East 14th St./ Mission Blvd. and Fremont Blvd. Multimodal Corridor Project: **Baseline Conditions Report**

Final – March 2019

ALAMEDA
County Transportation Commission

East 14th St./ Mission Blvd. and Fremont Blvd. Multimodal Corridor Project:
Baseline Conditions Report

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Section 1

Introduction and Executive Summary

1.1 PROJECT CORRIDOR OVERVIEW

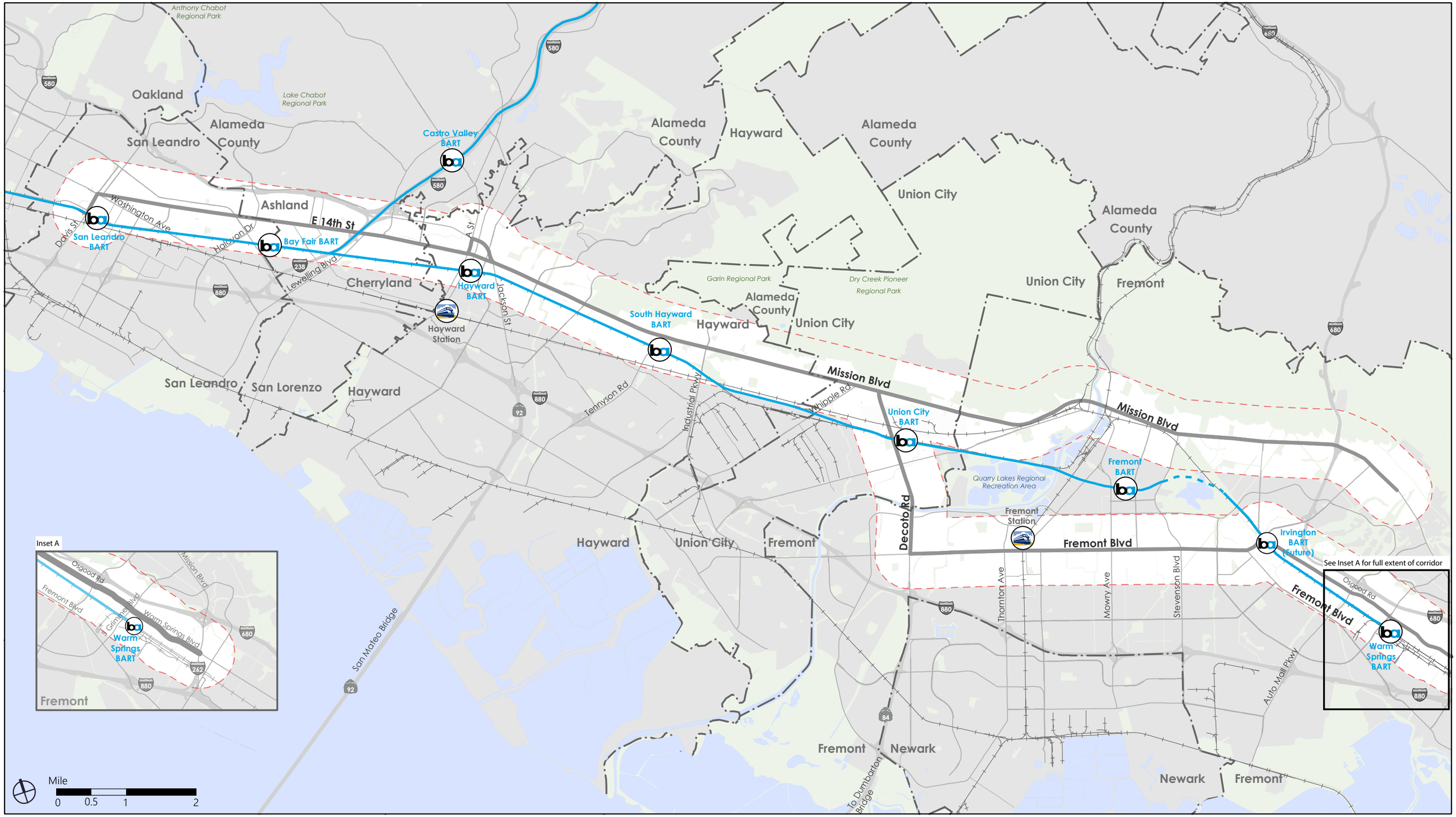
East 14th Street, Mission Boulevard, and Fremont Boulevard connect the communities of central and southern Alameda County with regional transportation facilities and employment activity centers. The north-south corridor extends through five jurisdictions (San Leandro, unincorporated Alameda County, Hayward, Union City, and Fremont) and provides connections throughout the inner East Bay paralleling Interstate 880 and BART. The transportation network in the area includes two major east-west bay crossings (San Mateo and Dumbarton Bridges), as well as commute corridors to the Tri-Valley (Interstate 580, SR 84 and Interstate 680).

The E. 14th Street/Mission Boulevard and Fremont Boulevard Multimodal Corridor Project (Project) will identify specific short-, medium-, and long-term multimodal mobility improvements for implementation. The Project Corridor alignment initially considered for this project included the following segment.

- E. 14th St. and Mission Blvd. from Davis St. in San Leandro to Interstate 680
- Decoto Rd. from Mission Blvd. to Fremont Blvd.
- Fremont Blvd. from Decoto Rd. to Washington Blvd. and potentially to the Warm Springs BART station

However, based on the request from the City of Fremont that was received after the completion of the baseline conditions data collection and analysis, the southern termini were extended along Mission Blvd. (to Ohlone College) and along Warm Springs Blvd. (to SR 262) as showin in **Figure 1-1**. Therefore, the Baseline Conditions Report presents the information only regarding the initial alignment with the sourthern termini at I-680 along Mission Blvd and Warm Springs BART station for Fremont Blvd. alignment. However, all subsequent Project tasks will include the new southern limits as in **Figure 1-1.**

The Study Area, for analysis purposes, is defined as the area within ½ mile of the Project Corridor as shown on **Figure 1-1**.



Legend:

- BART Station
- BART Above/Below Ground
- Capitol Corridor Stations
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial
- Water Bodies
- Parks/Open Space

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E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

Figure 1-1 | Project Corridor

January 2019

1.2 PURPOSE OF THIS REPORT

The Baseline Conditions Report presents data and analysis for transportation circulation, travel market, land use, and infrastructure conditions across the Project Corridor and Study Area. The report documents key findings for existing and planned future conditions that will be used to identify issues and opportunities and develop mobility improvement concepts. The baseline conditions analysis utilizes data assembled through field data collection, published plans and reports, and data sets provided by partner jurisdictions.

The data and analysis in this report will also be used to support subsequent Project Initiation Documents associated with potential improvements. (Subsequent next steps are described in Section 9 of this report.)

1.3 REPORT ORGANIZATION

The Baseline Conditions Report is organized as follows:

Section 2, Demographics and Land Use: This section describes the Study Area's demographic and land use context, including near-term development activity and long-term planned land uses. These attributes shape existing and future transportation demands to, from and within the Study Area.

Section 3, Roadway Infrastructure: This section summarizes physical characteristics and infrastructure conditions for the Project Corridor related to right of way, traffic signals, and pavement. This section also describes the existing roadway jurisdiction for the Project Corridor (Caltrans or local jurisdiction) and infrastructure projects that are underway, programmed or planned. The data in this section establishes a framework for existing physical constraints along the Project Corridor; the infrastructure data also highlights opportunities for potential multimodal upgrades.

Section 4, Travel Market Analysis: This section presents the analysis of travel markets and trip patterns for the Study Area, including mode share, trip lengths, origin/destination patterns, BART modes of access. The results of this analysis will define existing and future travel patterns that will inform near-term and long-term improvement needs.

Section 5, Vehicular Traffic Circulation: This section presents the analysis of vehicular traffic volumes, speeds, and congestion for

existing and future conditions. This section also presents conditions regarding on-street parking and goods movement. The data and analysis in this section serve to identify potential near-term and long-term traffic operations improvements.

Section 6, Transit Circulation: This section describes existing bus, rail and shuttle services operating within the Study Area, along with associated multimodal hubs that allow for transfers between modes. This section presents ridership statistics and an analysis of bus transit travel speeds and times, with a comparison between bus, rail, and auto modes for end-to-end corridor travel. The data and analysis will be used to identify opportunities to increase the attractiveness of transit as a travel option, with a long-term goal of increasing its mode share in the Study Area.

Section 7, Bicycle and Pedestrian Circulation: This section documents existing and planned bicycle and pedestrian facilities, sidewalk gaps and ADA facility deficiencies, and existing bicycle and pedestrian volumes. The data and analysis in this section will be used to identify opportunities to strengthen bicycle and pedestrian circulation for shorter-length trips and for connections to transit services.

Section 8, Safety: This section presents the analysis of collisions throughout the Project Corridor and identifies locations with high collision rates. The results of this analysis will be used to identify potential near-term safety improvements.

Section 9, Next Steps: This section describes the next steps for the Project following the Baseline Conditions Report. Immediate next steps include the finalization of corridor termini and segments; the development of the purpose, need and goals; and the development of near-term, mid-term, and long-term concepts for evaluation. Subsequent steps include the selection of preferred concepts to be advanced for project delivery as funding becomes available.

1.4 EXECUTIVE SUMMARY

The following is an overview of key findings for the baseline conditions analysis.

Demographics and Land Use

Existing and future conditions related to population, employment, and development patterns shape transportation demands to, from and within the Study Area. Key findings regarding the Study Area's demographic and land use context are as follows:

- **Employment Growth.** Total employment in the Study Area is projected to grow by 25 percent between 2020 and 2040, double the rate for Alameda County as a whole. The areas with the largest employment growth (in absolute numbers) are generally located in south Fremont around the Warm Springs BART station, near the Union City BART station, and in San Leandro near the San Leandro and Bay Fair BART stations. (Refer to page 2-2 for more information.)
- **Communities of Concern.** Approximately 25 percent of the Project Corridor length is adjacent to a Community of Concern, a designation that acknowledges populations and communities that could be considered disadvantaged or vulnerable. Most Communities of Concern are in the northern sections of the Study Area in San Leandro, unincorporated Alameda County, and Hayward. (Refer to page 2-4 for more information.)
- **Priority Development Areas.** Approximately 60 percent of the Study Area falls within the boundary of a Priority Development Area. Over half of the frontage along the Project Corridor is associated with parcels within a Priority Development Area. (Refer to page 2-5 for more information.)
- **Near-Term Development Activity.** Near term development projects totaling approximately 10,000 housing units and 1.8 million square feet of employment space are expected to be constructed within the Study Area. While small-scale and mid-sized projects are distributed throughout the Study Area, the largest amount of near-term development activity is anticipated around the Warm Springs BART station in Fremont. (Refer to page 2-9 for more information.)
- **Planned Land Use.** Two prevailing patterns exist for planned land uses along the Project Corridor:
    - Through San Leandro, unincorporated Alameda County, and the majority of Hayward (from Industrial Parkway north) the Project Corridor is planned as a

continuous mixed-use corridor with varying levels of intensity;

- South of Industrial Parkway, the Project Corridor is planned as a series of higher-intensity activity nodes that are separated by residential neighborhoods. (Refer to page 2-11 for more information.)

The demographics and land use analysis findings will be used to inform near-term and long-term demand for multimodal improvements in the Study Area.

Roadway Infrastructure

Roadway infrastructure conditions form the framework under which potential improvements are implemented. Key findings regarding roadway infrastructure are as follows:

- **Right of Way.** Right of way widths vary across the Project Corridor from 50 feet to 179 feet. In San Leandro, Alameda County, and Hayward, right of way widths are more uniform, while in Union City and Fremont, the right of way width changes frequently over short distances. (Refer to page 3-1 for more information.)
- **Roadway Jurisdiction.** Caltrans currently has jurisdiction over portions of the Project Corridor in all jurisdictions except Hayward. Relinquishment activities are underway for E. 14th Street and Mission Boulevard in Alameda County and Fremont Boulevard in Fremont. (Refer to page 3-8 for more information.)
- **Traffic Signal Systems.** The Project Corridor has 120 signalized intersections, the majority of which are interconnected through either fiber or copper. Most signals also have pedestrian push-button detection. However, most signals lack hardware and software allowing for communications between signals under different jurisdictions. Additionally, the majority of traffic signals do not have video detection for vehicles and bicyclists. (Refer to page 3-10 for more information.)
- **Pavement Condition.** Much of E. 14th Street and Mission Boulevard in San Leandro, Alameda County, Union City, and Fremont has pavement that is identified as poor or distressed. However, Caltrans has programmed or proposed several improvement projects for sections of the Project Corridor in San Leandro, Alameda County, and north Hayward. (Refer to page 3-20 for more information.)
- **Programmed and Proposed Projects.** Alameda County, Hayward, and Fremont each have near-term corridor improvement projects that are in design or under

construction. Streetscape improvement projects have been identified for portions of the Project Corridor in San Leandro and Alameda County. Caltrans has programmed or proposed several pavement improvement and pedestrian safety improvements throughout the Project Corridor. (Refer to page 3-24 for more information.)

This information will be used in subsequent project tasks to identify improvement needs and opportunities to coordinate project improvements with ongoing or proposed infrastructure activities.

Travel Markets

The Project Corridor serves a diverse set of travel markets, varying by mode of travel, trip purpose, trip length, and trip origins and destinations. Key findings regarding travel markets are as follows:

- **Mode Split.** Trips by auto (drive alone plus rideshare) for all trip purposes comprise 87 percent of Study Area trips, as compared to approximately 84 percent for Alameda County as a whole. The share of transit trips within the Study Area is lower than for Alameda County as a whole, in particular for work trips in Hayward, Union City, and Fremont. This suggests potential opportunities for transit access improvements in the Hayward, Union City, and Fremont portions of the Study Area. (Refer to page 4-1 for more information.)
- **Trip Lengths.** Trips of two miles or less account for 28 percent of trips within the Study Area, and trips of five miles or less are 55 percent of corridor trips. This indicates a large percentage of trips which could benefit from pedestrian and bicycle improvements. In contrast, the majority of transit trips to and from the Study Area (including bus and BART) are greater than 10 miles, demonstrating the importance of connections to regional transit services, as well as the potential for improvements in local shuttle services. (Refer to page 4-3 for more information.)
- **Origin/Destination Patterns - Local Trips.** Local trips are defined as those within a single Study Area jurisdiction or between two Study Area jurisdictions. Local trips make up 50 percent of total traffic at many locations along the Project Corridor. For the Fremont Boulevard portion of the Project Corridor, approximately half of daily and peak period trips both begin and end within Fremont. (Refer to page 4-7 for more information.)
- **Origin/Destination Patterns – Regional Study Area Trips.** Regional trips are defined as those with one trip end within a Study Area jurisdiction and the other trip end outside the Study Area. On average, regional trips represent

approximately one third of traffic along the Project Corridor. Combining local trips and regional Study Area trips, more than 90 percent of traffic along the Project Corridor has an origin or destination within a Study Area jurisdiction. (Refer to page 4-10 for more information.)

- **Origin/Destination Patterns - Regional Through Trips.** Regional through trips are defined as those that both begin and end outside the Study Area jurisdictions. Overall, a small proportion of traffic on the Project Corridor is attributable to regional through trips. An exception is the Hayward Loop, where regional through trips contribute one third of daily traffic. During peak periods, 10 to 15 percent of traffic on the Hayward Loop represents regional through trips between the San Mateo Bridge and Interstate 580 to the east. (Refer to page 4-14 for more information.)
- **End-to-End Trips.** The Project Corridor is not being used for end-to-end travel, with end-to-end trips representing less than 0.05 percent of total Project Corridor traffic. For the section of the Project Corridor between the Hayward Loop and Decoto Road, end-to-end trips represent approximately 19 percent of total traffic. It is likely that these trips represent drivers avoiding congestion on the parallel section of Interstate 880 and connecting to Interstates 238 and 580 north of the Hayward Loop. (Refer to page 4-16 for more information.)
- **BART Mode of Access.** Overall, BART stations in the Study Area have lower walking and bus/transit access mode shares when compared to the systemwide average. In the Study Area, walking and biking access is highest for stations in the north and decreases as one moves south. Bus access to BART does not exhibit the same patterns as walking and biking access, with the highest shares found at the Bay Fair and Fremont BART stations. (Refer to page 4-18 for more information.)

These analysis results will inform the development of multimodal improvements that support or strengthen these markets.

Vehicular Traffic Circulation

Travel by auto is the most widely used mode of transportation along the Project Corridor and therefore, a crucial element of analysis. Key findings regarding vehicular traffic circulation are as follows:

- **Traffic Volumes.** Existing traffic volumes for the Project Corridor range from a low of 16,800 vehicles per day in San Leandro to nearly 36,000 vehicles per day in Fremont. Traffic volumes for the parallel portion of Interstate 880 range from 182,000

vehicles per day in Fremont to 277,000 vehicles per day in Hayward. (Refer to page 5-8 for more information.)

- **Historical Traffic Growth.** Daily volumes for Interstate 880 have grown at a faster rate than peak hour volumes, indicating that vehicle trips are occurring over a longer period (peak spreading). Daily and peak hour volumes for the Project Corridor are growing at the same rate, likely indicating the Project Corridor is not at capacity in the peak hour. (Refer to page 5-12 for more information.)
- **Roadway Segment and Intersection Level of Service.** Current average travel speeds for the AM and PM peak periods range from 18 miles per hour north of Hayward to 40 miles per hour along Warm Springs Blvd. Based on these data, no significant sections of the Project Corridor operate at speeds classified as LOS D or worse. (Refer to page 5-14 for more information.) However, the capacity analysis for major intersections along the Project Corridor shows that six intersections currently operate at or above capacity (LOS E or LOS F) with an additional ten intersections operating at LOS D. (Refer to page 5-17 for more information.)
- **Traffic Volume Forecasts.** Forecasted Year 2040 traffic volumes for the Project Corridor show substantial traffic growth for the sections north of Decoto Rd, with corresponding declines in vehicle speeds. This is due to forecasted diversion from Interstate 880 to the Project Corridor. The Warm Springs area of the Project Corridor is expected to experience the greatest decrease in vehicle speeds due to planned employment growth in the area (Refer to page 5-23 for more information.)
- **Goods Movement.** Higher heavy vehicle percentages of 5 to 10 percent are found along northbound E. 14th St and Mission Blvd during the AM peak hour. Lower heavy vehicle percentages are found during the PM peak hour and for other sections of the Project Corridor. (Refer to page 5-29 for more information.)

As multimodal improvements are identified for the Project Corridor, these data will be used to inform potential benefits to vehicular traffic circulation as well as potential tradeoffs.

Transit Circulation

Transit services within the Study Area provide mobility options for those who choose not to drive or are unable to do so due to physical or other limitations. Transit also provides an alternative to vehicular capacity improvements for accommodating travel demand. Key findings regarding transit circulation in the Study Area are as follows:

- **Transit Coverage.** Seven public transit providers operate within the Study Area. Of these, AC Transit and BART are the

primary providers in terms of geographic coverage and hours of operation. Other transit providers include Union City Transit, Capitol Corridor, Altamont Corridor Express, Dumbarton Express, and VTA. (Refer to page 6-2 for more information.)

- **Shuttle Services.** Multiple types of shuttle services supplement the transit routes provided within the Study Area. Employer shuttles include commuter shuttles and first/last mile shuttles for employers within the Study Area. Other services include public first/last mile shuttles and private carpool shuttles such as Chariot. (Refer to page 6-4 for more information.)
- **Multimodal Transportation Hubs.** The majority of the multimodal connections in the Study Area are provided at BART stations. Other transportation hubs include the two passenger rail stations (Amtrak and ACE) and two park and ride lots. Connections at these locations include bus, bikeshare, carshare, and public and private shuttles. No single transportation hub serves all the transit providers operating within the Study Area, suggesting opportunities for improved connectivity. (Refer to page 6-5 for more information.)
- **BART Service and Ridership.** Seven existing BART stations serve the Study Area, with one planned in the Irvington neighborhood. The Fremont, San Leandro, and Bay Fair stations have the highest ridership of the BART stations in the Study Area, up to approximately 6,700 entries per day. Compared to the BART system as a whole, however, all stations in the Study Area except for Fremont have ridership levels below the systemwide median. This points to opportunities for enhanced multimodal connections and first/last mile access improvements to promote and increase ridership. (Refer to page 6-7 for more information.)
- **Bus Service and Ridership.** Bus service frequencies vary widely along the Project Corridor, with higher frequencies of up to 13 buses per hour found near Bay Fair BART, Hayward BART, and along Decoto Road. Ridership in the Project Corridor is more concentrated in the northern sections between the San Leandro and Hayward BART stations. However, no single route carries the majority of bus passengers within the Study Area. The City of Fremont and AC Transit are currently coordinating to restructure transit service within the city. (Refer to page 6-8 for more information.)
- **Bus Travel Speed and Time**. The lowest peak period bus travel speeds along the Project Corridor are less than 10 miles per hour and occur at locations near BART stations, as

well as along the portion of the Project Corridor between San Leandro to downtown Hayward. The lower travel speeds indicate opportunities to reduce bus delay through transit priority treatments. The travel times associated with BART station access suggest opportunities to improve bus travel time (and increase bus access to BART) through targeted infrastructure improvements around BART stations. (Refer to page 6-18 for more information.)

- **Travel Time Comparison by Mode.** BART provides the fastest travel time for end-to-end Project Corridor trips. BART travel times during the PM peak period are approximately half of auto travel times and approximately one quarter of bus travel times. This highlights the need for strong first- and last-mile connections to BART (via bus and other modes) to leverage its travel time advantage. (Refer to page 6-21 for more information.)
- **Regional Transit Improvements.** The East Bay BRT project is under construction and will provide a high-capacity transit connection between the San Leandro BART station and downtown Oakland to the north. The BART Silicon Valley project extends BART service from the Warm Springs station south to Santa Clara, with Phase I to Berryessa currently under construction. These projects provide near-term improvements to connect the Study Area to the larger region. (Refer to page 6-22 for more information.)

The transit analysis findings will be used to define projects that improve bus travel time along the Project Corridor and improve connectivity to BART and other multimodal transportation hubs. As these projects are developed, coordination among transit providers will allow for seamless connections between services.

Bicycle and Pedestrian Circulation

Biking and walking provide mobility options for shorter-distance trips within the Project Corridor and for groups such as youth and seniors who are not able to drive. Bicyclist and pedestrian networks are an important part of providing safe access to transit services. Key findings regarding transit circulation in the Study Area are as follows:

- **Existing and Planned Bicycle Facilities**. Much of the Project Corridor (67%, or 19.2 miles) has existing bike lanes (either Class II or Class IIb). Near-term improvements to Class IV protected bike lanes are planned for portions of the Project Corridor (8%, or 2.3 miles) in Hayward, while long-term improvements to Class IV protected bike lanes are planned for portions (65%, or 18.9 miles) in Alameda County, Union City and Fremont. Bicycle intersection improvements are planned at several locations in the City of Fremont. Additionally, the

planned East Bay Greenway project will provide a bike route parallel to the Project Corridor that connects to the San Leandro, Bay Fair, Hayward, and South Hayward BART stations. (Refer to page 7-2 for more information.)

- **Existing and Planned Pedestrian Facilities.** The majority of the Project Corridor (85%, or 24.8 miles) has sidewalks on both sides of the street with ADA-compliant sidewalk clearances and ramps. Areas with significant sidewalk gaps include Mission Blvd in Union City and Fremont and Grimmer Blvd near the Warm Springs BART station. Areas with ADA deficiencies are located throughout the Project Corridor. Planned pedestrian improvements for the Project Corridor focus on access to schools, pedestrian crossings, closure of sidewalk gaps, and ADA facility upgrades. (Refer to page 7-9 for more information.)

The bicycle and pedestrian analysis findings will be used to define projects that address existing facility gaps, improve connectivity to transit and other Study Area destinations, and improve the safety and comfort of bicyclists and pedestrians.

Safety

Safety for all transportation users is a critical element in the Study Area's multimodal network. The safety section presents safety conditions along the Project Corridor based on analysis of collision data. Key findings are as follows:

- **High Collision Locations.** Along the Project Corridor, there is a higher concentration of collisions for all collision types in the San Leandro, unincorporated Alameda County, Hayward, and Union City segments of the Project Corridor. The highest overall collision rates for the Project Corridor are found in unincorporated Alameda County and Union City, up to 234 collisions per mile over a five-year period (June 2012 – May 2017). (Refer to page 8-2 for more information.)
- **Fatal and Severe Injury Collisions.** Between June 2012 and May 2017, 18 collisions along the Project Corridor resulted in a fatality and 68 resulted in severe injuries. Almost half of fatal and severe collisions involved a pedestrian or bicyclist. Fatal and severe injury collisions occurred along the full Project Corridor, with a higher concentration of severe injury collisions in San Leandro, Alameda County, and Hayward. (Refer to page 8-2 for more information.)
- **Bicyclist High-Injury Sections.** For bicyclists, seven miles of the Project Corridor (25 percent of the total length) are identified as countywide high-injury sections. In general, bicyclist collisions in these sections involved bicyclists proceeding

straight (i.e., not turning left or right). While high-injury sections are located in all Project Corridor jurisdictions, the sections with the highest scores in terms of collision severity are in San Leandro and Fremont. (Refer to page 8-4 for more information.)

- **Pedestrian High-Injury Sections.** For pedestrians, 11 miles of the Project Corridor (40 percent of the total length) are identified as countywide high-injury sections. In general, pedestrian collisions in these locations were associated with pedestrians crossing at intersections, often at a marked crosswalk. The locations with the highest scores in terms of severity are in San Leandro, Hayward, and Fremont. (Refer to page 8-7 for more information.)

The safety analysis findings will be used to define locations along the Project Corridor that support safety improvements, and to identify potential safety countermeasures that address collision risk factors and patterns.

Section 2
Demographics and Land Use

Section 2

Demographics and Land Use

An understanding of demographic and land use conditions is an important first step in defining the users of the Project Corridor. Existing and future conditions related to population, employment, and development patterns shape transportation demands to, from and within the Study Area. This section describes the Study Area's demographic and land use context.

Topics covered in this section are as follows:

- Population and employment
- Communities of Concern
- Priority Development Areas
- Near-term development activities
- Planned land use
- Description of Relevant Plans and Projects

2.1 POPULATION AND EMPLOYMENT

Population and employment data were analyzed for the Project Corridor to identify geographic areas where significant growth is projected. For existing conditions, year 2018 population and employment estimates for the Study Area were estimated using Traffic Analysis Zone (TAZ) data sets from the Alameda Countywide Model, which in turn are based on data sets from *Plan Bay Area 2040*. **Table 2-1** summarizes year 2018 population estimates for TAZs comprising the Study Area. Based on these data, the Study Area has approximately 314,000 residents and 90,000 jobs. This represents almost 19 percent of Alameda County's population and almost 11 percent of the County's jobs.

Table 2-1 Existing Population and Employment

	Study Area	Alameda County	Nine-County Region
Population	314,000	1,677,000	7,763,000
Employment	90,000	824,000	3,996,000

Total employment in the Study Area is projected to grow by 25 percent between 2020 and 2040, double the rate for Alameda County as a whole.

For year 2040 conditions, population and employment forecasts were calculated for the Study Area as summarized in **Table 2-2** and **Table 2-3**. The forecasts use Plan Bay Area 2040 land use data for the Study Area as incorporated into the Alameda Countywide Model TAZs. Between 2020 and 2040, employment growth (as a percentage) in the Study Area is projected to outpace growth percentages for both Alameda County and the nine-county Bay Area region. Population growth is projected to be consistent with County and regional averages.

The areas with the largest employment growth (in absolute numbers) are listed in **Table 2-4** and shown in **Figure 2-1**. These areas are generally located in south Fremont around the Warm Springs BART station, near the Union City BART station, and in San Leandro near the San Leandro and Bay Fair BART stations.

Table 2-2 Study Area Population Growth, 2020 to 2040

	Study Area	Alameda County	Nine-County Region
Year 2020	322,000	1,720,000	7,915,000
Year 2040	388,000	2,083,000	9,627,000
Change	**20%**	**21%**	**22%**

Table 2-3 Study Area Employment Growth, 2020 to 2040

	Study Area	Alameda County	Nine-County Region
Year 2020	93,000	854,000	4,139,000
Year 2040	116,000	949,000	4,694,000
Change	**25%**	**11%**	**13%**

Table 2-4 Study Area TAZs with High Employment Growth

TAZ Number (refer to map)	Location	Employment Growth (2020 to 2040)
1539	Fremont	6,700
898	Fremont	2,700
774	Union City	2,000
583	San Leandro	1,800
892	Fremont	1,800
893	Fremont	1,700
896	Fremont	1,300
1473	San Leandro	1,100
1537	Fremont	1,000

Traffic Analysis Zone Number	Location	Employment Growth (2020 to 2040)
1539	Fremont	6,700
898	Fremont	2,700
774	Union City	2,000
583	San Leandro	1,800
892	Fremont	1,800
893	Fremont	1,700
896	Fremont	1,300
1473	San Leandro	1,100
1537	Fremont	1,000

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Legend:

- BART Station
- BART Above/Below Ground
- Capitol Corridor Stations
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial
- Water Bodies
- Parks/Open Space
- 1 dot = 10 employees (growth from 2020 to 2040)
- High Employment Growth TAZs

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Areas of High Employment Growth | Figure 2-1

July 2018

2.2 COMMUNITIES OF CONCERN

The Metropolitan Transportation Commission (MTC) and the Association of Bay Area Governments (ABAG), as part of *Plan Bay Area 2040*, have identified particular census tracts as Communities of Concern (CoCs). The designation acknowledges populations and communities that could be considered disadvantaged or vulnerable, in terms of both current conditions and potential impacts of future growth. Eight disadvantage factors are identified for CoCs, with a community concentration threshold assigned to each as shown in **Table 2-5**. A CoC is designated when a given census tract has either 1) a concentration of both minority and low-income residents; or 2) a concentration of three or more of the remaining six disadvantage factors, in addition to a concentration of low-income households. (The racial breakdown of the Study Area jurisdictions is summarized in **Table 2-6**.)

Table 2-5 Communities of Concern Factors and Thresholds

Disadvantage Factor	Percent of Regional Population	Community Concentration Threshold
1. Minority Residents	58%	70%
2. Low-Income Residents (<200% of poverty)	25%	30%
3. Residents who do not speak English well or at all	9%	20%
4. Households with no car	10%	10%
5. Seniors age 75+	6%	10%
6. Persons with a disability	9%	25%
7. Single-parent households	14%	20%
8. Cost-burdened renters	11%	15%

Sources: American Community Survey 2009-13 tract-level data, https://www.planbayarea.org/2040-plan/plan-details/equity-analysis

Table 2-6. Race and Ethnicity Summary

Race or Ethnicity	San Leandro	Ashland and Cherryland	Hayward	Union City	Fremont
White	39.7%	50.0%	41.2%	21.8%	26.4%
African American	11.7%	14.8%	11.4%	5.0%	3.2%
Asian	32.4%	15.7%	25.5%	52.4%	55.9%
Hispanic or Latino	27.4%	50.5%	40.3%	21.5%	13.3%

Source: US Census Population Estimates, 2017

Note: Percentages do not add to 100% as Hispanic or Latino individuals may be classified as one or more races.

Figure 2-2 shows the CoCs for the Project Corridor. Approximately 17 percent of the Study Area is classified as a CoC, and approximately 25 percent of the Project Corridor length is adjacent to a CoC. Most of the CoCs are located in the northern sections of the Project Corridor in San Leandro, unincorporated Alameda County, and Hayward.

