltrain outbound service at later hours.

Table 8: Customer Demand by Time of Day

Time	All Respondents	All MV Residents	MV Seniors (Age 65+)	MV Youth (Ages 10-18)
6am - 9am	59.1%	58.7%	41.1%	66.7%
9am - 12 Noon	50.0%	53.6%	64.3%	23.8%
12 Noon - 3pm	46.4%	49.7%	67.9%	45.2%
3pm - 7pm	78.5%	79.0%	69.6%	83.3%
7pm - Midnight	45.4%	50.3%	41.8%	14.3%
Midnight - 6am	6.0%	7.2%	3.6%	0.0%
Never	4.1%	1.8%	3.6%	0.0%

Community Shuttle service on weekdays generated the most interest, compared to weekend days, across all response groups (all survey respondents, City residents, City seniors, and City youth). See Table 9. Saturday service was more popular than Sunday service among all respondents, City residents, and City seniors. While a vast majority of City youth were interested in weekday service, only about a quarter (28.6 percent) showed interest in Saturday or Sunday service.

Table 9: Customer Demand by Time of Day

Day	All Respondents	All MV Residents	MV Seniors (Age 65+)	MV Youth (Ages 10-18)
Weekday	87.4%	88.9%	89.1%	90.5%
Saturday	56.8%	63.7%	70.9%	28.6%
Sunday	49.8%	55.9%	49.1%	28.6%
Never	4.3%	2.1%	3.6%	2.4%

Minimum Shuttle Frequency

Consistent with industry-wide findings, Mountain View survey respondents indicated that improved service frequency was the factor most likely to encourage them to use transit more often. (See Table 7) The survey asked respondents to select the minimum frequency required for them to use the Community Shuttle. The service currently operates every 30 minutes on weekdays and every 60 minutes on weekends, and the survey findings indicate that the shuttle would need to operate at least every 15 minutes to be considered attractive to the majority of respondents. (About 47 percent indicated 15-minute frequency as their threshold, 32 percent would accept 30-minute, and 3 percent indicated 60-minute frequency was sufficient for them to use shuttle service. Combined, nearly 83 percent of respondents would use service that operates every 15 minutes or less frequently, representing the majority of respondents.) In our outreach, seniors placed a higher priority on longer service hours over frequency improvements.

Table 10: Minimum Shuttle Frequency for Customers to Consider Shuttle Service

Frequency	All Respondents	All MV Residents	MV Seniors (Age 65+)	MV Youth (Ages 10-18)
Every 10 minutes	13.5%	13.6%	1.8%	21.4%
Every 15 minutes	47.2%	45.3%	41.8%	45.2%
Every 30 minutes	32.2%	36.3%	49.1%	31.0%
Every 60 minutes	3.3%	3.0%	1.8%	0.0%
None of the above	3.8%	1.8%	5.5%	2.4%

Usage of Transportation Network Company (TNC) Services

To better gauge the transportation landscape in Mountain View, survey respondents were asked how often they used services from TNCs such as Uber and Lyft. A majority of all respondents, City residents, City seniors, and City youth indicated they had either never used a TNC service or used them less than once a month. For those who do utilize TNCs, 'One to three times a month' seems to be the most common frequency. Those ages 65 and older (seniors) and between 10 and 18 (youth) used TNCs less than the average respondent and City resident, with zero percent of City seniors and 7.1 percent of City youth using Uber or Lyft at least once a week.

Table 11: Frequency of TNC Usage

Frequency	All Respondents	All MV Residents	MV Seniors (Age 65+)	MV Youth (Ages 10-18)
Every day	1.8%	0.9%	0.0%	0.0%
A few times a week	11.4%	10.5%	0.0%	7.1%
One to three times a month	24.4%	24.1%	13.0%	19.0%
Once a month	8.5%	8.4%	7.4%	9.5%
Occasionally, less than once a month	37.3%	39.0%	40.7%	40.5%
Never	16.6%	17.1%	38.9%	23.8%

Access to Caltrain and VTA Light Rail Services

When asked how they access Caltrain and VTA light rail stations, walking and driving oneself were the most popular responses among all survey respondents (36.7 percent and 25 percent, respectively) and City residents (42.8 percent and 25.5 percent, respectively). City youth and seniors also reported walking or driving oneself as the top two responses, though these cohorts were more likely to use the Community Shuttle or be dropped off than other response groups.

Table 12: Most Commonly Used Access Modes for Caltrain and VTA Service

Method	All Respondents	All MV Residents	MV Seniors (Age 65+)	MV Youth (Ages 10-18)
Walk	36.7%	42.8%	41.2%	38.9%
Drive myself	25.0%	25.5%	27.5%	27.8%
Bike/scooter	10.0%	10.2%	2.0%	5.6%
Carpool/dropped off	8.8%	8.3%	15.7%	13.9%
MVgo Shuttle	6.5%	1.2%	2.0%	0.0%
Mountain View Community Shuttle	6.5%	6.4%	11.8%	13.9%
Take an Uber/Lyft/Taxi	5.6%	5.7%	3.9%	2.8%
VTA bus or light rail	4.9%	4.3%	0.0%	5.6%
Company Shuttle	0.2%	0.0%	0.0%	0.0%

Top Destinations

Respondents were also asked to list destinations in the City of Mountain View that they would access via transit. Top destinations included: Downtown, San Antonio Center, Mountain View Transit Center (Caltrain Station), Mountain View High School, and Mountain View Civic Center. The Community Shuttle serves all of these locations except for Mountain View High School, which was listed by 46 percent of City youth. Popular destinations not currently served by the shuttle included: Shoreline Park, Rengstorff Center, Los Altos High School, and Googleplex.

Table 13: Top Destinations Accessed by Transit

Destinations	All Respondents	All MV Residents	MV Seniors (Age 65+)	MV Youth (Ages 10-18)
Downtown	28.7%	30.5%	29.5%	20.5%
San Antonio Center	25.8%	28.8%	29.5%	7.7%
Mountain View Caltrain Station	21.0%	18.0%	8.2%	0.0%
Mountain View High School	9.9%	11.9%	1.6%	46.2%
Mountain View Civic Center	9.3%	11.0%	13.1%	5.1%
Grant Park Plaza	7.4%	9.0%	14.8%	0.0%
El Camino Hospital	7.0%	7.0%	14.8%	2.6%
Shoreline Park	6.2%	8.4%	6.6%	10.3%
Century Cinema 16	5.8%	6.1%	3.3%	5.1%
Rengstorff Center	5.2%	6.7%	11.5%	5.1%
Los Altos High School	3.5%	3.5%	0.0%	12.8%
Crittenden Middle School	3.3%	4.7%	0.0%	15.4%
Miramonte Avenue & Cuesta Drive	3.3%	4.1%	9.8%	2.6%
Cuesta Park	3.1%	3.8%	0%	0.0%
Googleplex	3.1%	3.5%	1.6%	0.0%
German International School of Silicon Valley	3.1%	2.6%	0.0%	5.1%

Free Response Feedback

The survey also included two free response questions soliciting suggestions for improving the overall transit experience in Mountain View as well as connections to regional service (Caltrain, VTA light rail). Key trends among survey responses included:

- Improving weekend/weekday frequency,
- Installing/enhancing amenities (ex: add bus shelters and benches),
- Extending service hours (earlier morning/later night),
- Improving safety,
- Enhancing first/last mile services,
- Improving on-time performance, and
- Better public information for transit services (common response among City youth).

Proposed Service Options

As the City of Mountain View moves forward in its transit evaluation process, several transit service improvement strategies can be considered to determine how to optimize service and resources to meet community needs. In particular, these strategies could focus on improvements for the travel needs of the senior and youth population as well as first and last mile connections to regional transit. Potential service options include:

- **Extend service hours**. A major criticism of the Community Shuttle is the limited hours of operation. Expanding the span of service hours, at least on weekdays, could make the Community Shuttle more functional for commuters, students, and other customers traveling during earlier morning and evening hours.
- **Increase frequency**. More frequent service was the top result for all survey respondents when asked about factors that would influence more transit use. Increasing frequency from every 30 minutes to every 15 minutes will increase ridership, although system productivity may drop slightly with the additional investment of resources.
- **Reduce redundancies between services.** Currently the Community Shuttle duplicates a VTA route between El Camino Hospital and the Mountain View Caltrain Station. Although the shuttle does not charge a fare, whereas VTA does, eliminating overlapping service could free up resources to serve other transit needs.
- **Fill service gaps.** Despite the success of the Community Shuttle, there are deficiencies in access that could be addressed by modifying existing routes. For example, access to the senior and teen centers is circuitous from all areas north of Caltrain. Although service along Montecito did not generate significant ridership for VTA, its function for local trip-making could be considered.
- **Improve connections to regional service.** The limited service span of the Community Shuttle precludes customers from using the shuttle to access Caltrain for most traditional commute trips, primarily due to the lack of morning peak hour service. Many customers relying on transit for first/last mile connections cannot effectively use the full regional network due to the Community Shuttle's limited hours. Furthermore, many residential areas north of the Caltrain line and along El Camino Real do not have direct access to the Caltrain stations through existing VTA and shuttle service.

- **Enhance First/Last Mile Connections.** Strategies for addressing the increased demand for first/last mile connections include:
  - Higher levels of MVgo service to employment centers such as North Bayshore and East Whisman, which could include larger vehicles and potentially a BRT service model.
  - Use of on-demand transit service for local residents to access the Mountain View Transit Center, increasing the number of drop-offs and reducing demand for parking spaces at the park-and-ride facility.
  - Continued expansion of enhanced bicycle and pedestrian facilities.

- **Explore the potential applications of microtransit.** For many lower density neighborhoods, conventional fixed-route service isn't viable because it would yield very little productivity. New mobility options may be more financially practical for serving these areas.
- **Coordinate or integrate local shuttle service.** MVgo schedules and routes are determined by MVTMA members, however, the shuttles are open to the public and often function as a local transit service. Mountain View should consider opportunities for integrating or better coordinating services to achieve operational efficiencies and provide more frequent and/or more extensive service.
- **Grow public awareness through improved communication.** With multiple regional, local, and private transit options in Mountain View, a coordinated communication or marketing strategy could improve service legibility to customers. This could include better integrated branding. To replace SOV trips, transit must be both perceived as convenient as well as truly convenient, in practice. A map or rider guide reflecting all service providers operating within, through, and near Mountain View with and clear fare and transfer information could improve public understanding. Furthermore, an integrated web presence, pulling information from all providers into a central location would be useful for local customers and visitors, alike. This was a repeated concern from younger residents, so the City might also consider outreach/education events and rider training activities coordinated with the local schools.

Financial Considerations

With Google's full support, funding for operation of the current Community Shuttle service has been secured through 2024. This funding should sustain existing service levels for the next five years. Any planned service changes must be cost-neutral or remain contingent on acquiring additional funding sources. Extending service hours, improving frequency, or adding routes would all require additional vehicles and, thus, additional funds. Opportunities to secure funding for short-term improvements and/or the long-term costs of sustaining the service after 2024 include:

- **City of Mountain View Measure P:** The City's Measure P, a per-employee business tax, is estimated to generate $6 million per year. City Council has indicated it will spend 80 percent of this revenue on transportation for infrastructure and shuttle operations. This could be a stable operating revenue source for shuttle service. However, since Google is only committed to funding the shuttle until 2024, it may be more strategic to set this revenue aside for sustaining operations after Google funding ends in 2024.
- **VTA Measure B Sales Tax Transit Operations Program**: Two programs within the Measure B Transit Operations Program include:

- Expand mobility services and affordable fare programs for seniors, persons with disabilities, students and low-income riders.
- Support new/innovative transit service models to address first/last mile connections and provide transit services for the transit dependent, vulnerable populations and paratransit users that is safe and accountable.

Both enhancements to the Community Shuttle or new mobility options to provide access to Caltrain could be funded through this program, however the amount of funds are limited. Funds will be distributed through a highly competitive discretionary grant program and each grant will be for a limited time frame requiring resubmitting applications periodically to sustain successful services.

Bay Area Air Quality Management District Vehicle Trip Reduction Grant Program: A competitive program within the region, grant funding under this program supports several community and rail feeder shuttles throughout the Bay Area. Enhancements to the Community Shuttle service or new mobility options to provide connections to Caltrain would both be eligible for these funds. As with Measure B, the amount of funds are limited, so funds will be distributed through a highly competitive discretionary grant program and each grant will be for a limited time frame requiring resubmitting applications periodically to sustain successful services.

- **Fares:** Customers currently ride Community Shuttle service for free. Establishing a fare would generate revenue to be re-invested in providing better and/or continued service but could also negatively impact ridership if the fare is unaffordable to customers, decreasing access and customer perception of convenience. These ridership losses might be made up if the service improvements are implemented concurrently and are effective in attracting more riders.

  There are also costs to introducing a fare, including the capital cost of procuring/installing fare collection systems and the operating cost of their ongoing maintenance. New cashless systems that utilize smart phones and/or smart cards are likely the most cost effective, though these solutions require equity considerations for unbanked riders and those without smartphones.

Conclusion

The City of Mountain View is well-positioned to tackle its goal of reducing SOV trips by increasing transit ridership/usage. With regional providers connecting Mountain View to other communities/destinations in the Bay Area, the City's primary tasks are providing effective connections to these services as well as local service.

The community outreach efforts conducted for this study demonstrated that residents will use transit if it is easy to understand and easy to use. A key opportunity for growing transit ridership is through improved frequency and span that better match the service levels of regional providers like Caltrain and VTA, ensuring the first/last mile connection that makes transit attractive for all trip purposes at all times of day. Employees commuting to the Mountain View area for work would also benefit from earlier shuttle service so they can utilize transit for both their morning and evening commute. It is rare for a commuter to use transit for only one half of their trip—if they can't use transit to get to work, they likely won't use it to get home from work.

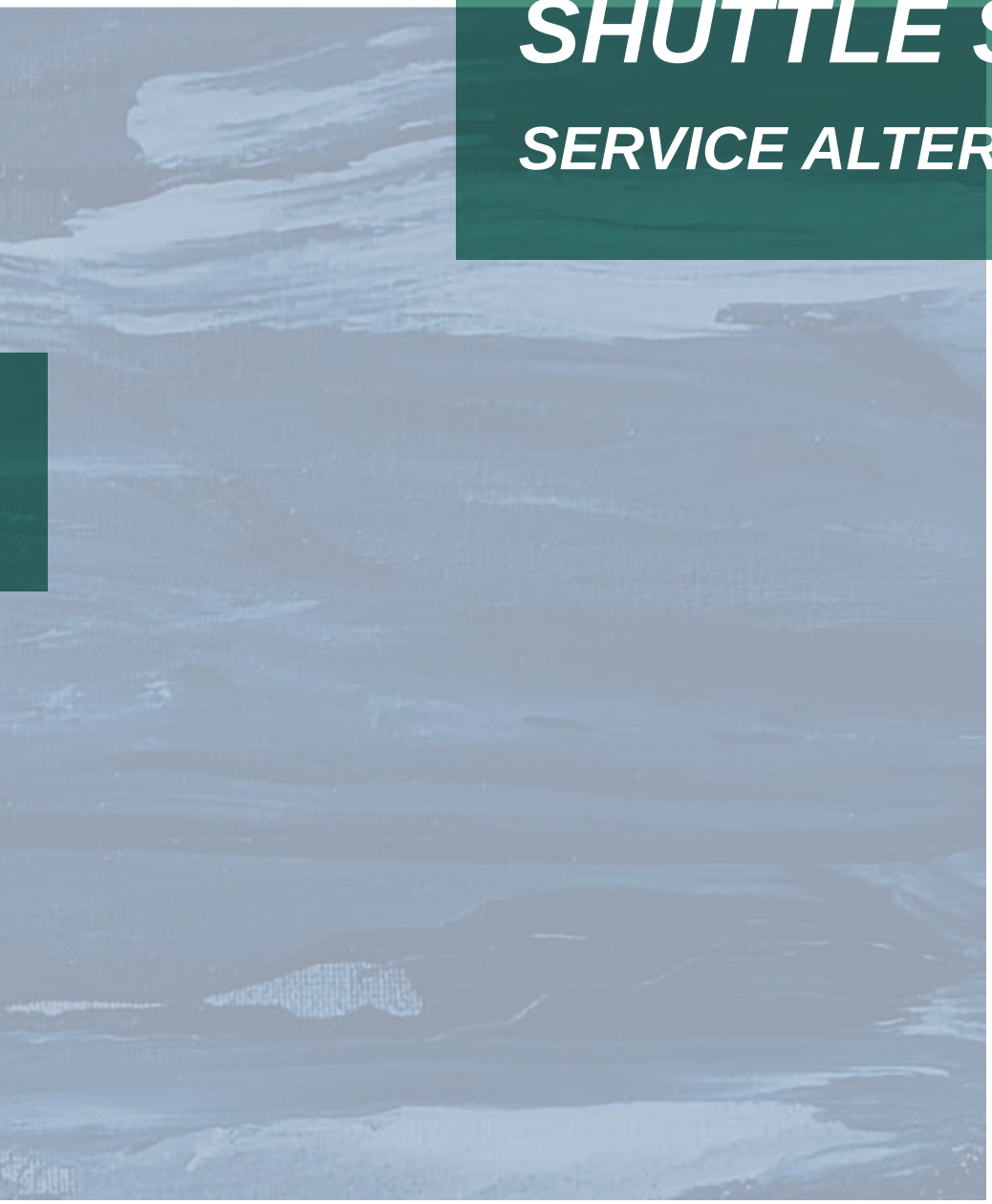
Increasing frequency, span of service and connectivity are also desired by seniors and youth for internal trips within Mountain View. For example, many activities at the Senior Center begin before 10 AM and

access from areas north of Caltrain requires long circuitous routing. Seniors also expressed a desire for slightly later service. While the shuttle is not designed for school trips, youth participants expressed frustration with crowding on VTA that resulted in students not being picked up. Mountain View youth also desire better late afternoon and early evening service to accommodate after school activities.

The next step in the City's planning process is identifying service alternatives. The survey results and stakeholder feedback have provided a clear case for the specific transit demands of different user groups and helped shape some preliminary service options. Funding short-term service improvements and any level of service beyond 2024 is the City's key challenge. A preferred service plan must provide options that correlate to the level of funding the City chooses to pursue and the sources it is ultimately able to tap.

CITY OF MOUNTAIN VIEW SHUTTLE STUDY

SERVICE ALTERNATIVES



CITY OF MOUNTAIN VIEW

CONTENTS

SERVICE ALTERNATIVES

Introduction

The City of Mountain View has partnered with Google since 2015 to provide fare-free service to Mountain View residents, employees, and visitors on the Community Shuttle. Beginning in June 2020, Google will no longer operate the shuttle but has agreed to fund the service through 2024. Additionally, VTA recently implemented the 2019 New Transit Service Plan, which affected some VTA routes serving Mountain View. The City is also working toward bold reduction targets for greenhouse gas emissions that will require a significant decrease in the mode share of single-occupancy vehicle (SOV) trips.

These changes provided the City with an opportunity to evaluate the Community Shuttle and plan for its future as a component of a multi-agency multi-modal transportation network. The City of Mountain View Shuttle Study is comprised of three phases. The first was a study of existing transit service and market conditions, as summarized in the Existing Conditions Report. The second phase developed strategies to improve intracity service and intercity connections to meet travel demand in the short and long terms. These service strategies were included at the end of the Existing Conditions Report and are integrated into this report as well. This third and final phase employs these strategies to develop service alternatives for the Mountain View City Council to consider for implementation. This report presents and summarizes those service alternatives.

Summary of Existing Conditions

The analysis of existing transit conditions was designed to answer a few key questions:

- Where do people live? Where are they trying to go and when?
- Where are populations who are most likely to rely on transit living?
- How effective are existing transit options at serving these trips and populations?
- How well does the community perceive transit to be serving them and do they use it?

A key component of the existing conditions analysis was identifying the areas where transit is most likely to attract riders and serve the community. Market identification considers major employers, shopping centers, schools, and other trip generators. Another indicator of transit usage is population and demographic information. The following data (all measured in persons per acre) were aggregated to create a composite transit propensity map:

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

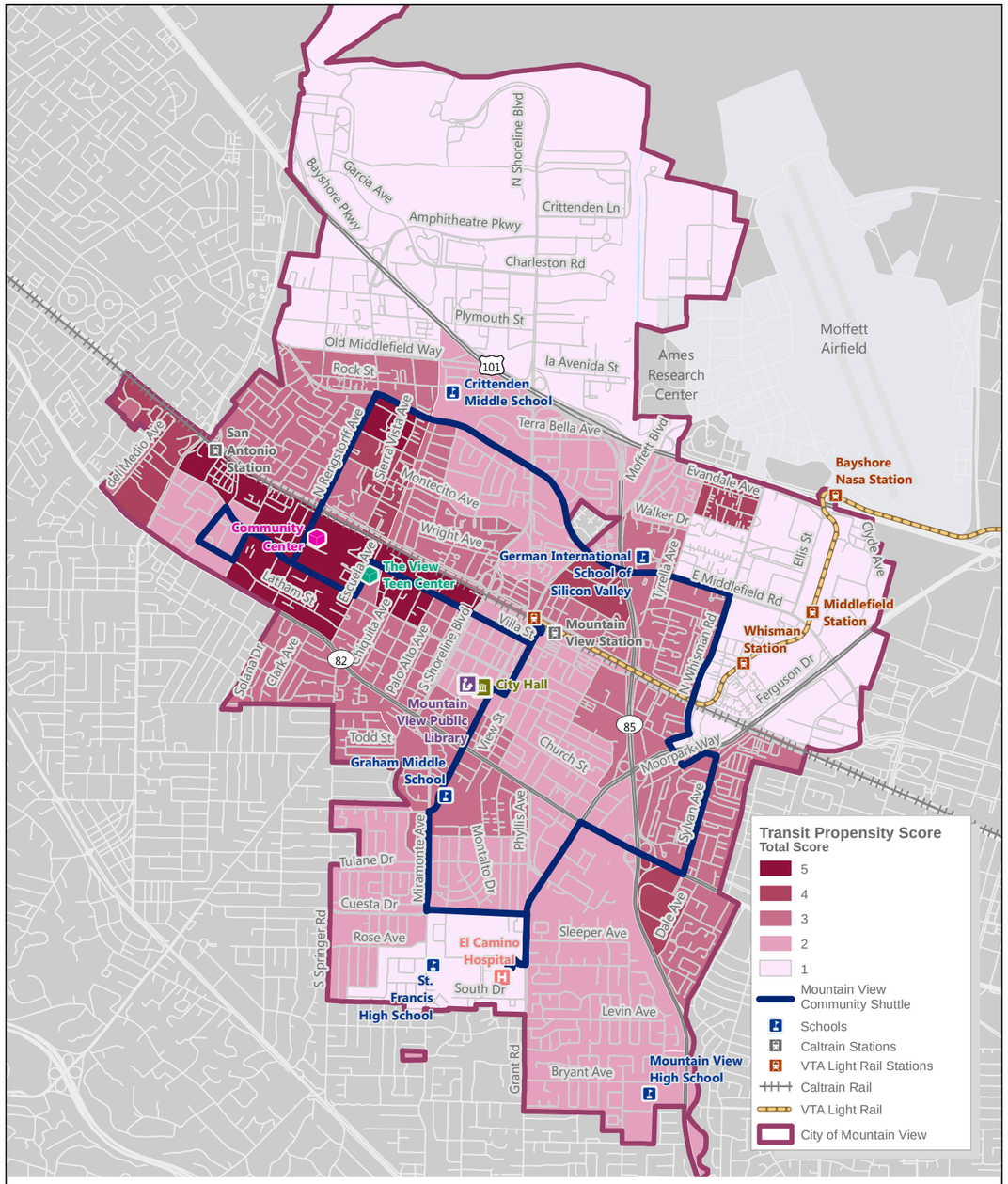
The transit propensity index indicates that the greatest need for transit (as measured by these factors) is concentrated primarily on the western side of Mountain View, near the San Antonio Station and the Census block groups southeast of the Station (where the Community Center and Teen Center are located), along the Caltrain line. The current Mountain View Community Shuttle travels through and stops in these areas. (See Figure 1.)

The Existing Conditions Report also included an evaluation of current service performance. The Community Shuttle's alignment successfully links key trip generators throughout the community, and service productivity (passenger boardings per service hour) was stronger than any of the VTA routes that serve Mountain View (Routes 22, 32, 34, 35, 40, 81, and 522). Phase 1 of the Shuttle Study included a community survey to gauge community perceptions, demand, and usage of the Community Shuttle.

According to survey respondents, two of the greatest deterrents to using the Community Shuttle are the limited service span and a service frequency of 30 minutes. The survey indicated the Shuttle would need to operate at least every 15 minutes to be considered attractive to a plurality of respondents (47 percent). With a 10 AM – 6 PM service day, the Community Shuttle does not serve those traveling during traditional morning commute hours (6 AM – 9 AM) or commuters arriving in Mountain View after 5:30 PM. If a commuter cannot use the Community Shuttle for one end of their daily commute, they are unlikely to use it for the other end. Students are also unable to take the Community Shuttle to school in the mornings, and residents are unable to use the Shuttle for non-work trips in the evenings.

The service alternatives presented in this report were developed based on Phase 2 service strategies and goals identified in the existing conditions analysis. Alternatives are presented in the following sections with the related strategy or goal.

FIGURE 1: TRANSIT PROPENSITY MAP



City of Mountain View - Transit Propensity Score

0 0.25 0.5 1 Miles

Improve Community Shuttle Through Service Changes

There are many approaches to improving Community Shuttle service, including changes to service design, operations, administration, and funding. This section addresses service and operational alternatives to provide better service to existing riders and attract more riders by better meeting community travel demands.

Extend Hours of Service (Span)

Extending the hours of service on the Community Shuttle opens up transit as a potential alternative to more Mountain View trips (those occurring before 10 AM and after 6 PM). A longer span also helps the Community Shuttle operate more effectively as a first/last mile connection to other regional services (Caltrain, VTA), which have significantly longer service spans than the Community Shuttle.

The other key service provider for local trips in Mountain View is MVgo, operated by the Mountain View Transportation Management Association (MVTMA). Its current span is peak-only, from 6:45/7:15 AM to 10:15/10:45 AM in the morning peak and 3:00/3:45 PM to 7:45/8:30 PM in the evening peak. For these two services to function as complementary, the Community Shuttle should at least cover the same span as MVgo, if not more (keeping mid-day service). Service span alternatives are summarized in Table 1.

EXPAND SERVICE HOURS ON WEEKDAYS

The current 10 AM – 6 PM all-week service span for the Community Shuttle does not address both ends of weekday work trips, with most traditional commuters needing to reach work before 9 AM. Most people will use the same mode for both their home-based-work trip and work-based-home trip. If the Community Shuttle cannot capture both ends of that trip, it will not be a feasible option for commuters. Earlier morning and later evening service would help accommodate not only traditional commute trips, but also school hours for student trips and more non-work trips. For example, many activities at the Senior Center begin before 10 AM.

TABLE 1: SUMMARY OF SERVICE SPAN ALTERNATIVES

Service Span Alternatives	Current		Proposed		Additional Daily Revenue Hours	Additional Daily Vehicles Required	Additional Annual Operating Cost
	First Trip Start Time	Last Trip Start Time	First Trip Start Time	Last Trip Start Time			
Expand service hours on weekdays	10:00 AM	5:00 PM	7:00 AM	6:30 PM	18	0	$624,240[1]
Expand service hours on weekends	10:00 AM	5:00 PM	8:00 AM	7:00 PM	8	0	$119,680

1 Costs are based on the current cost of operating the Community Shuttle. Based on comparative costs for other services in the region these appear to represent the high end of operating costs.

EXPAND SERVICE HOURS ON WEEKENDS

The current service span also limits the utility of the Community Shuttle as a first/last mile connection for regional trips over the weekend. If a Mountain View resident makes a trip into San Francisco on a Saturday night, Caltrain span (operating Northbound until 10:50 PM and Southbound until 1:30 AM) covers that trip, but if the first/last mile connection on the Community Shuttle isn't available after 6 PM, that may be a deterrent to using transit. Even if there are not enough resources to match the Caltrain span, extending service by even a few hours will capture more trips.

There are advantages and drawbacks to consider before implementing the service span alternatives, including:

- **Pros:** Service becomes more useful for more trip purposes. People can use the Shuttle to travel to work and school earlier in the morning and for entertainment and journeys home from work in the evenings. Extending service span also does not require purchasing additional vehicles.
- **Cons:** This expanded span may still not be early enough for commuters who spend over an hour on Caltrain, such as people working in the heart of San Francisco.

Improve Frequency

Frequency is the number one factor that attracts new riders to use transit. With 30-minute service, riders must depend on the trip schedule and plan their travel around when the bus operates. As service frequency increases, average wait times decrease, and riders can more easily spontaneously show up at the bus stop and wait for the next trip. Since a larger percent of the population wants to just show up and ride rather than plan around a schedule, increasing frequency from every 30 minutes to every 20 or 15 minutes is expected to significantly grow ridership.

If there were no resource constraints, 15-minute frequency on both weekdays and weekends optimizes the Community Shuttle for customer convenience and ease of use. However, the Community Shuttle operator will most likely need to set priorities for service improvements by either limiting which days (weekday vs. weekend) and which routes (clockwise vs. counter-clockwise) or route segments receive additional frequency investment. The degree of frequency improvement (10 minutes better vs. 15 minutes better) must also be considered. Alternatives are outlined in Table 2.

TABLE 2: SUMMARY OF FREQUENCY ALTERNATIVES

Frequency Increase Options	Current Frequency (minutes)	Proposed Frequency (minutes)	Additional Daily Revenue Hours	Additional Daily Vehicles Required	Additional Annual Operating Cost
Increase weekday service to 20 minutes	30	20	18	2	$752,240
Increase weekday service to 15 minutes	30	15	34	4	$1,435,120
Increase weekday service to 15 minutes between San Antonio Center and Mountain View Caltrain only	30	15 (partial route) 30 (full route)	8	1	$341,440
Increase weekend service to 30 minutes	60	30	16	2	$239,360

NOTE: ADDITIONAL ANNUAL OPERATING COST IS INCLUSIVE OF THE ANNUAL COST OF LEASING ADDITIONAL VEHICLES.

There are advantages and drawbacks to consider before selecting an alternative service frequency, including:

- **Pros:** Increasing frequency is proven to increase ridership. Reduced wait times increase transit's attractiveness, especially for shorter trips taken on community circulators.
- **Cons:** The cost of increasing frequency is significantly higher than expanding span or changing the route alignment. Increasing frequency requires acquiring new vehicles, adding capital cost. Productivity may decrease if ridership does not increase with direct proportionality (1:1) to the amount of additional service provided.

Extend Hours of Service and Improve Frequency

Arguably the service change with the greatest impact would be improving both service span and service frequency. This approach is, of course, costly but the most likely to grow ridership on the Community Shuttle. Estimated resources for joint improvements are summarized in Table 3.

TABLE 3: SUMMARY OF COMBINED FREQUENCY-SPAN IMPROVEMENT RESOURCE REQUIREMENTS

Combined Frequency-Span Alternative	Proposed		Additional Daily Revenue Hours	Additional Daily Vehicles Required	Additional Annual Operating Cost
	Frequency	Span*			
Weekday - Expand span and increase frequency to 20 minutes	20	7:00 AM – 6:40 PM	34	2	$1,307,120
Weekday – Expand span and increase frequency to 15 minutes	15	7:00 AM – 6:45 PM	50	4	$1,990,000
Weekday – Longer service span, add 15-minute service during peak commute times (6-9 AM, 2-6:45 PM)	15 (peak) 30 (off-peak)	6:00 AM – 6:45 PM	50	4	$1,990,000
Weekday – Expand span and increase frequency to 15 minutes between San Antonio Center and Mountain View Caltrain only	15 (partial route) 30 (full route)	7:00 AM – 6:30 PM	30	1	$303,360
Weekend – Expand span and increase frequency to 30 minutes	30	8:00 AM – 7:00 PM	32	2	$606,720

*SPAN REPRESENTS THE STARTING TIME OF THE FIRST AND LAST TRIP.

Adjust Route Alignments to Reduce Redundancies and Complement Other Services

Redesigning the Community Shuttle alignment is a cost-effective option to improve productivity, attract new riders, and/or reduce redundancies between the Community Shuttle and other transit operators in Mountain View. One such redundancy is the current Community Shuttle route deviation to serve El Camino Hospital via Cuesta Dr. and Miramonte Ave. This overlaps with two other services: VTA Route 51 and a free public shuttle operated by El Camino Hospital. This segment of the Community Shuttle route accounts for only 9 percent of total ridership while using 25 percent of the route's resources (15 minutes of the 60-minute schedule). While multiple service options to critical services is ideal, these Community Shuttle resources could be reallocated to other areas without service or with higher demand while two service options maintain access to El Camino Hospital.

REALIGNMENT ALTERNATIVE 1

One option for reallocating the resources from the El Camino Hospital deviation is adding a loop via North Whisman, Fairchild, and Ellis Street to add service to major employers, future residential projects and Middlefield Station. Service would continue along El Camino Real between Castro and Grant Rd. instead of deviating to serve El Camino Hospital. See Figure 2.

Alternative 1 has both advantages and drawbacks, including:

- **Pros:** New segment provides additional connection point to VTA Orange Line light rail (Middlefield Station). Added service segment also serves several employers, including multiple Google campuses, and planned future residential development. There are also several electric vehicle charging points along the proposed loop that could potentially be used for Community Shuttle charging. Improves access to Caltrain, senior and teen centers from areas along El Camino Real south of Castro.
- **Cons:** Alignment change would eliminate Community Shuttle service to El Camino Hospital, Cuesta Park, El Camino YMCA, direct stop to Graham Middle School, and a Cuesta Dr. stop proximate to St. Francis High School.

REALIGNMENT ALTERNATIVE 2

An alternative allocation of resources from discontinuing the El Camino Hospital deviation would alter the route to create two loops, connected by the Villa St. segment in Downtown Mountain View (between Moffett and Shoreline Blvds.). Service would still be bi-directional, but the Villa St. segment would be served twice on the Red Line (clockwise route) and twice on the Grey Line (counter-clockwise route), rather than only once on each line in the current alignment. Service would continue along El Camino Real between Castro and Grant Rd. instead of deviating to serve El Camino Hospital. The turn-by-turn alignment for Alternative 2 is shown in Figure 3.

Alternative 2 has both advantages and drawbacks, including:

- **Pros:** This alignment Improves access to Caltrain, VTA light rail and Downtown Mountain View from areas north of the Caltrain Line. It provides more miles of residential collection points as well as service to retail destinations on Moffett and the Social Security office and Safeway grocery off Shoreline. Improves access to Caltrain, senior and teen centers from areas along El Camino Real south of Castro.
- **Cons:** Alignment change would eliminate Community Shuttle service to El Camino Hospital, Cuesta Park, El Camino YMCA, direct stop to Graham Middle School, and a Cuesta Dr. stop proximate to St. Francis High School. Creates deviation/longer ride for customers traveling from one end of Middlefield Rd. to the other.

COMPARING ALTERNATIVE ALIGNMENTS

Both realignment alternatives are cost neutral, not requiring any additional operating or capital costs since resources will be reallocated from the El Camino Hospital deviation. Alternative 1 provides more "last mile" connection points (employment destinations) and expands the overall geographic extent of the Community Shuttle service. Alternative 2 provides more "first mile" points (residential origins) and additional service to Downtown Mountain View, prioritizing connections to Mountain View Transit Center/Caltrain Station. Both introduce some overlap with existing VTA service while eliminating overlapping service to El Camino Hospital.