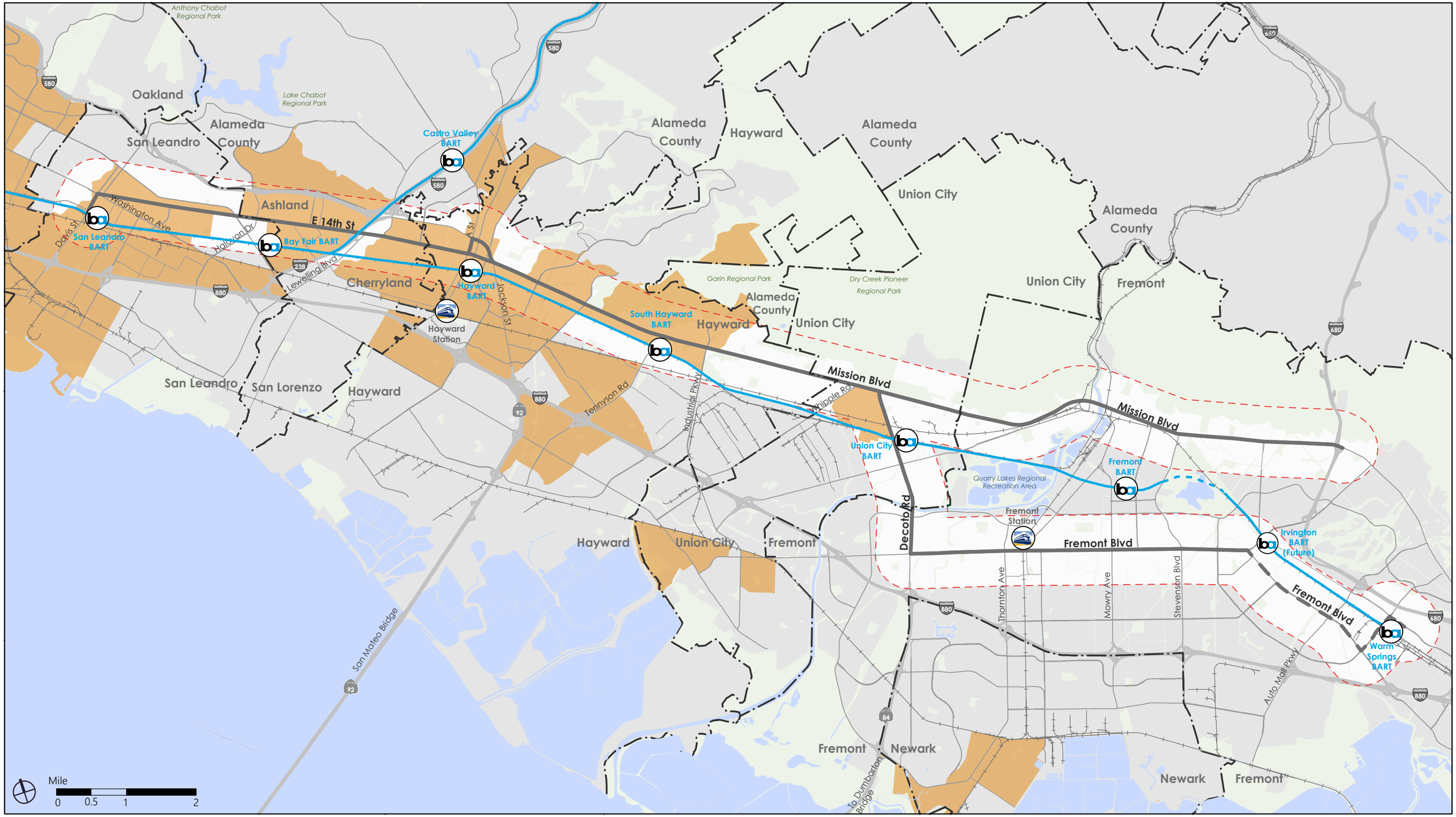
2.3 PRIORITY DEVELOPMENT AREAS

Portions of the Project Corridor are designated by *Plan Bay Area 2040* as Priority Development Areas (PDAs). PDAs are defined as locally-identified opportunity areas for investment, new homes, and job growth. As part of *Plan Bay Area 2040*, PDAs form part of the foundation for regional growth.

A total of 14 designated PDAs are entirely or partially within the Study Area. **Table 2-7** lists the PDAs in the Project Corridor and **Figure 2-3** shows their location and extent. The Study Area contains the following six PDA types[1]:

- *City Center:* Magnets for surrounding areas and commuter hubs to the region (e.g., Union City Intermodal Station).
- *Transit Town Center*: Local-serving centers of economic and community activity (e.g., Bay Fair BART).
- *Suburban Center:* Similar to City Centers but with lower densities, less transit, and more parking and single-use areas (e.g., Warm Springs Area).
- *Transit Neighborhood:* Primarily residential areas with low-to-moderate densities served by rail or multiple bus lines (e.g., Centerville).
- *Urban Neighborhood:* Residential areas with strong regional connections, moderate-to-high densities, and local-serving retail mixed with housing (e.g. South Hayward BART station).
- *Mixed-Use Corridor:* Areas of economic and community activity with rail, streetcar, or high frequency bus service that lack a distinct center (e.g., E. 14th Street and Mission Boulevard in unincorporated Alameda County).

[1] The PDA type "Regional Center" is not present in the Study Area.



Legend:

- BART Station
- BART Above/Below Ground
- Capitol Corridor Stations
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial
- Water Bodies
- Parks/Open Space
- Communities of Concern

E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

Source: MTC/ABAG 2018

ALAMEDA County Transportation Commission

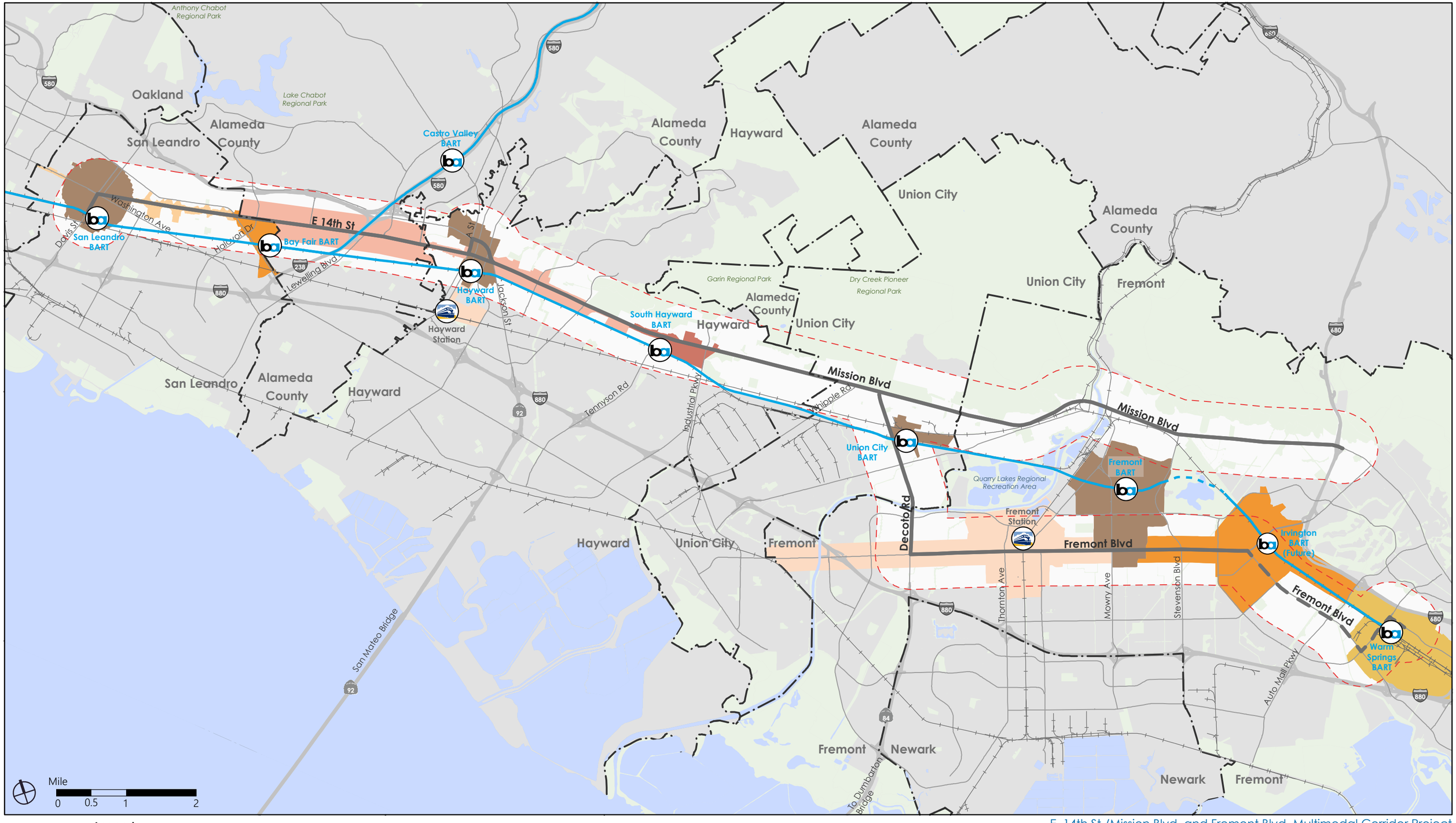
MTC Communities of Concern | Figure 2 -2

July 13, 2018

Table 2-7 Priority Development Areas

Name	Type	Acreage[1]
San Leandro		
Downtown Transit Oriented Development	City Center	414
East 14th Street	Mixed-Use Corridor	116
Bay Fair BART Village	Transit Town Center	133
Unincorporated Alameda County		
East 14th Street and Mission Boulevard	Mixed-Use Corridor	644
Hayward		
Downtown	City Center	230
The Cannery	Transit Neighborhood	90
Mission Boulevard Corridor	Mixed-Use Corridor	214
South Hayward BART	Mixed-Use Corridor	47
South Hayward BART	Urban Neighborhood	150
Union City		
Intermodal Station District	City Center	129
Fremont		
Centerville	Transit Neighborhood	1,322
City Center	City Center	876
Irvington District	Transit Town Center	1,149
Warm Springs	Suburban Center	1,455

1. Acreage values are net excluding public rights of way.



Legend:

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- BART Above/Below Ground
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- Freeway/Arterial
- Water Bodies
- Parks/Open Space

Priority Development Areas

- City Center
- Urban Neighborhood
- Suburban Center
- Transit Town Center
- Mixed-Use Corridor
- Transit Neighborhood

ALAMEDA County Transportation Commission

E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

Note: For detail on PDAs please see- https://tinyurl.com/MTCPDA
Source: MTC/ABAG 2017

Priority Development Areas | Figure 2-3

May 30, 2018

Approximately 60 percent of the Study Area falls within the boundary of a PDA. East 14th St. and Mission Blvd. in San Leandro, unincorporated Alameda County, and Hayward are adjacent to multiple contiguous PDAs. Most of the Project Corridor frontage along Fremont Blvd. is associated with a PDA. Areas outside PDAs are generally located along southern Mission Blvd. in Union City and Fremont, and along Decoto Rd.

Over half of the Project Corridor is adjacent to a Priority Development Area.

In terms of corridor frontage length, over half of the Project Corridor frontage is part of a PDA, as shown in **Table 2-8.**

Table 2-8 Priority Development Area Frontage

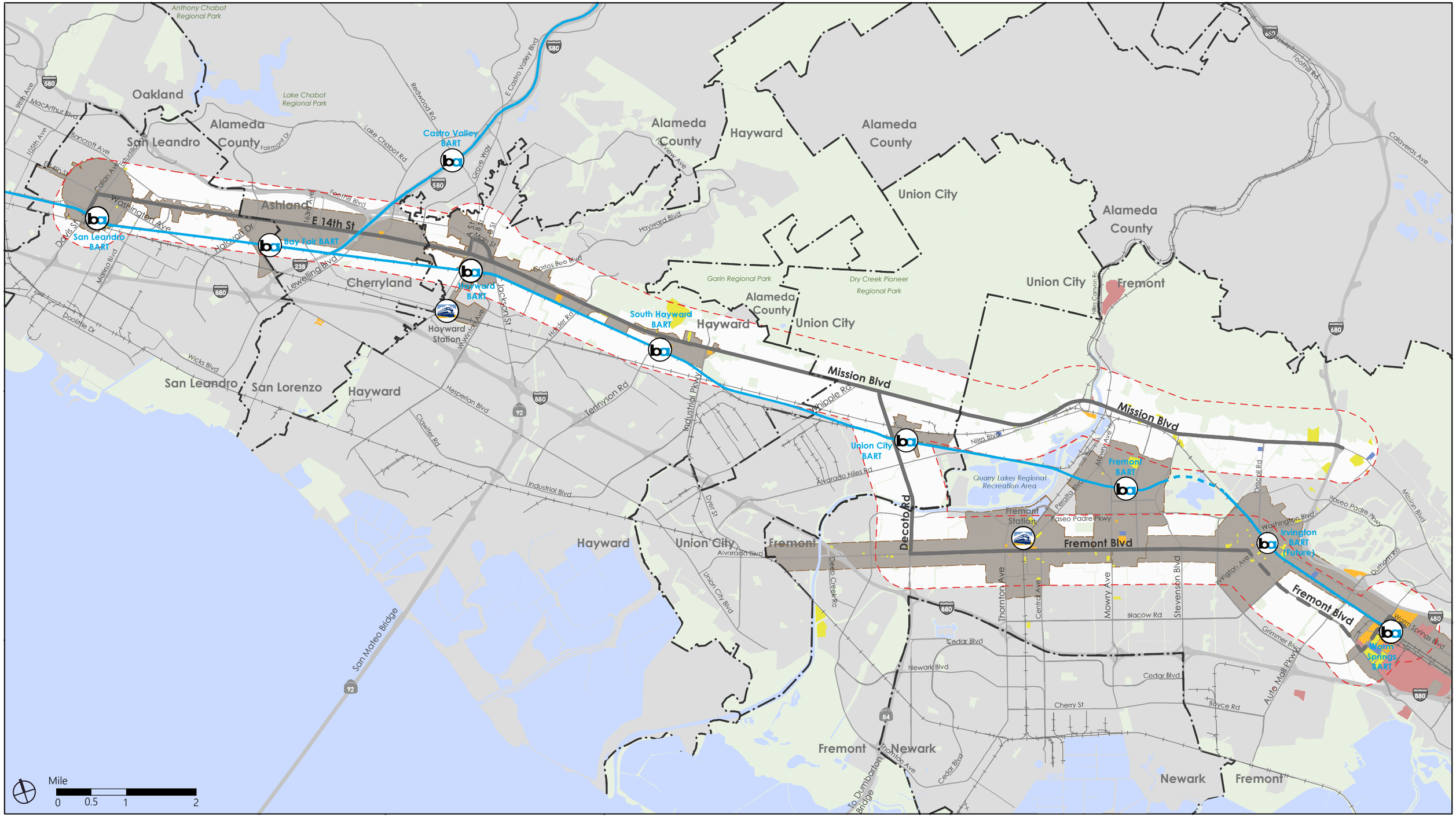
Jurisdiction	PDA Frontage Length (miles, both sides)	% of Total Corridor Frontage
San Leandro	5.8	100%
Alameda County	4.4	100%
Hayward	9.9	81%
Union City	0.3	4%
Fremont	13.1	47%
TOTAL	**33.2**	**58%**

Source: Plan Bay Area 2040

2.4 NEAR-TERM DEVELOPMENT ACTIVITY

Local jurisdictions along the Project Corridor provided available data regarding development projects that are nearing completion, are approved, or are nearing approval. The magnitude and geographic distribution of near-term development activity in the Study Area will inform changes in transportation demand and opportunities for associated near-term improvements.

Table 2-9 summarizes the employment square footage and number of residential units expected to be constructed near-term within the Study Area. **Figure 2-4** shows the location of these residential, non-residential, and mixed-use projects. A significant number of the projects falls within the boundaries of PDAs. While the locations of small-scale and mid-sized projects are distributed throughout the Project Corridor, a significant amount of development with a broad range of uses is occurring around the Warm Springs BART station in Fremont.



Legend:

- BART Station
- BART Above/Below Ground
- Capitol Corridor Stations
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial
- Water Bodies
- Parks/Open Space

Near-Term Development Projects

- Employment
- Residential
- Mixed Use
- Public/Institutional
- Priority Development Areas

E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

Note: Project data not available from Union City
Source: Project data proved by City departments

Near-Term Development Projects | Figure 2-4

June 5, 2018

Table 2-9 Near-Term Development Projects

Jurisdiction	Employment Square Footage	Housing Units
San Leandro	11,126	1,021
Unincorporated Alameda County	20,900	124
Hayward	28,000	1,363
Union City	39,000	686
Fremont	1,656,806	6,825
TOTAL	**1,755,832**	**10,019**

Source: Development project data provided by local jurisdictions.

2.5 PLANNED LAND USE

The land uses planned for the Project Corridor will generate demand for both existing transportation modes and new transportation services. The planned mix, intensity, and character of land uses also provide context for street cross section elements and related improvements.

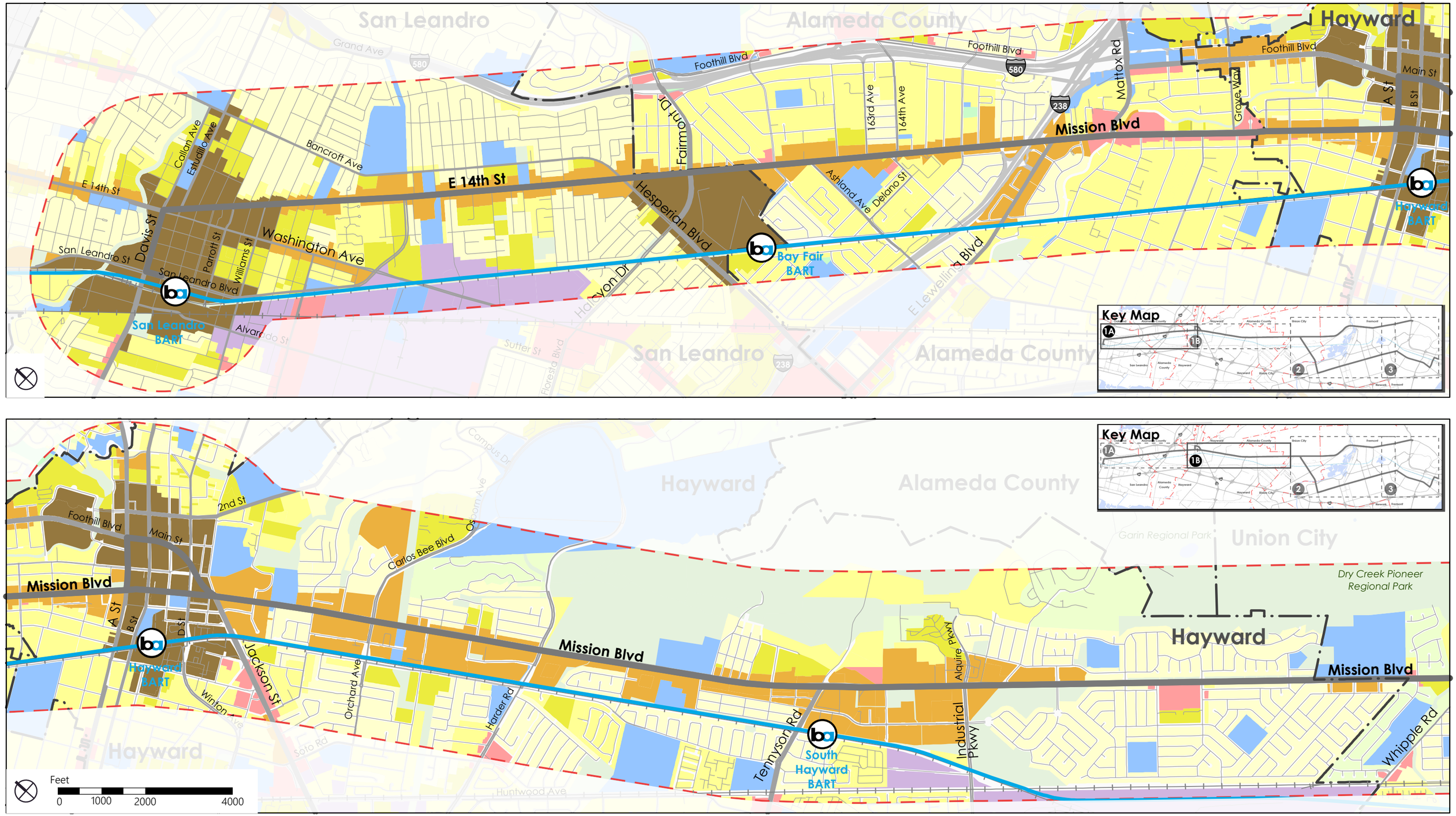
Figure 2-5(a,b,c) shows planned land uses for the Project Corridor. Since the Study Area jurisdictions have varying definitions for similar land use categories, in particular for residential and mixed-use designations, a range of generalized land use types was developed based on the zoning and planned land use definitions provided by each jurisdiction[2]. This allows for analysis and comparison across jurisdictional boundaries.

Table 2-10 lists the density and intensity ranges used to define the residential and mixed-use categories shown in **Figure 2-5(a,b,c)**. Since the planned industrial, commercial, and public/institutional land use categories do not vary significantly across the Study Area jurisdictions, these three land use types are each shown as a single category.

Table 2-10 Planned Land Use Assumptions, Residential and Mixed Use

Generalized Land Use Category	Density/Intensity Range
Residential	
High Density	More than 20 units/ acre
Medium Density	10 to 20 units/acre
Low Density	4 to 10 units/acre
Very Low Density	Less than 4 units/acre
Mixed Use	
High-Intensity	Floor Area Ratio above 1.0 and more than 40 units/acre
Other	Floor Area Ratio above 0.8 and more than 30 units/acre

[2] Planned land use data is not available in GIS format for unincorporated Alameda County. The land use shown for unincorporated areas is based on land use types developed for the Alameda County version of the Plan Bay Area Sustainable Community Strategy.



Legend:

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- BART Above/Below Ground
- Capitol Corridor Station
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial/Collector/Local
- Water Bodies
- Parks/Open Space

Generalized Planned Land Use within 1/2 mile of corridor

- High Intensity Mixed Use
- Mixed Use
- Commercial
- Industrial
- High Density Residential (>20 du/ac)
- Medium Density Residential (10-20 du/ac)
- Low Density Residential (4-10 du/ac)
- Very Low Density Residential (<4 du/ac)
- Public/School

ALAMEDA County Transportation Commission

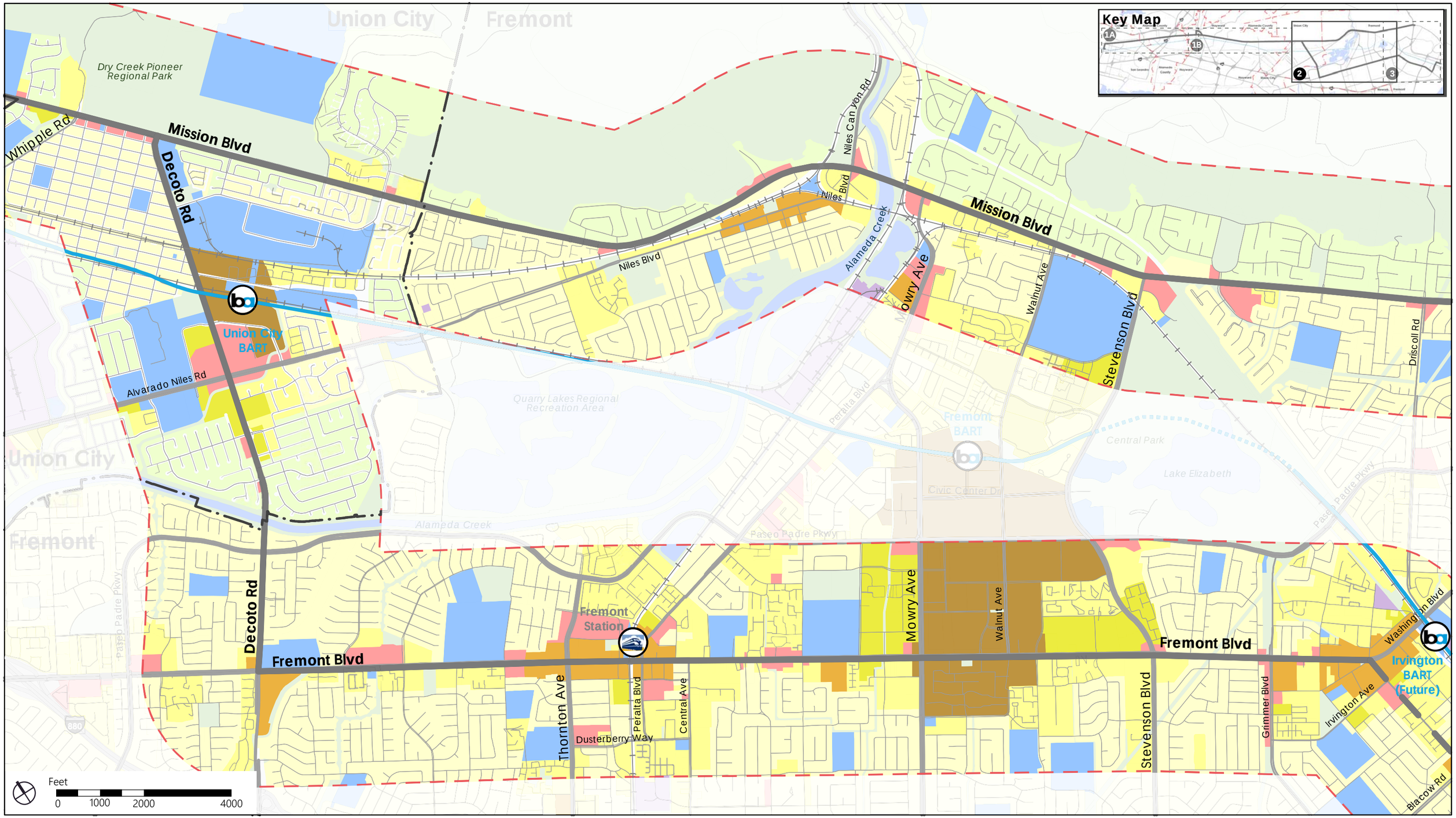
Source: Jurisdiction General Plans - San Leandro (2015), Hayward (2014) Union City (2002), Alameda County (ABAG 2010 data)

E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

Generalized Planned Land Use | Figure 2-5a

E. 14th St./Mission Blvd. between Davis St. and Whipple Rd.

June 2018



Legend:

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- BART Above/Below Ground
- Capitol Corridor Station
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial/Collector/Local
- Water Bodies
- Parks/Open Space

Generalized Planned Land Use within 1/2 mile of corridor

- High Intensity Mixed Use
- Mixed Use
- Commercial
- Industrial
- High Density Residential (>20 du/ac)
- Medium Density Residential (10-20 du/ac)
- Low Density Residential (4-10 du/ac)
- Very Low Density Residential (<4 du/ac)
- Public/School

ALAMEDA County Transportation Commission

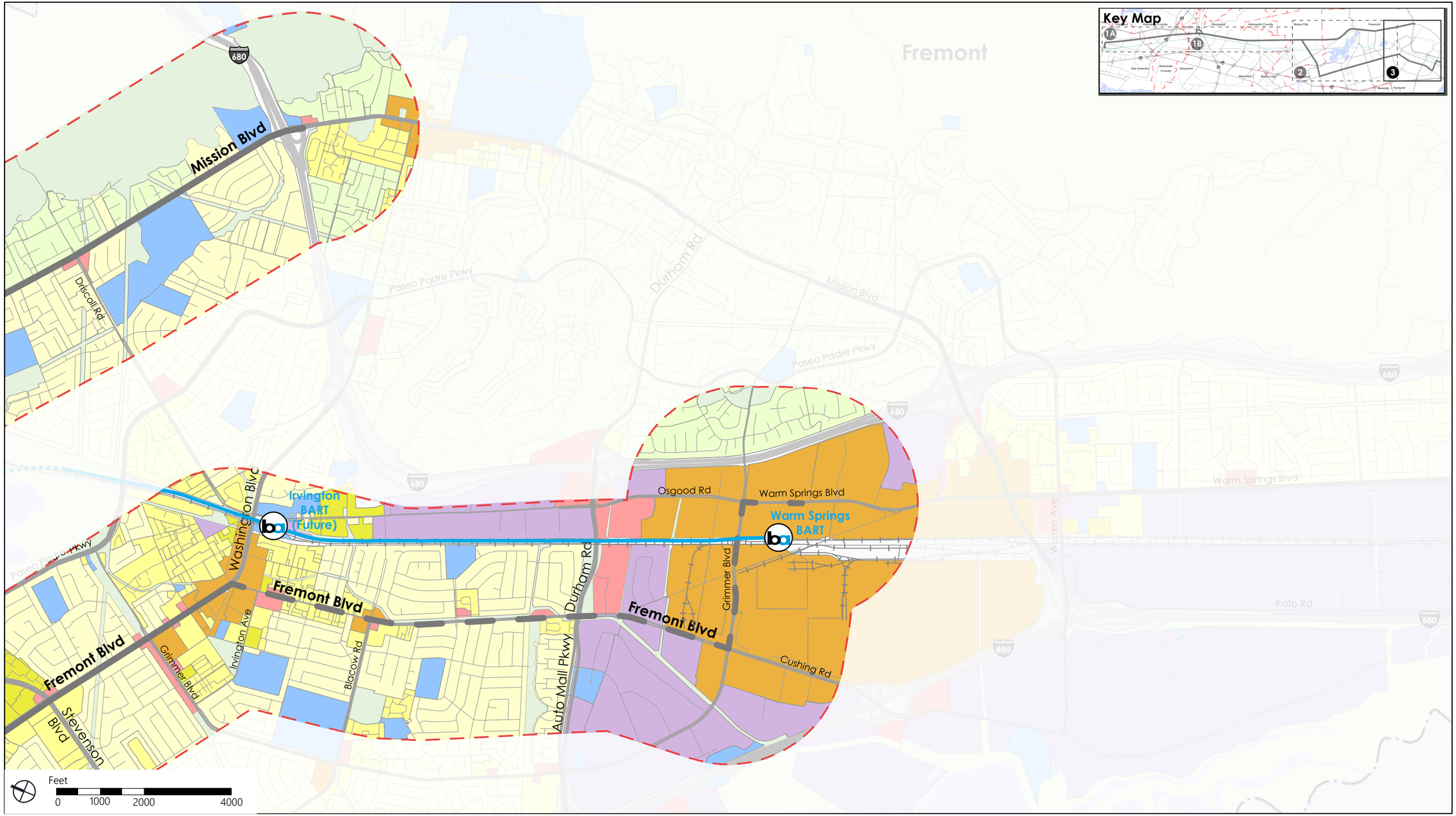
E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

Source: Jurisdiction General Plans - Union City (2002), Fremont (2011)

Generalized Planned Land Use | Figure 2-5b

Mission Blvd. between Whipple Rd. and Driscoll Rd. and Fremont Blvd. between Decoto Rd. and Washington Blvd.

June 2018



Legend:

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- BART Above/Below Ground
- Capitol Corridor Station
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial/Collector/Local
- Water Bodies
- Parks/Open Space

Generalized Planned Land Use within 1/2 mile of corridor

- High Intensity Mixed Use
- Mixed Use
- Commercial
- Industrial
- High Density Residential (>20 du/ac)
- Medium Density Residential (10-20 du/ac)
- Low Density Residential (4-10 du/ac)
- Very Low Density Residential (<4 du/ac)
- Public/School

ALAMEDA County Transportation Commission

E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

Source: Jurisdiction General Plans - Fremont (2011)

Generalized Planned Land Use | Figure 2-5c

Mission Blvd. between Driscoll Rd. and I-680 and Fremont Blvd. between Washington Blvd. and Warm Springs BART

June 2018

As shown in **Figure 2-5**, two prevailing patterns exist for planned land uses in the Study Area.

- Through San Leandro, unincorporated Alameda County, and the majority of Hayward (from Industrial Parkway north) the Project Corridor is planned as a continuous mixed-use corridor with varying levels of intensity. In this section, the highest intensity levels are located around the San Leandro, Bay Fair, and Hayward BART stations.
- South of Industrial Parkway, the Project Corridor is planned as a series of higher-intensity activity nodes that are separated by residential neighborhoods. Activity nodes in this area are located around the Union City BART station, at the Decoto Rd./Fremont Blvd. intersection, along Niles Blvd., around the Fremont ACE/Amtrak station, near the Fremont BART station, around the planned Irvington BART station, and around the Warm Springs BART station. In particular, a sizeable area around the Warm Springs BART is planned for mixed-use development, with additional areas planned for industrial development.