SERVICE TO NEW RESIDENTIAL DEVELOPMENT

The North Bayshore and Whisman Specific Plans anticipate significant new housing in areas that are currently exclusively commercial. While Realignment Alternative 1 could serve potential development in the Whisman area, the Community Shuttle does not serve the North Bayshore area except for weekend service to the movie theaters. One option for serving new residential development in these areas would be expansion of MVgo service. Beginning in April 2020, MVgo will add a route serving residential developments on San Antonio Road and El Camino Real. Most MVgo service has been designed to serve employers who belong to the MVTMA. However, if the City of Mountain View continues to mandate that new multi-unit residential developments become members of the MVTMA, funding could be available to expand the service span to serve more residential areas.

FIGURE 2: CURRENT SERVICE COMPARISON TO REALIGNMENT ALTERNATIVE 1

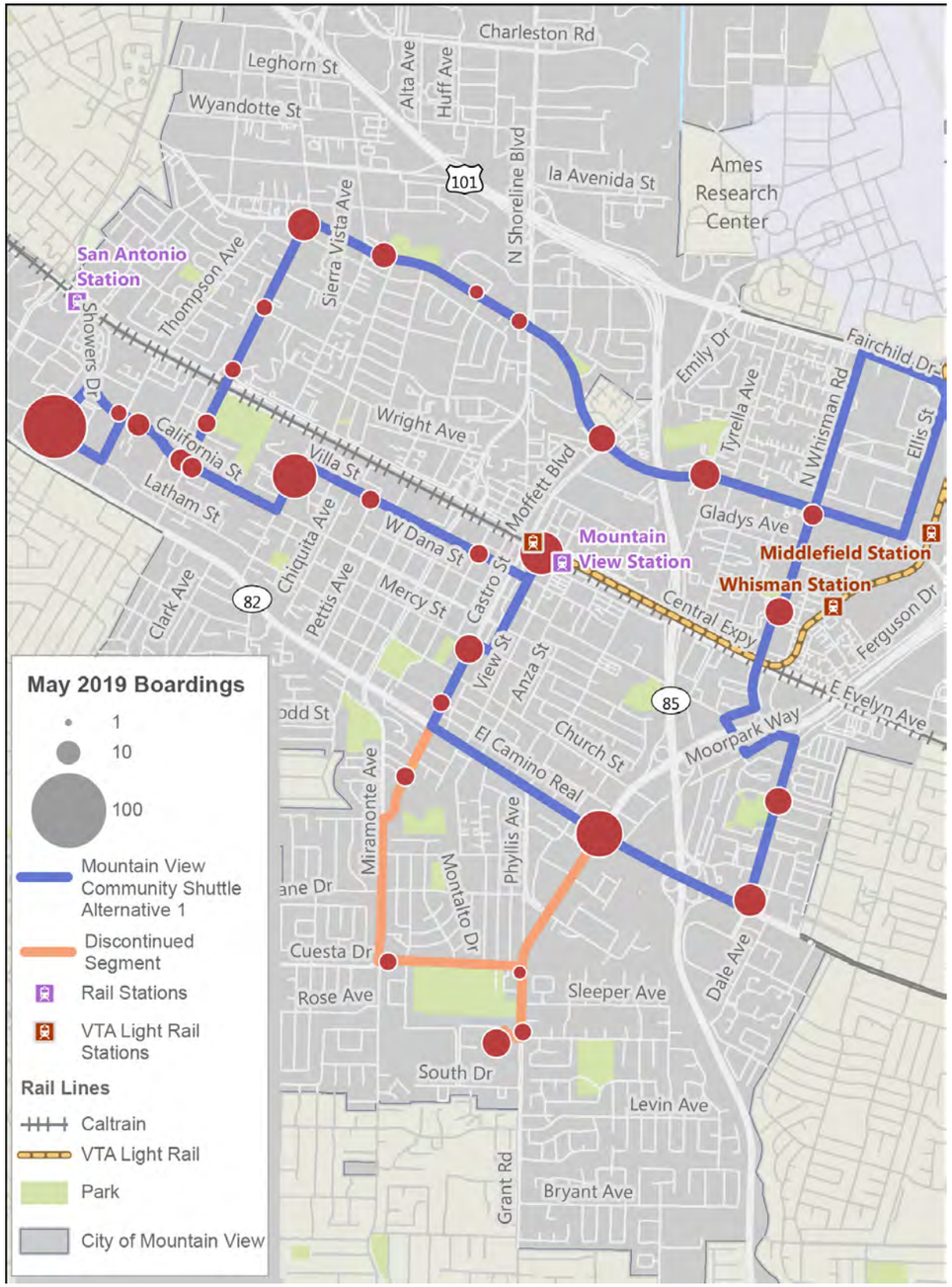
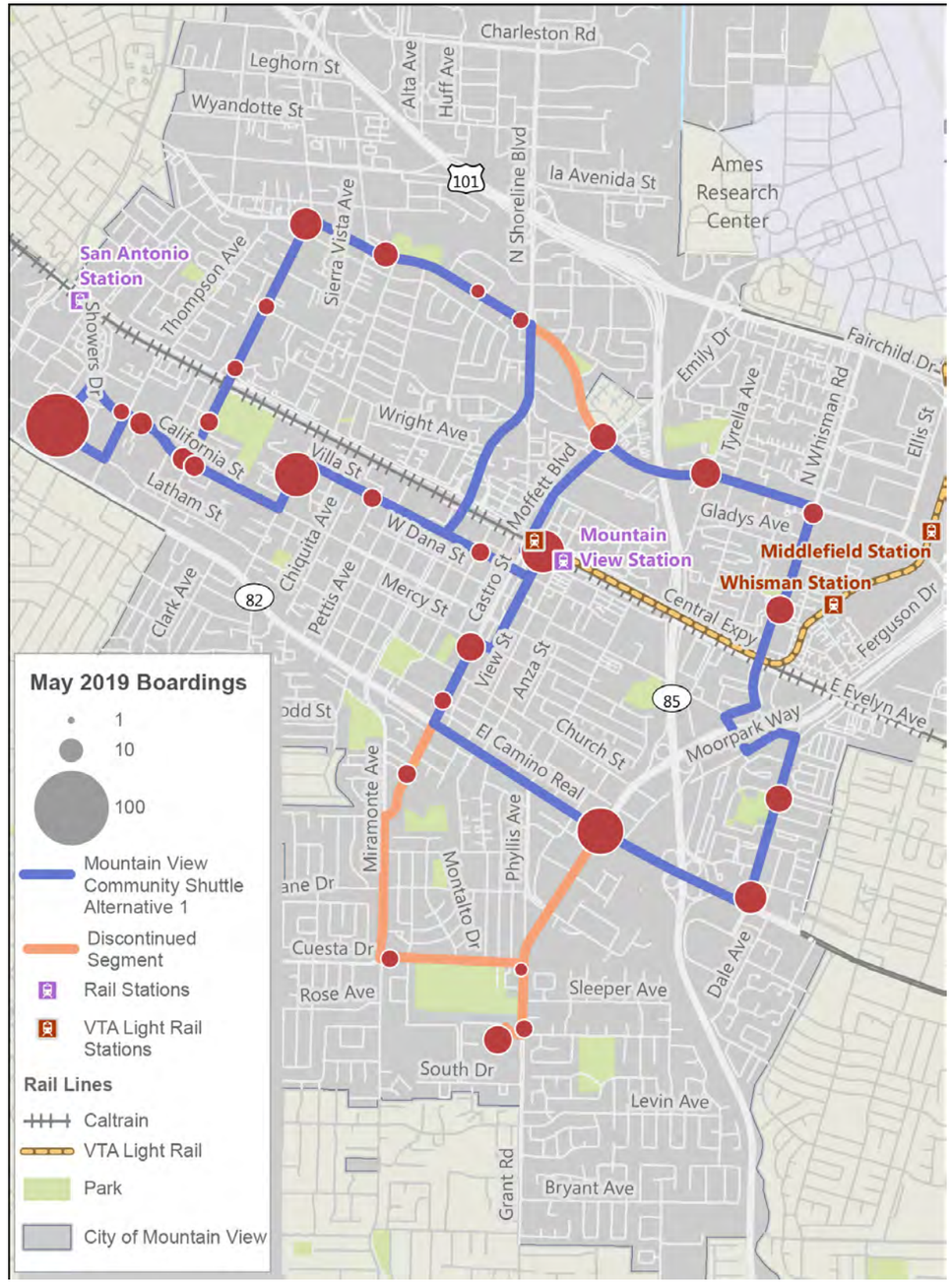


FIGURE 3: CURRENT SERVICE COMPARISON TO REALIGNMENT ALTERNATIVE 2



Ensure First/Last Mile Connections to Regional Service

In addition to internal Mountain View travel, an optimized Community Shuttle should provide first/last mile connections to regional transit services. Demand for those regional services is expected to grow in the coming years. As Caltrain moves toward complete electrification, service is anticipated to be more frequent and provide faster trips under the Caltrain Modernization Program (CalMod). These improvements will likely increase demand for service at the Mountain View Caltrain Station, where parking is already constrained. The San Antonio Caltrain Station only has limited parking shared with a housing development and thus faces a similar challenge.

Providing additional parking capacity is costly and continues facilitating personal vehicle trips (including SOV trips). Reduction of SOV trips is a key component to Mountain View's climate action planning efforts. An increased demand for Caltrain positions the City of Mountain View to demonstrate leadership in first/last mile connections to a robust regional transit network. As alternatives to the Community Shuttle or supplemental service, VTA trippers and On-Demand (OD) services are options for providing these first/last mile connections.

VTA Peak Trippers

VTA routes serving the Mountain View Transit Center operate approximately every 30 minutes, or two trips per hour. By contrast, Caltrain provides four trains per hour during weekday peak hours (though arrival and departure times are not always evenly distributed within the hour). VTA Orange Line light rail provides service from the Mountain View Transit Center to employment destinations in Sunnyvale and San Jose every 15 minutes. By investing in additional trips on select VTA bus routes connecting to Caltrain and VTA light rail, Mountain View can offer an alternative to driving to rail stations. VTA Bus Routes 51 and 52 are contenders for peak trippers.

Route 51 operates between NASA Ames Research Center and West Valley College. The segment between Mountain View Transit Center and Grant and Fremont falls mostly within the Mountain View city limits and is within walking distance of most residential areas in the southwest quadrant of the city. (See area between Timepoints B and F in Figure 5.) The segment north of the Caltrain tracks (between Timepoints A and B in Figure 5) is also served by VTA Route 21, providing four trips per hour during peaks.

Route 52 operates between Mountain View Transit Center and Foothill College via El Monte. (See Figure 6.) As there are no feasible points for turning around the bus near the Mountain View – Los Altos boundary, the entire route would be considered for additional trips.

To operate approximately 15-minute peak-hour service on these two routes would require three buses providing 14 hours of additional service per day. Based on VTA 2020 marginal costs, if the City were to subsidize this extra service, it would cost approximately $429,000 per year.

If the Community Shuttle span of service is increased to cover the peak hours and the existing route alignment is not modified, adding service to Route 51 could be duplicative, although the shuttle does not serve neighborhoods near Mountain View High School. Adding service to Route 52 only would require two additional buses or about nine additional hours at an annual cost of $276,000 (based on the same VTA 2020 marginal costs).

FIGURE 5: MAP OF VTA BUS ROUTE 51

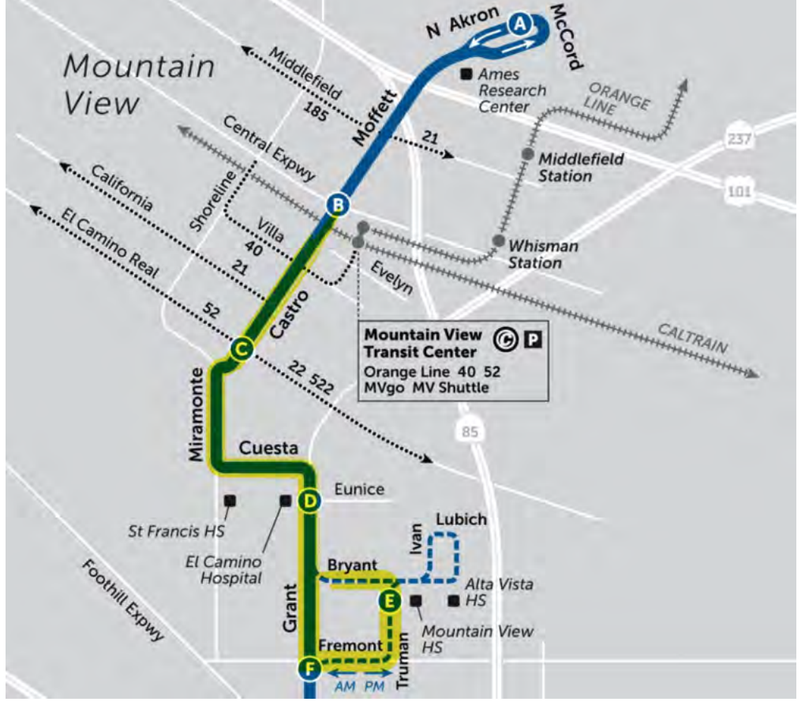


FIGURE 6: MAP OF VTA BUS ROUTE 52

On-Demand (OD) Service

OD service as a first/last mile alternative is growing increasingly popular among transit agencies and communities. OD pilot projects typically use small vehicles and offer shared rides to customers who have requested service through an app/website/digital platform. Although services like this, traditionally called dial-a-ride, have been around for over 50 years, the use of mobile apps has significantly improved the customer experience by enabling riders to request a trip at the time they want to travel rather than having to make reservations up to 24 hours in advance.

OD service has multiple benefits from the customer perspective. Riders can request trips when they want to travel rather than working around the schedule of a fixed-route bus or calling a day in advance. Some OD services also offer curb-to-curb service, picking up customers at any point instead of an operator-designated bus stop or pickup location. Though more convenient for consumers, for service providers, OD models are generally less operationally efficient than fixed-route service. OD services still require paying a driver to sit in a vehicle all day, regardless of demand, and accrues more deadhead time and mileage between passenger trips. The vehicles are typically vans or very small buses, limiting the number of passengers per trip.

Appendix A provides greater detail on OD service models and includes eight case studies. The Via-Cupertino Shuttle, an 18-month OD pilot program offers some insight into how OD could function in Mountain View is one of eight case studies described in detail in Appendix A.

Transportation Network Company (TNC) Partnerships

Another popular option for first/last mile solutions is subsidizing trips on existing TNC services, like Uber Pool or Lyft Line. In most pilot projects, a transit agency partners with a TNC and agrees to subsidize qualified trips (for example, trips with an origin/destination within Mountain View City limits and a destination/origin at a transit center, rail station, or bus stop). Uber Pool and Lyft Line one-way fares from various points in Mountain View to the Mountain View Caltrain Station ranged from $9 to $11. The taxi fare for these same trips ranged from $13 to $14. Mountain View would either need to subsidize the whole amount, with a cap of maybe $15 per trip, or subsidize a share of the trip, with the customer paying the remainder. By comparison, parking at the Mountain View Caltrain Station is $5.50 per day.

Part of the goal of this study is to reduce single-occupancy vehicle trips within the City of Mountain View. Replacing SOV vehicle trips with Uber Pool or Lyft Line trips may keep a few cars off the road and decrease parking demand, but the deadhead travel for the Uber/Lyft driver between trips is still adding to the total Vehicle Miles Traveled (VMT) within Mountain View. Using regular Uber or Lyft service (rather than the shared-ride Pool and Line options) may curb parking demand but is a direct 1:1 tradeoff for SOV trips.

A few other challenges noted by agencies and cities that have piloted TNC partnerships include guaranteeing service availability will meet customer demand, Americans with Disabilities Act (ADA) access compliance, and not being able to secure program utilization data from the TNC. Such data could indicate how well the program is working, who is using the service, and where they are using it.

Ensuring first/last mile connectivity is vital in a community like Mountain View, with multiple regional transit providers, and advances in technology have generated more service options. However, cost and efficiency should be considered in comparing these service alternatives.

Grow Ridership Through Customer Information and Coordination

A key finding from the community survey conducted as part of the Existing Conditions Report was that many residents felt they needed better public information regarding transit service. This was particularly common among younger residents who attended the stakeholder meeting or responded to the survey. In addition to changes to the service and operating model, better public awareness of the Community Shuttle and access to information will increase the community benefit.

The Community Shuttle service was designed to facilitate internal trip-making in the City of Mountain View as well as first/last mile connections to the regional transportation network. The Bay Area transit network is comprised of more than two dozen service operators. This segmented network requires many customers to make multi-operator trips for their daily commute and other travel needs. There is strong demand for a more integrated transit network to attract riders and improve the customer experience on multi-operator trips, from trip planning to fare payment to transfers between operators. Addressing this challenge is critical to increasing transit's regional mode share in the Bay Area and helping Mountain View achieve its GHG reduction targets.[2] For the Community Shuttle to effectively provide first/last mile service as part of a multi-operator trip, a coordinated marketing and customer experience strategy is an important step in making the transit network legible to residents.

Marketing

Ensuring residents, commuters, and visitors are aware of the Mountain View Community Shuttle service is critical to growing ridership and providing an effective service to the community. With so many regional service providers, it is important for Community Shuttle to explain to customers how the service fits in with the rest of the regional network.

TRAVEL TRAINING

Particularly if the service span is extended to better serve school-age children, travel training in Mountain View schools and distribution of a "how to ride" brochure can be an effective tool to grow ridership by this population segment. Parents will likely be more comfortable allowing their kids to travel by public transit if they know their children have been trained and if they, as parents, are more aware of the service. This can be accomplished as a joint programming effort between the City of Mountain View and the Mountain View Whisman School District.

Travel training is also a proven strategy for improving the mobility of senior citizens. The Mountain View Senior Center already offers an abundance of programming and is a stop on the Community Shuttle route. A program designed to help seniors read the bus schedule, locate stops on the street, and use the real-time vehicle locator on their smart phones would improve the perception of the Community Shuttle as an accessible and convenient option. Earlier in this study, the City of Mountain View Senior Advisory Committee (SAC) identified a longer service span as their top priority. Coupling a longer span with some travel training support has the potential to grow senior utilization of the Community Shuttle.