Table 2-11 summarizes the frontage length along the Project Corridor for each of the planned land use categories. As shown in the table, over 40 percent of the Project Corridor frontage is planned for mixed-use development.

Table 2-11 Generalized Planned Land Use Frontage

Generalized Land Use Category	Corridor Frontage Length (miles, both sides)	% of Project Corridor Total
Mixed-Use	24.2	42%
Low/Very Low Density Residential	13.3	23%
Medium Density Residential	5.8	10%
Parks/Open Space	5.3	9%
Commercial	4.1	7%
Public/School	2.7	5%
High Density Residential	1.4	2%
Industrial	0.7	1%
TOTAL	**57.3**	**100%**

2.6 RELEVANT PLANS

Demographic and land use conditions for the Study Area are addressed through the following prior and ongoing plans. In some cases, the data and analysis from these documents were used as part of the analysis presented in this section.

- San Leandro General Plan (2016)
- Downtown San Leandro Transit-Oriented Development Strategy (2007)
- Bay Fair TOD Specific Plan (2017)
- San Leandro Economic Development Strategy and Work Plan (2013)
- Ashland and Cherryland Business District Specific Plan (2015)
- Eden Area Livability Initiative (2014)
- Hayward 2040 General Plan (2014)
- Hayward Economic Development Strategic Plan (2013)
- Downtown Hayward Specific Plan (2019)
- South Hayward BART Development, Design, and Access Plan (2006)
- Union City 2040 General Plan Update (2015)
- Union City Economic Development Plan (2017)
- Fremont General Plan (2011)
- Fremont Economic Development Plan (2011)

2.7 KEY FINDINGS

The following summarizes the key findings from each of the topic areas discussed:

- **Employment Growth.** Total employment in the Study Area is projected to grow by 25 percent between 2020 and 2040, double the rate for Alameda County as a whole. The areas with the largest employment growth (in absolute numbers) are generally located in south Fremont around the Warm Springs BART station, near the Union City BART station, and in San Leandro near the San Leandro and Bay Fair BART stations.
- **Communities of Concern.** Approximately 25 percent of the Project Corridor length is adjacent to a Community of Concern. Most of the Communities of Concern are located in the northern sections of the Project Corridor in San Leandro, unincorporated Alameda County, and Hayward.
- **Priority Development Areas.** Approximately 60 percent of the Study Area falls within the boundary of a Priority Development Area. Over half of the frontage along the Project Corridor is associated with parcels within a Priority Development Area.
- **Near-Term Development Activity.** A significant number of near-term development projects fall within the boundaries of PDAs, with the most significant amount of development

activity occurring around the Warm Springs BART station in Fremont.

- **Planned Land Use.** Two prevailing patterns exist for planned land uses in the Study Area
    - Through San Leandro, unincorporated Alameda County, and the majority of Hayward (from Industrial Parkway north) the Project Corridor is planned as a continuous mixed-use corridor with varying levels of intensity;
    - South of Industrial Parkway, the Project Corridor is planned as a series of higher-intensity activity nodes that are separated by residential neighborhoods. Higher-intensity activity nodes are planned for several locations along the Decoto Road and Fremont Boulevard corridors. Along Mission Boulevard, one activity center is identified around Niles Boulevard.

Section 3
Roadway Infrastructure

Section 3

Roadway Infrastructure

This section summarizes physical conditions and roadway infrastructure for the Project Corridor. This information will be used in subsequent project tasks to identify improvement needs and opportunities to coordinate project improvements with ongoing or proposed infrastructure activities.

Topics covered in this section are:

- Right-of-way
- Roadway jurisdiction
- Traffic signal systems
- Pavement conditions
- Programmed and proposed projects

3.1 RIGHT OF WAY

The right of way dimensions and limits for the Project Corridor establish the parameters for accommodating potential improvements. Data regarding the publicly owned right of way for the Project Corridor was collected through Alameda County Property Assessor's data sets and right of way maps as provided by Caltrans and local jurisdictions.

Figure 3-1 and **Table 3-1** summarize the right-of-way widths for the Project Corridor. A summary of right-of-way conditions by jurisdiction is as follows:

Right of way widths along the Project Corridor range from 50 feet to 179 feet.

- In San Leandro, right of way widths along E. 14th Street are generally consistent, with a 66-foot right of way in downtown and a 100-foot right of way for the remainder of the roadway.
- In Alameda County, right of way widths along are consistent along E. 14th Street and Mission Boulevard, with a 100-foot right of way north of Mattox Road and a 110-foot right of way to the south.

- In Hayward, right of way widths along Mission Boulevard are generally consistent, with an 80-foot right of way north of Jackson Street and a 100-foot right of way to the south.
- In Union City, most of Mission Boulevard has a consistent 100-foot right of way, with some wider rights of way present for shorter distances (less than ½ mile).
- In Union City and Fremont, right of way widths along Decoto Road vary considerably, ranging from 50 feet to 145 feet. (These variations in the documented right of way do not correspond to changes in the existing as-built roadway cross section, which is more uniform. Therefore, additional right of way confirmation is recommended for this section as projects are advanced for implementation.)[1]
- In Fremont, most of Mission Boulevard has a 100-foot right of way; however, this width is not consistent. Wider rights of way are present for shorter distances (less than ½ mile). A narrower right of way of 66 to 70 feet is present around Driscoll Road.
- In Fremont, right of way widths along Fremont Boulevard vary significantly. In the section between Decoto Road and Mowry Avenue, widths range from 50 feet to 128 feet. The section from Mowry Avenue south to Grimmer Boulevard generally has right of way widths of 100 feet or more, with a narrower right of way found near Auto Mall Parkway. (These variations in the documented right of way do not correspond to changes in the as-built roadway cross section, which is more uniform. Therefore, additional right of way confirmation is recommended for this section as projects are advanced for implementation.)

Table 3-1. Project Corridor Right-of-Way Width

Roadway	Limits	Typical Right of Way Width	Number of Through Lanes (per direction)
San Leandro			
Davis St	San Leandro Blvd to E. 14th St	80' to 91'	2
E. 14th St	Davis St to 135th Ave 135th Ave to Fairmont Dr	66' 100'	1-2 2
San Leandro Blvd	Davis St to E. 14th St	96' to 113'	2

[1] Right of way confirmation includes title report research to determine whether the area is included in previous right of way dedications or roadway easements not shown on recorded maps. If the area is outside the legally defined right of way and no easement exists, right of way dedication or acquisition may be pursued.

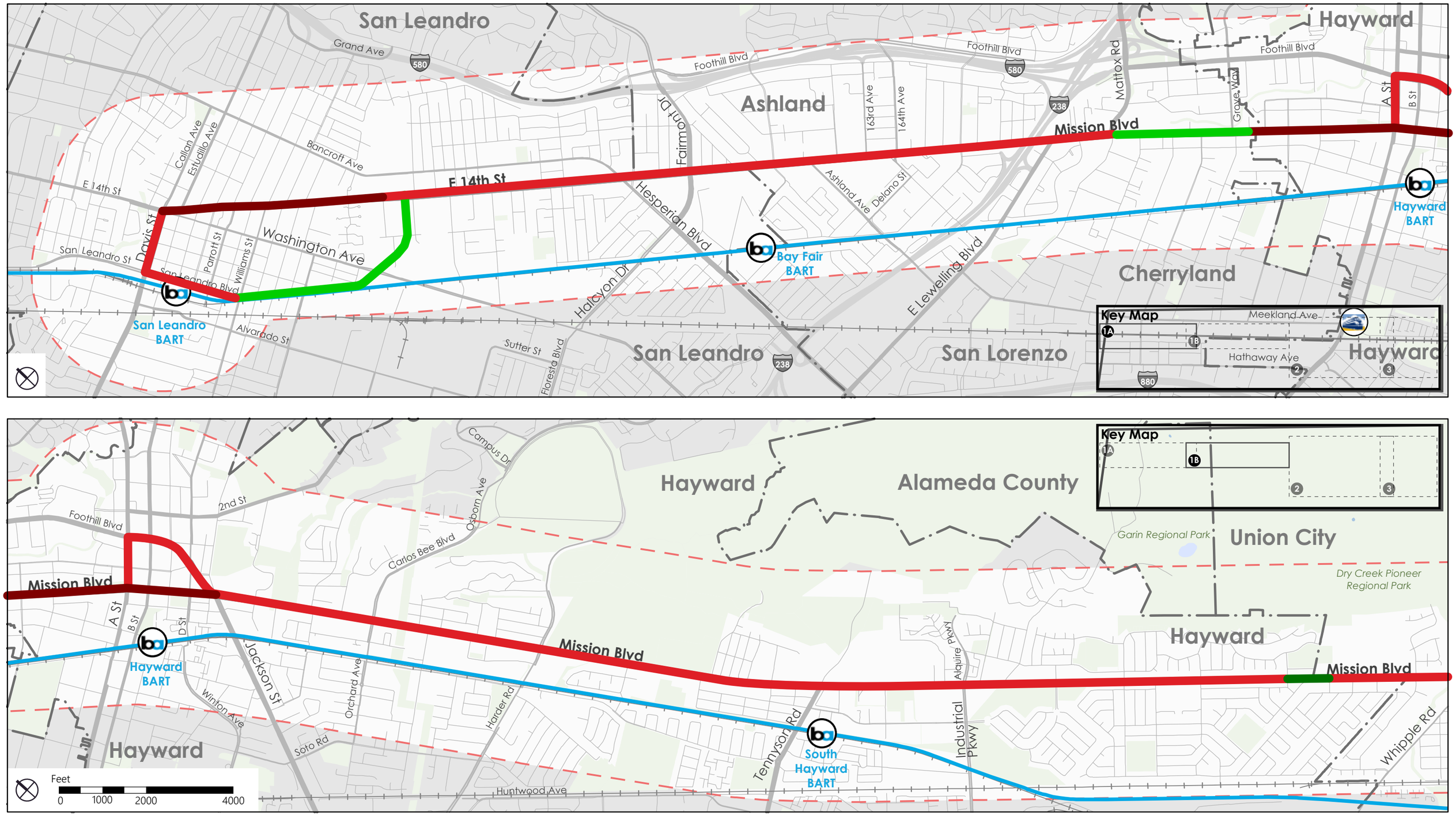
Table 3-1, continued. Project Corridor Right-of-Way Width

Roadway	Limits	Typical Right of Way Width	Number of Through Lanes (per direction)
	Alameda County		
E. 14th St	Fairmont Dr to Lewelling Blvd	100'	2
Mission Blvd	Lewelling Blvd to Mattox Rd	100'	2
	Mattox Rd to Rose St	110'	2
	Hayward		
Mission Blvd	Rose St to A St	80'	2
	A St to Foothill Blvd/ Jackson St	80'	4-5 (one-way)
A St	Mission Blvd to Foothill Blvd	80' to 94'	4 (one-way)
Foothill Blvd	A St to Mission Blvd	100'	5 (one-way)
Mission Blvd	Jackson St to Blanche St	100'	2
	Blanche St to Lexington Ave	150'	2
	Union City		
Mission Blvd	Lexington Ave to Holly Leaf Ln	100'	2-3
	Holly Leaf Ln to Chesapeake Dr	100' to 120'	2
Decoto Rd	Mission Blvd to 12th St	66'	2
	12th St to Alvarado Niles Rd	88'	2
	Alvarado Niles Rd to Perry Rd	66' to 83'	2
	Perry Rd to Royal Ann Dr/ Clover St	100' to 136'	2
	Royal Ann Dr/ Clover St to Alameda Creek	76'	2
	Fremont		
Mission Blvd	Chesapeake Dr to Gurdwara Ave	100' to 120'	2
	Gurdwara Ave to Santa Teresa Terr	100'	2-3
	Santa Teresa Terr to Dalgo Rd/ Mackintosh St	139' to 179'	2
	Dalgo Rd/ Mackintosh St to Ondina Dr/ Esparito Ave	111'	2
	Ondina Dr/ Esparito Ave to Palm Ave/ Mission Cielo Ave	66' to 70'	2
	Palm Ave/ Mission Cielo Ave to I-680 NB Ramps	104'	2
Decoto Rd	Alameda Creek to Brookmill Dr	76'	2-3
	Brookmill Dr to Mt Palomar Ct	134' to 145'	2-3
	Mt Palomar Ct to Fremont Blvd	50' to 100'	2-3
Fremont Blvd	Decoto Rd to Tamayo St	66' to 79'	2
	Tamayo St to Sunset Terr	85'	2-3
	Sunset Terr to Nicholet Ave	126'	2-3
	Nicholet Ave to Gilbraltar Dr	99'	2
	Gilbraltar Dr to Bonde Way	125 to 128'	2
	Bonde Way to Peralta Blvd	50' to 79'	2
	Peralta Blvd to Monroe Ave	101' to 116'	2
	Monroe Ave to Mowry Ave	80' to 96'	2
	Mowry Ave to Walnut Ave	128'	3
	Walnut Ave to Sundale Dr	66'	3
	Sundale Dr to N. Grimmer Blvd	127' to 146'	2-3
	N. Grimmer Blvd. to Blacow Rd	100' to 104'	2
	Blacow Rd to Delaware Dr	101' to 119'	2
	Washington Blvd to Delaware Dr	100' to 120'	2

Table 3-1, continued. Project Corridor Right-of-Way Width

Roadway	Limits	Typical Right of Way Width	Number of Through Lanes (per direction)
Fremont			
Fremont Blvd	Delaware Dr to Ice House Terrace	79' to 85'	2
	Ice House Terrace to S Grimmer Blvd	108' to 117'	2
S Grimmer Blvd	Fremont Blvd to Warm Springs Blvd	116'	2
Warm Springs Blvd	S Grimmer Blvd to Warm Springs BART	66'	2

Sources: Alameda County Property Appraiser, Caltrans



Legend:

- BART Station
- BART Above/Below Ground
- Capitol Corridor Station
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial/Collector/Local
- Water Bodies
- Parks/Open Space

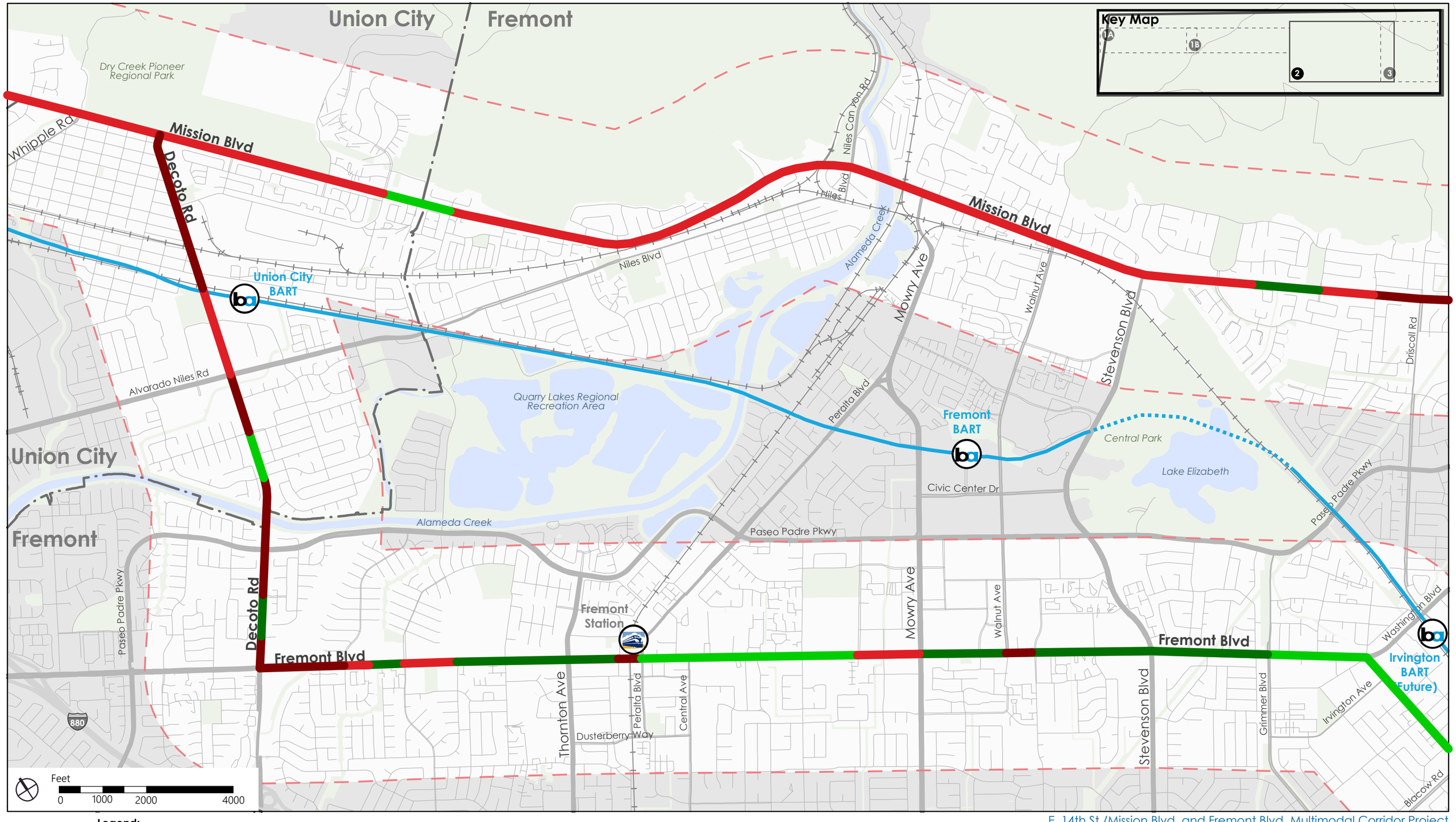
RIght-of-Way Ranges

- 80' or less
- 81' - 100'
- 101' - 120'
- 121'or more

E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

Figure 3-1a Right-of-Way

June 2018



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- Water Bodies
- Parks/Open Space

RIght-of-Way Ranges

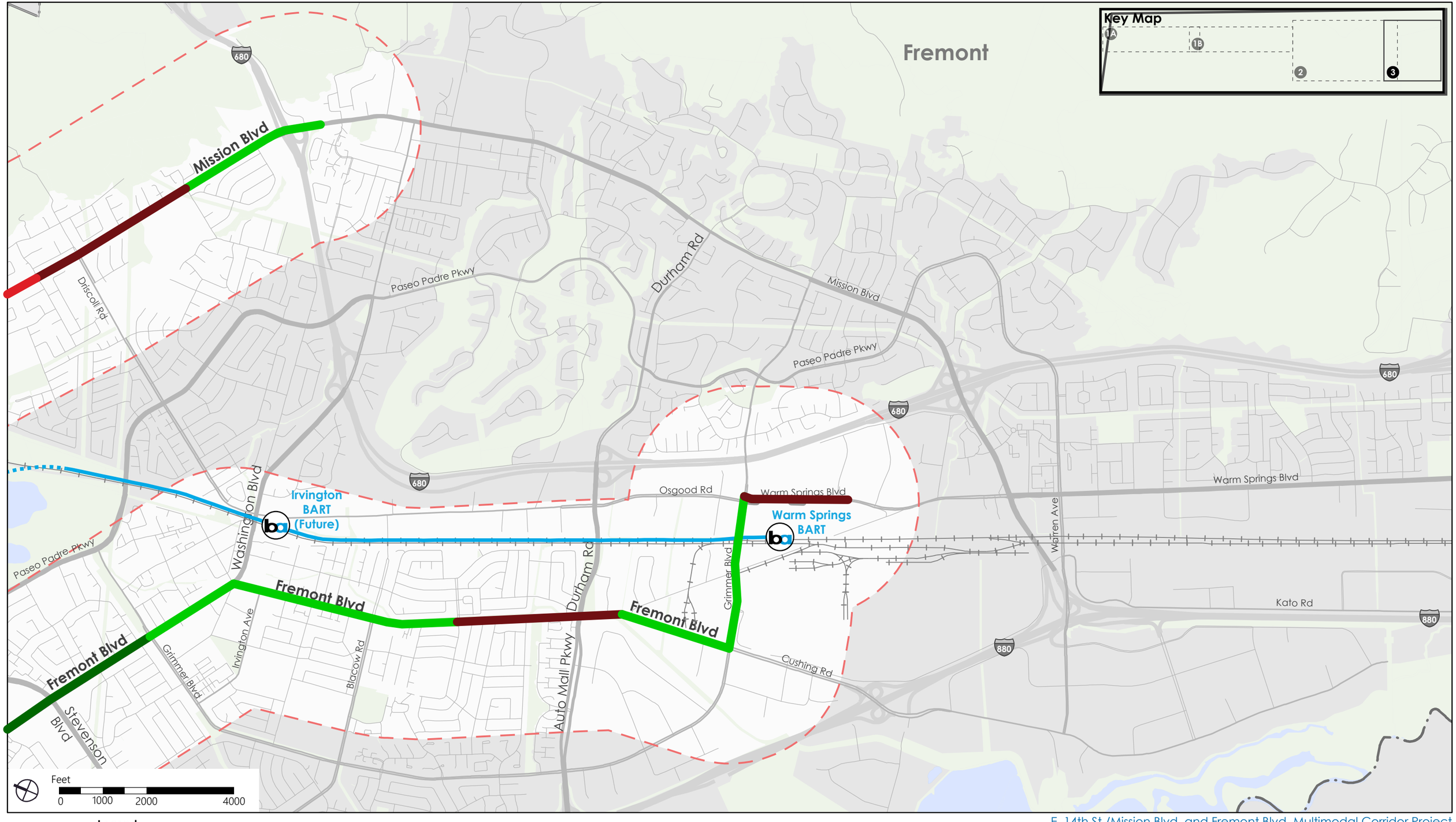
- 80' or less
- 81' - 100'
- 101' - 120'
- 121'or more

ALAMEDA County Transportation Commission

E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

Figure 3-1b Right-of-Way

June 2018



Legend:

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- Water Bodies
- Parks/Open Space

RIght-of-Way Ranges

- 80' or less
- 81' - 100'
- 101' - 120'
- 121'or more

E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

ALAMEDA County Transportation Commission

Figure 3-1c Right-of-Way

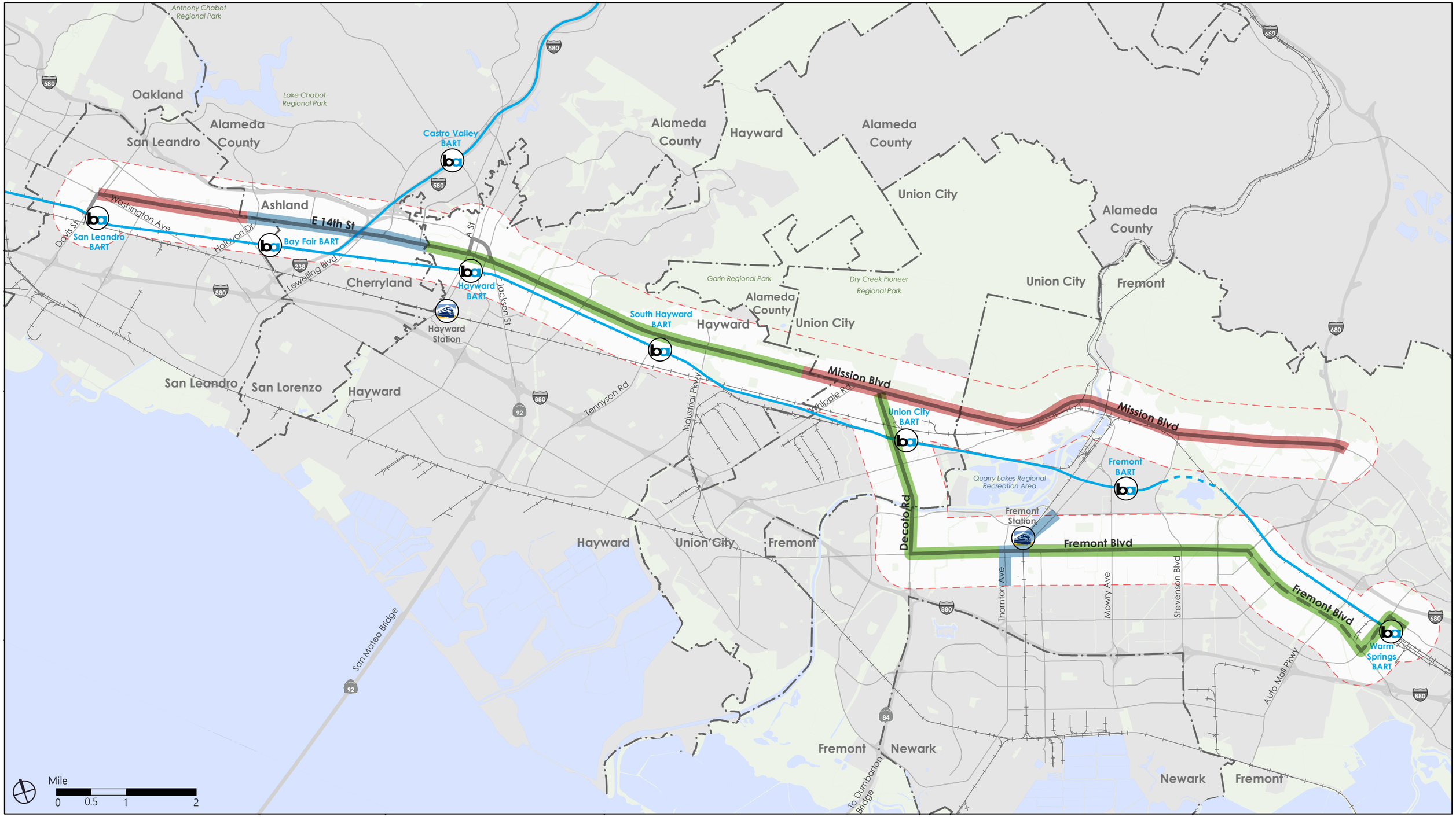
June 2018

3.2 ROADWAY JURISDICTION

The roadway ownership and maintenance responsibility for the Project Corridor will inform the coordination activities required to implement proposed improvements. For the Project Corridor, the roadway ownership is split between Caltrans and local jurisdictions depending on the location. **Figure 3-2** shows the roadway jurisdiction for the Project Corridor, which is as follows:

Roadway ownership for the Project Corridor is split between Caltrans and local jurisdictions depending on the location.

- **San Leandro:** E. 14th Street in San Leandro is under Caltrans jurisdiction. The City of San Leandro is currently considering whether to initiate relinquishment activities.
- **Alameda County:** E. 14th Street and Mission Boulevard in Alameda County are under Caltrans jurisdiction, but relinquishment activities are in process.
- **Hayward:** Mission Boulevard in Hayward is under City of Hayward jurisdiction.
- **Union City:** Mission Boulevard in Union City is under Caltrans jurisdiction. Decoto Road in Union City is under City of Union City jurisdiction.
- **Fremont:** Mission Boulevard in Fremont is under Caltrans jurisdiction. Decoto Road in Fremont is under City of Fremont jurisdiction. Fremont Boulevard is under City of Fremont jurisdiction, except for the segment from Thornton Avenue and Peralta Avenue, where relinquishment is proposed.



Legend:

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- Capitol Corridor Stations
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial
- Water Bodies
- Parks/Open Space

Caltrans Jurisdiction Status

- Caltrans R/W
- Relinquishment in Progress
- Not Under Caltrans Jurisdiction

E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

Figure 3-2
Caltrans Maintained Right-of-Way and Relinquishment Statuses

June 2018

3.3 TRAFFIC SIGNAL SYSTEMS

Traffic signals influence mobility conditions for all modes along the Project Corridor – automobiles, bicyclists, pedestrians, and transit vehicles. The Project Corridor has 120 signalized intersections over its length, as shown in **Figure 3-3** and listed in **Table 3-2**. An inventory of traffic signal infrastructure was completed to identify improvement opportunities to benefit one or more modes along the Project Corridor. The signal inventory represents data as provided by the five local jurisdictions and Caltrans.

The Project Corridor has 120 signalized intersections over its length.

The traffic signal inventory addresses the following components:

- **Controller type** – the signal controller type influences the type of software that is used. Advanced signal controllers and software comply with the standards of the National Transportation Communications for Intelligent Transportation Systems (NTCIP), as this allows for the integration of different signal systems between jurisdictions.
- **Signal interconnect** – signals may be connected to each other using either fiber or copper. This interconnect allows for more efficient signal timing and improved traffic flow.
- **Video vehicle detection** – signals may detect vehicles and bicyclists using loop detectors within the pavement or video cameras mounted above ground. Video detection is preferred, as it is less disruptive to pavement and provides better detection of both vehicles and bicyclists.
- **Pedestrian detection** – the presence of pedestrian push-buttons allows for the detection of pedestrians at intersections. Pedestrian push buttons allow for more efficient signal timing, as pedestrian signal phases can be activated based on pedestrian demand.

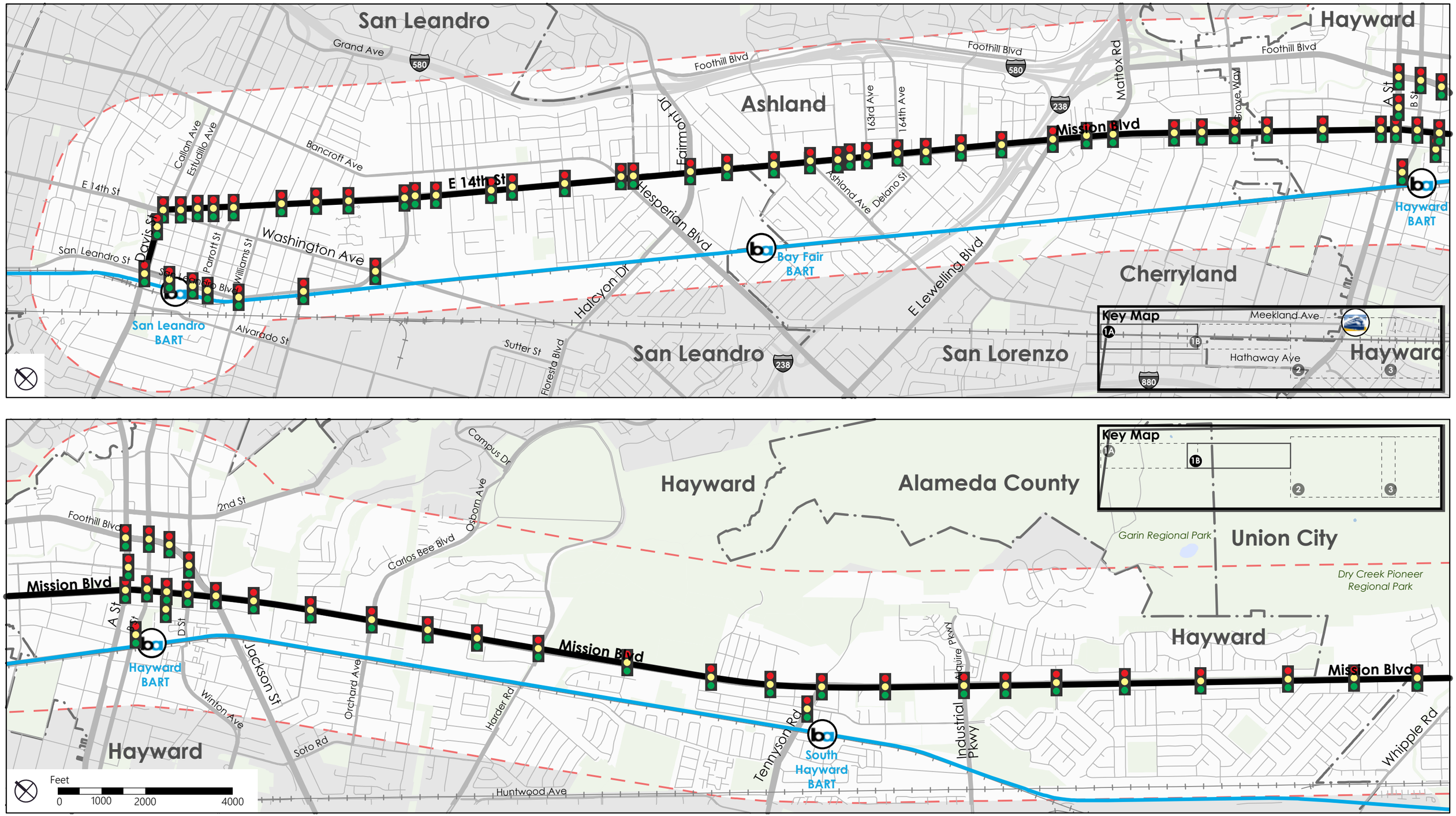
Key findings from the signal infrastructure inventory are as follows:

- **Controller type** – the majority of the signal controllers along the Project Corridor are not NTCIP-compliant. Of the 15 NTCIP-compliant signals, six are located along San Leandro Boulevard, six are located along Fremont Boulevard, and the remainder are located along Mission Boulevard in Hayward and Fremont.
- **Signal interconnect** – The majority of traffic signals) are interconnected through either fiber or copper. Almost all of the 50 signals with fiber interconnect are maintained by local jurisdictions along the Project Corridor.
- **Video vehicle detection** – the majority of traffic signals do not have video vehicle detection. Of the 38 signals with

video vehicle detection, six are located along San Leandro Boulevard, 22 are located along the Project Corridor in Hayward, and the remainder are located along the Project Corridor in Fremont.

- **Pedestrian detection** – almost all of the traffic signals have pedestrian detection. All signalized intersections maintained by local jurisdictions have pedestrian detection. As discussed later in this section, Caltrans has programmed or proposed pedestrian signal improvements at Project Corridor intersections at San Leandro and Fremont.

The majority of traffic signals along the Project Corridor lack video detection and/or have outdated hardware.



Legend:

- BART Station
- BART Above/Below Ground
- Capitol Corridor Station
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial/Collector/Local
- Water Bodies
- Parks/Open Space
- Signalized Intersections

E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

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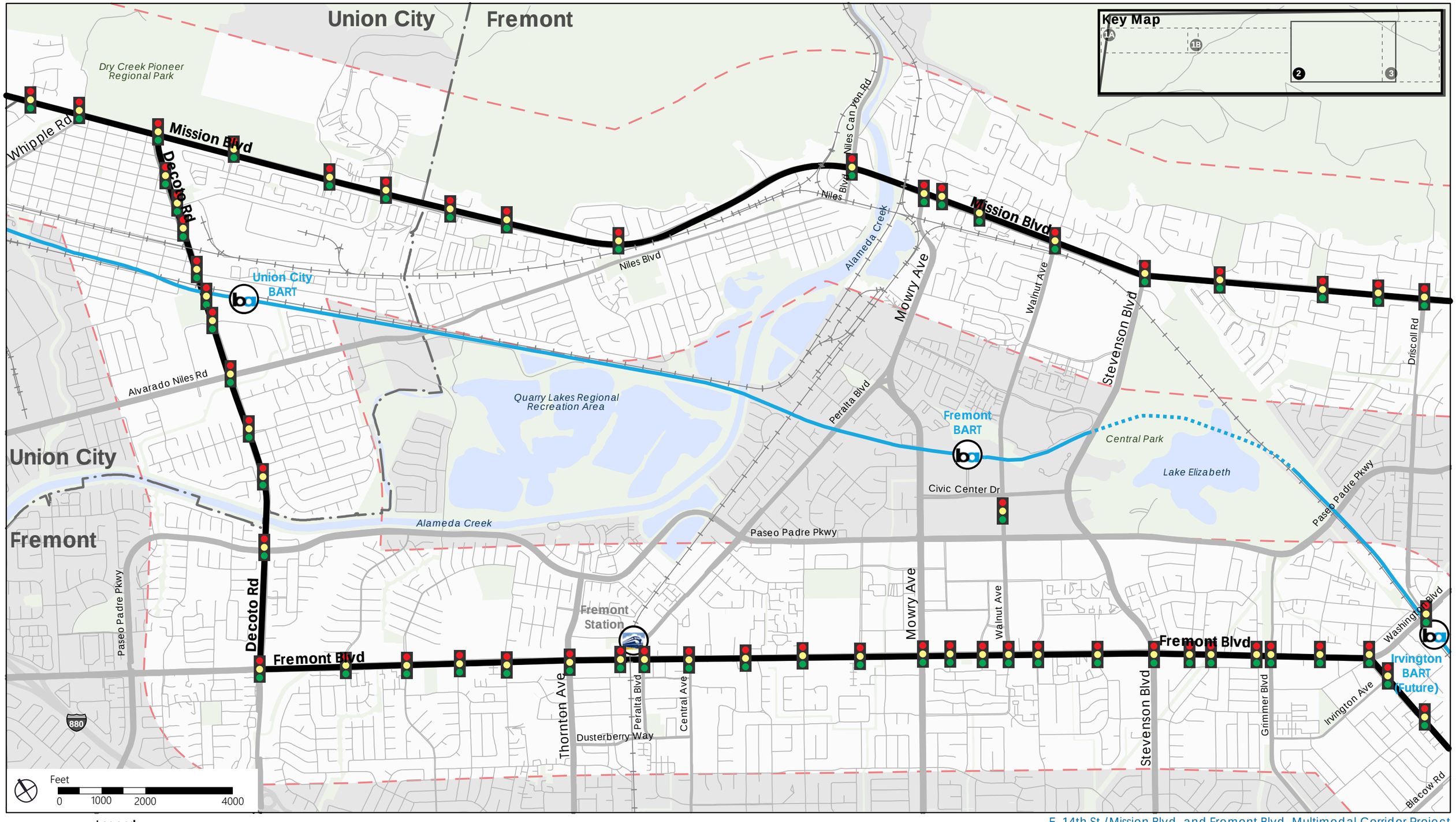
Figure 3-3a
Signalized Intersections

September 2018



E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

Legend:

- BART Station
- BART Above/Below Ground
- Capitol Corridor Station
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial/Collector/Local
- Water Bodies
- Parks/Open Space
- Signalized Intersections

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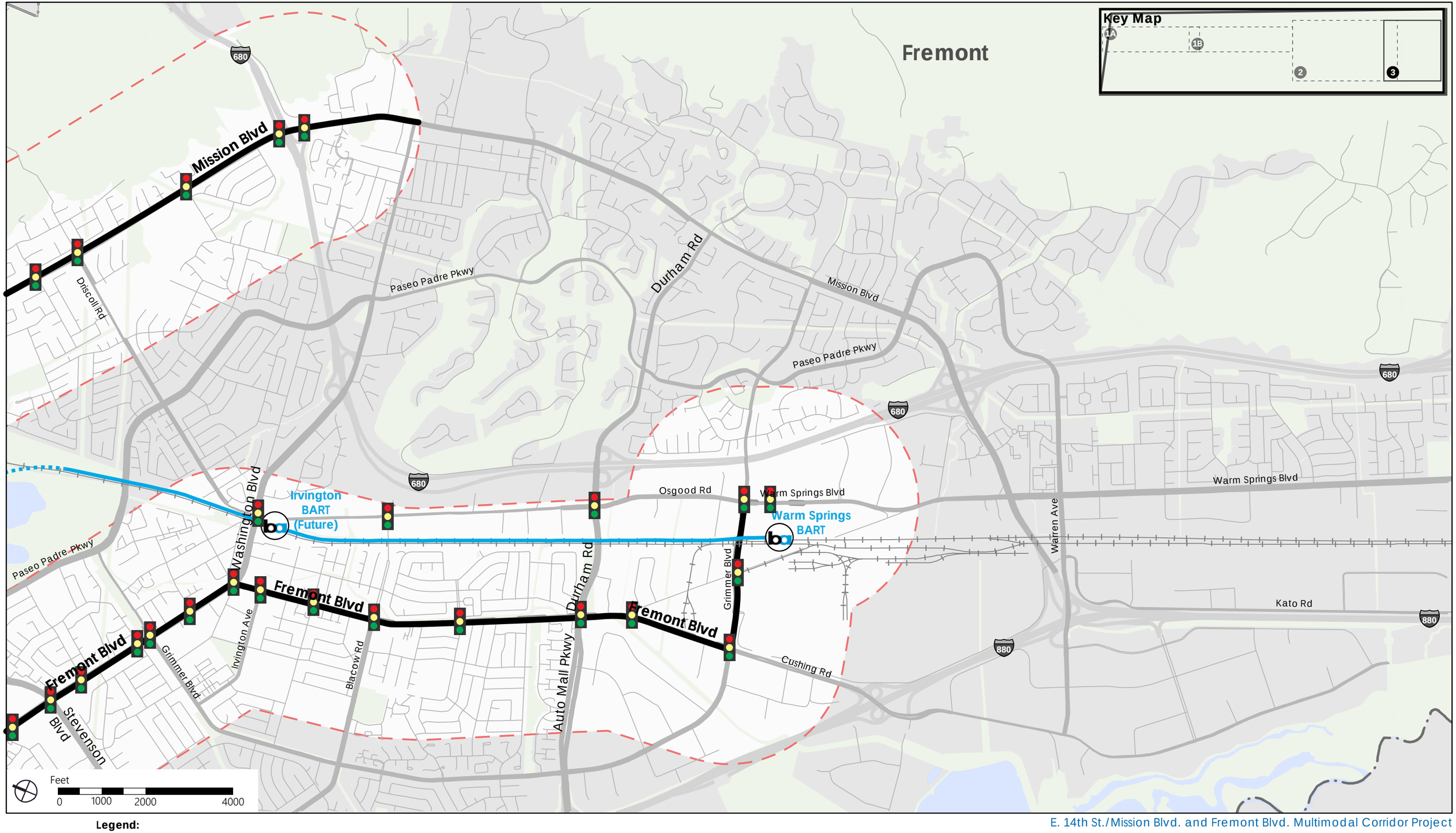
Figure 3-3b
Signalized Intersections

September 2018



E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

Legend:

- BART Station
- BART Above/Below Ground
- Capitol Corridor Station
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial/Collector/Local
- Water Bodies
- Parks/Open Space
- Signalized Intersections

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Figure 3-3c
Signalized Intersections

September 2018

Table 3-2. Traffic Signal Inventory

Intersection and Maintenance Entity			Advanced controller? (1)	Fiber interconnect ?	Video vehicle detection ?	Pedestrian detection ?
San Leandro						
E 14th St	Davis St.	Caltrans	Yes	No	No	Yes
E 14th St	Estudillo Ave.	Caltrans	Yes	No	No	Yes
E 14th St	Joaquin Ave.	Caltrans	Yes	No	No	Yes
E 14th St	Juana Ave.	Caltrans	Yes	No	No	Yes
E 14th St	Parrott St.	Caltrans	Yes	No	No	Yes
E 14th St	Sybil Ave.	Caltrans	Yes	No	No	Yes
E 14th St	Estabrook St.	Caltrans	Yes	No	No	Yes
E 14th St	San Leandro Blvd.	Caltrans	Yes	No	No	Yes
San Leandro Blvd.	Davis St.	Caltrans	Yes	No	No	Yes
San Leandro Blvd.	North BART Entrance	City	Yes	Yes	Yes	Yes
San Leandro Blvd.	Juana Ave.	City	Yes	Yes	Yes	Yes
San Leandro Blvd.	Parrott St.	City	Yes	Yes	Yes	Yes
San Leandro Blvd.	Williams St.	City	Yes	Yes	Yes	Yes
San Leandro Blvd.	Marina Blvd.	City	Yes	Yes	Yes	Yes
San Leandro Blvd.	Hudson Ln.	City	Yes	Yes	Yes	Yes
E 14th St	136th Ave.	Caltrans	Yes	No	No	Yes
E 14th St	138th Ave.	Caltrans	Yes	No	No	Yes
E 14th St	143rd Ave.	Caltrans	Yes	No	No	Yes
E 14th St	148th Ave.	Caltrans	Yes	No	No	Yes
E 14th St	Bancroft Ave.	Caltrans	Yes	No	No	Yes
E 14th St	150th Ave.	Caltrans	Yes	No	No	Yes
E 14th St	Fairmont Dr.	Caltrans	Yes	No	No	Yes
Alameda County						
E 14th St	Bayfair Dr.	Caltrans	Yes	No	No	Yes
E 14th St	159th Ave.	Caltrans	Yes	No	No	Yes
E 14th St	Ashland Ave.	Caltrans	Yes	No	No	Yes
E 14th St	162nd Ave.	Caltrans	Yes	No	No	Yes

(1) Advanced signal controllers are classified as those that are based on the latest industry standards to support joint corridor operations.
(2) As of March 2019, Caltrans plans to install advanced signal controllers in the near term for intersections within its portions of the corridor.

Table 3-2. Traffic Signal Inventory, continued

Intersection and Maintenance Entity			Advanced controller? (1)	Fiber interconnect ?	Video vehicle detection ?	Pedestrian detection?
Alameda County, continued						
E 14th St	163rd Ave.	Caltrans	Yes	No	No	Yes
E 14th St	164th Ave.	Caltrans	Yes	No	No	Yes
E 14th St	165th Ave.	Caltrans	Yes	No	No	Yes
E 14th St	167th Ave.	Caltrans	Yes	No	No	Yes
E 14th St	170th Ave.	Caltrans	Yes	No	No	Yes
Mission Blvd	E Lewelling Blvd.	Caltrans	Yes	No	No	Yes
Mission Blvd	Mattox Rd.	Caltrans	Yes	No	No	Yes
Mission Blvd	Medford Ave.	Caltrans	Yes	No	No	Yes
Mission Blvd	Grove Way	Caltrans	Yes	Np	No	Yes
Hayward						
Mission Blvd	Sunset Blvd	City	No	No	Yes	Yes
Mission Blvd	A St	City	No	Yes	Yes	Yes
Mission Blvd	B St	City	No	Yes	Yes	Yes
Mission Blvd	C St	City	No	Yes	Yes	Yes
Mission Blvd	D St.	City	No	Yes	Yes	Yes
Main St	A St	City	No	Yes	Yes	Yes
Foothill Blvd	A St	City	No	Yes	Yes	Yes
Foothill Blvd	B St	City	No	Yes	Yes	Yes
Foothill Blvd	C St	City	No	Yes	Yes	Yes
Foothill Blvd	D St.	City	No	Yes	Yes	Yes
Mission Blvd	Jackson St	City	No	Yes	Yes	Yes
Mission Blvd	Fletcher Ln	City	No	Yes	Yes	Yes
Mission Blvd	Sycamore Ave	City	No	Yes	Yes	Yes
Mission Blvd	Carlos Bee Blvd	City	No	Yes	Yes	Yes
Mission Blvd	Berry Ave	City	No	Yes	Yes	Yes
Mission Blvd	Harder Rd	City	No	Yes	Yes	Yes

(1) Advanced signal controllers are classified as those that are based on the latest industry standards to support joint corridor operations.
(2) As of March 2019, Caltrans plans to install advanced signal controllers in the near term for intersections within its portions of the corridor.

Table 3-2. Traffic Signal Inventory, continued

Intersection and Maintenance Entity			Advanced controller? (1)	Fiber interconnect ?	Video vehicle detection ?	Pedestrian detection ?
Hayward, continued						
Mission Blvd	Sorrenson Rd	City	No	Yes	Yes	Yes
Mission Blvd	Calhoun St	City	No	Yes	Yes	Yes
Mission Blvd	Hancock St	City	No	Yes	Yes	Yes
Mission Blvd	Tennyson Rd	City	No	Yes	Yes	Yes
Mission Blvd	Valle Vista Ave	City	No	Yes	Yes	Yes
Mission Blvd	Industrial Pkwy	City	No	Yes	Yes	Yes
Mission Blvd	Garin Ave	City	No	Yes	No	Yes
Mission Blvd	Arrowhead Wy	City	Yes	Yes	No	Yes
Mission Blvd	Fairway St	City	No	Yes	No	Yes
Mission Blvd	Gresel St	City	Yes	Yes	No	Yes
Mission Blvd	Lafayette Ave	City	No	Yes	No	Yes
Union City						
Mission Blvd	Tamarack Dr	Caltrans	Yes	No	No	Yes
Mission Blvd	Whipple Rd	Caltrans	Yes	No	No	Yes
Mission Blvd	Decoto Rd.	Caltrans	Yes	No	No	Yes
Mission Blvd	Daggett Ave.	Caltrans	Yes	No	No	Yes
Mission Blvd	Holly Leaf Ln.	Caltrans	Yes	No	No	Yes
Mission Blvd	7th St.	Caltrans	Yes	No	No	Yes
Decoto Rd	5th St.	City	No	Yes	No	Yes
Decoto Rd	7th St.	City	No	Yes	No	Yes
Decoto Rd	11th St.	City	No	Yes	No	Yes
Decoto Rd	Station Way	City	No	Yes	No	Yes
Decoto Rd	Union Square	City	No	Yes	No	Yes
Decoto Rd	Perry Rd.	City	No	Yes	No	Yes
Decoto Rd	Royal Ann Dr.	City	No	Yes	No	Yes

(1) Advanced signal controllers are classified as those that are based on the latest industry standards to support joint corridor operations.
(2) As of March 2019, Caltrans plans to install advanced signal controllers in the near term for intersections within its portions of the corridor.

Table 3-2. Traffic Signal Inventory, continued

Intersection and Maintenance Entity			Advanced controller? (1)	Fiber interconnect ?	Video vehicle detection ?	Pedestrian detection ?
Fremont, continued						
Decoto Rd	Paseo Padre Pkwy.	City	No	Yes	No	Yes
Decoto Rd	Fremont Blvd.	City	No	Yes	No	Yes
Fremont Blvd	Tamayo St.	City	No	Yes	Yes	Yes
Fremont Blvd	Nicholet Ave.	City	No	Yes	Yes	Yes
Fremont Blvd	Gibraltar Dr.	City	No	Yes	Yes	Yes
Fremont Blvd	Alder Ave.	City	No	Yes	Yes	Yes
Fremont Blvd	Thornton Ave.	Caltrans	Yes	No	No	Yes
Fremont Blvd	Peralta Blvd.	Caltrans	Yes	No	No	Yes
Fremont Blvd	Eggers Dr.	City	No	Yes	Yes	Yes
Fremont Blvd	Country Dr.	City	No	Yes	Yes	Yes
Fremont Blvd	Mowry Ave.	City	Yes	Yes	No	Yes
Fremont Blvd	Capitol Ave.	City	Yes	Yes	No	Yes
Fremont Blvd	Beacon Ave.	City	Yes	Yes	No	Yes
Fremont Blvd	Walnut Ave.	City	Yes	Yes	No	Yes
Fremont Blvd	Sundale Dr.	City	Yes	Yes	No	Yes
Fremont Blvd	Stevenson Blvd.	City	No	Yes	No	Yes
Fremont Blvd	Mission View Dr	City	No	Yes	No	Yes
Fremont Blvd	Eugene St.	City	No	Yes	No	Yes
Fremont Blvd	Grimmer Blvd.	City	No	Yes	No	Yes
Fremont Blvd	Chapel Way	City	No	Yes	No	Yes
Fremont Blvd	Washington Blvd	City	No	Yes	No	Yes
Fremont Blvd	Carol Ave.	City	No	Yes	No	Yes
Fremont Blvd	Delaware Dr.	City	No	Yes	No	Yes

(1) Advanced signal controllers are classified as those that are based on the latest industry standards to support joint corridor operations.

(2) As of March 2019, Caltrans plans to install advanced signal controllers in the near term for intersections within its portions of the corridor.

Table 3-2. Traffic Signal Inventory, continued

Intersection and Maintenance Entity			Advanced controller? (1)	Fiber interconnect ?	Video vehicle detection ?	Pedestrian detection ?
Fremont, continued						
Fremont Blvd	Old Warm Springs Blvd.	City	Yes	Yes	Yes	Yes
Fremont Blvd	S. Grimmer Blvd.	City	No	Yes	No	Yes
Warm Springs Blvd.	Grimmer Blvd.	City	No	Yes	No	Yes
Washing-ton Blvd	Roberts Ave	City	No	Yes	No	Yes
Washing-ton Blvd	Osgood Rd.	City	No	Yes	Yes	Yes
Osgood Rd	Blacow Rd	City	No	Yes	No	Yes
Osgood Rd	Auto Mall Pkwy	City	No	Yes	No	Yes
Osgood Rd	Wal-Mart Entrance	City	No	Yes	No	Yes

(1) Advanced signal controllers are classified as those that are based on the latest industry standards to support joint corridor operations.
(2) As of March 2019, Caltrans plans to install advanced signal controllers in the near term for intersections within its portions of the corridor.

3.4 PAVEMENT CONDITION

The condition of pavement influences the circulation and safety for all roadway users. Poor pavement can negatively affect motorists, transit vehicles, and bicyclists.
summarizes pavement conditions for the Project Corridor based on data from the Metropolitan Transportation Commission (MTC) Vital Signs database.

- For streets under local jurisdiction, the 2017 Pavement Condition Index (PCI) is shown. The index ranges from 0 to 100, with 0 representing a failed road and 100 representing a brand-new facility. Segment PCI data is collected on a rolling basis but is imputed for interim years based on facility age and treatments using the MTC StreetSaver system.
- For streets under Caltrans jurisdiction, Highway Pavement Condition is shown. Data indicates whether a portion of highway is classified by Caltrans as distressed or is in good condition. The current data set is for the year 2015.

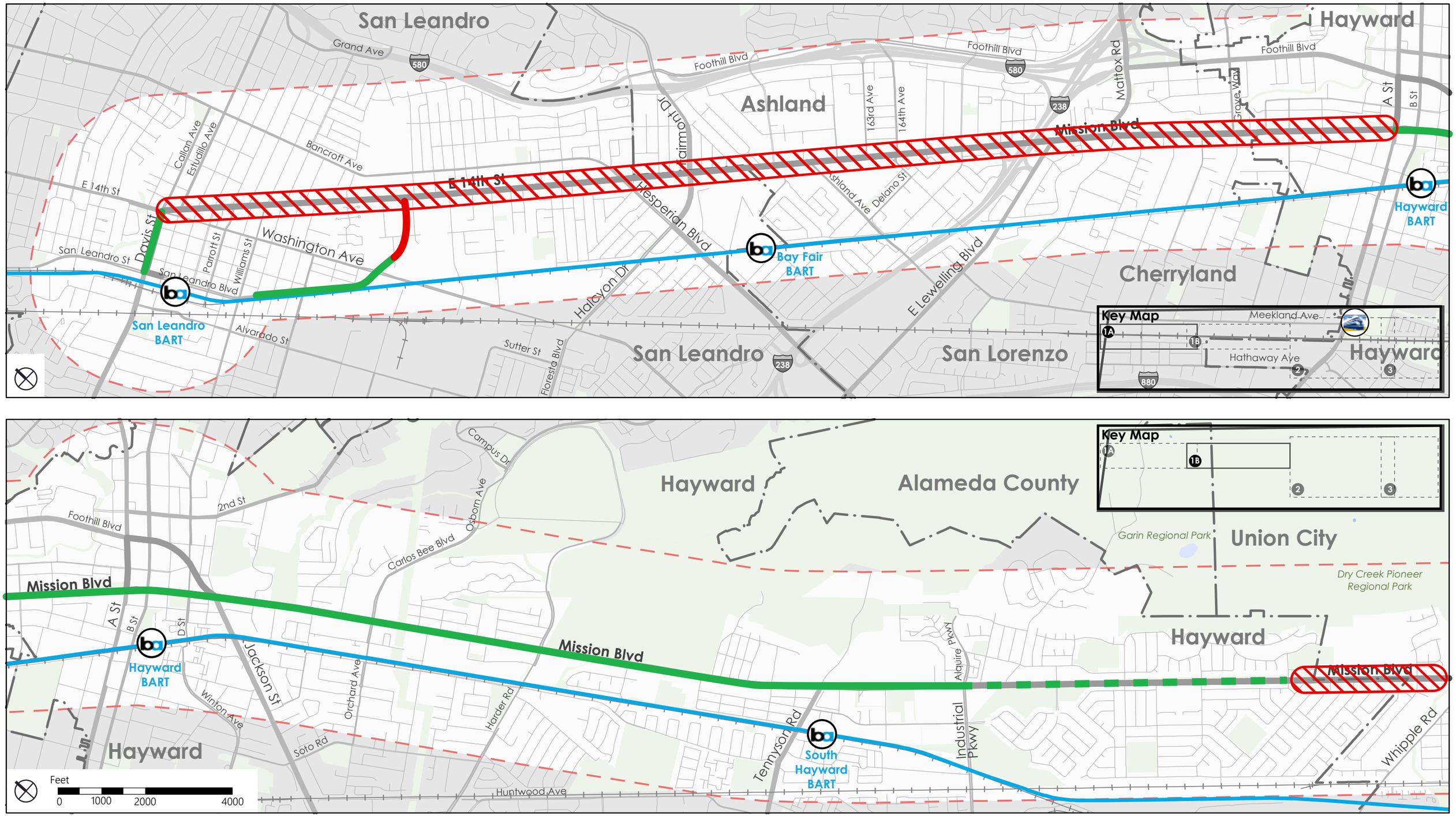
Poor or distressed pavement is found along much of the Project Corridor.

Key findings from the pavement condition inventory are as follows:

- **San Leandro:** E. 14th Street through San Leandro has distressed pavement as classified by Caltrans.
- **Alameda County:** E. 14th Street and Mission Boulevard have distressed pavement as classified by Caltrans.

- **Hayward:** Mission Boulevard through Hayward has fair to good pavement conditions from A Street south. Mission Boulevard north of A Street has distressed pavement as classified by Caltrans.
- **Union City:** Southbound Mission Boulevard through Union City has distressed pavement; northbound Mission Boulevard through Union City has acceptable pavement conditions. Decoto Road through Union City has fair to good pavement conditions.
- **Fremont:** Mission Boulevard through Fremont has distressed pavement as classified by Caltrans. Decoto Road and Fremont Boulevard through Fremont have fair to good pavement conditions.

As discussed later in this section, however, pavement improvements are programmed or proposed for sections of the Project Corridor in San Leandro.



Legend:

- BART Station
- BART Above/Below Ground
- Capitol Corridor Station
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial/Collector/Local
- Water Bodies
- Parks/Open Space
- Poor/Failed (PCI 0-49)
- At Risk (PCI 50-59)
- Good/Fair (PCI 60-79)
- Excellent/Very Good (PCI 80-100)
- Project Under Construction

Caltrans Pavement Condition

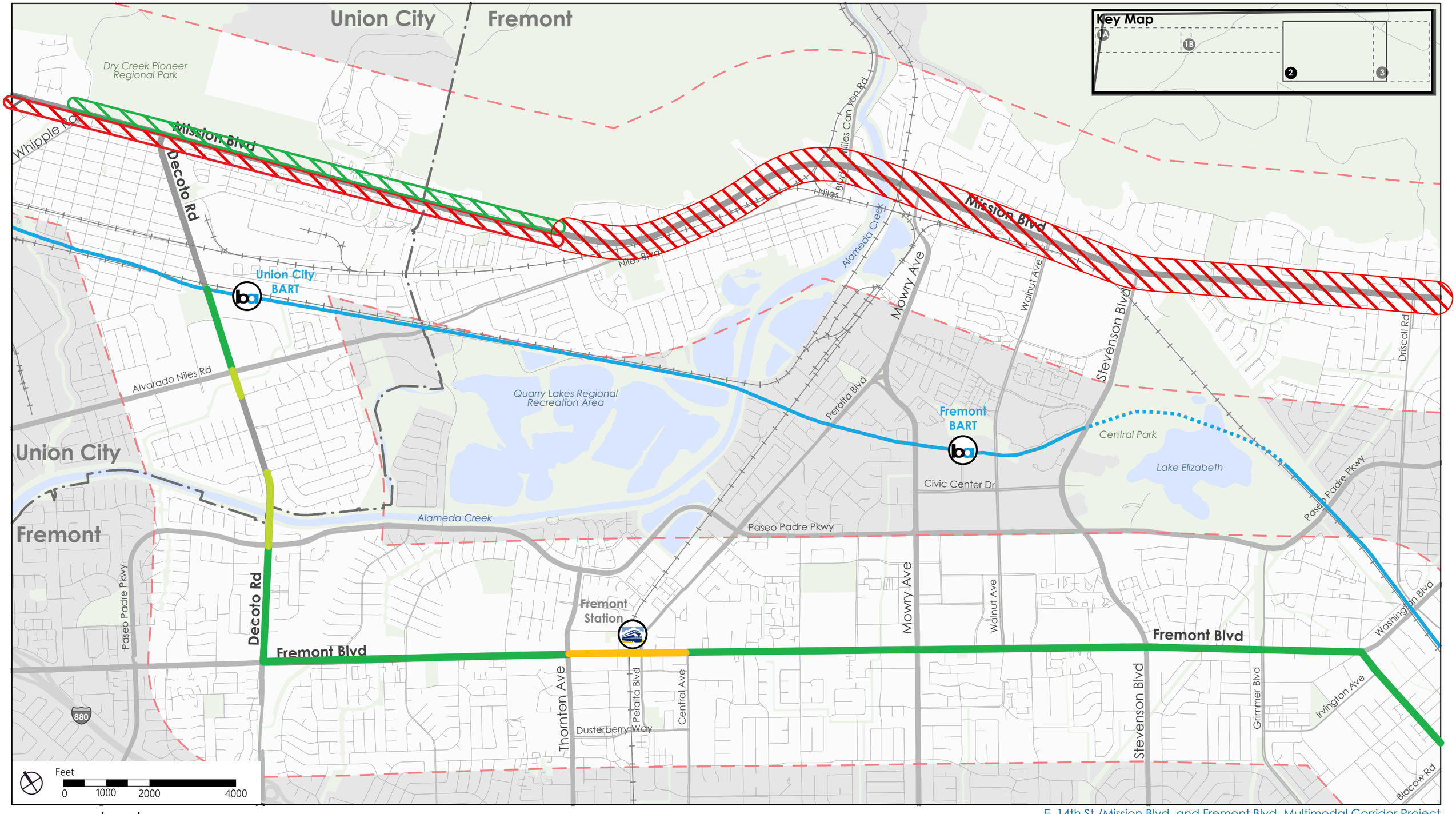
- Distressed
- Good/Excellent

ALAMEDA County Transportation Commission

E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

Figure 3-4a
Pavement Condition

September 2018



E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

Legend:

- BART Station
- BART Above/Below Ground
- Capitol Corridor Station
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial/Collector/Local
- Water Bodies
- Parks/Open Space
- Poor/Failed (PCI 0-49)
- At Risk (PCI 50-59)
- Good/Fair (PCI 60-79)
- Excellent/Very Good (PCI 80-100)
- Project Under Construction

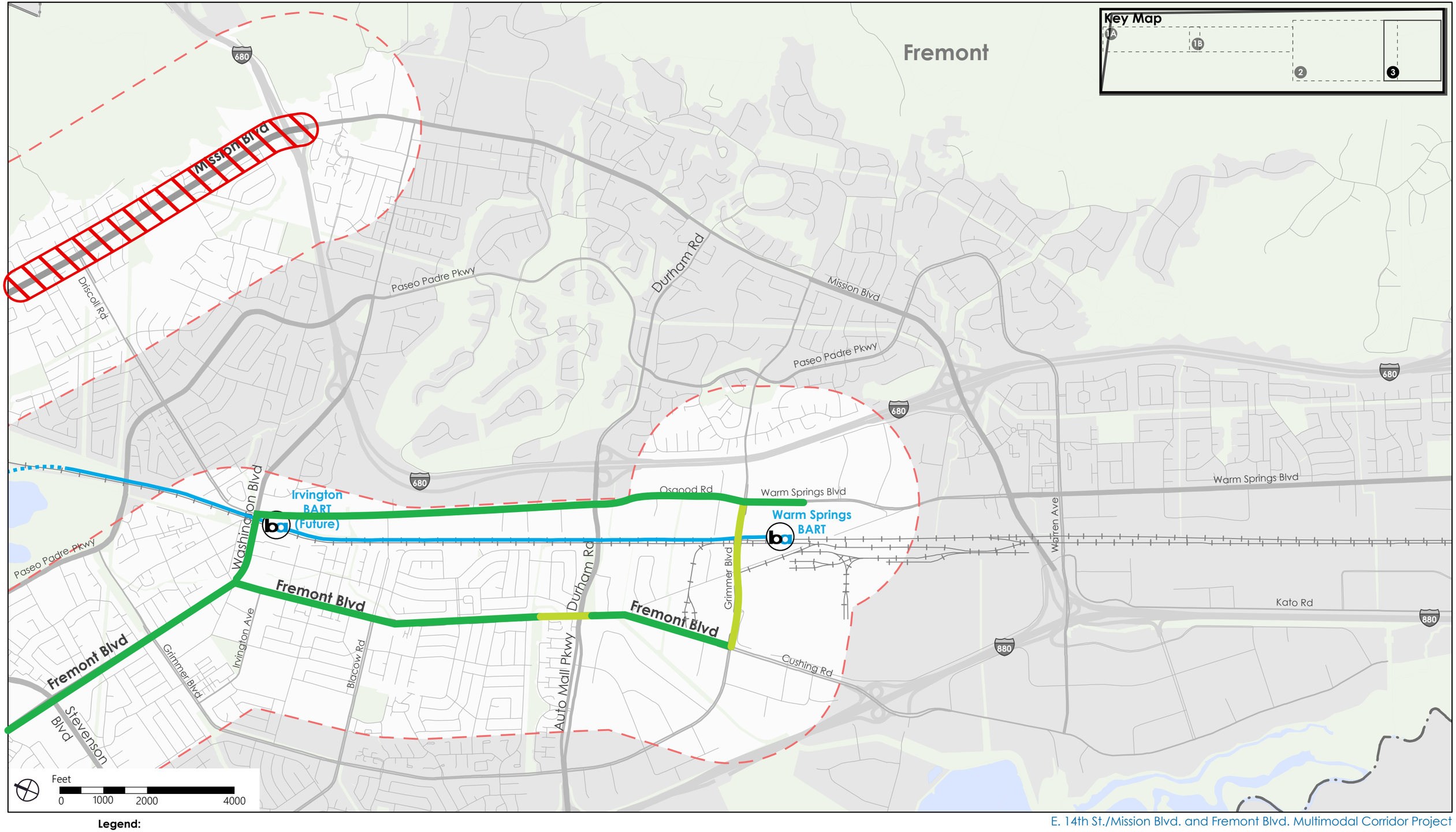
Caltrans Pavement Condition

- Distressed
- Good/Excellent

ALAMEDA County Transportation Commission

Figure 3-4b
Pavement Condition

February 2019



E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

Legend:

- BART Station
- BART Above/Below Ground
- Capitol Corridor Station
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial/Collector/Local
- Water Bodies
- Parks/Open Space
- Poor/Failed (PCI 0-49)
- At Risk (PCI 50-59)
- Good/Fair (PCI 60-79)
- Excellent/Very Good (PCI 80-100)
- Project Under Construction

Caltrans Pavement Condition

- Distressed
- Good/Excellent

ALAMEDA County Transportation Commission

Figure 3-4c
Pavement Condition

February 2019

3.5 PROGRAMMED AND PROPOSED PROJECTS

Programmed and proposed capital improvement projects are identified for the Project Corridor to identify near-term coordination opportunities with ongoing efforts. **Table 3-3** and **Figure 3-5** summarize programmed and proposed capital infrastructure improvements within the Study Area. Improvements were identified through local jurisdictions' Capital Improvement Programs and through Caltrans' work program.