"GETTING AROUND MOUNTAIN VIEW" JOINT MARKETING EFFORT

Even for internal travel in the City of Mountain View, riders have VTA, MVgo, and the Community Shuttle as options. Creating a consolidated service map with all local service and "how to ride" information can minimize the clutter of other connecting regional services and focus on customers who just want to travel within Mountain View (the Community Shuttle as part of a broader regional network will be addressed in the following Integrated Customer Information section). The Transit and Shuttles page of the City of Mountain View website could also showcase sample transit trips to highlight both local trips that can be made on the Community Shuttle as well as the regional destinations that are accessible by transit (ex: Mountain View to SFO).

Integrated Customer Information

A major barrier to more transit ridership in the Bay Area is the patchwork transit network with dozens of operators, each with their own service schedule, transfer policy, fare rate, fare media, and branding. Integrated service and fare media require coordinated efforts and agreements between agencies. The introduction of the Clipper card was an important step toward integration, but there is still room for improved coordination across agencies.

A key to effective transit planning is "thinking like a customer." For a customer to choose transit, the first test it must past is, "Can I get where I need to go on transit?" In some cities/regions there is only one transit operator, so a resident can just check that one website. This is not the case for Mountain View and its surrounding communities. Since memorizing the services of so many providers is not feasible, most transit customers utilize integrated trip planning tools, like Google Transit, to answer this question. Trip planning tools are most effective when they capture all mobility options, including personal vehicles and TNCs, bike routes, all modes of transit open to the public (bus, shuttle, rail, ferry) across all transit agencies, and any other mode of travel.

The second and third tests are, "Is transit cheaper than traveling by car?" and/or "Is transit faster than traveling by car?" Some trip planning apps provide estimated fare along with travel time. However, it is difficult to capture the nuances of every pass option offered by every agency, including zone-based fares, reduced fares, monthly or daily passes, etc. Increasingly, the transit industry is pursuing all-in-one digital platforms, sometimes called "Mobility as a Service" (MaaS). For transit to be truly convenient, trip planning, vehicle tracking/service updates, and fare payment should be centralized in one tool.

Mountain View need not start from scratch to develop an integrated app for residents. Several Bay Area operators provide their schedule information

2 See: Final Report of the 2017-2018 Environmental Sustainability Task Force. City of Mountain View. June 18, 2018. http://laserfiche.mountainview.gov/WebLink/0/edoc/219376/ESTF-2%20Sustainability%20Recommendations%20Report%20-%20June%202018%20-%20FINAL.pdf

and connection to digital fare payment in the Transit app. VTA has a web page encouraging customers to download Transit, calling it "VTA's officially endorsed trip planning app."

According to the Transit app's website (as of January 31, 2020), schedules have been provided by the following regional transit providers. (Note that those in green provide real-time information, while those in regular font provide static schedules.)

- AC Transit
- ACE
- AirTrain SFO
- BART
- Bear Transit
- Caltrain
- Capitol Corridor
- Cloverdale Transit
- County Connection
- Dumbarton Express
- Emery Go-Round
- Golden Gate Transit
- Hyperloop
- Marguerite
- Marin Transit
- Mission Bay TMA
- MVgo
- MUNI
- Petaluma Transit
- PresidiGo
- SamTrans
- San Francisco Bay Ferry
- Santa Rosa CityBus
- SFO Shuttles
- SolTrans
- SMART
- Sonoma County Transit
- Tri Delta Transit
- Vacaville City Coach
- VTA
- Wheels

Caltrain, VTA, and MVgo are all included in the Transit app. By adding the Community Shuttle, the app will have more comprehensive information on all travel options available in Mountain View and the Community Shuttle will be more visible as a service option to potential riders.

Maintain Bus Stops

Another important component of service visibility and ensuring a good rider experience is providing and maintaining the entry point to the service: the bus stop. An ideal bus stop reminds drivers, pedestrians, visitors, etc. that transit is an option (attracting more riders) and, more importantly, gives existing riders clear direction on where to wait for the bus. The ideal stop would also include posted information with the service schedule and, if there are multiple routes, indication on the sign of which route(s) serve that stop. Stops with high ridership, low frequency, or lots of transferring customers are typically the best candidates for bus stop amenities (shelters, benches, trash cans, etc.).

For the Mountain View Community Shuttle, the first step is ensuring bus stop posts and signs are maintained. Some stops on the Community Shuttle are also stops on VTA bus routes. In these instances, the Community Shuttle stop sign was added to the VTA post. Where VTA has discontinued service, the City of Mountain View and/or future Community Shuttle operator needs to ensure these posts and signs and any other amenities at these previously-shared stops are maintained. Ideally benches would be eventually added at all stop locations, however at minimum the heaviest used stops should have benches installed if they currently do not. When stops are added or relocated it is essential that they be ADA accessible which includes adequate clearance for wheelchair boarding and alighting buses and level concrete or asphalt surfaces at the curb.

Pricing Strategies

Community Shuttle Fare

In considering whether or not to collect a fare, every transit operator must consider: 1) How much revenue could be generated, 2) How much it would cost to collect the fare, 3) How much ridership might suffer by introducing a cost to riders. Even with many consumers favoring debit/credit cards or mobile payment (like Apple Pay), public services still need to consider unbanked populations who use cash only. For this reason, most transit agencies still offer an on-board cash payment option, even after introducing mobile ticketing or reloadable passes.

Currently the Community Shuttle is fare free. (The MVgo shuttles are also fare free.) For a community of Mountain View's size, the cost of installing and maintaining a fare collection system will outweigh the potential revenue. Furthermore, some riders will stop riding if a fare is introduced, either because they can no longer afford to ride or they no longer perceive the service to be the most convenient option, knowing they will need cash or some kind of pass to ride. Collecting a fare also has operations impacts, adding dwell time at each stop for customers to pay as they board.

SUBSIDIZE VTA FARES

To provide consistency for internal travel within Mountain View the City may consider entering into an arrangement with VTA to allow boardings within Mountain View to be fare free. This could be applied to all service or limited to select routes. For example if the City decides to modify the Community Shuttle to eliminate duplication with Route 51 allowing free fares on this route in Mountain View would address the concern that Community Shuttle customers would be now forced to pay a fare. It can also encourage more use of VTA services to connect with Caltrain. One concern is if this approach were pursued is how to deal with trips between Mountain View and destinations outside of the city. To keep it simple customers using VTA for trips outside of the city limits would receive a free fare leaving the city but would have to pay when boarding outside of the city in the other direction. A mobility wallet (see below) or an opt-in option for Mountain View residents on Clipper Card may be another approach to provide free or discounted rides on VTA when boarding in Mountain View.

MOBILITY WALLET

Mobility wallets are growing in popularity in the transit industry. Often part of a multi-modal and multi-operator regional system, a mobility wallet provides a digital platform for fare payment to multiple agencies. It can be designed as an e-purse, where the user adds money to their account and the appropriate fare is deducted based on the service provider and mode. Alternatively, some mobility wallets are the smart phone equivalent of a "smart card," identifying the point at which a pass is the more economical option than continuing to pay single-ride fares (fare capping), saving the customer money.

Many trip planning apps, like the Transit app, are working toward building in fare collection capabilities so transit riders can use one app for all their mobility needs. In the meantime, the Clipper card is the most integrated fare payment option in the Bay Area. Metropolitan Transportation Commission (MTC) is in the process of designing the next generation of the Clipper card, called "Clipper 2.0." An app for mobile ticketing is expected and a digital wallet function is under consideration.

Appendix B provides two case studies of mobility wallets and provides detail on how a mobility wallet could be designed and implemented in Mountain View.

CALTRAIN MONTHLY PARKING PERMIT

Caltrain offers customers parking in station lots for a fee. Anyone can purchase a daily parking permit for $5.50 at a ticket vending machine. A monthly parking permit must be purchased in conjunction with a monthly train pass and costs $82.50. Some employers offering commuter benefits pay for monthly Caltrain parking permits for employees. With demand for Caltrain service expected to increase with electrification and other improvements under CalMod, demand for parking will likely exceed the number of available spaces.

The Community Shuttle provides an alternative first/last mile connection to the Caltrain stations in Mountain View. If the Community Shuttle were to charge a fare, Caltrain parking permits could potentially be used in lieu of fare and that portion of Caltrain revenue allocated to the Community Shuttle. Alternatively, partnerships with commuter benefits providers could be developed to allocate funds to the Community Shuttle instead of a parking permit and encouraging employees to use the shuttle to access Caltrain, somewhat like a TMA structure.

Carry Service into the Future Through Financial Sustainability

The immediate issue facing the Community Shuttle is what entity will operate the service beginning in June 2020, when Google will cease operation of the Community Shuttle. However, the other key issue is preparing financially for 2024, when Google will discontinue funding the Shuttle, and beyond. If the City of Mountain View plans to keep the Community Shuttle a fare-free service, it must secure reliable funding sources or partnerships. Decisions about future funding of the Community Shuttle will likely be related to the how the transition of Shuttle operations from Google to another entity is resolved.

MV Measure P (Per-Employee Business Tax)

In November 2018, Mountain View voters approved Measure P, a business license tax that charges businesses based on number of employees (sometimes called a "head tax"). The tax went into effect on January 1, 2020. The majority of the revenue from the business license tax is to be allocated to transportation projects. While there are a number of important and costly infrastructure projects that will utilize these funds, some of the dollars could also be allocated to Community Shuttle service for sustaining existing service and implementing improvements outlined in this report.
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VTA Measure B Sales Tax Transit Operations Program

Two programs within the Measure B Transit Operations Program include:

- Expand mobility services and affordable fare programs for seniors, persons with disabilities, students and low-income riders.
- Support new/innovative transit service models to address first/last mile connections and provide transit services for the transit dependent, vulnerable populations and paratransit users that is safe and accountable.

Both enhancements to the Community Shuttle or new mobility options to provide access to Caltrain could be funded through this program, however the amount of funds are limited. Funds will be distributed through a highly competitive discretionary grant program and each grant will be for a limited time frame requiring resubmitting applications periodically to sustain successful services.

Bay Area Air Quality Management district Vehicle Trip Reduction Grant Program

A competitive program within the region, grant funding under this program supports several community and rail feeder shuttles throughout the Bay Area. Enhancements to the Community Shuttle service or new mobility options to provide connections to Caltrain would both be eligible for these funds. As with Measure B, the amount of funds are limited, so funds will be distributed through a highly competitive discretionary grant program and each grant will be for a limited time frame requiring resubmitting applications periodically to sustain successful services.

Next Steps

A number of options have been provided in this report to provide the City Council with information needed to make informed decisions regarding the provision and promotion of public transportation in the city. Because of ongoing discussion, the long-term governance of the Community Shuttle is not addressed in this report. Making that determination will set the foundation for the future of the Community Shuttle. Another issue that will need to be addressed if a new contractor provides service is identifying charging infrastructure and determining the type and ownership of vehicles used for shuttle service.

APPENDIX A

What is On-Demand Transit?

On-Demand Transit also known as micro transit is a shared ride service that allows customers to request a trip rather than catching a bus at designated stops at designated times. Variations of On-Demand transit have existed for over 50 years and have historically been referred to as dial-a-ride. The passage of the Americans with Disabilities Act (ADA) in 1990 mandated the provision of dial-a-ride service (referred to as ADA complimentary paratransit service) within ¾ mile of local bus routes and fixed guideway (light rail, heavy rail (e.g. BART) or commuter rail) stations during all hours that the bus or rail service is provided for individuals whose disabilities preclude them from using those services.

Traditional dial-a-ride and ADA paratransit (the distinction is that the former is open to the general public while that latter is restricted to individuals with disabilities and occasionally all individuals over a specified age) have involved a customer phoning a call center to manually schedule their trip. Most ADA paratransit services have required at least 24-hour advance notification. Where same-day reservations can be made, waits of an hour or more between placing the reservation and pick-up were not uncommon. Most of these services are curb to curb in that they will transport the customer between the address of the starting point of the trip to the address of the destination. Productivity of most dial-a-ride and paratransit services is typically under 3 boardings per hour of service and often under 2 boardings per hour.

In the late 1960s, dial-a-ride was seen by many as the future of public transit in lower density suburbs with polycentric travel patterns. The Santa Clara County Transit District (the predecessor to VTA) initiated a countywide dial-a-ride service in late 1974 which ran for only 5 ½ months. One of the reasons for its failure was not having enough vehicles to meet demand – it was estimated to need four times as many vehicles; however, because of the nature of On-Demand services, it was still less productive than the fixed route network that succeeded it.

With the exception of ADA paratransit, which is mandated by federal law, dial-a-ride never became as widespread as originally anticipated except in smaller rural communities.

Over the past decade, the advent of Transportation Network Companies (TNCs) such as Uber and Lyft have introduced new opportunities for transit agencies to revisit traditional dial-a-ride programs. TNCs work through customer-friendly smartphone applications that use complex algorithms that match riders to drivers and develop efficient routings for getting riders where they need to go. These programs have soared in popularity over traditional taxi programs because the platforms are easy to use, allow for spontaneous trip planning, eliminate cash payments, and provide information on the driver and estimated trip times. Transit agencies are leveraging this technology to provide new On-Demand or micro transit services to supplement traditional fixed-route options. These new On-Demand programs leverage the dynamic routing and corner to corner pick-ups of TNC technology creating a new experience for riders. They also cut down on labor costs of taking reservations and scheduling trips, though call centers still exist for those who do not have access to a smart phone or prefer making reservations over the phone. Many agencies across the country have started testing micro transit pilot projects, with mixed results. This appendix reviews the outcomes of eight different pilot projects and offers lessons learns and potential applications for the City of Mountain View.

Types of On-Demand Transit

There are three primary business models for providing On-Demand transit services.

1). The entity providing service contracts with an app provider for the software to be used for customer reservations and scheduling vehicles, while the agency is responsible for actual service operations.

2). The entity providing service enters into a turnkey arrangement for both the reservations and scheduling app and the actual service provision. This is the model used by the City of Cupertino for their On-Demand service

3). The entity providing service contracts with one or more TNC and/or taxi company to provide service usually by providing the customer with a subsidized ride.

There are multiple applications of On-Demand transit.

- Replace existing low productivity fixed route or route deviation services (route deviation service is a conventional bus route that is allowed to deviate off its route to serve destinations within a defined distance from the bus route. Customers traveling to and from bus stops along the route need not make arrangements and will use the timetable to determine when the bus will arrive, while customers needing the bus to deviate need to call for a reservation or inform the driver upon boarding).
- Provide public mobility access to low-density areas that are not served by fixed route service.
- Supplement existing fixed route service, partially to accommodate trips that are not well served by the existing fixed route service.
- Substitute for fixed route service during times when demand for transit service is low.
- Provide first and last mile service to fixed route service.

Case Studies

SamTrans

SamTrans provides transit service throughout San Mateo County. They initiated On-Demand service in Pacifica in May 2019 to replace a route deviation service. The goals for the service were to provide more rides but at a lower cost. The demonstration failed on both accounts and is being discontinued. Samtrans contracted with Via for the reservation and scheduling app and used an existing contract with MV Transportation to provide the service using branded mini vans. One vehicle operates in a 5 square mile area providing internal trips. Most trips travel to and from a retail center or the transit hub across from the retail center for connections to fixed route service operating along Highway 1. The service uses virtual stops requiring customers to walk to the nearest intersection (corner to corner).

The service was provided from 6:15 AM to 6:45 PM on weekdays only. Customers could make reservations using the Via app or by calling the Samtrans call center. The call center hours did not match the hours of operation as it did not accept calls until 7 AM. Customers could pay using the Via app or on board the vehicle. The fare for this service was the same as SamTrans fixed route service including discounts and a reader on board the vehicles allowed for the use of Clipper Card.

The route deviation service generated nine boardings per hour while the On-Demand service generated seven boardings per hour. Average daily ridership dropped from 90 per day to 78 per day. Complaints per month increased from less than one per month to four per month. The cost of the On-Demand service was $151 per hour compared with $131 per hour for the previous service. The cost per rider was $24.20.

AC Transit

AC Transit provides fixed route bus service to communities on the east side of San Francisco Bay between Richmond and Fremont. AC Transit instituted two On-Demand pilots in 2017 branded as AC Flex. One in Newark replaced an existing route while the other in Castro Valley supplemented existing fixed routes that continued operating and added service to an area not served by fixed route service. Customers could use an app or call the AC Transit call center to arrange a trip between any two designated stops within the service zone. All stops were designated by sign with a flex label. The Newark service had scheduled departure times for the Union City BART allowing customers to walk up without a reservation. The Castro Valley service served the Castro Valley BART Station at designated times also allowing walk-up customers.

The service was provided between 6 AM to 8 PM weekdays only. Regular AC Transit fares were applied and could be paid on board. AC Transit used cut away buses operated by AC Transit drivers. The initial cost per hour for the Flex service was $220. AC Transit set a goal of five to seven boardings per hour; however neither service achieved that goal with the Newark service generating 2.42 boardings per hour and Castro Valley generating 3.07 boardings per hour.

AC Transit planned on eliminating the Newark On-Demand service in conjunction with restructuring of service in the area based on both on low productivity and a customer survey indicating a preference for fixed route service. However with the advent of COVID-19, AC Transit discontinued both services in March with no plans to restore them.

Tri Delta Transit

Tri Delta Transit provides fixed route and ADA paratransit service to the cities of Pittsburg, Antioch, Oakley and Brentwood in Eastern Contra Costa County. They introduced two On-Demand pilots; one in Antioch the other in Pittsburg. Both pilots were introduced in low density residential areas that did not have fixed route bus service. Tri Delta did not establish goals for the service when implemented – rather the objective was to determine if micro transit could be a viable option for providing service to areas that could not easily or efficiently served by fixed route service. Tri Delta contracts with TransLoc for the reservation and scheduling software and with First Transit to provide the service. First Transit operates all fixed route and paratransit service and this service is part of that contract.