Near-term infrastructure projects are programmed or proposed throughout the Project Corridor.

Key findings are as follows:

- Alameda County, Hayward, and Fremont each have near-term corridor improvement projects that are in design or under construction.
- Streetscape improvement projects have been identified for portions of the Project Corridor in San Leandro and Alameda County.
- Caltrans has programmed or proposed several pavement improvement and pedestrian safety improvements throughout the Project Corridor. Improvements include pavement rehabilitation, repaving, accessible pedestrian signals, ADA curb ramps, and pedestrian hybrid beacons.

Table 3-3. Programmed and Proposed Projects

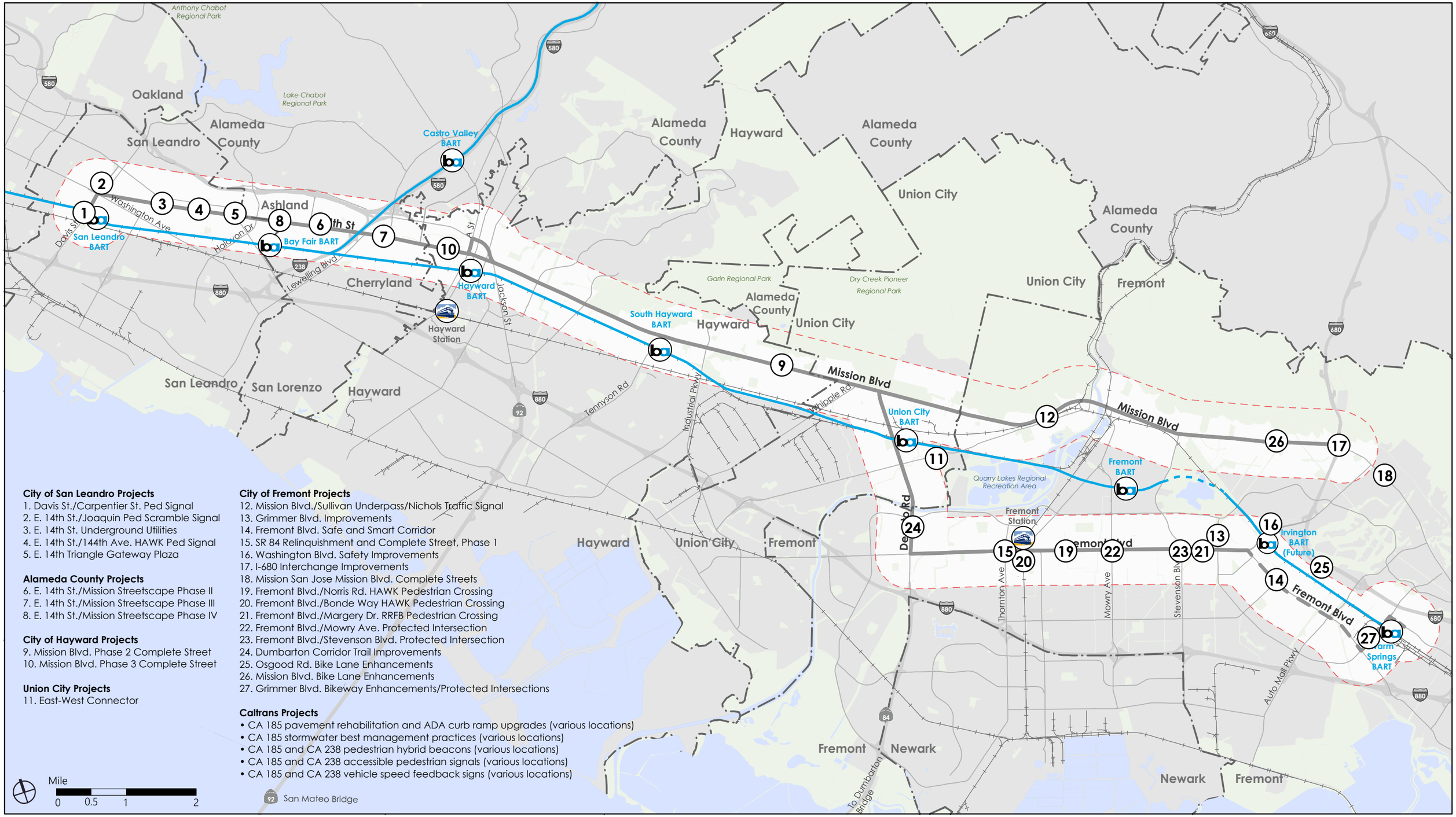
Project Name	Location	Project Description (from Capital Improvement Program)	Status
San Leandro			
Davis/ Carpentier Ped Signal	Davis Street at Carpentier St.	Pedestrian Signal	Funded
E. 14th/ Joaquin Signal Improvements	E 14th St. at Joaquin Ave.	Install ped scramble signal	Funded
E. 14th Underground Utility	E 14th St. from Maud Ave. to Bancroft Ave.	Began in 2004. Last segment of East 14th Street within the City; Undergrounding of utilities; Maud Ave to Bancroft	Funded
E. 14th/144th Ped Signal	E 14th St./144th Ave.	Install HAWK ped signal	Funded
E. 14th Triangle Gateway	E 14th Ave./150th/ Hesperian/Bancroft	Improve the East 14th Street Triangle with landscaping, art, and walkways. The current estimate for the cost of improvements is $975,000, scope of work will be adjusted to fit the budget if no other funding is appropriated. Without this project the E14 Triangle will remain a gravel lot. Concept from 2010.	Planning, Partially Funded

Table 3-3, continued. Programmed and Proposed Capital Projects

Project Name	Location	Project Description (from Capital Improvement Program)	Status
Alameda County			
E. 14th St/ Mission Streetscape Phase II	E. 14th St from 162nd Ave to I-238	Install corridor improvements to improve pedestrian, bicycle, transit accessibility and congestion relief in accordance with the Ashland Cherryland Business District Specific Plan. Planned work includes sidewalk and median improvements, landscaping, bicycle lanes, street lighting and traffic signal improvements. Initiated by former Redevelopment Agency	Funded
E. 14th St/ Mission Streetscape Phase III	Mission Blvd from I-238 to Rose St	See above description for Mission Streetscape Phase II	Partially Funded
E. 14th St/ Mission Streetscape Phase IV	E. 14th St from Thrush Ave to 162nd Ave	Retrofit of Phase I improvements	Unfunded
Hayward			
Mission Blvd Phase 2	Mission Blvd from Industrial Pkwy to Blanche St	Complete street with utility undergrounding	Under Construction
Mission Blvd Phase 3	Mission Blvd from Rose St to A St	Complete street with utility undergrounding	In Design
Union City			
East-West Connector	From Mission Blvd/7th St to Paseo Padre Pkwy (Fremont)	Three-mile roadway which connects Mission Blvd at 7th Street in Union City to Paseo Padre Parkway in Fremont and widens portions of Decoto Road and Paseo. The four-lane connector would require construction of three bridges and three grade separations at rail crossings. Union City Council is initiating the process of assuming full responsibility for constructing and managing.	In Design
Fremont			
Mission Traffic Signal	At Sullivan Underpass/Nichols Ave	Traffic Signal	Funded
Grimmer Improvements	Grimmer Blvd between Fremont Blvd and Paseo Padre Pkwy	Landscaped median, bike lane and a 2-way bikeway/walkway and modify the Grimmer/Paseo Parkway Intersection.	Funded

Table 3-3, continued. Programmed and Proposed Capital Projects

Project Name	Location	Project Description (from Capital Improvement Program)	Status
Fremont			
Fremont Blvd Safe and Smart Corridor/ Signal Timing Optimization	Centerville to Warm Springs	The Safe and Smart Corridor project will demonstrate complete streets design concepts, sensor-based infrastructure, communication systems, smart lighting, adaptive signal control, and connected vehicles/ infrastructure/devices to achieve a number of objectives for the corridor. These include Fremont's Vision Zero traffic safety goals, efficient multimodal mobility, sustainability and strategically urban development along Fremont Blvd.	In Design
Caltrans			
Stormwater Mitigation	In Alameda County, on State Routes 185 and 238 at various locations.	Install best management practices.	Planning (K-Phase)
Capital Preventative Maintenance	In and near Hayward and San Leandro, from A Street to Davis Street.	Rehabilitate pavement and upgrade curb ramps to Americans with Disabilities Act (ADA) standards.	PAED
Paving (Minor Program)	In Alameda County in and near San Leandro, from Ora Loma Ditch to Hesperian Boulevard.	AC resurfacing, upgrade curb ramps.	POSTRTL
ADA Curb Ramps	In San Leandro, from Plaza Drive to the Oakland city limit.	Reinstall and/or upgrade existing curb ramps and sidewalks to ADA standards.	PSE
Pedestrian Hybrid Beacon (X-Walk Safety Improvements)	In San Leandro, Hayward, and Fremont on Routes 185 and 238 at various locations.	Crosswalk safety enhancements.	PSE
Accessible Pedestrian Signals	In San Leandro, Hayward, and Fremont on Routes 185 and 238 at various locations.	Crosswalk safety enhancements.	PSE
Vehicle Speed Feedback Signs	In Hayward	Install vehicle speed feedback signs (VSFS) and signal standards.	Planning (K-Phase)
ADA Pedestrian Infrastructure	Route 238, postmile 0.737/0.823 (in front of Mission San Jose Park in Fremont)	Installation of new curb ramps and sidewalk to meet current ADA standards	Planning (K-Phase)



City of San Leandro Projects
1. Davis St./Carpentier St. Ped Signal
2. E. 14th St./Joaquin Ped Scramble Signal
3. E. 14th St. Underground Utilities
4. E. 14th St./144th Ave. HAWK Ped Signal
5. E. 14th Triangle Gateway Plaza

Alameda County Projects
6. E. 14th St./Mission Streetscape Phase II
7. E. 14th St./Mission Streetscape Phase III
8. E. 14th St./Mission Streetscape Phase IV

City of Hayward Projects
9. Mission Blvd. Phase 2 Complete Street
10. Mission Blvd. Phase 3 Complete Street

Union City Projects
11. East-West Connector

City of Fremont Projects
12. Mission Blvd./Sullivan Underpass/Nichols Traffic Signal
13. Grimmer Blvd. Improvements
14. Fremont Blvd. Safe and Smart Corridor
15. SR 84 Relinquishment and Complete Street, Phase 1
16. Washington Blvd. Safety Improvements
17. I-680 Interchange Improvements
18. Mission San Jose Mission Blvd. Complete Streets
19. Fremont Blvd./Norris Rd. HAWK Pedestrian Crossing
20. Fremont Blvd./Bonde Way HAWK Pedestrian Crossing
21. Fremont Blvd./Margery Dr. RRFB Pedestrian Crossing
22. Fremont Blvd./Mowry Ave. Protected Intersection
23. Fremont Blvd./Stevenson Blvd. Protected Intersection
24. Dumbarton Corridor Trail Improvements
25. Osgood Rd. Bike Lane Enhancements
26. Mission Blvd. Bike Lane Enhancements
27. Grimmer Blvd. Bikeway Enhancements/Protected Intersections

Caltrans Projects
- CA 185 pavement rehabilitation and ADA curb ramp upgrades (various locations)
- CA 185 stormwater best management practices (various locations)
- CA 185 and CA 238 pedestrian hybrid beacons (various locations)
- CA 185 and CA 238 accessible pedestrian signals (various locations)
- CA 185 and CA 238 vehicle speed feedback signs (various locations)

Mile
0 0.5 1 2

92 San Mateo Bridge

Legend:
- BART Station
- BART Above/Below Ground
- Capitol Corridor Stations
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial
- Water Bodies
- Parks/Open Space

ALAMEDA County Transportation Commission

E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

Figure 3-5
Programmed and Proposed Capital Infrastructure Projects

February 2019

3.6 KEY FINDINGS

Based on the data and analysis presented in this section, the key findings for roadway infrastructure along the Project Corridor are as follows:

- **Right of Way.** Right of way widths vary across the Project Corridor. In San Leandro, Alameda County, and Hayward, right of way widths are more uniform and range from 50 to 110 feet. In Union City and Fremont, the right of way width changes frequently over short distances; additional right of way confirmation is recommended for these sections as projects are advanced for implementation. Right of way availability and constraints will inform opportunities to repurpose space for multimodal improvements. In particular, the feasibility of near-term and mid-term improvements will be determined by right of way conditions.
- **Roadway Jurisdiction.** Caltrans has jurisdiction over portions of the Project Corridor in all jurisdictions except Hayward. Relinquishment activities are proposed for E. 14th Street and Mission Boulevard in Alameda County and Fremont Boulevard in Fremont. The maintenance responsibility for the Project Corridor will inform the coordination activities required to implement proposed improvements.
- **Traffic Signal Systems.** The majority of traffic signals are interconnected through either fiber or copper. Most signals also have pedestrian push-button detection. However, many intersections have legacy traffic signal controllers that are not based on latest industry standards (e.g., NTCIP, ATC, etc.) which limits the ability and functionality for cross-jurisdictional traffic operations. Additionally, the majority of traffic signals do not have video detection for vehicles and bicyclists. Potential improvements to traffic signal systems can provide benefits to auto, pedestrian, bicycle, and transit circulation in the Study Area.
- **Pavement Condition.** Much of E. 14th Street and Mission Boulevard in San Leandro, Alameda County, Union City, and Fremont has pavement that is identified as poor or distressed. However, Caltrans has programmed or proposed several improvement projects for sections of the Project Corridor in San Leandro. Pavement improvements along the Project Corridor will improve the quality of travel for motorists, transit vehicles, and bicyclists.
- **Programmed and Proposed Projects.** Alameda County, Hayward, and Fremont each have near-term corridor improvement projects that are in design or under construction. Streetscape improvement projects have been

identified for portions of the Project Corridor in San Leandro and Alameda County. Caltrans has programmed or proposed several pavement improvement and pedestrian safety improvements throughout the Project Corridor. These projects provide opportunities to coordinate near-term improvements with ongoing efforts.

Section 4
Travel Market Analysis

Section 4

Travel Market Analysis

The Project Corridor serves a diverse set of travel markets, varying by mode of travel, trip purpose, trip length, and trip origins and destinations. This section describes various travel markets that exist or are projected in the Study Area. The analysis results will inform the development of multimodal improvements that support or strengthen these markets.

Topics covered in this section are:

- Mode split
- Trip length
- Existing auto trip patterns
- BART mode of access

4.1 MODE SPLIT

The distribution of Study Area trips among various travel modes was analyzed to provide an understanding of larger travel patterns and to establish a baseline for potential improvements. The Alameda Countywide Model 2020 scenario was used to estimate existing mode split for the transportation analysis zones (TAZs) that encompass the Study Area. **Table 4-1** summarizes the results of the mode split analysis for the Study Area for existing conditions. The data shown are for all trips that begin and/or end within the Study Area.

Table 4-1: Study Area Mode Split, Existing Conditions

Travel Mode	All Trip Purposes		Work Trips Only	
	Study Area	Alameda County	Study Area	Alameda County
Drive Alone	50.1%	48.5%	75.3%	68.7%
Rideshare	37.1%	35.0%	15.1%	14.8%
Transit	4.0%	6.4%	6.9%	12.6%
Bike	1.7%	1.7%	0.6%	0.9%
Walk	7.0%	8.5%	2.0%	3.1%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**

The results of the Study Area mode split analysis are as follows:

The share of transit trips within the Study Area is lower than for Alameda County as a whole, in particular for work trips.

- Trips by auto (drive alone plus rideshare) for all trip purposes comprise 87 percent of Study Area trips, as compared to approximately 84 percent for Alameda County as a whole.
- The share of drive alone trips in the Study Area is comparable to that for Alameda County as a whole.
- For all trip purposes, non-drive alone modes make up about half of all trips. However, the majority of work trips in the Study Area and in Alameda County are made by solo drivers. This suggests opportunities to facilitate non-auto commute trips.
- The share of transit trips within the Study Area is lower than for Alameda County as a whole, in particular for work trips. This suggests opportunities to improve transit services and facilities to encourage a higher mode share.
- The share of Study Area walk trips is lower than that for Alameda County as a whole.

Table 4-2 presents the mode split estimates for sections of the Study Area. The data shown are for all trips that begin and/or end within each section of the Study Area.

Table 4-2: Study Area Mode Split by Corridor Section, Existing Conditions

Mode	San Leandro and Alameda County		Hayward and Union City		Fremont	
	All Trip Purposes	Work Trips Only	All Trip Purposes	Work Trips Only	All Trips	Work Trips Only
Drive Alone	46.9%	69.9%	50.9%	76.4%	51.5%	77.6%
Rideshare	36.9%	14.3%	37.6%	16.3%	37.0%	14.4%
Transit	5.9%	11.8%	3.8%	5.7%	3.1%	5.2%
Bike	2.0%	1.1%	1.8%	0.5%	1.6%	0.6%
Walk	8.4%	2.8%	6.0%	1.2%	6.8%	2.2%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Source: Alameda Countywide travel model, Plan Bay Area 2040 version, 2020 scenario, trips to or from Study Area TAZs.

The results of the mode split analysis for sections of the Study Area are as follows:

- For all trip purposes, the share of drive alone trips is comparable across the Study Area. However, the share of drive alone work trips varies across the Study Area, ranging from approximately 70 percent in San Leandro and unincorporated Alameda County to approximately 78 percent in Fremont.

- The transit mode share (for work trips) is significantly higher in San Leandro and unincorporated Alameda County than in the remainder of the Study Area. This suggests potential opportunities for transit access improvements in the Hayward, Union City, and Fremont portions of the Study Area. (Transit conditions in the Study Area are discussed in Section 6, Transit Circulation.)

Transit mode shares in the Study Area are lowest in Hayward, Union City, and Fremont, suggesting opportunities to increase the non-auto mode share in these areas.

Together, these findings suggest that the greatest opportunities to increase non-auto mode share are present in the Hayward, Union City, and Fremont portions of the Study Area.

4.2 TRIP LENGTHS

The lengths of trips within the Study Area were analyzed to inform opportunities for potential shifts to non-auto modes. The Alameda Countywide Model 2020 scenario was used to identify trip lengths by travel mode for all trip purposes. For this analysis, all trips that begin or end in the Study Area are included, regardless of whether the trip uses the Project Corridor. Trip lengths in the one- to two-mile range suggest trips that may be made by walking, while trips up to five miles are good candidates for biking. **Table 4-3** summarizes trip lengths by travel mode for the Study Area.

Table 4-3: Study Area Trip Lengths by Travel Mode, Existing Conditions

Trip Length	Travel Mode					
	Drive Alone	Shared Ride	Transit (includes bus and rail)	Bike	Walk	Total
<1 Mile	4%	5%	1%	4%	25%	6%
1-2 Miles	14%	19%	6%	20%	52%	18%
2-5 Miles	29%	33%	20%	53%	23%	30%
5-10 Miles	18%	16%	16%	19%	0%	16%
>10 Miles	35%	27%	57%	4%	0%	30%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Mean Trip Length, miles	11.5	10.1	15.1	4.2	1.6	10.3

Source: Alameda Countywide travel model, Plan Bay Area 2040 version, 2020 scenario, trips to and from Study Area TAZs.

Over half of trips in the Study Area are less than five miles, indicating a large number of trips which could benefit from pedestrian, bicycle, and bus transit improvements.

The results of the Study Area trip length analysis are as follows:

- Trips of two miles or less account for 24 percent of trips within the Study Area, and trips of five miles or less are 54 percent of corridor trips. This indicates a large percentage of trips which could benefit from pedestrian, bicycle, and bus transit improvements.

- The majority of transit trips that start or end in the Study Area are greater than 10 miles, demonstrating the importance of connections to regional transit services, as well as the potential for improvements in local shuttle services to better serve shorter trips.

Trip lengths were also evaluated for trips to and from three corridor sections within the Study Area. **Table 4-4** summarizes trip lengths for three corridor sections within the Study Area. The northern section of the corridor has somewhat higher proportions of shorter trips (58 percent of trips less than five miles) than the central and southern sections, resulting in a mean trip length 17 percent lower than the other two sections. This is consistent with the mode split information, where the northern section has the highest current use of bicycle and walk modes. The southern section (Fremont) has the highest proportions of trips longer than 10 miles.

Table 4-4: Trip Lengths by Corridor Section, Existing Conditions

Trip Length	San Leandro and Alameda County		Hayward and Union City		Fremont	
	All Trip Purposes	Work Trips Only	All Trip Purposes	Work Trips Only	All Trips	Work Trips Only
<1 Mile	6%	2%	4%	1%	7%	2%
1-2 Miles	21%	5%	15%	3%	18%	5%
2-5 Miles	31%	18%	31%	17%	29%	18%
5-10 Miles	17%	22%	20%	23%	14%	17%
>10 Miles	25%	53%	30%	56%	32%	58%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Mean Trip Length, miles	8.8	14.9	10.6	15.7	10.6	15.9

Source: Alameda Countywide travel model, Plan Bay Area 2040 version, 2020 scenario, trips to or from Study Area TAZs.

4.3 AUTO TRIP PATTERNS

Trips by automobile (both drive alone and rideshare) make up the majority of travel within the Study Area. Automobile trip patterns were analyzed in greater detail to understand how the Project Corridor is used for trips to, from, within, and through the Study Area. The findings from this analysis will then be used in conjunction with other analyses (presented in subsequent sections) to define multimodal improvements corresponding to existing and/or desired auto trip patterns.

The analysis of auto travel market conditions uses GPS probe data from StreetLight Data (StreetLight) to understand trip origins,

destinations, and routes. The analysis focuses on personal vehicle travel only and represents a sample of completed auto trips over one year (from March 1, 2017 to February 28, 2018).

The results of the origin/destination analysis and trip route analysis are discussed in the following sections.

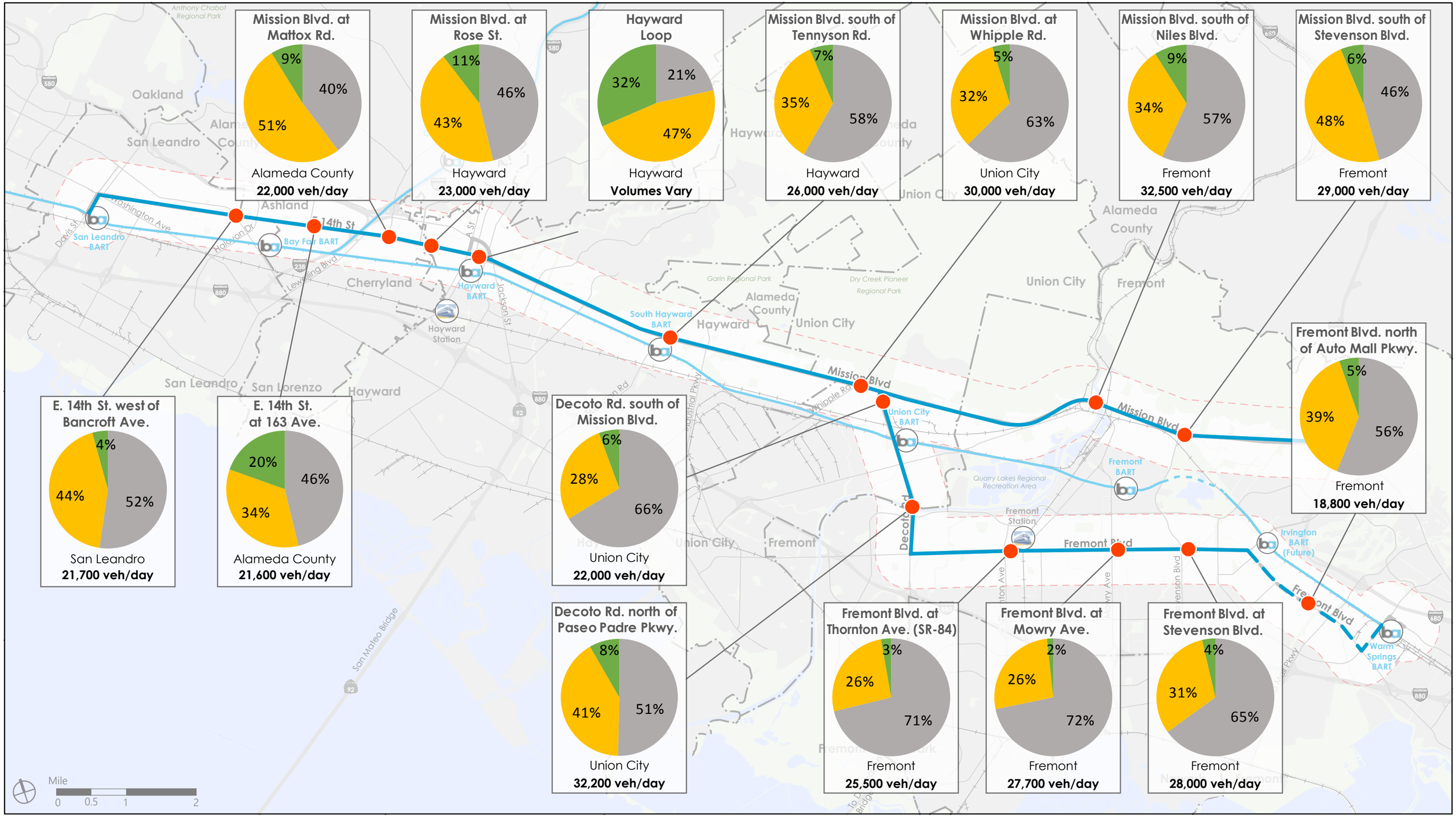
Origin/Destination Analysis

The origin/destination analysis addresses where auto trips using the Project Corridor begin and end. This data uses the terms "local trips," "regional/Study Area trips," and "regional through trips" in describing the analysis results. These terms are defined as follows:

- **Local Trips** – Trips that both start and end in one of the jurisdictions in the Study Area. Local trips are within a single jurisdiction or between two jurisdictions. *Example: A trip from Hayward to Fremont is classified as a local trip.*
- **Regional/Study Area Trips** – Trips with one end within a Study Area jurisdiction, and one end outside. *Example: Morning and evening commute trips between a home in Fremont and employment in Santa Clara County are classified as regional/study area trips.*
- **Regional Through Trips** - Trips that both start and end outside a jurisdiction in the Study Area. Regional through trips use portions of the Project Corridor but do not have an origin or destination within the Study Area. *Example: A trip between the Tri-Valley and San Mateo County is classified as a regional through trip if the route included part of the Project Corridor.*

For the origin/destination analysis, all trips are classified as either a local trip, a regional/Study Area trip, or a regional through trip. These three categories are mutually exclusive categories and together comprise all trips using the Project Corridor.

Figure 4-1 shows the share of local trips, regional/Study Area trips, and regional through trips for various locations across the Project Corridor. Each trip type is discussed in greater detail in the remainder of this subsection.



Legend:

- BART Station
- BART Above/Below Ground
- Capitol Corridor Stations
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial
- Water Bodies
- Parks/Open Space
- Trips Start and End within a Corridor Jurisdiction
- One End within a Corridor Jurisdiction, One End outside
- Trips Start and End outside of a Corridor Jurisdiction

ALAMEDA County Transportation Commission

Figure 4-1 | Existing Daily Auto Trip Patterns

August 2018

Local Trips

Local travel within and between the Study Area jurisdictions make up a significant portion of trips using the Project Corridor.

Figure 4-1 shows the share of local trips (in gray) for daily conditions for various locations along the Project Corridor. **Table 4-5** shows the share of local trips for daily, AM peak, and PM peak periods.

The share of local trips nears or exceeds 50 percent at many locations throughout the Project Corridor. This suggests that a primary trip pattern for the Project Corridor is trips within and between the Study Area jurisdictions. The share of local trips is highest along Fremont Boulevard, where over 65 percent of trips using the Project Corridor start and end in one of the Study Area jurisdictions.

For the AM peak period, local trips make up a smaller share of total Project Corridor traffic than for the PM peak period or the overall weekday. This time-of-day difference is most significant near I-238 and at the southern edge of the Project Corridor in Fremont. This suggests that PM peak period conditions represent a more conservative (i.e., higher) baseline in evaluating the potential for local trips in the Study Area.