Service is provided between 5 AM and 9 PM weekdays only and while trips can be made internally

within the zones most trips are to and from the Antioch BART station for the Antioch zone and the Pittsburg BART Station for the Pittsburg zone. The service is corner to corner. Customers must download the TransLoc app on their smart phone and set up an account for fare payment. The fare is $2, the same as local fixed route service. Tri Delta does not issue transfers. The Antioch zone is about five square miles and the Pittsburg zone is three square miles. The average wait time is 13 minutes and the average trip time is also 13 minutes.

Tri Delta allocates 80% of all costs to fixed route service and 20% of all costs to paratransit including the two On-Demand pilots. Therefore using this costing method, the On-Demand service operating cost is $59 per hour. The cost per rider is $11.91. Specially branded paratransit buses are used for this service. Currently productivity during peak hours is about 11 boardings per hour but only 1 boarding per hour during the midday, driven by the fact that most riders are commuters traveling to and from BART stations during peak periods.

Tri Delta was not satisfied with TransLoc app and will be switching over the VIA app on June 15, 2020. The TransLoc app would not give an ETA until payment was made, and frequently adjusted the ETA after that time and sometimes the trip would drop off completely. The VIA app will also have a call-in option for making reservations.

Via Cupertino Shuttle

The City of Cupertino contracted with Via to provide an On-Demand transit service within the city limits. Unlike the examples above, this is a turnkey contract in which Via provides both the app and operates the service on behalf of the city. The service supplements VTA fixed route service within the city providing trips between anywhere within the city limits (an area of 10.5 square miles) and to and from the Sunnyvale Caltrain Station. The service is corner to corner. During the first three months an introductory fare of $1 was charged. Since the beginning of February, the fare has been $3.50 per trip. Customers use the app to request a trip and pay with their credit or debit card. Via maintains a call center which accommodates customers who wish to reserve on the phone but they must set up an account with their credit card to pay if they use this method.

The goal was to average 3.5 boardings per hour of service; a goal that was achieved in March just before COVID-19 impacted demand when weekday ridership grew to average 160 per day. There was a slight drop in ridership during the first week of February after the $3.50 fare was implemented; however, the growth trajectory of ridership resumed after that. Performance reaches four to five boardings per hour during three times of day: the AM Peak, consisting of students and commuters; around noon where demand is primarily from senior residents, and the PM Peak when commuters are returning home. Sunnyvale Caltrain is the busiest stop.

The operating cost has been $65 per hour. The cost per passenger is $18.57. However Via operators are contract drivers similar to Uber and Lyft and are subject to AB5 classifying them as employees. It is anticipated that the cost per hour will increase as a result unless a ballot measure to overturn AB5 passes in the November 2020 election.

Service was initially provided weekdays 6 AM and 8 PM and Saturdays between 9 AM and 5 PM. Saturday service is temporarily discontinued due to COVID-19. The average wait time once a reservation is made is 15 minutes with average trip time of 10 to 12 minutes. As demand grew in late February and early March wait times grew to 20 to 30 minutes with an occasional 40 minute wait until Via leased additional vans to meet the demand. Via leases the vans from Avis using seven passenger vans (driver and six passengers). One van is accessible to comply with ADA requirements.

The service is generally popular with residents and users. The only negative comment is a desire to serve more destinations outside the City of Cupertino, particularly the Mountain View Caltrain Station. The city is considering extending service to both the Mountain View Caltrain and El Camino Hospital within the City of Mountain View.

The city plans on extending service beyond the pilot. It is currently funded by the City general fund. The city is looking to use another source of funding such as Cupertino's share of Measure B which can be used for other transportation purposes if pavement condition exceeds a state of good repair threshold. Long term the city would like for Apple to fund the service, possibly replacing their own vans currently used for the inter-campus shuttle.

LAVTA

The Livermore Amador Valley Transit Authority (LAVTA) provides public transit service in the cities of Dublin, Livermore, Pleasanton and unincorporated portions of eastern Alameda County. Fixed routes were restructured in 2017 with the goal of placing more emphasis on performance instead of service area coverage. Poor performing routes were eliminated and frequency was increased on main lines and BRT routes. This left a significant portion of the City of Dublin without fixed route service. The City of Dublin also has parking issues at the crowded Dublin BART station. Therefore, LAVTA entered into a partnership with Uber, Lyft and De Soto Cab to provide transportation within the City of Dublin in a program called Go Dublin.

The program paid for half of the TNC fare, up to $5.00, for trips made on Uber Pool, Lyft Line or De Soto Cab. Trips must begin and end within the City of Dublin. Passengers were required to use the ride share version of the TNC services so as to be consistent with public policy to promote carpooling. LAVTA received a $100,000 grant for the pilot program. Go Dublin carries roughly 1,000 to 1,500 rides per month at an average subsidy of $2.80 per trip. The majority of trips begin or end at the BART station. In comparison to the previously operated fixed routes in Dublin, the ridership is similar but the operating subsidy for the discontinued services was greater, on the order of $15 – 20 per trip. LAVTA included De Soto Cab in the program as they have wheelchair accessible vehicles. Interestingly, De Soto has yet to receive a request for an accessible vehicle. Part of this could be due to the fact that paratransit service continues to cover the area.

Go Dublin uses existing apps from the TNCs, thereby eliminating startup costs. Requesting a ride is also quite simple. Passengers need only to sign up for Uber Pool or Lyft Line and enter the promotion code. The app remembers the promotion code for the next ride. As for marketing, LAVTA relied mostly on Uber and Lyft to promote the program with the exception of one postcard mailing.

As private companies, Uber and Lyft are competitive and reluctant to provide all data collected. For this reason, LAVTA only receives each month: 1) the number of trips provided, 2) subsidy per trip and a 3) heat map showing pick up/drop off locations. They are unable to collect any information about the riders themselves – demographics, frequency of use – factors that would allow LAVTA a better understanding of who uses the program.

West Sacramento

The City of West Sacramento initiated a micro transit pilot in 2018 and is currently seeking to extend its contract with Via to continue this service through at least June 2022. The contract with Via is a turnkey arrangement similar to Cupertino's. West Sacramento is located in Yolo County and the county transit provider Yolobus provides fixed route service within the city as well as regional service to the City of Sacramento and other communities in Yolo County. Yolobus service is supported by West Sacramento's TDA allocation. The City initiated the micro transit project because it felt that the fixed route service did a poor job accommodating internal trips and because one route in particular (Route 35) was very unproductive, generating nine boardings per hour on weekdays and less than two boardings per hour on weekends. Since inception, the On-Demand service operated in addition to the Yolobus fixed route service. While there have been no pre-COVID-19 reductions in Yolobus service, the plan is to discontinue Route 35 and reallocate its resources to improve frequency on regional routes serving West Sacramento, with micro transit and ADA paratransit continuing to serve the neighborhoods currently served by Route 35.

Ridership during the first year exceeded expectations and has resulted in an increase in service hours during the second year. Service is provided between weekdays from 6 AM to 11 PM, Saturdays from 9 AM to 11 PM, and Sundays from 8 AM to 8 PM. Service is provided corner to corner although curb to curb pick-ups will be provided for registered individuals with disabilities this service is not a replacement for ADA paratransit service which is also provided city wide and will continue serving areas that will no longer be within ¾ mile of fixed route service). The average wait time is 12 minutes and the average trip time is 12 to 15 minutes. The fare is $3.50 with free transfers to and from Yolobus. The Yolobus fare is $2.25.

Despite growth in ridership, there was a need to add vehicles to accommodate this growth resulting in only a small increase in productivity from 3.24

boardings per hour in FY 2019 to 3.63 boardings per hour in FY 2020. The average weekday ridership pre-COVID-19 was 461 and the average weekend ridership was 250. The cost of providing service is $59 per hour or $11.12 per rider.

LTD Cottage Grove OR

Lane Transit District (LTD) provides transit service in Eugene, OR and surrounding areas. Cottage Grove is a small community about 18 miles south of Eugene. LTD provides eight trips on weekdays from Eugene that provide a loop through Cottage Grove. An On-Demand service was established to provide in town trips that were not well served by the one way loop provide by the LTD fixed route. Using the TransLoc app, a nonprofit social service agency was contracted to provide the service from 7 AM to 7 PM on weekdays. The fixed route was initially cut back to a park and ride, however since the app did not coordinate trips between the On-Demand service and the fixed route, resulting in a loss of ridership on fixed route; the fixed route loop was restored . The On-Demand service has an average wait time of 21 minutes and generates up 90 trips per day or 7.5 boardings per hour. The cost of providing service is $48 per hour.

Service has been suspended as a result of COVID-19.

VIA San Antonio TX

VIA is the transit provider for the San Antonio, TX region (there is no relation with Via, a private company based in New York City that provides On-Demand service in Cupertino and throughout the United States and other countries). VIA initiated an On-Demand service in a low-density residential area replacing three low productivity fixed route bus routes. VIA contracts with RideCo on a turnkey basis. RideCo contracts with Yellow Taxi to actually provide the service which is provided with branded mini vans. The contract is a fixed cost contract and not based on service hours.

As with most On-Demand service described here, the service utilizes virtual stops that customers walk to. Customers may book a ride between any two locations in the zone. Customers choosing not to use the app to book a trip can call a special number at the Yellow Taxi dispatch office. The average wait time to be picked up is 10 minutes with the average trip time of 10 to 15 minutes.

The three fixed routes carried an average 700 boardings per weekday while the replacement On-Demand service carries an average 650 boardings per weekday. On-Demand productivity averages 5 boardings per hour. Service is provided between 5:30 AM to 9:30 PM seven days per week to match the longest service span of the prior fixed routes, resulting in a longer span of service for most customers. The zone is 19 square miles. Regular VIA fares are charged with free transfers to fixed route service at transit hubs for travel beyond the zone.

Summation of Findings

Lesson learned from the case studies described above include:

- The cost per hour ranges from a low of $48 per hour (when contracting with a nonprofit organization) to $220 per hour (when using agency employees).
- The cost per passenger ranges from $11 to $24 for non-TNC subsidized fare services. The highest fare charged is $3.50, therefore still results in a significant subsidy.
- Boardings per hour range from 3.5 to 11. The higher performance occurs during peaks when all trips originate or terminal at a rail station. The better performing projects tend to have productivity between 5 to 7 boardings per hour. The service that had the highest peak productivity (11) also had the lowest off peak productivity (1).
- Where services replaced fixed route buses ridership was lower on the On-Demand service (although not always significantly lower) even though the On-Demand service may have had longer service span, served additional areas, or replaced low frequency service with service that could be summoned at any time.
- Using existing TNCs involves subsidizing the fare charged by the TNC. Since TNCs have priced service below the cost of providing service to grow market share; it is likely that TNCs will need to significantly increase the prices charged to customers. If AB5 is not overturned in November the cost of TNC fares or services provided by mobility companies such as Via will also need to increase.

Agency	Business Model	Base Fare	Cost Per Rider	Cost Per Hour	Boardings Per Hour
SamTrans	1	$2.25	$24.20	$151	7
AC Transit	1	$2.50		$220	2.42 to 3.07
Tri Delta	1	$2.00	$11.91	$59	6
City of Cupertino	2	$3.50	$18.57	$65	3.5
LAVTA	3	*	$2.80	*	*
City of West Sacramento	2	$3.50	$11.12	$59	3.63
LTD	2	$1.75	$6.40	$48	7.5
VIA San Antonio	1	**	**	**	5

BUSINESS MODELS

1. The entity providing service contracts with an app provider for the software to be used for customer reservations and scheduling vehicles, while the agency is responsible for actual service operations.
2. The entity providing service enters into a turnkey arrangement for both the reservations and scheduling app and the actual service provision. This is the model used by the City of Cupertino for their On-Demand service.
3. The entity providing service contracts with one or more TNC and/or taxi companies to provide service usually by providing the customer with a subsidized ride.

* LAVTA subsidizes ½ the TNC fare up to $5. The average has been $2.80 per trip.
** VIA has a fixed-price contract that does not vary based on hours provided.

Implications for Mountain View

Prior to COVID-19 impacts on transit ridership, all fixed route transit services in Mountain View (VTA, Community Shuttle and MVgo) generated higher productivity as measured by boardings per revenue or service hour than any of the On-Demand services described above. A larger survey of micro transit services has not found any with higher productivity and many with lower productivity than the case studies included in this report. Based on these findings, it is most likely that a micro transit pilot in the City of Mountain View would carry fewer riders and cost more than the existing fixed route services in place today, however may have applicability for serving new markets.

The Community Shuttle and MVgo service currently charge no fares whereas a micro transit service would need to charge a fare. Micro transit services are limited in the number of passengers they can carry per hour due to the nature of dynamic routing. Unlike fixed route transit which operates on specified alignment, On-Demand transit deviates to pick up customers (even with virtual stops requiring the customer to walk to be picked up). If this type of service is offered for free, assuming basic principles of supply and demand, it will be oversubscribed, requiring more vehicles and operating costs considerably higher than fixed route service.

Micro transit could possibly serve some areas or trip needs not adequately served by existing transit services. An examination of unmet transit needs and whether On-Demand transit service could fill the need include:

- **Earlier or later hours for the Community Shuttle**. The Community shuttle only operates between 10 AM and 6 PM and one of the top requests received both in the community survey and stakeholder meetings was to expand the hours of operation. Given the high productivity of the Shuttle (27 boardings per hour) even if productivity were cut in half during extended hours; productivity of 14 boardings per hour is still higher than what could be achieved with micro transit.
- **Areas poorly served by existing services**. In December 2019, VTA eliminated service on Montecito Ave. and on Middlefield Road west of Moffett Blvd. The Community Shuttle serves Middlefield Road between Moffett Blvd. and Rengstorff Ave but does not provide direct service to Downtown Mountain View (customers from these areas can ride the Community Shuttle to Downtown, however it is a circuitous route either via El Camino Hospital or San Antonio Center). Creating a zone north of Caltrain could complement existing services and fill travel needs not well served by existing VTA or Community Shuttle services.
- **Access to Caltrain**. Parking is severely limited at both Caltrain Stations in Mountain View. While Caltrain ridership may be depressed over the next one to two years due to impacts of COVID-19; long term ridership is likely to pick up particularly after electrification is complete and Caltrain operates service every 10 minutes. Since adding parking capacity is not likely or desired, creating a micro transit service focused on Caltrain could provide access for individual's not well served by existing transit services and eliminate the constraints on Caltrain ridership due to limited parking. Micro transit pilots that provide first/last mile access to rail stations are some of the most productive. Service could be provided from specific zones or could link the entire city, supplementing VTA and Community Shuttle service.

If Mountain View chooses to implement a micro transit pilot, it will need to identify the source of funding. The funding sources identified in the Existing Conditions Report (Mountain View Measure P, VTA Measure B and the Bay Area Air Quality Management District Vehicle Trip Reduction Grant Program) could be used to institute an On-Demand transit pilot. For Caltrain focused micro mobility services the use of value capture from Transit Oriented Development (TOD) around the two Caltrain stations or a partnership with Caltrain to utilize parking revenues to fund the service as parking alternative are potential sources of revenue.

Unlike Cupertino and West Sacramento, where existing fixed route service does not fully or effectively meet internal travel needs, the Mountain View Community Shuttle is productive. While there are unmet needs as identified above, investment in a micro transit pilot and sustaining it if successful needs to be balanced against the need to sustain and expand the Community Shuttle.

APPENDIX B

What is a Mobility Wallet?

There is no commonly accepted definition of a mobility wallet, but it generally refers to a collection of mobility-related services packaged together into a single service or pass. For example, a mobility wallet could include a monthly pass for transit, a credit for bikeshare, and reduced prices for a carshare service. Fundamentally, the purpose of a mobility wallet is to provide a variety of mobility options for users to meet a variety of mobility needs, reducing or eliminating users' reliance on automobiles.

Mobility wallets can also help solve a key barrier to mobility: access to information. When evaluating how to complete a trip, individuals must first know all options available to them, and then they have to cross-reference pricing and schedules from multiple different websites in order to decide which mode best suits their needs. A mobility wallet can help solve this problem by consolidating all of the information in a single platform.

Mobility wallets are a relatively new concept in transportation and mobility and can be implemented in a variety of ways. At the most basic, a mobility wallet can simply be a collection of passes bundled together at a subsidized price. At the most complicated, a mobility wallet is a single app or service that integrates a number of mobility services with unified payment and trip planning. Mobility wallets can be administered by cities, transportation agencies, or private companies.

Mobility as a Service

Many implementations of mobility wallets, especially those offered by private companies, are branded as a form of "Mobility as a Service" or MaaS. While mobility wallets and MaaS are closely related, they are not the same thing. Mobility as a Service, a response to changing mobility norms, is the idea that mobility can be provided as a service, such as through a subscription app, rather than as a product, such as car ownership. Mobility as a Service is generally provided through apps, which usually focus on integrating different trip modes into a single integrated service. Mobility wallets can be part of implementing MaaS but are not the only way.

Case Studies

Two case studies will be presented in this report: Portland, Oregon's transportation wallet, and the Whim app, in Helsinki, Finland. These case studies were chosen to show a variety of approaches and implementation strategies.

Portland Transportation Wallet

The City of Portland, Oregon implemented a transportation wallet in 2017, and it is the most relevant example for Mountain View. The program is currently limited to individuals that live or work in two neighborhoods in the city, although the City is currently running a pilot program that would expand the service to affordable housing communities throughout the city. The wallet is very simple; it includes passes and credits for a number of mobility services at a greatly discounted rate. The contents of the wallet change slightly each year, depending on funding and partnerships available. For 2020, the wallet, for an annual cost of $99, provides:

- A $100 or $250 TriMet credit, depending on neighborhood. TriMet is Portland's regional transportation agency and operates the bus and light rail service;
- An annual pass for the Portland Streetcar, a $440 value;
- A $99 BIKETOWN, Portland's bikeshare service, credit; and
- A $10 credit to each of three scootershare providers.

Currently, the wallet does not unify the services in any way, and as such, does not attempt to solve the information problem. Users for the service are mailed a Hop Card, Portland's Clipper equivalent, which contains the TriMet credit and Streetcar pass as well as codes that can be used to add bikeshare and scootershare credits to their relevant personal accounts. In the future, Portland is planning on providing an app that would better combine the services, and improve the information available to users.