Table 4-5: Local Trips as a Percent of Project Corridor Traffic

Location	Local Trips as a Share of Total Traffic		
	Daily	AM Peak (6-10 AM)	PM Peak (3 – 7 PM)
East 14th Street / Mission Boulevard			
E. 14th St. west of Bancroft Ave.	52%	33%	54%
E. 14th St. east of Bancroft Ave.	54%	37%	57%
E. 14th St. at Fairmont Dr.	47%	30%	54%
E. 14th St. at 163rd Ave.	46%	34%	53%
E. 14th St. north of I-238	31%	22%	38%
Mission Blvd. south of I-238	46%	30%	57%
Mission Blvd. at Mattox Rd.	40%	27%	47%
Mission Blvd. at Rose St.	46%	33%	54%
Mission Blvd. south of Tennyson Rd.	58%	46%	61%
Mission Blvd. south of Industrial Pkwy.	61%	52%	64%
Mission Blvd. at Lexington Ave.	64%	57%	63%
Mission Blvd. at Whipple Rd.	63%	56%	62%
Mission Blvd. south of Decoto Rd.	62%	57%	63%
Mission Blvd. at Veneto Ave.	60%	53%	62%
Mission Blvd. south of Niles Blvd.	57%	54%	56%
Mission Blvd. south of Mowry Ave.	60%	58%	61%
Mission Blvd. south of Stevenson Blvd.	46%	41%	52%
Decoto Road			
Decoto Rd. south of Mission Blvd.	66%	62%	66%
Decoto Rd. north of Paseo Padre Pkwy.	50%	46%	51%
Fremont Boulevard			
Fremont Blvd. at Thornton Ave. (SR-84)	71%	65%	74%
Fremont Blvd. east of Peralta Blvd. (SR-84)	76%	64%	78%
Fremont Blvd. at Mowry Ave.	72%	60%	75%
Fremont Blvd. at Stevenson Blvd.	65%	50%	70%
Fremont Blvd. north of Auto Mall Pkwy.	56%	50%	55%

Source: StreetLight data for March 1, 2017 to February 28, 2018

Local Trips within and between Jurisdictions

Local trips using the Project Corridor were analyzed further to understand the extent to which these trips represent travel within a single jurisdiction versus travel between jurisdictions.

Table 4-6, **Table 4-7**, and **Table 4-8** summarize the analysis results for daily, AM peak, and PM peak periods, respectively. The percentages represent the number of trips within or between jurisdictions divided by the average volume of trips along the Project Corridor in the jurisdiction. For example, along the Project Corridor in San Leandro, 23 to 25 percent of the daily traffic is made up of trips starting and ending in San Leandro, while an additional 27 to 31 percent is made up of trips between San Leandro and the other jurisdictions within the Study Area.

Table 4-6: Daily Local Trips within and between Study Area Jurisdictions

Jurisdiction	Daily Local Trips	
	Within Jurisdiction	Between Jurisdictions
San Leandro	23 – 25%	27 – 31%
Unincorporated Alameda County	6 – 7%	24 – 37%
Hayward	16 – 23%	34 -43%
Union City	5 – 12%	49 – 56%
Fremont (along Mission Blvd)	26 – 34%	29 – 32%
Fremont (along Fremont Blvd	55 – 66%	4 – 16%

Table 4-7: AM Peak Local Trips within and between Study Area Jurisdictions

All Day	AM Peak Local Trips	
	Within Jurisdiction	Between Jurisdictions
San Leandro	13 – 16%	19 – 21%
Unincorporated Alameda County	2 – 4%	17 – 29%
Hayward	11 – 15%	30 – 40%
Union City	4 – 9%	46 – 50%
Fremont (along Mission Blvd)	23 – 29%	30 – 32%
Fremont (along Fremont Blvd	44 – 53%	6 – 16%

Table 4-8: PM Peak Local Trips within and between Study Area Jurisdictions

Jurisdiction	PM Peak Local Trips	
	Within Jurisdiction	Between Jurisdictions
San Leandro	23 – 26%	27 – 33%
Unincorporated Alameda County	7 – 9%	29 – 43%
Hayward	18 – 25%	35 – 45%
Union City	5 – 11%	50 – 57%
Fremont (along Mission Blvd)	25 – 38%	31 – 32%
Fremont (along Fremont Blvd	54 – 69%	6 – 15%

Approximately half of the trips using the Fremont Blvd. section of the Project Corridor both begin and end in Fremont.

The majority of local trips along the Fremont Boulevard portion of the Project Corridor both begin and end within Fremont. In unincorporated Alameda County, Hayward, and Union City, the majority of local trips along the Project Corridor represent travel between Study Area jurisdictions. For San Leandro and the Fremont portion of Mission Boulevard, local trips within and between the respective jurisdictions are comparable. These findings suggest a need for potential transportation improvements that are multijurisdictional in nature to correspond to these broader travel patterns.

Regional/Study Area Trips

Regional/Study Area trips are those with one end within a Study Area jurisdiction and the other trip end outside the Study Area. **Figure 4-1** shows the share of regional/Study Area trips (in gold) for daily conditions for various locations along the Project Corridor. **Table 4-9** shows the share of regional/Study Area trips for daily, AM peak, and PM peak periods.

On average, more than 90 percent of traffic along the Project Corridor has an origin or destination within a Study Area jurisdiction.

The share of regional/Study Area trips ranges from 26 percent to 51 percent depending on the location along the Project Corridor. On average, approximately one third of traffic along the Project Corridor represents regional/Study Area trips.

Combining local trips and regional/Study Area trips, more than 90 percent of traffic along the Project Corridor has an origin or destination within a Study Area jurisdiction. While the exact percentage varies by location, these data show that the Project Corridor is used primarily for trips associated with the Study Area.

Table 4-9: Regional/Study Area Trips as Percent of Project Corridor Traffic

Location	Regional/Study Area Trips as a Share of Total Traffic		
	Daily	AM Peak (6-10 AM)	PM Peak (3- 7 PM)
East 14th Street / Mission Boulevard			
E. 14th St. west of Bancroft Ave.	43%	61%	42%
E. 14th St. east of Bancroft Ave.	41%	55%	38%
E. 14th St. at Fairmont Dr.	37%	44%	34%
E. 14th St. at 163 Ave.	34%	39%	34%
E. 14th St. north of I-238	41%	51%	42%
Mission Blvd. south of I-238	40%	51%	35%
Mission Blvd. at Mattox Rd.	51%	57%	48%
Mission Blvd. at Rose St.	43%	51%	38%
Mission Blvd. south of Tennyson Rd.	35%	46%	32%
Mission Blvd. south of Industrial Pkwy.	34%	42%	29%
Mission Blvd. at Lexington Ave.	31%	38%	29%
Mission Blvd. at Whipple Rd.	33%	39%	31%
Mission Blvd. south of Decoto Rd.	34%	39%	33%
Mission Blvd. at Veneto Ave.	35%	43%	33%
Mission Blvd. south of Niles Blvd.	34%	40%	32%
Mission Blvd. south of Mowry Ave.	34%	38%	30%
Mission Blvd. south of Stevenson Blvd.	48%	56%	42%
Decoto Road			
Decoto Rd. south of Mission Blvd.	28%	29%	27%
Decoto Rd. north of Paseo Padre Pkwy.	41%	44%	38%
Fremont Boulevard			
Fremont Blvd. at Thornton Ave. (SR-84)	26%	32%	24%
Fremont Blvd. east of Peralta Blvd. (SR-84)	22%	33%	21%
Fremont Blvd. at Mowry Ave.	27%	38%	24%
Fremont Blvd. at Stevenson Blvd.	31%	46%	27%
Fremont Blvd. north of Auto Mall Pkwy.	39%	48%	36%

Source: StreetLight data for March 1, 2017 to February 28, 2018

Regional/Study Area trips along the Project Corridor were analyzed further to understand travel patterns between the Study Area and other parts of the Bay Area. Trips to and from San Mateo County and Santa Clara County were analyzed in more detail, as these areas represent employment concentrations adjacent to the Study Area jurisdictions. Significant trip patterns between the Study Area and these areas may suggest opportunities for improved multimodal connectivity.

Regional/Study Area Trips to/from San Mateo County

The Project Corridor does not serve a significant role in trips to and from San Mateo County.

Table 4-10 summarizes regional/Study Area trips to and from San Mateo County. Along the Project Corridor, the highest percentages of trips between the Study Area and San Mateo County are found around Decoto Road and the Dumbarton Bridge. In this area, trips between the Study Area and San Mateo County make up as much as 13 percent of Project Corridor traffic.

Away from these areas of the Project Corridor, regional/Study Area trips to/from San Mateo County make up less than ten percent of Project Corridor traffic. This data indicates that the Project Corridor currently does not play a significant role for trips to and from San Mateo County.

Table 4-10: Project Corridor Trips to/from San Mateo County

Street	Section	Regional/Study Area Trips to/from San Mateo County		
		Daily	AM Peak	PM Peak
E. 14th St/ Mission Blvd	Between Davis St and Hayward Loop	1 – 2%	0 - 4%	1 – 2%
Mission Blvd/ Foothill Blvd/A St	Hayward Loop	2%	2%	2%
Mission Blvd	Between Hayward Loop and Decoto Rd	2 – 8%	2 - 9%	2 – 5%
Mission Blvd	Between Decoto Rd and I-680	1 – 3%	2 – 5%	1 – 4%
Decoto Rd	Between Mission Blvd and Fremont Blvd	4 – 9%	8 – 13%	2 – 8%
Fremont Blvd	Between Decoto Rd and Washington Blvd	3 – 5%	5 - 9%	3 – 5%

Regional/Study Area Trips to/from Santa Clara County

Table 4-11 summarizes regional/Study Area trips to and from Santa Clara County. For the southern portions of the Project Corridor from Decoto Road south, the Project Corridor plays a significant role in serving regional trips between the Study Area jurisdictions and Santa Clara County. For sections of southern Mission Boulevard, Decoto Road, and Fremont Boulevard, these trips make up almost one quarter of total AM peak traffic.

For the Project Corridor north of Decoto Road, regional trips between the Study Area jurisdictions and Santa Clara County make up 11 percent or less of total traffic.

For the Union City and Fremont portions of the Project Corridor, trips between the Study Area and Santa Clara County make up almost one quarter of total AM peak traffic.

Table 4-11: Project Corridor Trips to/from Santa Clara County

Street	Section	Regional/Study Area Trips to/from Santa Clara County		
		Daily	AM Peak	PM Peak
E. 14th St/Mission Blvd	Between Davis St and Hayward Loop	0 – 1%	0 – 1%	0 – 1%
Mission Blvd/ Foothill Blvd/A St	Hayward Loop	2%	3%	1%
Mission Blvd	Between Hayward Loop and Decoto Rd	5 – 8%	9 - 11%	4 – 6%
Mission Blvd	Between Decoto Rd and I-680	9 – 16%	11 - 24%	8 -12%
Decoto Rd	Between Mission Blvd and Fremont Blvd	10 – 20%	10 - 22%	10 - 16%
Fremont Blvd	Between Decoto Rd and Washington Blvd	8 – 13%	14 - 24%	5 – 10%

Source: StreetLight data for March 1, 2017 to February 28, 2018

Regional Through Trips

Regional through trips (with both an origin and destination outside the Study Area jurisdictions) were analyzed to understand the extent to which the Project Corridor is utilized for regional through travel.

Figure 4-1 shows the share of local trips (in green) for daily conditions for various locations along the Project Corridor. **Table 4-12** shows the share of local trips for daily, AM peak, and PM peak periods. Overall, a small proportion of traffic on the Project Corridor is attributable to regional through trips that both begin and end outside the Study Area jurisdictions.

The portion of the Project Corridor near Interstate 238 has a higher share of regional through trips, reaching a maximum of 28 percent. These trips are not associated with a single travel pattern, but rather are associated with multiple locations outside the Study Area, including Castro Valley, northern Alameda County, the Tri-Valley, and San Mateo County.

Table 4-12: Regional Through Trips as Percent of Traffic on Project Corridor

Location	Regional Through Trips as a Share of Total Traffic		
	Daily	AM Peak (6-10 AM)	PM Peak (3-7 PM)
East 14th Street / Mission Boulevard			
E. 14th St. west of Bancroft Ave.	4%	6%	4%
E. 14th St. east of Bancroft Ave.	5%	8%	5%
E. 14th St. at Fairmont Dr.	16%	26%	12%
E. 14th St. at 163 Ave.	20%	27%	14%
E. 14th St. north of I-238	28%	28%	21%
Mission Blvd. south of I-238	15%	18%	8%
Mission Blvd. at Mattox Rd.	9%	16%	6%
Mission Blvd. at Rose St.	10%	16%	8%
Mission Blvd. south of Tennyson Rd.	7%	8%	7%
Mission Blvd. south of Industrial Pkwy.	5%	6%	7%
Mission Blvd. at Lexington Ave.	5%	5%	7%
Mission Blvd. at Whipple Rd.	5%	5%	6%
Mission Blvd. south of Decoto Rd.	4%	4%	5%
Mission Blvd. at Veneto Ave.	5%	4%	5%
Mission Blvd. south of Niles Blvd.	9%	6%	12%
Mission Blvd. south of Mowry Ave.	7%	4%	8%
Mission Blvd. south of Stevenson Blvd.	6%	4%	7%
Decoto Road			
Decoto Rd. south of Mission Blvd.	6%	9%	7%
Decoto Rd. north of Paseo Padre Pkwy.	8%	10%	11%
Fremont Boulevard			
Fremont Blvd. at Thornton Ave. (SR-84)	3%	3%	3%
Fremont Blvd. east of Peralta Blvd. (SR-84)	2%	3%	1%
Fremont Blvd. at Mowry Ave.	2%	3%	1%
Fremont Blvd. at Stevenson Blvd.	4%	5%	3%
Fremont Blvd. north of Auto Mall Pkwy.	5%	2%	8%

Source: StreetLight data for March 1, 2017 to February 28, 2018

Regional Through Trips Using the Hayward Loop

As shown in **Figure 4-1**, approximately one third of traffic using the Hayward Loop represents regional through trips. This portion of the Project Corridor was analyzed further to understand the extent regional through trips use the Project Corridor as part of a longer east-west route between the San Mateo Bridge and Interstate 580 to the east. This issue was also analyzed as part of a separate StreetLight origin/destination analysis completed in 2017 for the City of Hayward. Based on the two analyses, 10 to 15 percent of peak period traffic along the Loop represents regional through trips between the San Mateo Bridge and Interstate 580 to the east.

Regional Through Trips in Mission San Jose

As referenced in Section 1 of the report, the Study Area was expanded following the completion of this analysis to include Fremont Boulevard from I-680 to Ohlone College. While not addressed as part of this analysis, the City of Fremont has noted significant cut-through traffic using this section of the corridor.

End-to-End Project Corridor Trips

Separate from the origin/destination analysis presented in prior sections, StreetLight data were analyzed to understand whether traffic along the Project Corridor is associated with end-to-end travel for all or part of the corridor.

The Project Corridor is not being used for end-to-end travel.

For this analysis, end-to-end trips are defined as those where a vehicle traveled continuously along the Project Corridor for a given distance. It is important to note that the start and end points of the overall trip do not necessarily correspond to these end points. *Example: An end-to-end vehicle trip between the Hayward Loop and Decoto Road is one that travels continuously along the Project Corridor between these two points. This trip may represent travel between San Leandro and Union City, or between the Tri-Valley and Fremont.*

Table 4-13 summarizes end-to-end trips for the Project Corridor as a whole and for smaller sections of the corridor. As noted in the table, it is extremely rare for vehicles to travel from one end of the Project Corridor to the other end as part of a single trip. Such trips represent less than 0.05 percent of total Project Corridor traffic. For the section of the Project Corridor between the Hayward Loop and Decoto Road, end to end trips represent approximately 19 percent of total traffic.

Based on the auto travel speed analysis (described in Section 5, Vehicular Traffic Circulation), the section of the Project Corridor between the Hayward Loop and Decoto Road is parallel to the segment of Interstate 880 (between Winton Avenue and Mowry Avenue) that carries one of the highest vehicular volumes and is

congested during peak periods. It is likely that trips traveling end to end on this section of the Project Corridor in Hayward represent regional/Study Area trips avoiding congestion on Interstate 880 and connecting to Interstates 238 and 580 north of the Hayward Loop.

Table 4-13: Project Corridor End to End Trips by Section

Street	Section	Daily Volume	End to End Trips		
			% of Total	Daily Trips	Peak Hour Trips
E 14th St/ Mission Blvd	Between Davis St and Hayward Loop	20,600	<1	<200	<20
Mission Blvd	Between Hayward Loop and Decoto Rd	26,000	19	5,700	470
Mission Blvd	Between Decoto Rd and I-680	32,500	6	2,000	200
Fremont Blvd	Between Decoto Rd and Washington Blvd	25,500	2.5	<100	70
Fremont Blvd	Between Washington Blvd and Warm Springs BART	25,500	<0.5	<100	<10
Overall	**Between Davis St and I-680**	**N/A**	**<0.05**	**N/A**	**<10**
Overall	**Between Davis St and Warm Spring BART**	**N/A**	**<0.05**	**N/A**	**<10**

Note: Peak Volumes are calculated as Daily Volume x StreetLight percentages
Sources: StreetLight data for March 1, 2017 to February 28, 2018 and Caltrans 2016 Traffic Volume: Annual Average Daily Traffic

For other sections of the Project Corridor, either the parallel freeway is not as congested or there are other parallel streets that provide alternatives to congested routes. Therefore, the Project Corridor does not serve a major congestion relief function in those sections. This highlights the relationship between some sections of the Project Corridor and the nearby freeways, showing how heightened congestion on freeways can and will affect how the Project Corridor is used.

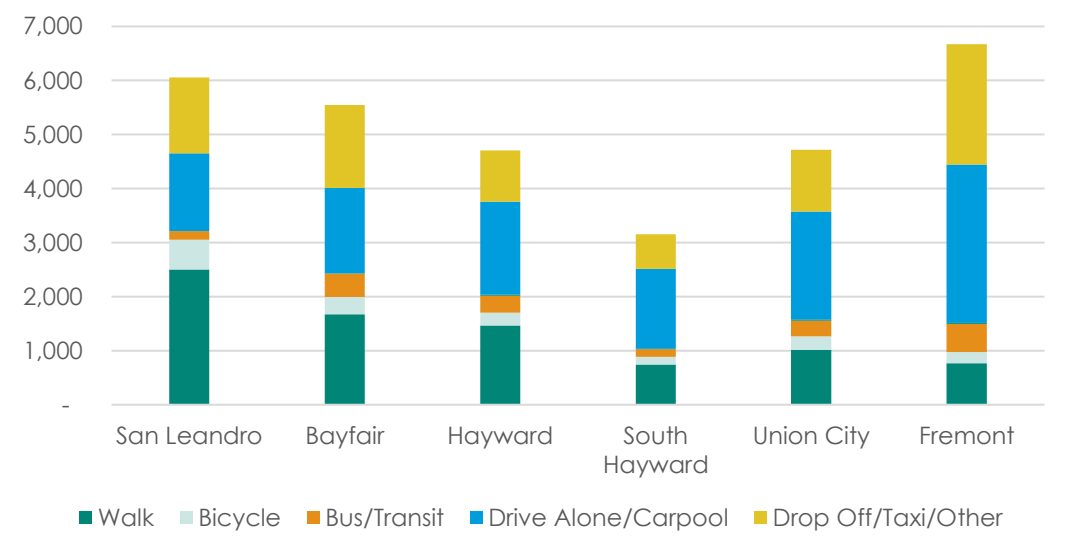
4.4 BART MODE OF ACCESS

The modes of station access for BART passengers in the Study Area were analyzed to understand existing multimodal connection patterns and to identify opportunities to strengthen those connections. The access modes are analyzed based on survey data from the 2015 BART Customer Satisfaction Survey.

Figure 4-2 shows daily ridership for the BART stations in the Study Area and the corresponding modes of access for each station. **Table 4-13** summarizes the AM peak period access mode shares for BART stations in the Study Area. Overall, BART stations in the Study Area have lower walking and bus/transit access mode shares when compared to the systemwide average. A higher share of BART passengers in the Study Area drive alone to stations. It should be noted that the systemwide average includes downtown San Francisco and Oakland stations with high walk access.

In the Study Area, walking and biking access is highest for stations in the north (as high as 50 percent in San Leandro) and decreases as one moves south (as low as 15 percent in Fremont). Bus access to BART does not exhibit the same patterns as walking and biking access, with the highest shares (8 percent) found at the Bay Fair and Fremont BART stations.

Figure 4-2 Daily BART Ridership and Mode of Access



Note: Data for the Warm Springs BART station is not available as the station was not open at the time of the survey.

Table 4-13. BART Mode of Access, AM Peak

Mode of Access from Home to BART	San Leandro	Bay Fair	Hayward	South Hayward	Union City	Fremont	BART Stations within Study Area	All BART Stations
Walk	41%	30%	31%	24%	22%	12%	27%	37%
Bicycle	9%	6%	5%	5%	5%	3%	5%	6%
Bus/Transit	3%	8%	7%	4%	6%	8%	6%	8%
Motorcycle/ Motorized Scooter	0%	0%	1%	0%	0%	0%	0%	0%

Table 4-13, continued

Mode of Access from Home to BART	San Leandro	Bay Fair	Hayward	South Hayward	Union City	Fremont	BART Stations within Study Area	All BART Stations
Drive Alone/ Carpool	24%	29%	37%	47%	42%	44%	37%	29%
Drop Off/Taxi/ Other	23%	28%	20%	20%	24%	33%	25%	19%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Source: BART, 2015

4.5 KEY FINDINGS

Based on the data and analysis presented in this section, key findings for travel markets in the Study Area are as follows:

- **Mode Split.** Trips by auto (drive alone plus rideshare) for all trip purposes comprise 87 percent of Study Area trips, as compared to approximately 84 percent for Alameda County as a whole. The share of transit trips within the Study Area is lower than for Alameda County as a whole, in particular for work trips in Hayward, Union City, and Fremont. This suggests potential opportunities for transit access improvements in the Hayward, Union City, and Fremont portions of the Study Area.
- **Trip Lengths.** Trips of two miles or less account for 28 percent of trips within the Study Area, and trips of five miles or less are 55 percent of corridor trips. This indicates a large percentage of trips which could benefit from pedestrian and bicycle improvements. In contrast, the majority of transit trips are greater than 10 miles, demonstrating the importance of connections to regional transit services, as well as the potential for improvements in local shuttle services.
- **Origin/Destination Patterns - Local Trips.** Local trips within and between the Study Area jurisdictions make up 50 percent of total traffic at many locations along the Project Corridor. For the Fremont Boulevard portion of the Project Corridor, approximately half of daily and peak period trips both begin and end within Fremont.
- **Origin/Destination Patterns – Regional/Study Area Trips.** On average, trips within one end in a Study Area jurisdiction and the other end outside the Study Area represent approximately one third of traffic along the Project Corridor. Combining local trips and regional/Study Area trips, more than 90 percent of traffic along the Project Corridor has an origin or destination within a Study Area jurisdiction.

- **Origin/Destination Patterns - Regional Through Trips.** Overall, a small proportion of traffic on the Project Corridor is attributable to regional through trips that both begin and end outside the Study Area jurisdictions. One exception is the Hayward Loop, where regional trips contribute almost one third of daily traffic. During peak periods, 10 to 15 percent of traffic on the Loop represents regional through trips between the San Mateo Bridge and Interstate 580 to the east.
- **End-to-End Trips.** The Project Corridor is not being used for end-to-end travel, with end-to-end trips representing less than 0.05 percent of total Project Corridor traffic. For the section of the Project Corridor between the Hayward Loop and Decoto Road, end to end trips represent approximately 19 percent of total traffic. It is likely that these trips represent drivers avoiding congestion on the parallel section of Interstate 880 and connecting to Interstates 238 and 580 north of the Hayward Loop.
- **BART Mode of Access.** Overall, BART stations in the Study Area have lower walking and bus/transit access mode shares when compared to the systemwide average. In the Study Area, walking and biking access is highest for stations in the north and decreases as one moves south. Bus access to BART does not exhibit the same patterns as walking and biking access, with the highest shares found at the Bay Fair and Fremont BART stations.

Section 5
Vehicular Traffic Circulation

Section 5

Vehicular Traffic Circulation

Vehicular traffic circulation is the most widely used mode of transportation along the Project Corridor and therefore, a critical element of analysis. As multimodal improvements are identified and developed, it will be important to consider potential benefits to vehicular traffic circulation as well as potential tradeoffs.

This section identifies areas of the Project Corridor with existing and/or future congestion, as well as key intersections that are over capacity. This section also includes a description of heavy vehicle and goods movement activity affecting the Project Corridor.

Topics covered in this section include:

- Number of lanes and posted speed limits
- Traffic volumes
- Travel speeds
- Intersection capacity analysis
- On-street parking
- Heavy vehicles and goods movement

5.1 NUMBER OF LANES AND POSTED SPEED LIMITS

Existing conditions along the Project Corridor vary in terms of number of lanes, the presence of a median, signal spacing, and posted speed limits. **Table 5-1** documents these metrics for the major cross sections along the Project Corridor. **Figure 5-1** shows the number of lanes and posted speed limits graphically.

The majority of the Project Corridor has two through lanes in each direction (four total). Key exceptions are as follows:

- Three lanes in each direction (six total) – portions of the Project Corridor south of Downtown Hayward, in Union City, and Fremont
- Four to five lanes in each direction, one-way – downtown Hayward, part of the Hayward Loop
- Three lanes total (one northbound, two southbound) - downtown San Leandro

Slower posted speed limits of 25 mph are present near or adjacent to the downtowns of San Leandro, Hayward, and Fremont. Higher

posted speed limits of up to 45 mph are found in the southern portions of the Project Corridor.

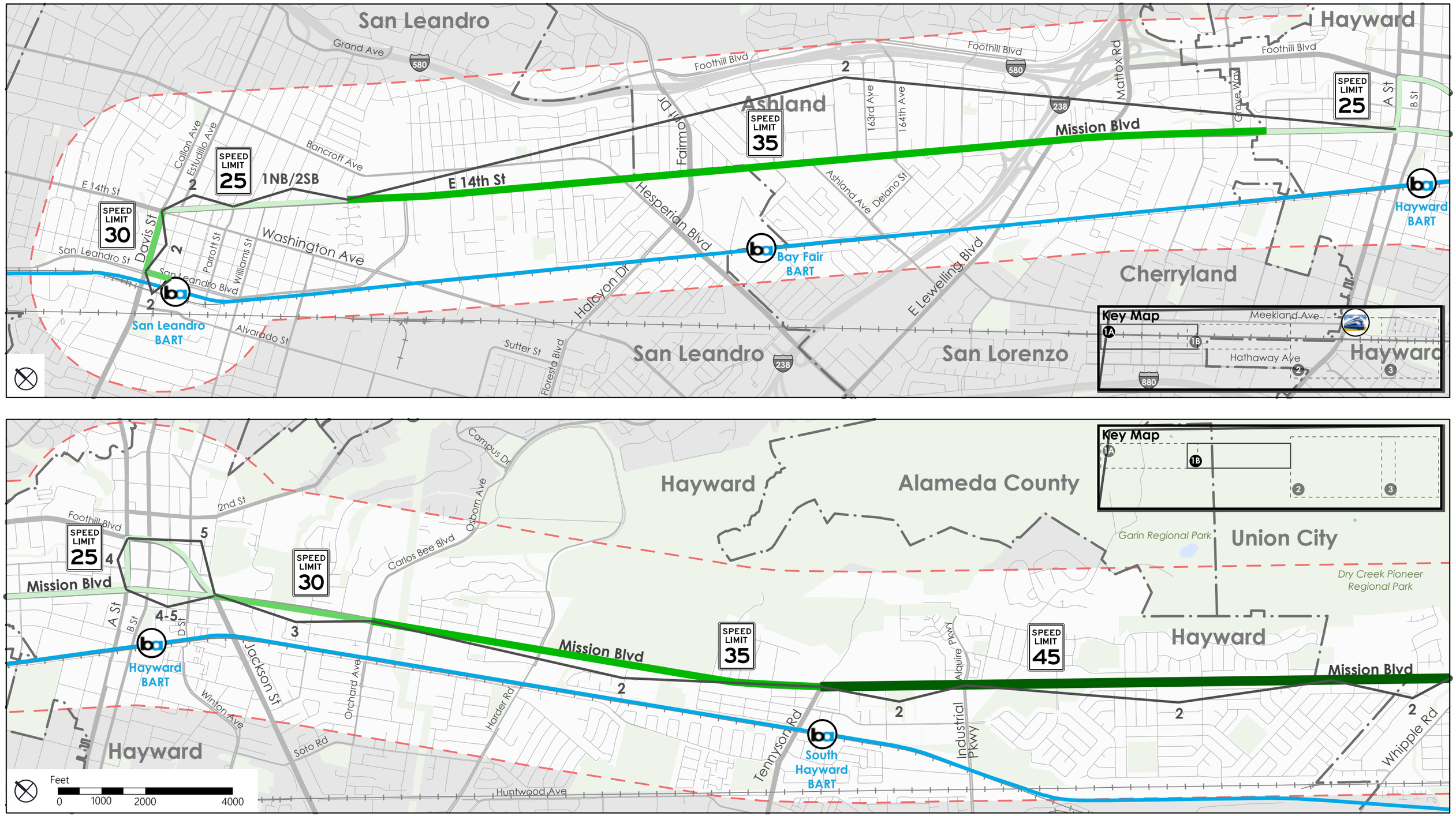
Posted speed limits are influenced by a combination of roadway design parameters and the adjacent land use context. Along the Project Corridor, lower speed limits are found in areas with higher-density land use patterns with buildings at or near the street. Higher speed limits exist in areas with lower-density land use patterns with greater building setbacks.