Portland's transportation wallet is administered by the City's Department of Transportation and funded through fees levied on parking permits; the two areas that have access to the transportation wallet are actually areas with preexisting city-run parking permitting zones. The transportation wallet is intended to provide an alternative to driving and parking in those neighborhoods, and to ensure that those who do drive in these communities have access to parking. Residents and employees in these neighborhoods who have already purchased parking permits are allowed to trade in the permit for a transportation wallet.

The wallet has been extremely successful; in both parking districts, the number of parking permits issued has decreased, and many residents and employees have traded in parking permits for wallets. Even more encouragingly, those who use the transportation wallet have changed behaviors. More than a third of users reported they used TriMet, the Streetcar, and BIKETOWN more frequently after purchasing a transportation wallet while 32 percent of users indicated they now drive less.

Whim

Whim is a Mobility as a Service app, launched in Helsinki, Finland in 2017. Operated by a private company, MaaS Global, Whim is perhaps the most widely-known implementation of Mobility as a Service. The service is primarily monthly subscription based with three tiers. The first tier is transit-focused, including a 30-day transit pass, unlimited 30-minute bikeshare rides, a limited number of reduced taxi fares, and reduced-price car rentals. Prices for the lowest tier start at just under 60 euros, approximately $65; Helsinki has a zone-based fare system, and the subscription price varies depending on the zones included in the transit pass. The higher tiers offer the same transit and bikeshare benefits, but more generous taxi and rental car discounts. In addition, the app offers a pay-as-you-go option, where the user is charged regular prices for all services.

Whim also integrates all of these services, as well as scootershare, into a single app. Users can open the app, see what transportation options are available to meet their needs, and pay for the relevant ticket or pass, all in the app. The core idea behind the service is that users will be able to buy a subscription that covers day-to-day mobility needs in single, monthly fee by relying on a backbone of transit and active transportation. When transit and active transportation cannot meet a user's need, they have the option to rent a car or use a taxi at a reduced fee. Ideally, this gives users a reason to forgo car ownership, reducing the prevalence of single occupancy vehicles and increasing transit use.

MaaS Global, a private company, has not published statistics about how its services change user behavior, so it is difficult to understand how effective Whim is at encouraging transit use or reducing car use. Whim, however, is clearly successful; the service is now available in three other European cities and plans to expand to Tokyo and Singapore in the future. MaaS Global does not provide any mobility services itself, so Whim relies on partnering with cities, transit agencies, and private mobility operators, such as taxi and scootershare companies, in the regions it operates.[1]

Other MaaS Providers

Mobility as a Service, as an industry, is growing rapidly. Whim is just one of many MaaS startups, and many tech and mobility companies are increasingly aiming to access the industry. Intel recently purchased Israel-based MaaS provider Moovit for $900 million, planning to pair Moovit's services with autonomous taxis that are currently under development by another Intel subsidiary, Mobileye.[2] Both Uber and Lyft are moving towards becoming complete MaaS operators, integrating public transit and bikeshare into their apps.

Uber, Lyft, and Intel all offer, or are planning to offer, mobility services in addition to providing a MaaS platform. Such companies have an incentive to direct users towards the mobility options that they provide, and away from services like public transit. In addition, these companies are building MaaS platforms that do not necessarily require close partnership with city governments and transit agencies, and the platforms are likely going to be available to users in Mountain View whether or not the City works with the platform provider.

1 portlandoregon.gov/transportation/article/757304
2 venturebeat.com/2020/05/06/before-intels-900-million-bid-moovit-wanted-to-raise-more-money-then-the-pandemic-hit/

Mountain View

Mountain View is a strong candidate for a mobility wallet. The city has a number of mobility options operated by a variety of transportation providers, and providing a mobility wallet to residents or employees could significantly change how users choose to travel in and to Mountain View. Potential service options include:

- **VTA:** A mobility wallet could include a pass or reduced fare on VTA light rail and buses. Current mobility wallets and MaaS providers place an emphasis on public transit being the core of the service, so strong transit benefits are probably a necessity for a successful mobility wallet program.
- **Caltrain:** A mobility wallet could include a Caltrain pass, or reduced fare. The pass or reduced fare could apply to pre-identified Caltrain zones, or users could have the option of purchasing a wallet that applies to different zones for a variable price.
- **Bikeshare:** Core to the idea of a mobility wallet is having multiple options available to users. Bikeshare is likely to be an important part of a mobility wallet. Mountain View is currently running a bikeshare pilot program and has a significant amount of control over how and if bikeshare providers operate in the city. Mountain View could require bikeshare operators to participate in a mobility wallet program to operate in the city.
- **Scootershare:** Mountain View is currently planning a scootershare pilot program. Similar to bikeshare, Mountain View could require scootershare operators to participate in a mobility wallet program.
- **MVgo and the Mountain View Community Shuttle:** While these services are currently free to use, a mobility wallet that integrates information of all transportation could further increase the visibility and convenience of these services.

Administration

Mountain View has two potential administration options for a proposed transportation wallet. The simplest is to administer the program through a City department, such as Public Works. This is the model that Portland uses. It allows for the City to have a great deal of control over the program, but Portland officials have noted that the administrative burden from the program is high, largely stemming from the need to manually put together and mail each wallet to users. Portland is working to reduce this administrative burden by producing an app, something that Mountain View may also need to consider. Mountain View could also work with a separate, existing entity to administer the program, such as the Mountain View Transportation Management Association (TMA), in a similar manner.

The second option is to provide a mobility wallet through a public-private partnership, such as Whim. MaaS Global is not the only provider of such services, and the transportation technology is a growing space. Partnering with a private company would reduce the administrative burden on Mountain View while providing some level of control over the program. However, as these companies are for-profit, they will only partner with Mountain View if they feel there is a viable business case to do so.

Beyond who will administer the program, Mountain View will need to decide where to administer the program; the City needs to consider if the program will be available to parts of the city or the whole city, and whether it covers both those that work in the city and those that live in the city, or just one or the other. Mountain View has an existing parking permitting program that it could leverage, in a manner similar to Portland.

Funding Sources

Potential funding sources for a mobility wallet depends on how Mountain View chooses to administer the program. If Mountain View chooses to work through a public-private partnership, there is potentially no need for a dedicated funding source; MaaS providers, such as MaaS Global, generate their own revenue through the convenience they provide and the value proposition they offer. Offering a subsidy is not a necessity for a city-administered program either, but the wallet would need to provide some other utility to users, such as improved information or convenience.

If Mountain View does choose to offer their own subsidized mobility wallet, or wants to subsidize a public-private partnership to make the program more appealing, Mountain View will need to identify funding sources. Potential funding sources include:

- **Parking Permit Fees:** Like Portland, Mountain View could raise fees on the existing parking permitting program to generate revenue to provide subsidized mobility wallets to residents and employees in the parking district.
- **Expansion of Transportation Management Association:** The City could work with major employers and existing members of the TMA to guarantee funding contributions to a mobility wallet program, possibly in exchange for a reduction of regulations in another form, such as less strict parking requirements.
- **Mobility Provider Fee:** Funding could be generated by placing fees on mobility modes the City wants to discourage. For example, the City could place a small fee on Uber and Lyft rides, both generating income and making a mobility wallet a more attractive alternative.
- **General Fund:** Mountain View could fund a mobility wallet through the general fund, especially for a pilot program.

Clipper Card Integration

Clipper Card is currently being updated to meet modern mobility needs, with full rollout of the improved service expected in 2023. Notably, the update will include an app that allows users to manage their account and plan integrated trips across all participating transit systems. The updated Clipper Card will also permit wider Clipper Card usage, potentially including paying for parking at stations or paying for other mobility modes. These additional options are reliant on service providers and Clipper working together to implement Clipper payments, and as a result, may not be available for every (or potentially any) scootershare services, for example. It is also not clear how the improved Clipper Card will accommodate discounts or passes for all services. For example, while a user may be able to pay for bikeshare using a Clipper Card, it may not be able to accommodate a 50 percent discount on that bikeshare.

The updated Clipper Card will offer a valuable resource for a Mountain View administered mobility wallet; the app would reduce the administrative burden on the City, and the app could provide many of the conveniences that a public-private partnership would.

Recommendations

First, Mountain View needs to establish goals for the mobility wallet program. Is the chief goal to reduce demand for parking in the city's core? Or to reduce the number of workers driving into Mountain View? Many goals are compatible, and a mobility wallet program could meet many goals. However, the services the wallet include will change based what goals are prioritized.

Mountain View should administer its own mobility wallet or work with the Mountain View TMA to administer the program. By administering its own mobility wallet, Mountain View will have more flexibility in how the program is structured and will be able to make changes to the program as necessary. In addition, Mountain View's existing mobility options, MVgo and the Community Shuttle, can be more tightly integrated into the program, and users can be directed to these services as a free backbone for transportation within the city. Clipper Card integration will reduce the administrative burden and should provide many of the same benefits to users as using a MaaS provider.

The City will need to work with VTA, Caltrain, and other mobility service providers to understand exactly what services could be included in a mobility wallet, and for what price. That information, combined with the goals of the program, will determine what an initial mobility wallet will look like. That wallet can then be tested through a pilot program, potentially using Portland's model of limiting the wallet to a parking permit district.

Appendix D: Silicon Valley Bicycle Coalition Network Priority Tool

D. Appendix D Silicon Valley Bicycle Coalition Network Priority Tool

Figure D-1. SVBC Bike Priority Tool: Project Results

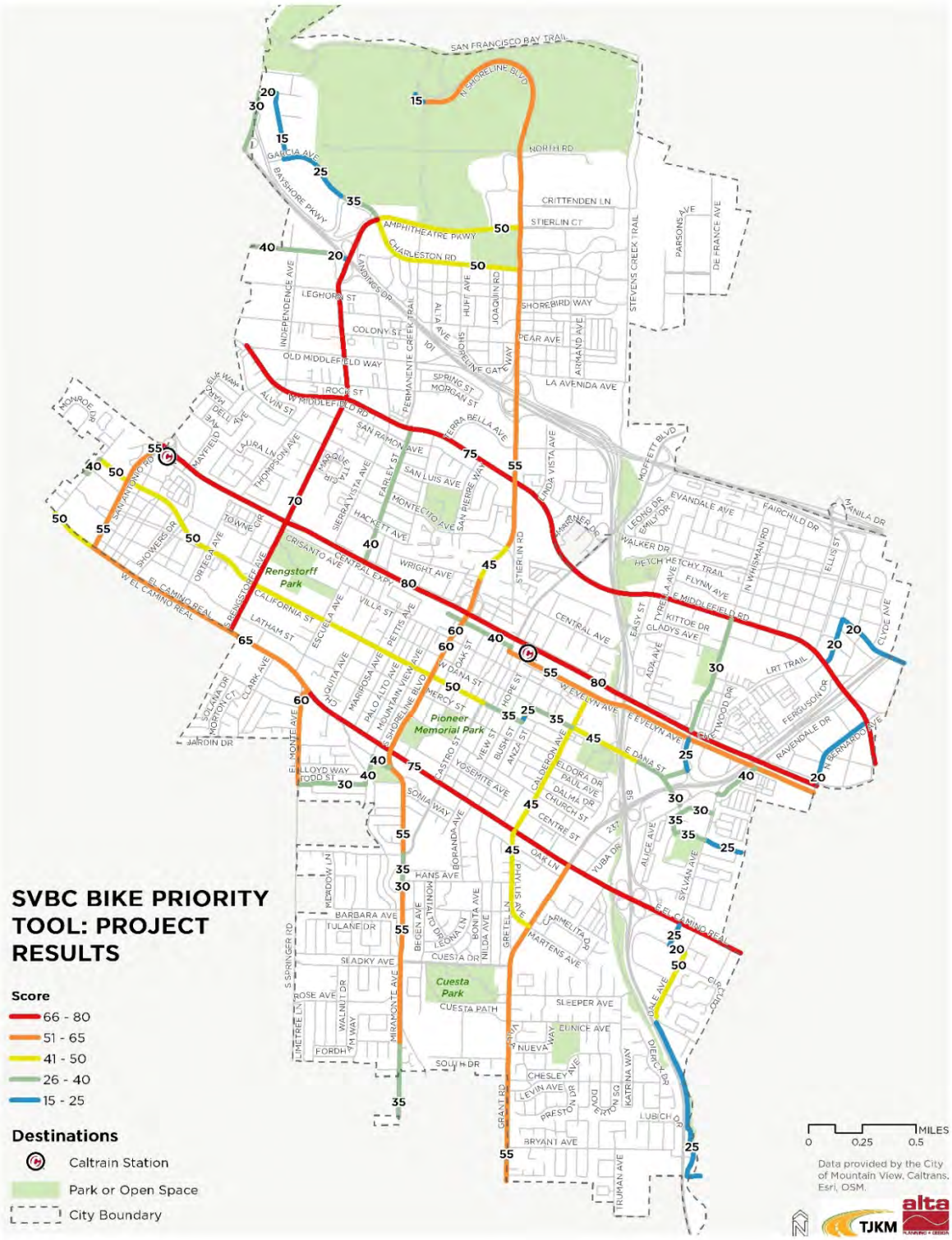

Table D-2 SVBC Bike Priority Tool: Project Results

Rank	Corridor	From	To	Miles
Tier 1				
1	Central Expy	Shoreline Blvd	Bernardo Ave	80
2	Central Expy	San Antonio Ave	Shoreline Blvd	80
3	El Camino Real	El Monte Ave	City Boundary - Sunnyvale	75
4	Middlefield Ave	Central Expy	Old Middlefield Way	75
5	Rengstorff Ave	El Camino Real	Charleston Rd	70
Tier 2				
6	El Camino Real	San Antonio Rd	El Monte Ave	65
7	El Monte Ave	Todd St	El Camino Real	60
8	Shoreline Blvd	Villa St	Wright Ave	60
9	Shoreline Blvd	El Camino Real	Villa St	60
10	Evelyn Ave	Bernardo Ave	Castro St	55
11	Grant Rd	El Camino Real	Waverly Pl	55
12	Miramonte Ave	El Camino Real	Marylin Dr	55
13	Miramonte Ave	Gest Dr	Starr Way	55
14	San Antonio Rd	El Camino Real	California St	55
15	San Antonio Rd	California St	Central Expy	55
16	Shoreline Blvd	Montecito Ave	Shoreline Park	55
Tier 3				
17	Amphitheatre Pkwy	Garcia Ave	Shoreline Blvd	50
18	California St	Mariposa Ave	Castro St	50
19	California St	Del Medio Ave	Showers Dr	50
20	California St	Showers Dr	Mariposa Ave	50
21	Charleston Rd	Rengtorff Ave	Shoreline Blvd	50
22	Dale Ave	Continental Cir	Heatherstone Way	50
23	El Camino Real	City Boundary	San Antonio Rd	50
24	Calderon Ave	El Camino Real	Evelyn Ave	45
25	Dana St	Calderon Ave	Pioneer Way	45
26	Phyllis Ave	El Camino Real	Grant Rd	45
27	Shoreline Blvd	Wright Ave	Montacito Ave	45
Tier 4				
28	Charleston Rd	Commercial St	Rengstorff Ave	40
29	Del Medio Ave	Miller Ave	California St	40
30	Evelyn Ave	Castro St	End of Street	40
31	Farley St	Central Expy	Middlefield Rd	40
32	Moorpark Way	Sylvan Ave	Evelyn Ave	40
33	Mountain View Ave	Todd St	Park Dr	40
34	Park Dr	Mountain View Ave	Miramonte Ave	40
35	California St	Blossom Ln	Bush St	35

Rank	Corridor	From	To	Miles
36	Castro St	Evelyn Ave	Evelyn Ave	35
37	Dana St	Bush St	Calderon Ave	35
38	Foxborough Dr	Glenborough Dr	Hedgerow Ct	35
39	Garcia Ave	Salado Dr	Rengstorff Ave	35
40	Glenborough Dr	Foxborough Dr	Sylvan Ave	35
41	Miller Ave	Del Medio Ave	City Boundary	35
42	Miramonte Ave	Gest Dr	Eastwood Dr	35
43	Miramonte Ave	Hans Ave	Castro St	35
44	Dana St	Pioneer Way	Moorpark Way	30
45	Foxborough Dr	Hedgerow Ct	Sylvan Ave	30
46	Miramonte Ave	Starr Way	Hans Ave	30
47	San Antonio Rd	US 101	Casey Ave	30
48	Todd St	Springer Rd	Mountain View Ave	30
49	Whisman Rd	Dana St	Ferry Morse Way	30
50	Whisman Rd	Central Expy	Middlefield Rd	30
Tier 5				
51	Bush St	California St	Dana St	25
52	Dana St	Sylvan Ave	Tahoe Ter	25
53	Garcia Ave	Marine Way	Salado Dr	25
54	The Americana	Continental Cir	El Camino Real	25
55	Whisman Rd	Ferry Morse Way	Evelyn Ave	25
56	Stevens Creek Trail Extension	Heatherstone Way	City Boundary - Sunnyvale	25
57	Bernardo Ave	Central Expy	Middlefield Rd	20
58	Casey Ave	San Antonio Rd	Marine Way	20
59	Charleston Rd	Rengstorff Ave	Rengstorff Ave	20
60	Continental Cir	The Americana	Dale Ave	20
61	Logue Ave	Middlefield Rd	Maude Ave	20
62	Maude Ave	Logue Ave	City Boundary	20
63	Marine Way	Casey Ave	Garcia Ave	15
64	Shoreline Blvd	Park Entrance	Shoreline Blvd	15

Appendix E: Prioritization Results

CorridorID	Name_Clean	From_	To_	eq_mhhinc	eq_transit	mob_tot	mob_mod	wb_dest	wb_gap	wb_trans	wb_direct	saf_aaa	saf_hin	saf_srts	sust_reduc	cons_ovrl	cons_ccb	Transit_Score	Corr_Prio_Total	mileage
364	El Camino Real	Rengstorff Ave	Southbay Fwy	10	10	15	3	9	6	5	0	10	10	8	10	3	5	8	112	3.845142
910	Rengstorff Ave	Central Expy	El Camino Real	10	10	13	3	9	0	10	5	10	10	8	10	3	5	4	110	0.65957
936	Shoreline Blvd	Montecito Ave	El Camino Real	8	10	13	3	9	3	10	5	5	10	8	10	3	5	6	108	2.186262
360	El Camino Real	West City Boundary	Rengstorff Ave	10	10	15	3	9	6	5	0	5	10	8	10	3	5	8	107	1.97547
900	Rengstorff Ave	Middlefield Rd	Central Expy	10	10	13	3	9	0	10	0	10	10	8	10	3	5	4	105	0.686208
1125	San Antonio Rd	Central Expy	El Camino Real	8	10	14	3	6	6	10	5	5	10	0	10	3	5	6	101	1.148688
130	California St	Rengstorff Ave	Castro St	10	10	13	3	9	0	10	5	5	10	0	10	3	5	6	99	1.754974
150	California St	San Antonio Rd	Rengstorff Ave	10	10	13	3	9	0	10	0	10	10	0	10	3	5	6	99	1.12066
366	El Camino Real	Southbay Fwy	East City Boundary	10	10	15	3	9	0	5	0	10	10	0	10	3	5	8	98	1.754523
1140	Showers Dr	San Antonio Rd	El Camino Real	8	10	14	3	9	0	10	0	10	0	8	10	3	5	6	96	0.759318
1150	Sierra Vista Ave	Leghorn St	Montecito Ave	10	10	14	1	9	9	10	5	10	0	8	10	0	0	0	96	0.955304
933	Shoreline Blvd	Ampitheatre Pkwy	Montecito Ave	8	5	16	3	9	0	10	5	5	10	0	10	3	5	6	95	3.002486
840	Moffett Blvd	Middlefield Rd	Central Expy	8	10	14	1	9	0	10	5	10	0	8	10	5	0	4	94	0.87551
920	Rengstorff Ave	Charleston Rd	Middlefield Rd	8	5	14	3	9	3	5	5	10	10	0	10	3	5	4	94	1.294629
420	Middlefield Rd	Sierra Vista Ave	Shoreline Blvd	10	10	13	3	9	3	5	0	0	10	8	10	3	5	4	93	1.318668
1000	Ortega Ave	California St	Latham St	8	5	12	1	9	6	10	10	10	0	8	10	0	0	4	93	0.171997
1620	Stevens Creek Trail - Middle	US 101	Heatherstone Way	10	10	8	3	9	0	10	0	10	10	8	10	0	5	0	93	2.877351
710	Latham St	Rengstorff Ave	Shoreline Blvd	10	10	13	1	9	6	10	5	10	0	8	10	0	0	0	92	0.933353
700	Latham St	Showers Dr	Rengstorff Ave	10	10	13	1	9	6	10	0	10	0	8	10	0	0	4	91	0.484797
410	Middlefield Rd	Shoreline Blvd	Moffett Blvd	8	5	13	3	9	3	10	0	0	10	8	10	3	5	4	91	1.017473
850	Moffett Blvd	RT Jones Rd	Middlefield Rd	6	5	13	1	9	6	10	5	10	0	8	10	1	0	4	88	1.683259
1330	San Antonio Cir	Showers Dr	San Antonio Rd	8	10	13	3	9	0	10	10	10	0	0	10	3	0	2	88	0.149856
400	Middlefield Rd	Moffett Blvd	Whisman Rd	6	10	13	3	9	3	10	0	0	10	0	10	3	5	6	88	1.561113
460	Escuela Ave	Cristanto Ave	El Camino Real	10	10	13	1	9	0	10	5	10	0	0	10	0	5	4	87	0.573872
1260	Villa St	Escuela Ave	Shoreline Blvd	10	10	14	1	9	6	10	5	0	0	8	10	0	0	4	87	0.56438
430	Middlefield Rd	Old Middlefield Way	Sierra Vista Ave	10	10	13	3	9	3	5	0	0	10	0	10	3	5	4	85	1.606541
160	California St	Del Medio Ave	San Antonio Rd	8	10	13	3	6	0	10	5	0	10	0	10	3	5	0	83	0.159276
200	Central Ave	Stierlin Rd	Stevens Creek Trail	8	10	13	1	9	9	10	0	5	0	8	10	0	0	0	83	0.513245
1340	Central Expressway	West City Boundary	East City Boundary	10	10	7	3	9	6	10	0	0	10	0	10	3	5	0	83	6.89154
440	El Monte / Springer	El Camino Real	Todd Rd	8	5	13	3	9	3	5	5	0	10	0	10	3	5	4	83	0.560408
740	Logue Ave	Loop	Middlefield Rd	6	0	14	1	9	6	10	5	10	0	0	10	0	5	6	82	0.360943
380	Middlefield Rd	Southbay Fwy	Central Expy	6	0	13	3	6	6	10	5	0	10	0	10	3	5	4	81	0.770598
830	Miramonte Ave	El Camino Real	Cuesta Dr	8	5	13	3	9	3	5	5	0	0	8	10	3	5	4	81	1.523611
860	Montecito Ave	Rengstorff Ave	Stierlin Rd	10	10	13	3	9	0	10	0	5	0	8	10	3	0	0	81	1.104589
1190	Sylvan Ave	Moorpark Way	El Camino Real	4	5	13	1	9	0	10	5	5	0	8	10	1	5	4	80	0.624914
1510	Stevens Creek Trail Extension	Heatherstone Way	City Boundary - Sunny	4	5	8	3	6	6	10	0	10	10	8	10	0	5	0	80	0.823176
950	N Whisman Rd	Middlefield Rd	Ferry Morse Way	6	5	13	1	9	3	10	5	0	0	8	10	0	5	4	79	1.163045
1530	Hetch Hetchy Trail	Stevens Creek Trail	Clyde Ave	6	5	8	3	6	3	10	0	10	10	8	10	0	0	0	79	1.291328
140	California St	Castro St	Bush St	0	5	13	3	9	0	10	10	0	10	0	10	3	5	0	78	0.222628
300	Cuesta Dr	Miramonte Ave	Grant Rd	10	5	13	3	9	3	5	5	0	0	8	10	3	0	4	78	1.030799
390	Middlefield Rd	Whisman Rd	Southbay Fwy	6	0	13	3	9	3	10	0	0	10	0	10	3	5	6	78	1.304484
480	Farley St	Middlefield Rd	Central Expy	0	5	12	1	9	6	10	5	5	0	8	10	1	5	0	77	0.666475
530	Foxborough Dr	Glenborough Dr	Sylvan Ave	0	5	12	1	9	6	10	0	10	0	8	10	1	5	0	77	0.262092
980	Middlefield Way	West City Boundary	Rengstorff Ave	8	5	13	3	9	6	5	0	5	10	0	10	3	0	0	77	0.867955
1030	Park Dr	Mountain View Ave	Miramonte Ave	4	5	12	1	9	6	5	10	10	0	0	10	0	5	0	77	0.183526
90	Bryant / Lubich	Diericx Dr	Truman Ave	10	5	13	1	9	6	0	0	10	0	8	10	0	0	4	76	0.472021
370	E Evelyn Ave	Stevens Creek Freew	S Bernardo Ave	4	5	13	1	9	0	10	5	10	0	0	10	0	5	4	76	1.837938
450	Ellis St	Manila Ave	Middlefield Rd	10	0	13	1	9	3	10	5	5	10	0	10	0	0	0	76	0.697387
810	Miller Ave	Del Medio Ave	San Antonio Rd	6	10	12	1	6	6	10	5	10	0	0	10	0	0	0	76	0.173647
490	Fay Way	Jane Ln	Jewell Pl	4	5	13	1	9	0	10	5	10	0	8	10	0	0	0	75	0.113029
570	Glenborough / Dana	Foxborough Dr	Tahoe Terrace	4	5	14	1	9	6	10	0	10	0	0	10	1	5	0	75	0.325617
720	Laura Ln	Whitney Dr	Thompson Ave	4	5	13	1	9	0	10	5	10	0	8	10	0	0	0	75	0.163225
280	Continental Cir	The Americana	Dale Ave	4	10	12	1	9	0	5	0	10	0	8	10	0	5	0	74	0.08304
1500	Permanente Creek Trail - South	El Camino Real	City Boundary - Los Al	4	5	8	3	6	0	10	0	10	5	8	10	0	5	0	74	1.837676
590	Grant Rd	El Camino Real	Cuesta Dr	10	5	13	1	9	6	5	5	0	0	0	10	0	5	4	73	1.10163
790	Martens Ave	Grant Rd	Dead End	10	5	14	1	9	6	5	0	5	0	8	10	0	0	0	73	0.406061
880	Mountain View Ave	Park Dr	Todd St	4	5	12	1	9	6	5	5	10	0	0	10	0	5	0	72	0.136607
1560	Permanente Creek Trail - North	Middlefield Rd	Shoreline Blvd	10	5	8	3	6	0	5	0	10	10	0	10	0	5	0	72	1.537052
1290	W Maude Ave	Logue Ave	East City Boundary	6	0	14	1	9	6	10	0	5	0	0	10	0	5	6	72	0.356107
350	E Dana St	Bush St	Moorpark Way	0	5	14	1	9	3	10	0	5	0	8	10	1	5	0	71	1.203509

470	Fairchild / Leong	Moffett Blvd	Clyde Ave	6	10	13	1	9	3	10	0	5	0	0	10	0	0	4	71	1.192911
520	Fordham Way	Barbara Ave	Orangetree Ln	0	5	12	1	9	6	5	5	10	0	8	10	0	0	0	71	0.785699
1050	Phyllis Ave	El Camino Real	Grant Rd	10	5	13	1	9	0	5	5	0	0	8	10	0	5	0	71	0.773937
190	Castro St	Evelyn Ave	El Camino Real	0	5	13	1	9	6	10	5	5	0	0	10	1	0	6	71	0.9423
600	Hans Ave	Miramonte Ave	Phyllis Ave	10	5	12	1	9	0	5	0	10	0	8	10	0	0	0	70	0.50672
640	Jane Ln	Thompson Ave	Fay Way	4	5	13	1	9	0	10	0	10	0	8	10	0	0	0	70	0.106489
650	Jewell Pl	Fay Way	Rengstorff Ave	4	5	13	1	9	0	10	10	0	0	8	10	0	0	0	70	0.051135
670	Kittyhawk Way	Whisman Rd	Central Expy	0	5	12	1	9	3	10	10	10	0	0	10	0	0	0	70	0.169931
800	Mayfield / Whitney	Central Expy	Laura Ln	4	5	13	3	9	0	10	0	5	0	8	10	3	0	0	70	0.362312
870	Moorpark Way	Alice Ave	Evelyn Ave	4	5	13	1	9	3	10	5	5	0	0	10	0	5	0	70	0.590581
1200	The Americana	El Camino Real	Continental Cir	4	5	12	1	9	0	5	5	5	0	8	10	1	5	0	70	0.11706
1060	Pioneer Way	Evelyn Ave	Dana St	0	5	14	1	9	0	10	10	10	0	0	10	0	0	0	69	0.194985
1250	View St	Evelyn Ave	California St	0	5	14	1	9	0	10	10	10	0	0	10	0	0	0	69	0.265371
1270	Evelyn Ave	Castro St	Stevens Creek Fwy	0	5	13	1	9	0	10	0	10	0	0	10	1	5	4	68	0.688075
1300	Middlefield Rd	Victory Ave	Thaddeus Dr	4	5	13	3	9	6	5	0	10	0	0	10	3	0	0	68	0.085463
820	Miramonte Ave	Cuesta Dr	South City Boundary	0	5	13	3	9	6	5	0	5	0	0	10	3	5	4	68	0.718165
890	N Bernardo Ave	Middlefield Rd	Central Expy	6	0	14	1	6	0	10	5	10	0	0	10	1	5	0	68	0.393967
1100	S Whisman Rd	Dana St	Ferry Morse Way	0	5	13	1	9	6	10	5	0	0	0	10	0	5	4	68	0.12329
930	Shoreline Blvd	Shoreline Lake	Ampitheatre Pwky	0	0	16	3	6	0	5	0	10	10	0	10	3	5	0	68	2.674763
1580	LRT Trail	Pacific Dr	Fairchild Dr	6	0	8	3	6	0	10	0	10	10	0	10	0	5	0	68	0.958641
310	Dale / Heatherstone	Continental Cir	Knickerbocker Dr	4	10	12	1	9	3	5	0	0	0	8	10	0	5	0	67	0.543484
1280	Evelyn Ave	Khan Lab School	Castro St	4	10	13	1	9	0	10	0	10	0	0	10	0	0	0	67	0.333667
1010	Pacchetti Way	Showers Dr	California St	8	10	12	3	6	0	10	0	5	0	0	10	3	0	0	67	0.207398
50	Barbara / Meadow	Marilyn Dr	Fordham Way	0	5	12	1	9	6	5	0	10	0	8	10	0	0	0	66	0.348275
330	Diericx Dr	Franklin Ave	Lubich Dr	10	5	12	1	9	6	0	0	5	0	8	10	0	0	0	66	0.544142
580	Grant Rd	Cuesta Dr	South City Boundary	10	5	13	1	9	3	5	0	5	0	0	10	0	5	0	66	1.521315
1040	Pear Ave	Shoreline Blvd	Dead End	10	0	14	1	6	6	5	0	10	0	0	10	0	0	4	66	0.245576
1070	Plymouth St	Alta Ave	Shoreline Blvd	0	0	14	3	9	6	5	5	10	0	0	10	0	0	4	66	0.413144
110	Bush St	Dana St	California St	0	5	14	1	9	0	10	0	10	0	0	10	1	5	0	65	0.085417
1170	Space Park Way	Shoreline Blvd	Oro Way	10	0	14	1	9	6	5	0	10	0	0	10	0	0	0	65	0.245742
1210	Thompson Ave	Jane Ln	Laura Ln	4	5	13	1	9	0	10	5	0	0	8	10	0	0	0	65	0.174168
20	Alta Ave	Charleston Rd	Plymouth St	0	0	14	1	9	6	5	5	10	0	0	10	0	0	4	64	0.322355
120	Calderon Ave	Evelyn Ave	El Camino Real	0	5	13	1	9	0	10	10	0	0	0	10	1	5	0	64	0.766168
510	Ferry-Morse Way	Evelyn Ave	Whisman Rd	0	0	14	1	9	0	10	10	10	0	0	10	0	0	0	64	0.156473
540	Franklin / Sleeper	Grant Rd	Diericx Way	10	5	13	1	9	6	5	0	5	0	0	10	0	0	0	64	0.673478
1240	Victory Ave	Middlefield Rd	Dell Ave	4	5	12	1	9	0	10	0	5	0	8	10	0	0	0	64	0.250953
1630	Stevens Creek Trail - North	US 101	Bay Trail	10	0	8	3	3	0	5	0	10	10	0	10	0	5	0	64	1.858407
290	Crittenden Ln	Shoreline Blvd	Stevens Creek Trail	0	0	14	1	9	0	5	10	10	0	0	10	0	0	4	63	0.786537
550	Garcia Ave	Bayshore Pkwy	Rengstorff Ave	0	0	14	3	6	3	5	0	10	0	0	10	3	5	4	63	0.843459
770	Marilyn Dr	Springer Rd	Miramonte Ave	0	5	12	1	9	3	5	0	10	0	8	10	0	0	0	63	0.498298
960	National Ave	Fairchild Dr	Ellis St	6	0	14	1	6	6	10	0	10	0	0	10	0	0	0	63	0.324046
1220	Todd St	Springer Rd	Mountain View Ave	0	5	12	1	9	6	5	0	10	0	0	10	0	5	0	63	0.310998
100	Bryant	Evelyn Ave	Mercy St	0	5	14	1	9	0	10	5	0	0	8	10	0	0	0	62	0.387117
170	Casey Ave	San Antonio Rd	Intuit	0	0	14	1	6	6	5	0	10	0	0	10	1	5	4	62	0.190473
230	Church St	Shoreline Blvd	Southbay Fwy	0	5	14	1	9	0	5	5	5	0	8	10	0	0	0	62	0.981631
270	Colony St	Sierra Vista Ave	Dead End	8	0	14	1	9	0	5	5	10	0	0	10	0	0	0	62	0.139435
780	Marine Way	Casey Ave	Garcia Ave	0	0	14	1	6	6	5	0	10	0	0	10	1	5	4	62	0.311608
1320	Rengstorff Ave	Charleston Rd	Rengstorff Ave	8	0	13	3	6	0	5	5	0	5	0	10	3	0	4	62	0.213109
1110	San Antonio Cir	San Antonio Rd	San Antonio Rd	8	10	12	1	6	0	10	5	0	0	0	10	0	0	0	62	0.218142
1180	Stierlin Rd	Shoreline Blvd	Washington St	8	5	13	1	9	0	10	0	5	0	0	10	1	0	0	62	0.430318
1310	Yorkshire Way	Martens Ave	Sleeper Ave	10	5	12	1	9	0	5	0	10	0	0	10	0	0	0	62	0.174486
70	Boranda Ave	El Camino Real	Hans Ave	0	5	12	1	9	6	5	0	5	0	8	10	0	0	0	61	0.36766
210	Charleston Rd	Shoreline Blvd	Shorebird Way	10	0	14	3	6	0	5	0	10	0	0	10	3	0	0	61	0.405203
220	Charleston Rd	Rengstorff Ave	Shoreline Blvd	0	0	13	3	6	0	5	0	10	0	0	10	3	5	6	61	1.548562
240	Clyde Ave	Fairchild Dr	Maude Ave	6	0	14	1	6	0	10	0	10	0	0	10	0	0	4	61	0.612567
500	Fayette Dr	Del Medio Ave	San Antonio Rd	6	10	12	1	6	6	10	0	0	0	0	10	0	0	0	61	0.208233
730	Leghorn St	Independence Ave	Sierra Vista Ave	8	0	14	1	9	9	5	5	0	0	0	10	0	0	0	61	0.386466
940	N Whisman Rd	Fairchild Dr	Middlefield Rd	6	0	13	1	9	3	10	5	0	0	0	10	0	0	4	61	0.574431
1090	Rock St	Middlefield Rd	Dead End	0	5	13	1	9	0	5	0	10	0	8	10	0	0	0	61	0.818963
180	Castro St	El Camino Real	Miramonte Ave	4	5	12	3	9	0	5	5	0	0	0	10	3	0	4	60	0.782397
610	Huff Ave	Charleston Rd	Plymouth St	0	0	14	1	9	6	5	5	10	0	0	10	0	0	0	60	0.280021