Table 5-1: Number of Lanes, Signal Spacing, and Posted Speed Limits

Jurisdiction	From/To	Number of Lanes (per direction)	Median	Posted Speed Limit (mph)	Number of Signals	Signals Per Mile
E 14th St						
San Leandro	Davis St to Parrott St	2*	None	25	4	13.3
	Parrott St to Cornwall Way	1 NB 2 SB	None	25	4	8.0
	Cornwall Way to San Leandro Blvd	2	Two-Way Turn Lane	35	0	0.0
	San Leandro Blvd to Plaza Dr.	2	Raised Median, Two-Way Turn Lane	35	8	5.7
Alameda County	Plaza Dr. to Lewelling Blvd	2	Raised Median, Two-Way Turn Lane	35	11	6.4
Mission Blvd						
Alameda County	Lewelling Blvd to Rose St	2	Striped Median	35	3	3.3
Hayward	Rose St to A St	2*	None	25	1	1.7
	A St to Jackson St (southbound)	4-5 (one way)	N/A	25	4	10.0
	Foothill Blvd to Mission Blvd (westbound A St)	4 (one-way)	N/A	25	2	10.0
	A St to Jackson St (northbound Foothill Blvd)	5 (one-way)	N/A	25	3	6.0
	Jackson St to Orchard Ave	3	Raised Median	30	4	5.7
	Orchard Ave to Tennyson Rd	2	Raised Median	35	6	3.0
	Tennyson Rd to Industrial Pkwy	2	Raised Median	40	2	3.3
	Industrial Pkwy to Lexington Ave	2	Raised Median	40	5	3.1
Union City	Lexington Ave to Whipple Rd	2	Raised Median	40	2	3.3
	Whipple Rd to Decoto Rd	3	Raised Median	40	1	2.5

Jurisdiction	From/To	Number of Lanes (per direction)	Median	Posted Speed Limit (mph)	Number of Signals	Signals Per Mile
	Decoto Rd to Veneto Ave	2	Raised Median	45	4	3.3
Fremont	Veneto Ave to Niles Canyon Rd	2	Raised Median	45	3	1.5
	Niles Canyon Rd to Orchard Dr	3	Raised Median	45	2	5.0
	Orchard Dr to Stevenson Blvd	2	Raised Median	45	3	3.3
	Stevenson Blvd to I-680	2	Raised Median	40	5	2.3
Decoto Rd						
Union City	Mission Blvd to Alameda Creek	2	Raised Median	35	8	4.7
Fremont	Alameda Creek to Fremont Blvd	3 EB 2 WB	Raised Median	40	1	1.7
Fremont Blvd						
Fremont	Decoto Rd to Tamayo St	2	Raised Median	40	1	2.5
	Tamayo St to Nicholet Ave	3 NB 2 SB	Raised Median	40	1	3.3
	Nicholet Ave to Alder Ave	3 NB 2 SB	Raised Median	40	2	5.0
	Alder Ave to Thornton Ave	2	Raised Median	40	1	3.3
	Thornton Ave to Peralta Ave	2	Two-Way Turn Lane	30	1	3.3
	Peralta Ave to Parish Ave	2*	None	30	1	10.0
	Parish Ave to Central Ave	2	Raised Median	30	0	0.0
	Central Ave to Mowry Ave	2	Raised Median	35	3	3.0
	Mowry Ave to Walnut Ave	3	Raised Median	35	3	7.5
	Walnut Ave to Stevenson Blvd	3	Raised Median	40	3	5.0
	Stevenson Blvd to Union St/ Washington Blvd	2	Raised Median, Two-Way Turn Lane	35	5	5.6
	Union St/ Washington Blvd to S. Grimmer Blvd	2	Raised Median	40	7	3.2
S. Grimmer Blvd						
Fremont	Fremont Blvd to Warm Springs Blvd	2	Raised Median	40	2	3.3
Warm Springs Blvd						
Fremont	Grimmer Blvd to Warm Springs BART Station	2	Raised Median	35	2	10.0

Jurisdiction	From/To	Number of Lanes (per direction)	Median	Posted Speed Limit (mph)	Number of Signals	Signals Per Mile
Washington Blvd						
Fremont	Fremont Blvd to Roberts Ave	2	None	35	0	0.0
	Roberts Ave to Osgood Rd	2 WB 3 EB	Raised Median	35	0	0.0
Osgood Rd						
Fremont	Washington Blvd to S. Grimmer Blvd	2	Two-Way Turn Lane	40	4	1.9



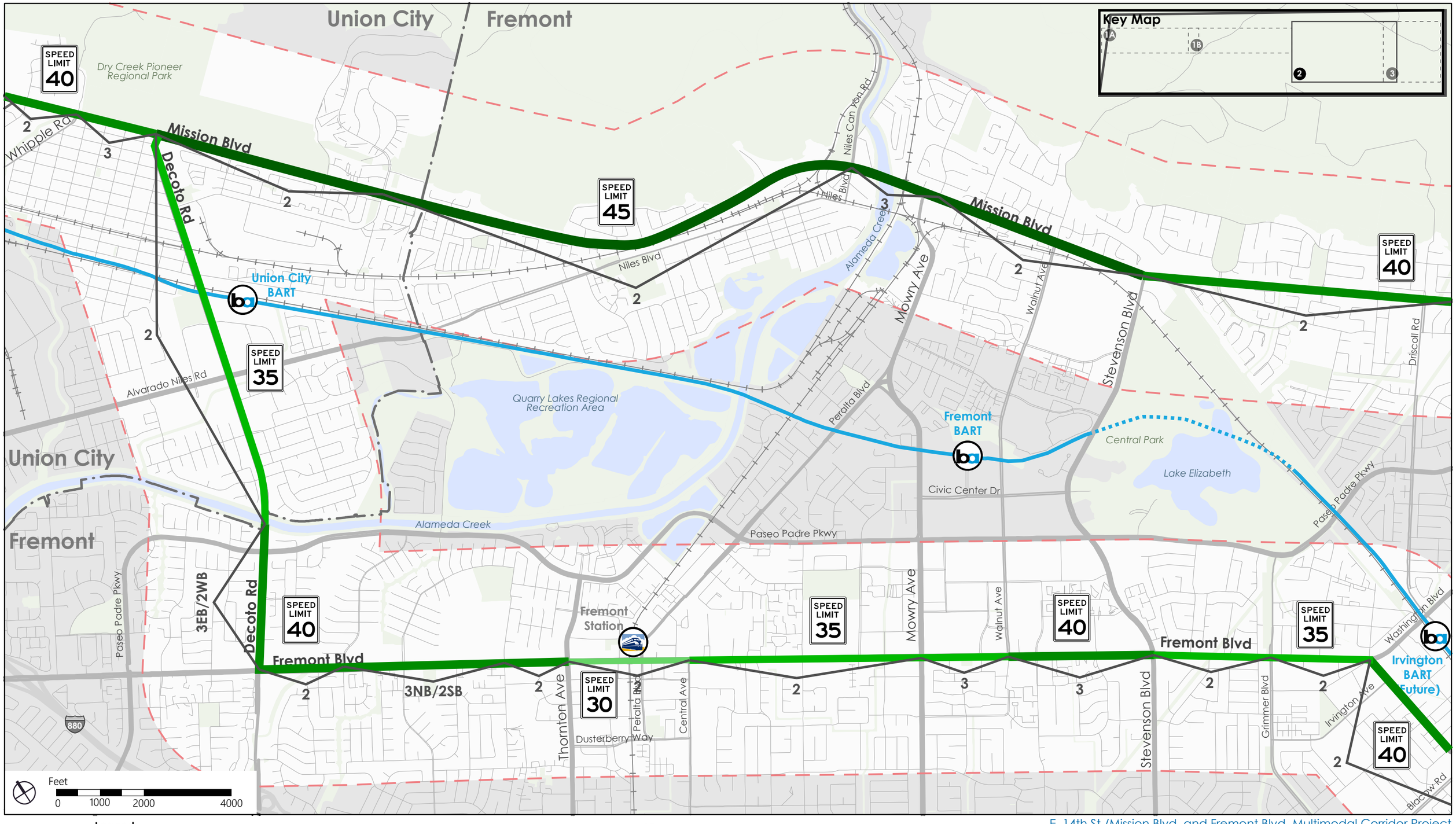
Legend:

- BART Station
- BART Above/Below Ground
- Capitol Corridor Station
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial/Collector/Local
- Water Bodies
- Parks/Open Space
- 25
- 30
- 35
- 40
- 45
- Travel Lanes Per Direction

E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

Figure 5-1a
Speed Limit and Number of Lanes
E. 14th St./Mission Blvd. between Davis St. and Whipple Rd.

August 2018



Legend:

- BART Station
- BART Above/Below Ground
- Capitol Corridor Station
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial/Collector/Local
- Water Bodies
- Parks/Open Space
- 25
- 30
- 35
- 40
- 45
- Travel Lanes Per Direction

ALAMEDA County Transportation Commission

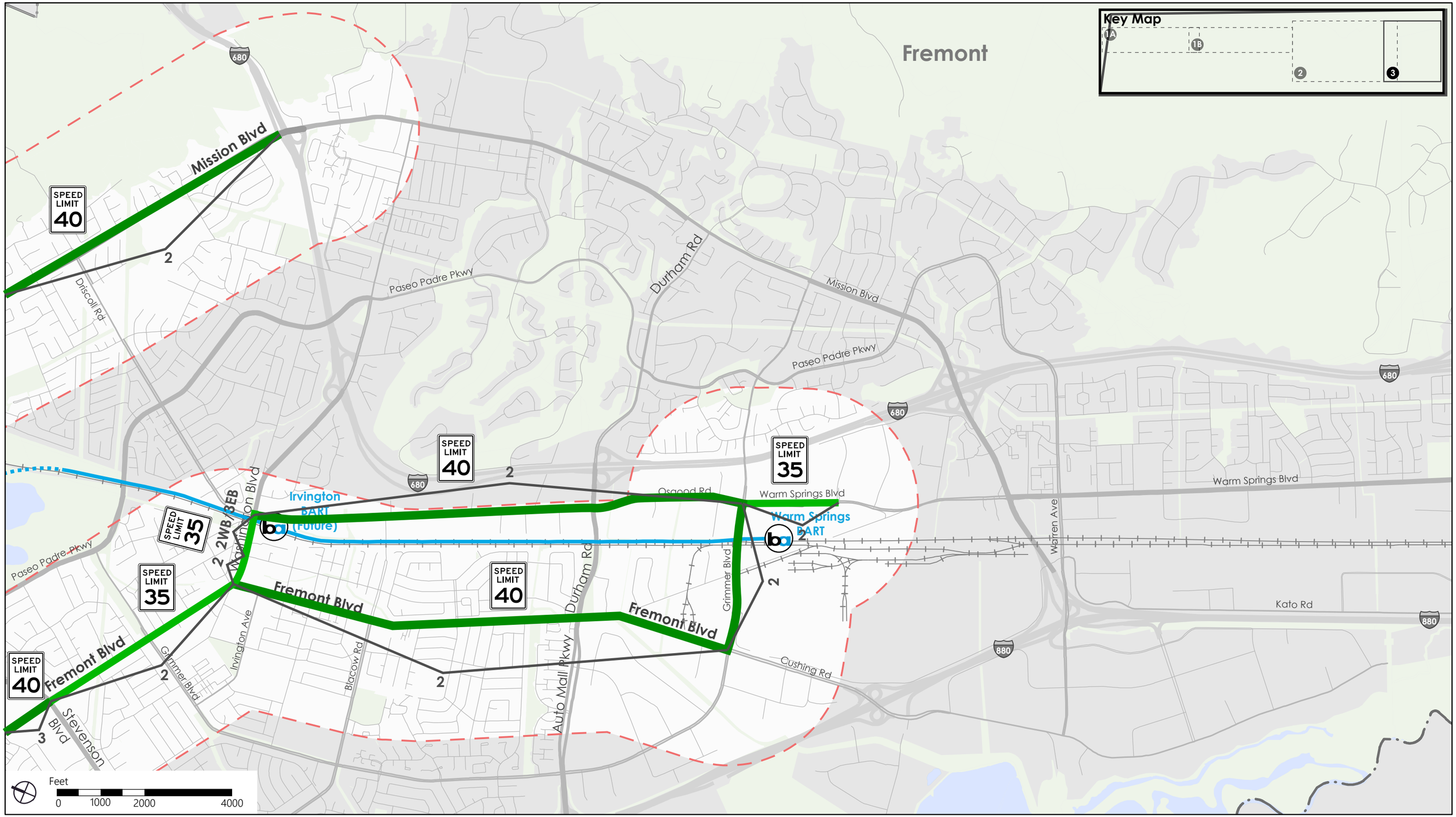
E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

Figure 5-1b

Speed Limit and Number of Lanes

Mission Blvd. between Whipple Rd. and Driscoll Rd. and Fremont Blvd. between Decoto Rd. and Washington Blvd.

August 2018



Legend:

- BART Station
- BART Above/Below Ground
- Capitol Corridor Station
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial/Collector/Local
- Water Bodies
- Parks/Open Space
- 25
- 30
- 35
- 40
- 45
- Travel Lanes Per Direction

ALAMEDA County Transportation Commission

E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

Figure 5-1c

Speed Limit and Number of Lanes

Mission Blvd. between Driscoll Rd. and I-680 and Fremont Blvd. between Washington Blvd. and Warm Springs BART

August 2018

5.2 EXISTING ROADWAY VOLUMES AND HISTORICAL TRENDS

Existing conditions related to traffic volume, speed, and intersection operations were analyzed to identify locations along the Project Corridor with existing capacity constraints. Historical trends in traffic volume and speed were analyzed for the most recent five-year period. This section documents the findings of this analysis.

Traffic Volumes

Daily and peak hour traffic volumes for existing conditions were compiled for the Project Corridor and parallel portions of Interstate 880 using the following sources:

- Caltrans' Traffic Census Program (2016) – primary data source for peak hour and AADT volumes for portions of the Project Corridor and Interstate 880 that are under state jurisdiction
- Alameda CTC Rail Strategy (2016) – for traffic volumes along Decoto Rd
- City of Fremont Traffic Counts (2017) – for Fremont Blvd, Grimmer Blvd, and Warm Springs Blvd

Existing Traffic Volumes

Current daily traffic volumes along the Project Corridor range from a low of 16,800 in San Leandro to a high of nearly 36,000 in Fremont.

Existing traffic volumes were available at 28 locations along the Project Corridor and 17 locations along adjacent portions of Interstate 880. **Table 5-2** and **Table 5-3** summarize the daily and peak hour volumes for these locations. These tables also show the volumes per lane.

For ease of presentation and comparison, traffic counts for the Project Corridor were grouped into seven distinct sections as shown in the table; traffic counts for Interstate 880 were grouped into three sections. **Figure 5-2** shows the daily and peak hour volumes for the Project Corridor and Interstate 880 based on these sections. Within each section, the highest daily volume is reported for simplicity; these values are shown in red in **Table 5-2** and **Table 5-3.**

As shown in **Table 5-2**, the Project Corridor has the lowest volumes on E. 14th St north of the Hayward Loop. Most of this section has four through lanes, except for portions within downtown San Leandro. The highest traffic volumes on Mission Blvd are near Niles Canyon Rd; this section has six through lanes. The highest volumes on Fremont Blvd are between Stevenson Blvd and Washington Blvd; this section has four through lanes.

Traffic volumes along the parallel sections of Interstate 880 exhibit the reverse trend, with higher volumes in the northern end of the Study Area and lower volumes in the southern end. These differing patterns indicate that volumes along the Project Corridor are

influenced more by local trips rather than regional trips (refer to Section 4, Travel Markets, for additional discussion).

Table 5-2: Existing Daily and Peak Hour Traffic Volumes - Project Corridor

Project Corridor Section	Location	Existing Volume		Volume Per Lane	
		Daily (AADT)	Peak Hour	Daily	Peak Hour
E. 14th St. / Mission Blvd: Davis St. to A St.	South of Davis St	22,100	1,800	5,525	450
	South of Sybil Ave/Castro St	16,800	1,300	5,600	433
	South of Hesperian Blvd	21,700	1,800	5,425	450
	South of 150th Ave	20,600	1,700	5,150	425
	South of 168th Ave	21,500	1,800	5,375	450
	SR 238 Interchange	18,100	1,500	4,525	375
	South of Lewelling Blvd	22,400	1,850	5,600	463
	South of Mattox Rd	22,000	1,850	5,500	463
Mission Blvd: A St. to Decoto Rd.	North of Gresel St	27,000	2,200	6,750	550
	North of Decoto Rd	30,000	2,450	5,000	408
Mission Blvd: Decoto Rd. to I-680	South of Decoto Rd	26,000	2,150	6,500	538
	South of Nursery Ave	30,000	2,850	7,500	713
	South of Sullivan Underpass	30,000	2,850	7,500	713
	South of Niles Canyon Rd/SR 84	32,500	3,100	5,417	517
	South of Mowry Ave/SR 84	23,000	1,900	5,750	475
	North of I-680	29,000	2,400	7,250	600
Decoto Rd: Mission Blvd. to Fremont Blvd.	South of Depot Rd	23,700	2,030	5,925	508
Fremont Blvd: Decoto Rd. to Grimmer Blvd.	South of Thornton Ave	25,500	2,800	6,375	700
	Decoto Rd to Thornton Ave.	26,456	2,652	5,291	530
	Thornton Ave to Peralta Blvd.	25,397	2,377	6,349	594
	Peralta Blvd to Central Ave	23,687	2,140	5,922	535
	Central Ave. to Mowry Ave	27,698	2,608	6,925	652
	Mowry Ave to Stevenson Blvd	28,118	2,428	7,030	607
	Stevenson Blvd to Washington Blvd	35,998	3,033	9,000	758
	Washington Blvd to Auto Mall Pkwy	18,873	1,890	4,718	473
	Auto Mall Pkwy to S. Grimmer Blvd	20,855	2,079	5,214	520

Project Corridor Section	Location	Existing Volume		Volume Per Lane	
		Daily (AADT)	Peak Hour	Daily	Peak Hour
S. Grimmer Blvd: Fremont Blvd. to Warm Springs Blvd.	West of Warm Springs Blvd	17,689	1,839	4,422	460
Warm Springs Blvd: S. Grimmer Blvd. to Warm Springs BART	South of S. Grimmer Blvd	22,115	2,668	5,529	667

Source: Caltrans (2016), Alameda CTC (2016), City of Fremont (2017)
Notes:
1) The volumes shown in red are the highest within each individual grouping and are considered to represent each section for analysis purposes.
2) The peak hour as reported by Caltrans is the highest hour of the day and may occur during the AM or PM peak period.

Table 5-3: Existing Daily and Peak Hour Traffic Volumes - Interstate 880

I-880 Section/Location		Existing Volume		Volume Per Lane	
		Daily	Peak Hour	Daily	Peak Hour
Davis St to A St	South of Davis St	219,000	14,600	24,333	1,622
	South of Marina Blvd	225,000	15,000	25,000	1,667
	South of Route 238 East	244,000	16,300	22,182	1,482
	South of Hesperian Blvd	267,000	17,700	24,273	1,609
A St to Decoto Rd	South of A St	277,000	18,400	27,700	1,840
	South of Winton Ave	264,000	17,500	29,333	1,944
	South of SR 92	240,000	16,400	30,000	2,050
	South of Tennyson Rd	228,000	15,600	28,500	1,950
	South of Industrial Pkwy	212,000	14,500	23,556	1,611
	South of Whipple Rd	214,000	14,600	23,778	1,622
	South of Alvarado-Niles Rd	220,000	15,000	27,500	1,875
	South of Fremont Blvd	213,000	14,600	26,625	1,825
Decoto Rd to Fremont Blvd	South of Decoto Rd/SR 84	217,000	14,800	27,125	1,850
	South of Thornton Ave/SR 84	214,000	14,600	26,750	1,825
	South of Mowry Ave	203,000	13,900	25,375	1,738
	South of Stevenson Blvd	201,000	13,700	25,125	1,713
	South of Auto Mall Pkwy	182,000	12,400	22,750	1,550

Source: Caltrans (2016)
Notes:
1) The volumes shown in red are the highest within each individual grouping and are considered to represent each section for analysis purposes.
2) Auxiliary lanes are not included in the calculation of volume per lane.

South of Lewelling Boulevard:
22,400 vpd | 1,850 vph

South of Hesperian Boulevard:
267,000 vpd | 17,700 vph

South of A Street:
277,000 vpd | 18,400 vph

North of Decoto Road:
30,000 vpd | 2,450 vph

South of Depot Road:
23,700 vpd | 2,030 vph

South of Niles Canyon Road:
32,500 vpd | 3,100 vph

South of Stevenson Boulevard:
35,998 vpd | 3,033 vph

West of Warm Springs Boulevard:
17,689 vpd | 1,839 vph

South of Decoto Road:
217,000 vpd | 14,800 vph

South of S. Grimmer Boulevard:
22,115 vpd | 2,668 vph

Mile
0 0.5 1 2

Legend:

- BART Station
- BART Above/Below Ground
- Capitol Corridor Stations
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial
- Water Bodies
- Parks/Open Space
- Project Corridor

E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

Figure 5-2
Existing Daily Traffic Volumes
Source: Caltrans (2016)

June 2018

Traffic Volume Historical Trends

Historical traffic volume data were available for many of the count locations along the Project Corridor and I-880. **Table 5-4** and **Table 5-5** show the historical trends for daily and peak hour (highest of AM or PM peak) traffic volumes, respectively. To simplify the reporting of the historical trends, only the count location in each section with the highest AADT was used.

The following conclusions can be drawn from the historical traffic volumes trends:

Traffic growth rates for the Project Corridor have been lower than those for the parallel sections of Interstate 880.

- Daily volumes on Interstate 880 have increased at a faster rate (3 percent per year) than peak hour volumes (1.8 percent per year). Since Interstate 880 is approaching capacity during peak periods, the higher daily growth rate indicates the peak demand is spreading to a larger portion of the day.
- The Project Corridor is growing at the same rate per year for both daily and peak hour periods. This indicates that peak hour traffic along the Project Corridor is not constrained by capacity under existing conditions.
- The highest growth rates along the Project Corridor are between A St and Decoto Rd. The growth rate for this section is about 3 percent per year, consistent with that for the adjacent section of Interstate 880. This section of the Project Corridor also contains the Hayward Loop which, based on the travel market analysis, is likely to be used as a diversion route for adjacent freeways.

Table 5-4: Historical Daily Volume Trend

Roadway Section	2013	2014	2015	2016(3)	Yearly Growth
Project Corridor					
E. 14th St/Mission Blvd. from Davis St. to A St.	22,000	22,000	22,000	22,400	0.6%
Mission Blvd. from A St. to Decoto Rd.	27,500	28,000	30,000	30,000	2.9%
Mission Blvd. from Decoto Rd. to I-680	31,000	31,500	32,500	32,500	1.6%
Decoto Rd. from Mission Blvd. to Fremont Blvd.	N/A	N/A	N/A	23,700	N/A(1)
Fremont Blvd. from Decoto Rd. to Grimmer Blvd.	N/A	N/A	N/A	35,998	N/A(2)
S Grimmer Blvd. from Fremont Blvd. to Warm Springs Blvd.	N/A	N/A	N/A	17,689	N/A(1)
Warm Springs Blvd. from S. Grimmer Blvd to Warm Springs BART	N/A	N/A	N/A	22,115	N/A(1)
Interstate 880					
I-880 from Davis St. to A St.	244,000	254,000	259,000	267,000	3.0%
I-880 from A St. to Decoto Rd.	254,000	264,000	269,000	277,000	2.9%
I-880 from Decoto Rd. to Stevenson Blvd.	199,000	207,000	211,000	217,000	2.9%

Source: Caltrans & City of Fremont

N/A – data not available

(1) Historical data not available.

(2) Not calculated due to errors in source data.

(3) Data from the City of Fremont on Decoto Road, S. Grimmer Boulevard, Fremont Boulevard, and Warm Springs Boulevard represent 2017 conditions

Table 5-5: Historical Peak Hour Volume Trend

Roadway Section	2013	2014	2015	2016(3)	Yearly Growth
Project Corridor					
E. 14th St/ Mission Blvd. from Davis St. to A St.	1,800	1,800	1,800	1,850	0.9%
Mission Blvd. from A St. to Decoto Rd.	2,250	2,300	2,450	2,450	2.9%
Mission Blvd. from Decoto Rd. to I-680	2,950	3,000	3,100	3,100	1.7%
Decoto Rd. from Mission Blvd. to Fremont Blvd.	N/A	N/A	N/A	2,030	N/A(1)
Fremont Blvd. from Decoto Rd. to Grimmer Blvd.	N/A	N/A	N/A	3,033	N/A(2)
S Grimmer Blvd. from Fremont Blvd. to Warm Springs Blvd.	N/A	N/A	N/A	1,839	N/A (1)
Warm Springs Blvd. from S. Grimmer Blvd to Warm Springs BART	N/A	N/A	N/A	2,668	N/A (1)
Interstate 880					
I-880 from Davis St. to A St.	16,800	16,900	17,200	17,700	1.8%
I-880 from A St. to Decoto Rd.	17,500	17,600	17,900	18,400	1.7%
I-880 from Decoto Rd. to Stevenson Blvd.	15,300	14,200	14,400	14,800	N/A*

Source: Caltrans & City of Fremont

N/A – data not available

(1) Historical data not available.

(2) Not calculated due to errors in source data.

(3) Data from the City of Fremont on Decoto Road, S. Grimmer Boulevard, Fremont Boulevard, and Warm Springs Boulevard represent 2017 conditions

Travel Speeds

Travel speeds were analyzed for the Project Corridor and adjacent sections of Interstate 880 using INRIX data sets. INRIX uses GPS data from mobile devices and vehicle tracking systems to estimate vehicle travel speeds.

INRIX data sets include 68 segments for the Project Corridor (34 per direction) and 74 segments for the adjacent sections of I-880 (37 per direction). These segments were aggregated into larger sections like those used for the traffic volume analysis:

The INRIX travel speed data were summarized based on the following assumptions, like those used for the travel markets analysis (Section 4):

- Data period from March 1, 2017 to March 1, 2018
- Midweek days (Tuesday, Wednesday, and Thursday)
- 50th percentile travel speed to represent typical conditions
- AM peak (6 – 10 AM) and PM peak (3 – 7 PM) periods
- 15-minute increments
- Midweek holidays were not removed from the data set

Existing Traffic Speeds

Peak period traffic speeds along the Project Corridor range from a low of 18 mph in the northern sections to a high of 40 mph in the south.

Table 5-6 summarizes the AM and PM peak period average travel speeds for the Project Corridor and adjacent Interstate 880 corridor. The INRIX data used captures overall travel speeds including delays from traffic signals and vehicle queues. Therefore, the average travel speeds are often less than the posted speed limit and are influenced by both the number of traffic signals and operating conditions at individual intersections.

The slowest average speeds along the Project Corridor are generally in the northern section of the corridor between Davis St and A St. Speeds for this section range from 18 to 21 mph, consistent with this section having the lowest posted speed limits, ranging from 25 to 35 mph.

The fastest average speeds along the Project Corridor are along Warm Springs Blvd, Grimmer Blvd, and Mission Blvd between Decoto Rd and Interstate 680. Speeds for these sections reach a maximum of 36 to 40 mph, consistent with the higher posted speed limits of 35 to 40 mph.

Based on the Highway Capacity Manual methodologies, arterial roadway segments of one to two miles in length that have average speeds less than 13 mph are considered to operate at LOS D, E, or F. However, as shown in **Table 5-6** and discussed above, no longer roadway segments currently have average peak period speeds below 13 mph. Therefore, a more detailed review of the 15-minute data was also conducted to look for congested sections. This review showed that no sections of one to two miles along the Project Corridor were operating below 13 mph for any 15-minute period of the typical day.

While the Project Corridor in general is not considered congested under existing conditions, there may be specific locations (e.g. near signals) with localized congestion. Some of these locations are identified later in the intersection operations section.

For Interstate 880 southbound, the section between Decoto Rd and Stevenson Blvd is the slowest during the AM peak period operating at 28 mph (37 mph below the posted speed limit of 65 mph).

Table 5-6: Existing Peak Period Travel Speeds

Roadway Sections	Northbound (in mph)		Southbound (in mph)		LOS D, E or F? (1)
	AM	PM	AM	PM	
Project Corridor					
E. 14th St from Davis St to A St	21	18	21	18	No (1)
Mission Blvd from A St to Decoto Rd	25	20	25	24	No
Mission Blvd from Decoto Rd to I-680 SB Ramps	36	32	32	29	No
Decoto Rd from Mission Blvd to Fremont Blvd	24	21	23	22	No
Fremont Blvd from Decoto Rd to Stevenson Blvd	25	23	25	24	No
Fremont Blvd from Stevenson Blvd to S. Grimmer Blvd (2)	35	34	23	35	No
S Grimmer Blvd from Fremont Blvd to Warm Springs Blvd (2)	35	35	35	35	No
Warm Springs Blvd from S. Grimmer Blvd to Warm Springs BART (2)	40	39	38	40	No
Interstate 880					
I-880 from Davis St to A St	38	52	36	48	
I-880 from A St to Decoto Rd	52	24	29	44	
I-880 from Decoto Rd to Stevenson Blvd	63	34	28	57	

Source: INRIX, March 2017 – February 2018

(1) Per the Highway Capacity Manual, LOS D for the Project Corridor is defined as travel speeds less than 13 mph for any segment of 1-2 miles. LOS conditions were analyzed for each 15-minute increment during the AM and PM peak periods.
(2) Speeds estimated from Alameda Countywide Travel Model as INRIX data were not available.

For Interstate 880 northbound, the section between Decoto Rd and A St is the slowest in the PM peak period, operating at 24 mph.

Key findings based on the INRIX data analysis are as follows:

- Given that speeds along Interstate 880 are generally faster than corresponding speeds on the Project Corridor, it is unlikely that north-south trips divert from Interstate 880 to the Project Corridor today under typical conditions. This is confirmed in the travel market analysis section.
- With average segment speeds along the Project Corridor equating to LOS A through LOS C operations, there are not larger sections of the Project Corridor experiencing significant congestion for existing conditions. However, intersection-level congestion, discussed later in this section, may begin to affect conditions as traffic volumes increase.

Traffic Speed Historical Trends

Similar to the analysis completed for traffic volumes, a historical trends analysis was performed using INRIX speed data to determine how travel speeds along the Project Corridor and the adjacent Interstate 880 corridor have changed between 2014 and 2017.

Table 5-7 summarizes the analysis results. As shown, both the Project Corridor and adjacent Interstate 880 have experienced decreases in average speeds of 4 to 7 percent per year. If this trend continues, segments of the Project Corridor could become congested (i.e., fall below the 13-mph threshold) especially in the northern segment (San Leandro) and southern portion (Fremont).

Table 5-7: Historical Peak Period Travel Speed Trends, 2014 - 2017

Roadway Section	Northbound		Southbound		Trend
	AM	PM	AM	PM	
Project Corridor					
E. 14th St/ Mission Blvd from Davis St to A St	-5.3%	-7.9%	-5.3%	-7.8%	-6.6%
Mission Blvd from A St to Decoto Rd	-3.6%	-7.1%	-3.6%	-4.4%	-4.7%
Mission Blvd from Decoto Rd to I-680 SB Ramps	-2.1%	-4.1%	-3.1%	-5.9%	-3.8%
Decoto Rd from Mission Blvd to Fremont Blvd	-4.5%	-5.4%	-4.1%	-5.3%	-4.8%
Fremont Blvd from Decoto Rd to Stevenson Blvd	-5.9%	-6.9%	-5.3%	-6.0%	-6.0%
Fremont Blvd from Stevenson Blvd to S. Grimmer Blvd	N/A	N/A	N/A	N/A	N/A
S Grimmer Blvd from Fremont Blvd to Warm Springs Blvd	N/A	N/A	N/A	N/A	N/A
Warm Springs Blvd from S. Grimmer Blvd to Warm Springs BART	N/A	N/A	N/A	N/A	N/A
Interstate 880					
I-880 from Davis St to A St	-5.2%	-3.4%	-5.5%	-5.1%	-4.8%
I-880 from A St to Decoto Rd	-3.1%	-6.0%	-7.2%	-5.0%	-5.3%
I-880 from Decoto Rd to Stevenson Blvd	-0.9%	-8.0%	-4.5%	-2.0%	-3.8%

Since 2014, average peak period traffic speeds for the Project Corridor have decreased between 4 and 7 percent per year.

Intersection Operations

To supplement the segment-level analysis completed using INRIX data, an intersection capacity analysis was performed to identify congestion at specific locations. The analysis provides a planning-level assessment of intersections currently operating near or over capacity based on existing volumes and lane geometries. The analysis methodology is described in the next page. These intersections may be candidates for near-term projects to improve operations at specific locations along the Project Corridor or intersections that should be considered when making recommendations for other projects that may affect intersection capacity.

Since there are 120 signalized intersections along the Project Corridor, the following locations were prioritized for analysis:

- Project Corridor intersections with cross streets included as part of the Alameda CTC's Congestion Management Plan (CMP) network
- Project Corridor intersections with cross streets that provide direct access to freeways (I-880 and/or I-580) but are not included in the CMP network
- Key intersections that accommodate AC Transit routes connecting the Project Corridor to adjacent BART stations (analyzed where counts were available)

Based on this prioritization, 31 intersections were analyzed (**Table 5-9**).

The Project Corridor intersections were analyzed using the Intersection Capacity Utilization (ICU) method which is a commonly used planning level methodology. The ICU method calculates a volume to capacity (V/C) ratio by accounting for lane configuration, volumes, and limited signal data such as cycle length and loss time. V/C ratios in the ICU method are then assigned a LOS based on the thresholds shown in **Table 5-8**. This methodology does not consider the adequacy of the signal timing being used at the intersection, only the adequacy of the number of lanes provided.

Of the 31 key intersections analyzed along the Project Corridor, six were found to operate over capacity.

Table 5-8: Intersection Level of Service (LOS) for ICU methods

Level of Service (LOS)	Volume to Capacity Ratio	Description
A	0.000 - 0.600	Free flowing. Most vehicles do not have to stop.
B	0.601 - 0.700	Minimal delays. Some vehicles have to stop, although waits are not bothersome.
C	0.701 - 0.800	Acceptable delays. Significant numbers of vehicles have to stop because of steady, high traffic volumes. Still, many pass without stopping.
D	0.801 - 0.900	Tolerable delays. Many vehicles have to stop. Drivers are aware of heavier traffic. Cars may have to wait through more than one red light. Queues begin to form, often on more than one approach.
E	0.901 - 1.000	Significant delays. Cars may have to wait through more than one red light. Long queues form, sometimes on several approaches.
F	> 1.000	Excessive delays. Intersection is jammed. Many cars have to wait through more than one red light, or more than 60 seconds. Traffic may back up into "up-stream" intersections.