660	Joaquin Rd	Charleston Rd	Plymouth St	0	0	14	1	9	6	5	5	10	0	0	10	0	0	0	60	0.278572
1230	Truman Ave	Bryant Ave	South City Boundary	0	5	13	1	9	0	0	0	10	0	8	10	0	0	4	60	0.311867
320	Dell Ave	Nita Ave	Victory Ave	4	5	12	1	9	0	10	0	0	0	8	10	0	0	0	59	0.069739
620	Independence Ave	Charleston Rd	Leghorn St	8	0	14	1	6	0	5	5	10	0	0	10	0	0	0	59	0.168778
250	Clyde Ct	Clyde Ave	Dead End	6	0	14	1	6	0	10	0	10	0	0	10	0	0	0	57	0.063766
560	Gladys Ave	Easy St	Whisman Rd	0	5	13	1	9	0	10	0	0	0	8	10	0	0	0	56	0.390304
1130	Shorebird Way	Shoreline Blvd	Charleston Rd	10	0	14	1	6	0	5	0	10	0	0	10	0	0	0	56	0.450748
80	Broderick Way	Terminal Blvd	Casey Ave	0	0	14	1	9	6	5	0	10	0	0	10	0	0	0	55	0.093523
30	Amphitheatre Pkwy	Charleston Rd	Shoreline Blvd	0	0	13	1	6	3	5	0	10	0	0	10	1	5	0	54	0.853037
60	Bayshore / Salado	San Antonio Rd	Garcia Ave	0	0	14	1	9	6	5	0	5	0	0	10	0	0	4	54	0.877221
1570	Bay Trail	City Boundary - West	Stevens Creek Trail	10	0	8	3	3	0	5	0	10	0	0	10	0	5	0	54	2.365629
40	Armand Ave	Villa Dr	La Avenida St	10	0	14	1	3	0	5	0	10	0	0	10	0	0	0	53	0.066351
760	Macon Ave	La Avenida St	Dead End	10	0	14	1	3	0	5	0	10	0	0	10	0	0	0	53	0.137746
690	Landings Dr	Charleston Rd	Charleston Rd	0	0	14	3	9	6	5	0	5	0	0	10	0	0	0	52	0.622805
970	Nita Ave	Dell Ave	Nita Ave	4	5	12	1	9	0	10	0	0	0	0	10	0	0	0	51	0.104327
1120	San Antonio Rd	Terminal Blvd	Bayshore Fwy	0	0	14	3	6	3	5	0	0	0	0	10	3	5	2	51	0.377654
0	North Bayshore New Street	Permanente Creek Tr	Shorebird Way	10	0	14	0	6	6	5	0	0	0	0	10	0	0	0	51	0.828862
10	Alice / Rainbow	Moorepark Way	Sylvan Ave	0	5	12	1	9	3	10	0	0	0	0	10	0	0	0	50	0.542263
630	Inigo Way	Pear Ave	La Avenida St	10	0	14	1	6	0	5	0	0	0	0	10	0	0	4	50	0.143982
990	Orangetree Ln	Fordham Way	South City Boundary	0	5	12	1	6	6	0	0	10	0	0	10	0	0	0	50	0.050324
1020	Pacific Dr	Whisman Rd	Pacific Dr	0	0	14	1	9	6	10	0	0	0	0	10	0	0	0	50	0.166214
1080	Ravendale Dr	Central Expy	Bernardo Ave	0	0	14	1	9	6	10	0	0	0	0	10	0	0	0	50	0.508413
340	E Charleston Rd	West City Boundary	Rengstorff Ave	8	0	13	1	6	0	5	0	0	0	0	10	1	5	0	49	0.398526
260	Coast Ave	Marine Way	Intuit	0	0	14	1	6	0	5	0	10	0	0	10	0	0	0	46	0.109071
680	La Avenida Ave	Inigo Way	Stevens Creek Trail	10	0	14	1	6	0	5	0	0	0	0	10	0	0	0	46	0.382394
1160	South Dr	Dead End	Grant Rd	0	0	12	1	9	0	5	0	5	0	0	10	0	0	0	42	0.369486

unique_id	streetname	Start	End	design_pln	corridor_score	cost_effect	minus_5_geog	feasibility	funding_opp	comm_supp	strat_impo	prio_total	total_cost_estimate	cost_per_mile	mileage
68	Shoreline Blvd	Villa St	Wright Ave	Class 4	108	10	0	10	10	5	0	143	1076800	2134978.645	0.50436
59	Shoreline Blvd	El Camino Real	Villa St	Class 4	108	10	0	10	5	5	5	143	1416800	2383980.633	0.5943
58	Shoreline Blvd	Wright Ave	Montacito Ave	Class 2	108	10	0	10	10	5	0	143	1076800	2134978.645	0.50436
11	California St	Showers Dr	Mariposa Ave	Class 4	99	10	0	10	5	0	5	129	2918700	2668198.735	1.09388
26	El Camino Real	El Monte Ave	City Boundary - Sunny	Class 4	112	0	0	0	10	0	5	127	50913200	21530606.76	2.36469
28	El Camino Real	San Antonio Rd	El Monte Ave	Class 4	112	0	0	0	10	0	5	127	25865695	21453877.51	1.20564
10	California St	Del Medio Ave	Showers Dr	Class 4	99	5	0	10	5	0	5	124	1680100	3411064.974	0.49254
54	Rengstorff Ave	El Camino Real	Charleston Rd	Class 4	105	0	0	0	10	0	5	120	10275200	4878626.86	2.10617
60	Shoreline Blvd	Montecito Ave	Shoreline Park	Class 4	95	0	0	10	5	5	5	120	0	0	2.7998
9	California St	Mariposa Ave	Castro St	Class 4	99	0	0	10	5	5	0	119	2629100	4562364.646	0.57626
29	El Monte Ave	Todd St	El Camino Real	Class 4	83	5	0	10	10	5	5	118	1665900	3696515.12	0.45067
43	Middlefield Ave	Central Expy	Old Middlefield Way	Class 4	93	0	0	10	10	0	5	118	17485000	4638282.392	3.76971
27	El Camino Real	City Boundary	San Antonio Rd	Class 4	107	0	0	0	10	0	0	117	5134105	21537447.4	0.23838
55	San Antonio Rd	El Camino Real	California St	Class 4	101	0	0	5	5	0	5	116	1870000	5566251.089	0.33595
56	San Antonio Rd	California St	Central Expy	Class 4	101	0	0	0	10	0	5	116	1189200	5186589.162	0.22928
48	Miramonte Ave	Gest Dr	Starr Way	Class 2	81	10	0	10	10	0	0	111	1863500	2678495.947	0.69573
15	Central Expy	Shoreline Blvd	Bernardo Ave	Class 4	83	0	0	10	10	0	5	108	0	0	1.81088
49	Miramonte Ave	Hans Ave	Castro St	Class 2	81	5	0	10	10	0	0	106	435100	3571640.448	0.12182
71	Ellis St	Fairchild Dr	Manila Ave	Class 2	76	5	0	10	5	5	5	106	5305500	28261436.31	0.18773
39	Grant Rd	El Camino Real	Waverly Pl	Class 4	73	10	0	5	10	0	5	103	641700	415278.4336	1.54523
45	Miramonte Ave	El Camino Real	Marylin Dr	Class 4	81	0	0	5	10	0	5	101	2469800	4904835.033	0.50354
47	Miramonte Ave	Starr Way	Hans Ave	Class 4	81	0	0	10	10	0	0	101	238100	4442018.476	0.0536
69	Stevens Creek Trail Extensi	Heatherstone Way	City Boundary - Sunny	Class 1	80	0	0	0	10	5	5	100	22463600	27288943.53	0.82318
67	Whisman Rd	Central Expy	Middlefield Rd	Class 4	79	0	0	5	10	0	5	99	2552100	4611112.041	0.55347
4	Bernardo Ave	Central Expy	Middlefield Rd	Class 2	68	10	1	10	10	0	5	98	836300	2165757.669	0.38615
12	California St	Blossom Ln	Bush St	Class 3	78	10	0	10	0	0	0	98	125800	694354.1866	0.18118
70	Central Expy	San Antonio Rd	Shoreline Blvd	Class 4	83	0	0	0	10	0	5	98	0	0	1.62312
25	Del Medio Ave	Miller Ave	California St	Class 2	83	5	0	5	5	0	0	98	0	0	0.08982
35	Foxborough Dr	Glenborough Dr	Hedgerow Ct	Class 3	77	10	0	10	0	0	0	97	600	6932.121328	0.08655
40	Logue Ave	Middlefield Rd	Maude Ave	Class 4	82	5	1	5	5	0	5	97	876400	3932519.171	0.22286
14	Castro St	Evelyn Ave	Evelyn Ave	Class 4	71	10	0	5	5	0	5	96	0	0	0.02353
22	Dana St	Calderon Ave	Pioneer Way	Class 4	71	5	0	10	10	0	0	96	1201300	3527806.323	0.34052
38	Glenborough Dr	Foxborough Dr	Sylvan Ave	Class 3	75	10	0	10	0	0	0	95	2400	16692.93859	0.14377
31	Evelyn Ave	Castro St	End of Street	Class 4	67	0	0	10	10	0	5	92	0	0	0.33367
33	Farley St	Central Expy	Middlefield Rd	Class 3	77	10	1	10	0	0	0	92	265300	398064.3528	0.66648
42	Maude Ave	Logue Ave	City Boundary	Class 4	72	5	1	5	10	0	5	92	1348600	3787059.834	0.35611
52	Park Dr	Mountain View Ave	Miramonte Ave	Class 4	77	5	1	10	0	0	5	92	312100	3170733.123	0.09843
24	Dana St	Bush St	Calderon Ave	Class 3	71	10	0	10	0	0	0	91	123400	562758.1229	0.21928
32	Evelyn Ave	Bernardo Ave	Castro St	Class 4	76	0	0	5	5	0	5	91	6772000	4323644.26	1.56627
44	Miller Ave	Del Medio Ave	City Boundary	Class 4	76	0	0	10	5	0	0	91	79300	4190119.71	0.01893
53	Phyllis Ave	El Camino Real	Grant Rd	Class 4	71	0	0	10	5	0	5	91	2278200	4749167.569	0.47971
21	Dana St	Sylvan Ave	Tahoe Ter	Class 2	75	5	0	5	5	0	0	90	527500	2900848.054	0.18184
50	Moorpark Way	Sylvan Ave	Evelyn Ave	Class 4	70	5	0	5	10	0	0	90	757900	3439211.821	0.22037
19	Continental Cir	The Americana	Dale Ave	Class 4	74	5	1	5	5	0	5	89	253100	3047915.186	0.08304
66	Whisman Rd	Ferry Morse Way	Evelyn Ave	Class 4	79	0	1	5	10	0	0	89	613600	4176452.713	0.14692
36	Garcia Ave	Salado Dr	Rengstorff Ave	Class 4	63	5	0	10	5	0	5	88	641700	3130236.756	0.205
37	Garcia Ave	Marine Way	Salado Dr	Class 4	63	5	0	10	5	0	5	88	1094400	3147783.909	0.34767
46	Miramonte Ave	Gest Dr	Eastwood Dr	Class 4	68	0	0	10	10	0	0	88	1863500	5307870.207	0.35108
13	Casey Ave	San Antonio Rd	Marine Way	Class 3	62	10	0	10	0	0	5	87	5100	63578.82186	0.08022
41	Marine Way	Casey Ave	Garcia Ave	Class 3	62	10	0	10	0	0	5	87	4800	15403.94445	0.31161
23	Dana St	Pioneer Way	Moorpark Way	Class 2	71	5	0	0	10	0	0	86	808400	2819007.071	0.28677
5	Bush St	California St	Dana St	Class 3	65	10	0	10	0	0	0	85	5500	64390.16173	0.08542
63	The Americana	Continental Cir	El Camino Real	Class 2	70	5	1	10	0	0	5	85	332400	3168591.275	0.10491
8	Calderon Ave	El Camino Real	Evelyn Ave	Class 2	64	10	0	10	0	0	0	84	1027400	1991529.277	0.51589

61	Shoreline Blvd	Park Entrance	Shoreline Blvd	Class 4	68	10	0	0	0	5	0	83	0	0	0.06624
65	Whisman Rd	Dana St	Ferry Morse Way	Class 4	68	0	1	10	10	0	0	83	863700	7414492.984	0.11649
20	Dale Ave	Continental Cir	Heatherstone Way	Class 2	67	5	1	5	5	0	5	82	990700	3020995.161	0.32794
34	Foxborough Dr	Hedgerow Ct	Sylvan Ave	Class 2	77	5	1	5	0	0	0	82	0	0	0.17554
16	Charleston Rd	Rengtorff Ave	Shoreline Blvd	Class 4	61	0	0	10	5	0	5	81	0	0	0.77141
1	Amphitheatre Pkwy	Charelston Rd	Shoreline Blvd	Class 4	54	5	0	10	5	0	5	79	2374600	3522993	0.67403
51	Mountain View Ave	Todd St	Park Dr	Class 2	72	5	1	5	0	0	0	77	0	0	0.13661
64	Todd St	Springer Rd	Mountain View Ave	Class 3	63	10	1	5	0	0	0	73	0	0	0.311
57	San Antonio Rd	US 101	Casey Ave	Class 4	51	0	1	10	10	0	5	71	1356300	4840730.404	0.28019
18	Charleston Rd	Commercial St	Rengstorff Ave	Class 2	49	10	1	10	0	0	0	64	334900	955159.2441	0.35062
17	Charleston Rd	Rengstorff Ave	Rengstorff Ave	Class 4	49	0	1	5	0	5	0	54	0	0	0.09118

ProjectNam	CorridorNa	prio_corri	prio_cost_	minus_5_ge	feasibilit	Cost_savin	Funding_op	Community_	Strat_impo	prio_total
Rengstorff Avenue Adaptive Signal System	Rengstorff Avenue between Montecito Avenue and Ga	105	10	0	10	0	10	5	5	145
South Shoreline Boulevard Complete Street Pilot	Shoreline Blvd btn Montecito Ave to EL Camino	108	5	0	10	0	10	0	5	138
Traffic Calming on Escuela Avenue	Escuela Ave between Latham St to Crisanto Ave	87	10	0	10	0	10	5	5	127
Redesign Shoreline Blvd and Central Expy	Shoreline Blvd / Central Expy	108	5	-5	0	0	0	5	5	118
Shoreline Blvd/Terra Bella Ave Intersection Imp	Shoreline Boulevard/Terra Bella Avenue	95	10	-5	5	0	0	5	5	115
Pacchetti Way Improvements	Pacchetti Way btn California Street and Showers Dr	67	5	0	10	0	10	5	5	102
California Street Streetscape Improvements	California Street btn San Antonio Rd and Showers	99	0	0	0	0	0	-5	5	99
Showers Dr Streetscape Improvements	Showers Dr btn San Antonio Rd and California St	96	0	0	0	0	0	-5	5	96
SR-237/Middlefield Interchange Improvements	SR-237 /Middlefield Interchange	78	0	0	0	0	5	5	5	93
New Underpass between US HWY 101 and Charleston Rd	Charleston Road btn Charleston Rd and Landings Dr	62	10	0	0	0	0	5	5	82
Transit Center Grade Separation	Shoreline Blvd at West Evelyn Avenue	68	0	-5	0	0	0	5	5	73
New Planned Street - North Bayshore Area	New Road (41)	41	10	0	0	0	10	0	5	66
New Planned Street - San Antonio Area	New Road (41)	41	10	0	0	0	10	0	5	66
New Planned Street - East Whisman Area	New Road (41)	41	10	0	0	0	10	0	5	66
US 101/San Antonio Rd/Charleston/Rengstorff IC Imp	US 101 interchanges at San Antonio and Charleston	0	0	0	0	0	0	0	0	0
Rengstorff Grade Separation	Rengstorff Avenue at Caltrain Tracks	0	0	0	0	0	0	0	0	0
Santa Clara County - US 101 Express Lanes	US 101 Throughout Mountain View City Limits	0	0	0	0	0	0	0	0	0
SR 85 Express Lanes	SR 85 Throughout Mountain View City Limits	0	0	0	0	0	0	0	0	0
US 101/Ellis Street	US 101 at Ellis Street	0	0	0	0	0	0	0	0	0
SR 85 NB to EB SR 237 Connector Ramp	SR 85 Northbound to Eastbound SR 237 Connector Ram	0	0	0	0	0	0	0	0	0
SR 85/El Camino Real Interchange Improvements	SR 85/El Camino Real	0	0	0	0	0	0	0	0	0
US 101/Shoreline Blvd Interchange Improvements	US 101/Shoreline Blvd.	0	0	0	0	0	0	0	0	0
SR 237/El Camino Real/Grant Rd. Intersection Imp	SR 237/El Camino Real/Grant Rd.	0	0	0	0	0	0	0	0	0

ProjectNam	CorridorNa	Prio_corri	prio_cost	minus_5_g	Feasibilit	Cost_Savin	Funding_O	Communit	Strat_Impc	Prio_total
Charleston Road between Shorebird Way and Garcia Avenue	Charleston Rd btn Shorebird Way and Garcia Avenue	61	5	0	5	0	5	5	5	86
Mtn View Transit Center Improvements	Near Transit Center	0	0	0	0	0	0	0	0	0
Mountain View Automated Guideway Transportation	Route Unknown	0	0	0	0	0	0	0	0	0
Peninsula Corridor Electrification Expansion	Caltrain Railroad	0	0	0	0	0	0	0	0	0
VTA SR 85 Transit Lane Study	SR 85	0	0	0	0	0	0	0	0	0