The intersection V/C ratios and LOS are summarized in **Table 5-9**. **Figure 5-3** shows the findings graphically for the worst peak hour. Of

the intersections analyzed, ten were found to operate at LOS D and six were found to operate at LOS E or worse during the AM and/or PM peak hours. These six intersections are shown in red text in **Table 5-9** and are as follows:

- Foothill Blvd and A St
- Mission Blvd and Niles Canyon Rd and Niles Blvd
- Mission Blvd and Mowry Ave
- Mission Blvd and I-680 SB Ramp
- Fremont Blvd and Decoto Rd
- Automall Parkway and Fremont Blvd

These six intersections fall within sections of the Project Corridor where current travel speed data show an overall LOS C or better (see **Table 5-6**). While these intersections currently do not cause enough delay to affect corridor speeds significantly, increased vehicle demand may affect corridor speeds for future conditions. Near-term projects to improve localized operations at these locations can be considered to reduce the impact of future vehicle demand on corridor speeds.

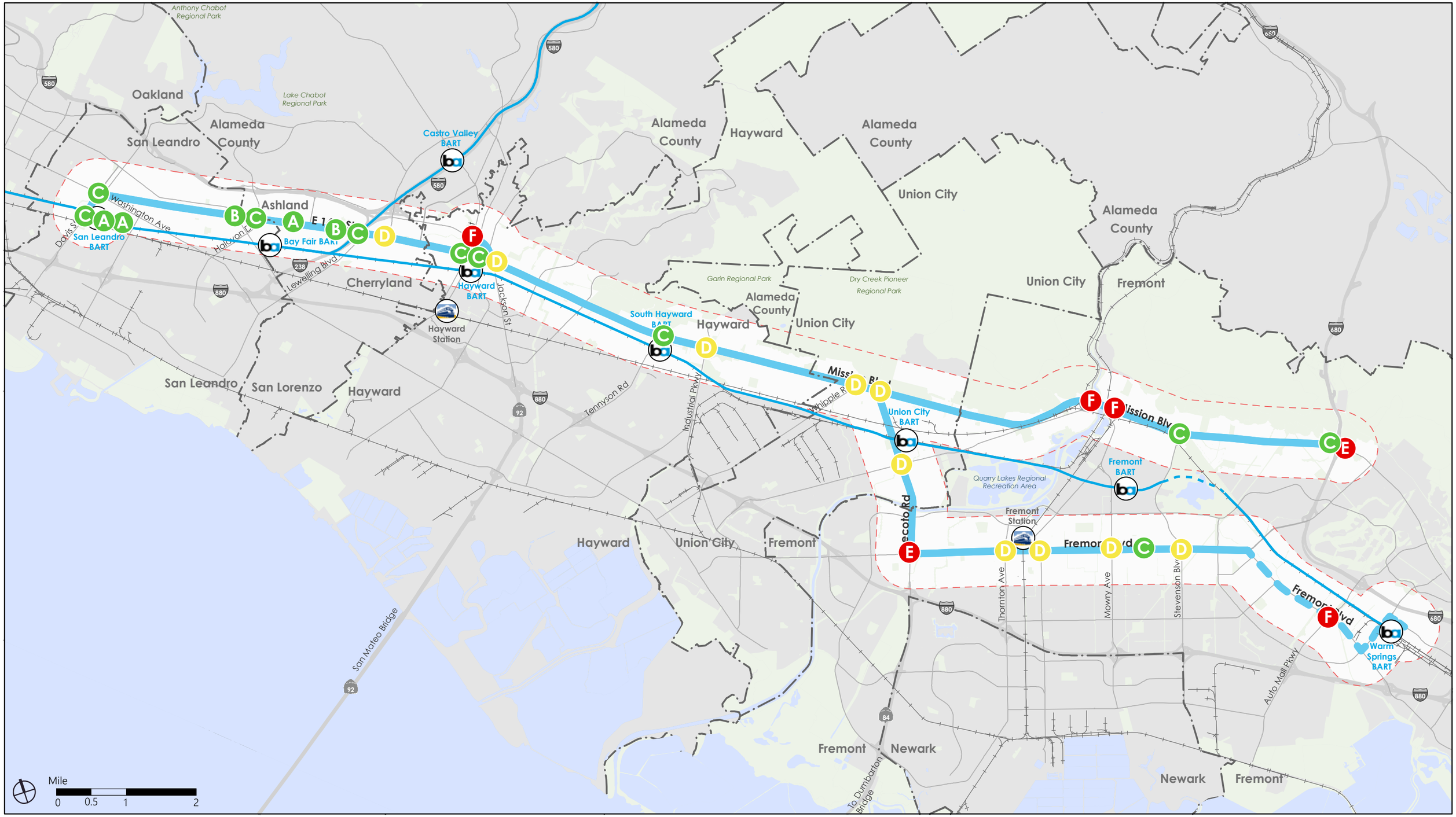
Additionally, as near-term improvements are identified for non-auto modes, affected intersections may be analyzed in more detail to identify potential impacts to traffic operations.

Table 5-9: Level of Service (LOS) for Key Intersections

Intersection	AM		PM	
	V/C	LOS	V/C	LOS
San Leandro				
San Leandro Blvd and W Juana Ave	0.53	A	0.49	A
San Leandro Blvd and BART Bus Entry	0.36	A	0.37	A
San Leandro Blvd and Davis St	0.73	C	0.78	C
E 14th St and Callan Ave and Davis St	0.66	B	0.73	C
E 14th St and Bancroft Ave	0.64	B	0.69	B
E 14th St and Fairmont Dr	0.74	C	0.77	C
Alameda County				
E 14th St and 163rd Ave	0.50	A	0.58	A
E 14th St and 170th Ave	0.70	B	0.67	B
Mission Blvd/Lewelling Blvd	0.75	C	0.76	C
Mission Blvd and Hampton Rd and Mattox Rd	0.73	C	0.86	D
Hayward				
Mission Blvd and A St	0.64	B	0.71	C
Mission Blvd and D St	0.75	C	0.75	C
Foothill Blvd and A St	0.95	E	1.02	F
Mission Blvd and Foothill Blvd and Jackson St	0.65	B	0.85	D
Mission Blvd and Tennyson Rd	0.74	C	0.65	B
Mission Blvd and Industrial Pkwy	0.88	D	0.79	C
Union City				
Mission Blvd and Whipple Rd	0.87	D	0.77	C
Mission Blvd and Decoto Rd	0.81	D	0.78	C
Decoto Rd and Alvarado-Niles Rd	0.88	D	0.88	D

Intersection	AM		PM	
	V/C	LOS	V/C	LOS
Fremont				
Mission Blvd and Niles Canyon Rd and Niles Blvd	0.91	E	1.03	F
Mission Blvd and Mowry Ave	1.24	F	0.95	E
Mission Blvd and Stevenson Blvd	0.77	C	0.74	C
Mission Blvd and I-680 NB Ramp	0.71	C	0.64	B
Mission Blvd and I-680 SB Ramp	0.88	D	0.95	E
Fremont Blvd and Decoto Rd	0.95	E	1.00	E
Fremont Blvd and Thornton Ave	0.84	D	0.85	D
Fremont Blvd and Peralta Blvd	0.66	B	0.81	D
Fremont Blvd and Mowry Ave	0.86	D	0.86	D
Fremont Blvd and Walnut Ave	0.67	B	0.76	C
Fremont Blvd and Stevenson Blvd	0.89	D	0.74	C
Automall Pkwy and Fremont Blvd	1.00	F	0.96	E

Red text indicates intersections operating at LOS E or F.



Legend:

- BART Station
- BART Above/Below Ground
- Capitol Corridor Stations
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial
- Water Bodies
- Parks/Open Space
- LOS A - LOS C
- LOS D
- LOS E - LOS F
- Project Corridor

E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

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Figure 5-3
Intersection Level of Service

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5.3 PROJECTED TRAFFIC VOLUMES AND SPEEDS

Volume and speeds for the Project Corridor and adjacent sections of Interstate 880 were projected for the year 2040 using the Alameda Countywide Travel Demand Model. These projections are used to identify vehicular traffic circulation deficiencies that may be addressed by long-term projects.

Projected Traffic Volumes

Year 2040 traffic volumes for daily and peak hour conditions are shown in in **Table 5-10** and **Table 5-11**, respectively. The projected volumes were derived by applying the incremental growth in traffic volumes between 2016 and 2040 (as estimated by the travel demand model) to existing volumes consistent with standard industry practice.

Table 5-10: Future Daily Traffic Volumes and Yearly Trends

Roadway Section	2016 AADT	Increment	2040 AADT	2016-2040 Trend
Project Corridor				
E. 14th St from Davis St to A St	22,400	16,800	39,200	2.4%
Mission Blvd from A St to Decoto Rd	30,000	17,300	47,300	1.9%
Mission Blvd from Decoto Rd to I-680 SB Ramps	32,500	9,800	42,300	1.1%
Decoto Rd from Mission Blvd to Fremont Blvd	23,700	700	24,400	0.2%
Fremont Blvd from Decoto Rd to S. Grimmer Blvd	35,998	7,700	43,698	0.8%
S Grimmer Blvd from Fremont Blvd to Warm Springs Blvd*	7,526	14,020	21,546	4.5%
Warm Springs Blvd from S. Grimmer Blvd to Warm Springs BART*	26,743	15,144	41,887	1.9%
Interstate 880				
I-880 from Davis St to A St	267,000	50,000	317,000	0.7%
I-880 from A St to Decoto Rd	277,000	31,000	308,000	0.4%
I-880 from Decoto Rd to Stevenson Blvd	217,000	32,000	249,000	0.6%

*S. Grimmer Blvd and Warm Springs Blvd volumes and growth are taken directly from the travel demand model since existing count data were not available.

Table 5-11: Future Peak Hour Traffic Volumes and Yearly Trends

Roadway Section	Existing Peak Hour Volume	Increment	2040 Peak Hour Volume	Annual Growth
Project Corridor				
E. 14th St from Davis St to A St	1,850	1,998	3,848	3.1%
Mission Blvd from A St to Decoto Rd	2,450	2,128	4,578	2.6%
Mission Blvd from Decoto Rd to I-680 SB Ramps	3,100	1,289	4,389	1.5%
Decoto Rd from Mission Blvd to Fremont Blvd	2,030	96	2,126	0.2%
Fremont Blvd from Decoto Rd to S. Grimmer Blvd	3,033	1,855	4,888	2.0%
S Grimmer Blvd from Fremont Blvd to Warm Springs Blvd*	842	1,183	2,025	3.7%
Warm Springs Blvd from S. Grimmer Blvd to Warm Springs BART*	2,067	1,704	3,771	2.5%
Interstate 880				
I-880 from Davis St to A St	17,700	3,408	21,108	0.7%
I-880 from A St to Decoto Rd	18,400	1,199	19,599	0.3%
I-880 from Decoto Rd to Stevenson Blvd	14,800	3,097	17,897	0.8%

*S. Grimmer Blvd and Warm Springs Blvd volumes and growth are taken directly from the travel demand model since existing count data were not available.

Future traffic growth along the Project Corridor is lowest in the Union City and Fremont sections due to the additional capacity provided by the BART extension to San Jose.

The highest growth rate along the Project Corridor is projected for the northern section between Davis St and A St. This section has a projected growth rate of between 2.6% and 3.1% per year, which is higher than that for the parallel section of Interstate 880. This traffic growth along the Project Corridor is likely the result of increasing congestion along the Interstate 880 mainline, causing more regional trips to divert to this section of the Project Corridor in the future. This diversion does not occur regularly for existing conditions because the I-880 mainline is generally faster than the Project Corridor; however, projected traffic growth will likely make E. 14th Street/Mission Boulevard a more viable alternative for through trips.

Projected regional traffic growth may result in traffic diversion from Interstate 880 to portions of the Project Corridor in San Leandro, unincorporated Alameda County, and Hayward.

The lowest growth rate along the Project Corridor is projected for the southern sections of Decoto Rd and Fremont Blvd. This traffic growth rate is likely the result of the planned BART extension to San Jose, which will provide additional person trip capacity for trips to and from south of the Study Area.

Projected Travel Speeds

Average peak period travel speeds for the year 2040 are shown in **Table 5-12** and **Table 5-13** for the northbound and southbound directions, respectively. The projected speeds were derived by applying the incremental change in traffic volumes between 2017

and 2040 (as estimated by the travel demand model) to existing speeds.

Table 5-12: Future (2040) Peak Period Traffic Speeds, Northbound

Roadway Section	Northbound Speeds (mph)		Change from Existing (mph)	
	AM	PM	AM	PM
Project Corridor				
E. 14th St from Davis St to A St	21	18	-<1	-<1
Mission Blvd from A St to Decoto Rd	23	12	-2	-8
Mission Blvd from Decoto Rd to I-680 SB Ramps	36	29	-<1	-3
Decoto Rd from Mission Blvd to Fremont Blvd	23	21	-1	-<1
Fremont Blvd from Decoto Road to S. Grimmer Blvd	24	23	-1	-1
S Grimmer Blvd from Fremont Blvd to Warm Springs Blvd	35	34	-<1	-1
Warm Springs Blvd from S. Grimmer Blvd to Warm Springs BART	40	24	-<1	-15
Interstate 880				
I-880 from Davis St to A St	35	46	-3	-7
I-880 from A St to Decoto Rd	44	20	-8	-4
I-880 from Decoto Rd to Stevenson Blvd	56	29	-7	-5

Table 5-13: Future (2040) Peak Period Traffic Speeds, Southbound

Roadway Section	Southbound Speeds (mph)		Change from Existing (mph)	
	AM	PM	AM	PM
Project Corridor				
E. 14th St from Davis St to A St	19	18	-2	-<1
Mission Blvd from A St to Decoto Rd	15	20	-10	-4
Mission Blvd from Decoto Rd to I-680 SB Ramps	29	27	-3	-2
Decoto Rd from Mission Blvd to Fremont Blvd	23	22	-<1	-<1
Fremont Blvd from Decoto Rd to Stevenson Blvd	24	23	-1	-<1
S Grimmer Blvd from Fremont Blvd to Warm Springs Blvd	20	31	-15	-4
Warm Springs Blvd from S. Grimmer Blvd to Warm Springs BART	15	39	-23	-1
Interstate 880				
I-880 from Davis St to A St	28	35	-7	-13
I-880 from A St to Decoto Rd	26	37	-3	-7
I-880 from Decoto Rd to Stevenson Blvd	25	47	-3	-10

As shown in these tables, peak period speeds are projected to decrease significantly along the northern and middle sections of the Project Corridor between Davis St and Decoto Rd. This decrease is partially influenced by growth along the corridor and by traffic diversion from Interstate 880, where trips use the Project Corridor to bypass the most congested sections of the freeway. Decreased travel times along the corridor will also impact transit vehicles.

Significant reductions in traffic speeds are projected for the San Leandro and Alameda County portions of the Project Corridor due to traffic diversion from Interstate 880.

For the southern portion of the Project Corridor along Grimmer Blvd and Warm Springs Blvd, the travel demand model results predict significant decreases in speed. This is consistent with the significant employment growth planned for the area (see Section 2, Demographics and Land Use).

Peak period speeds along Interstate 880 are projected to continue to decrease between now and 2040. However, the decrease is small, likely due to the freeway already operating under congested conditions.

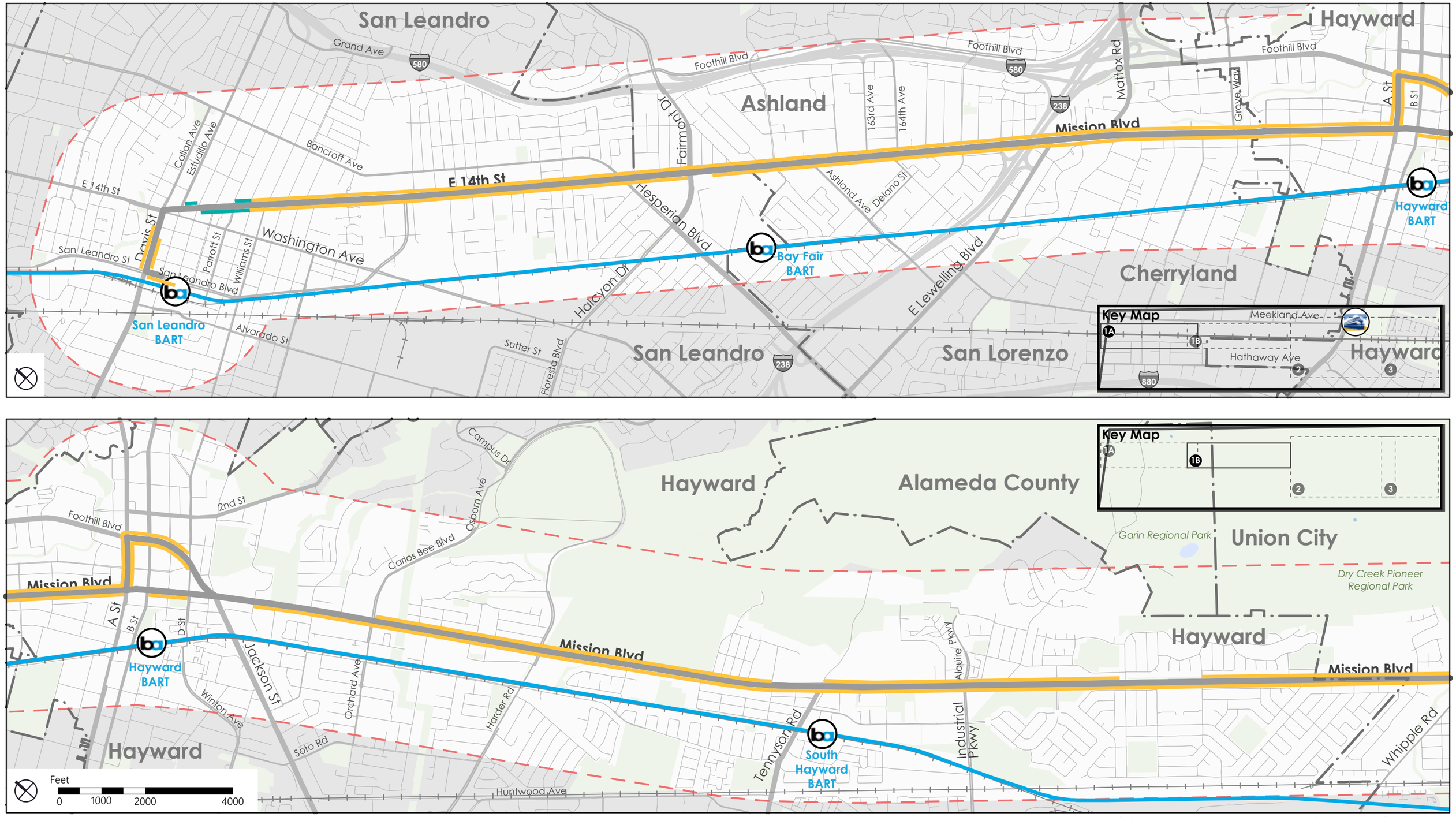
Significant reductions in traffic speeds are projected for the Warm Springs portion of the Project Corridor due to projected employment growth.

5.4 ON-STREET PARKING

On-street parking is present along several portions of the Project Corridor and affects vehicular traffic operations for existing conditions and potential improvements. A field review was conducted to identify locations with on-street parking and whether the parking is free or metered; the results are summarized in **Figure 5-4**. The summary of the field review is as follows:

- On-street parking is present along the majority of the Project Corridor in San Leandro, unincorporated Alameda County, and Hayward.
- Within Union City, on-street parking is present along Mission Blvd but not along Decoto Rd. It should also be noted that parking within Union City along the Project Corridor is significantly different from the rest of the areas due to lack of sidewalks and curbs.
- Within Fremont, on-street parking is present along portions of Fremont Blvd near the ACE/Amtrak station and south of Blacow Rd.
- Metered on-street parking is present only within downtown San Leandro. All other on-street parking along the Project Corridor is free and not metered.

This data will be used to inform the development of concepts by 1) identifying where parking interactions with vehicular (and potentially bicyclist) traffic occur; and 2) identifying areas where on-street parking supports adjacent land uses.



Legend:

- BART Station
- BART Above/Below Ground
- Capitol Corridor Station
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial/Collector/Local
- Water Bodies
- Parks/Open Space
- Metered Parking
- Free Parking
- Free Parking on Frontage Road

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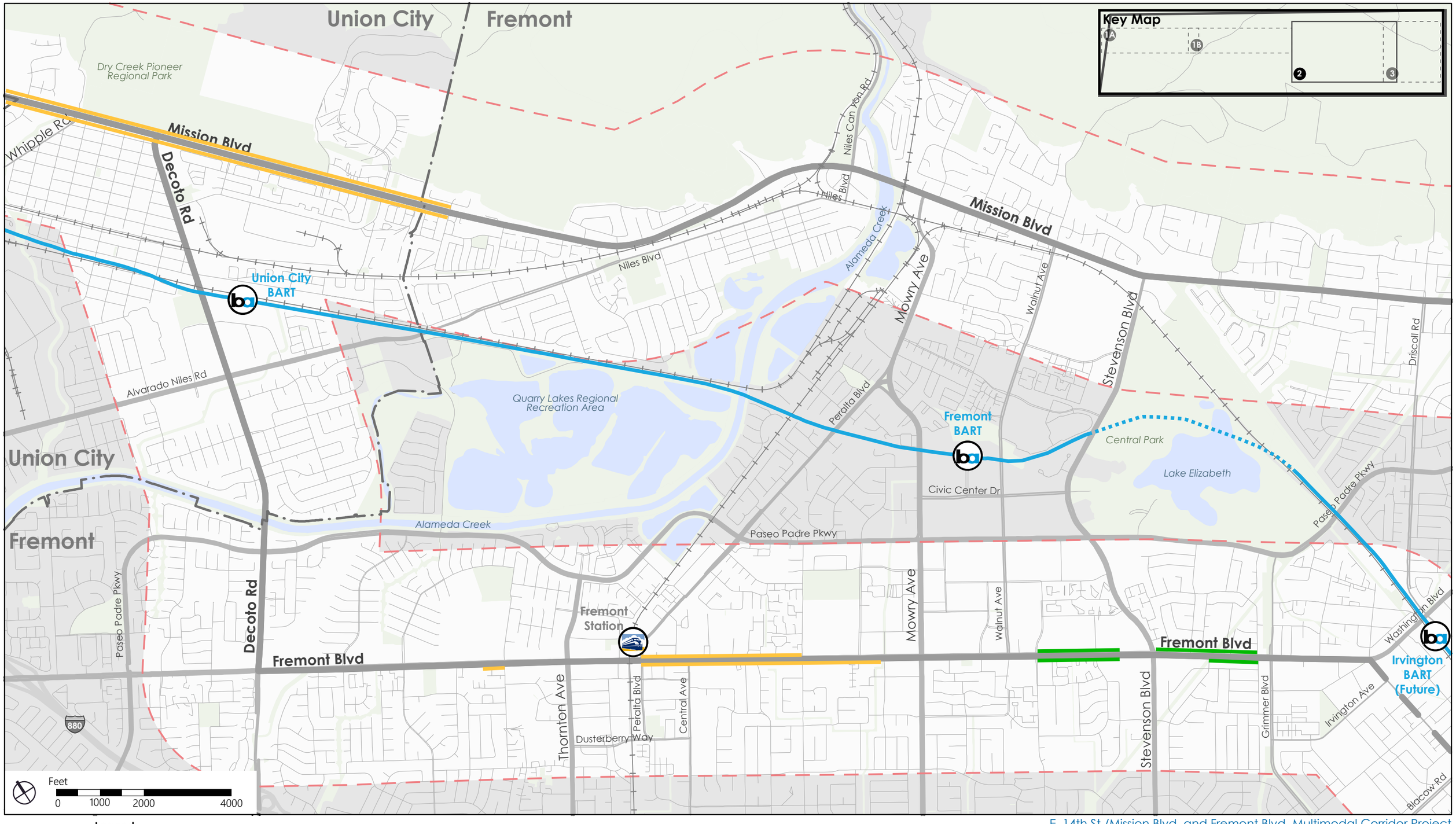
E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

Figure 5-4a
On-Street Parking
E. 14th St./Mission Blvd. between Davis St. and Whipple Rd.

July 2018



Legend:

- BART Station
- BART Above/Below Ground
- Capitol Corridor Station
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial/Collector/Local
- Water Bodies
- Parks/Open Space
- Metered Parking
- Free Parking
- Free Parking on Frontage Road

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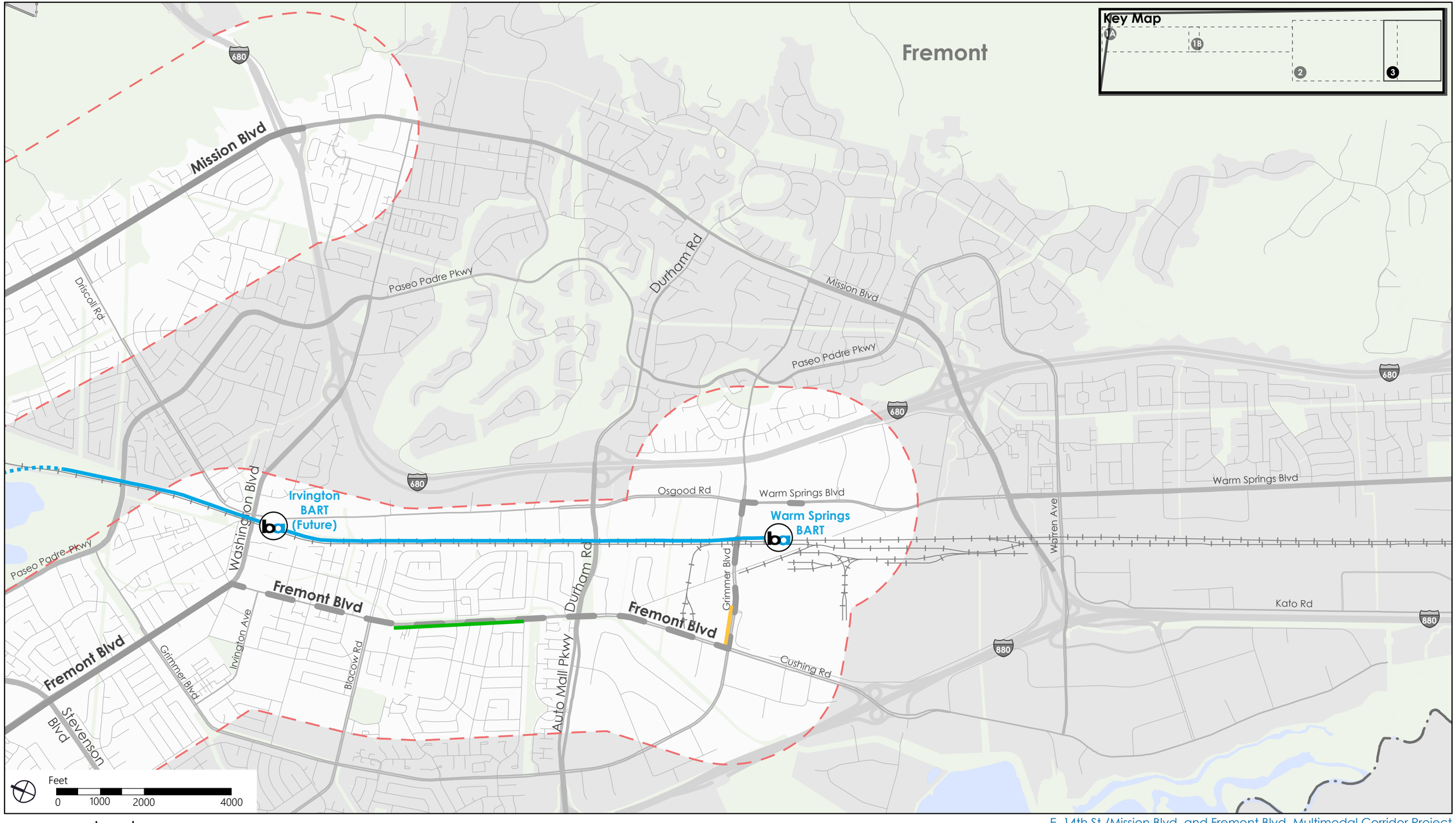
E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

Figure 5-4b
On-Street Parking
Mission Blvd. between Whipple Rd. and Driscoll Rd. and Fremont Blvd. between Decoto Rd. and Washington Blvd.

July 2018



Legend:

- BART Station
- BART Above/Below Ground
- Capitol Corridor Station
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial/Collector/Local
- Water Bodies
- Parks/Open Space
- Metered Parking
- Free Parking
- Free Parking on Frontage Road

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E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

Figure 5-4c
On-Street Parking
Mission Blvd. between Driscoll Rd. and I-680 and Fremont Blvd. between Washington Blvd. and Warm Springs BART

July 2018

5.5 HEAVY VEHICLES AND GOODS MOVEMENT

The Project Corridor on E. 14th Street and Mission Boulevard is identified as a Tier 2 Truck Route by Alameda CTC. The Corridor serves heavy vehicles (vehicles with three axles or more) to provide access to local land uses and as a potential through route for longer-distance trips. For longer-distance trips, the Alameda County Goods Movement Plan identifies E. 14th St, Mission Blvd and Decoto Rd as Tier 2 truck routes which are state highways and designated arterials that provide intra-county and intercity connectivity and last-mile connections. Fremont Blvd is not designated as a truck route.

To estimate the use of various sections of the Project Corridor by heavy vehicles, heavy vehicle volume percentages were collected at the major intersections (**Table 5-9**) during the AM and PM peak hours (The intersections selected are those with cross streets that are included in the CMP network.) **Table 5-14** summarizes the heavy vehicle percentages in each direction along the Project Corridor.

High heavy vehicle percentages are found along northbound E. 14th St. and Mission Blvd. during the AM peak hour.

Higher heavy vehicle percentages (above 5 percent) are found along northbound E. 14th St and Mission Blvd during the AM peak hour. Typical values for heavy vehicle percentages are around 2%. Lower heavy vehicle percentages are generally found during the PM peak hour and for Fremont Blvd.

Since E.14th St and Mission Blvd are identified as Tier 2 Truck Routes, potential projects will need to consider goods movement. This is especially true during the AM peak hour.

Table 5-14: Heavy Vehicle Percentages along the Project Corridor

Intersection	AM		PM	
	NB/EB	SB/WB	NB/EB	SB/WB
E 14th St / Mission Blvd				
E 14th St/170th Ave	7.3	3.9	2.9	2.3
Mission Blvd/Lewelling Blvd	6.0	4.4	2.6	2.0
Mission Blvd/Foothill Way/Jackson St	3.3	2.8	1.2	1.2
Mission Blvd/Decoto Rd	4.2	3.5	1.7	1.3
Mission Blvd/Niles Canyon Rd/Niles Blvd	5.1	3.5	1.5	1.6
Mission Blvd/Mowry Ave	7.3	3.6	1.6	1.6
Mission Blvd/I-680 NB Ramp	7.4	3.0	9.8	1.7
Mission Blvd/I-680 SB Ramp	9.3	4.5	4.5	1.5
Fremont Blvd				
Fremont Blvd/Decoto Rd	3.8	5.6	3.0	3.0
Fremont Blvd/Thornton Ave	2.9	4.8	1.8	1.7
Fremont Blvd/Peralta Blvd	3.4	4.2	2.1	2.0
Fremont Blvd/Mowry Ave	2.7	3.7	1.5	1.3
Fremont Blvd/ Automall Pkwy	3.7	1.9	0.8	1.2

Note: Percentages shown are for the Project Corridor segments only and do not include volumes for cross streets.

5.6 KEY FINDINGS

Based on the analysis of vehicular traffic circulation, the following key findings relate to the vehicular roadway network, traffic volumes, traffic speeds, intersection capacity, and goods movement.

Existing Traffic Volumes. Existing traffic volumes for the Project Corridor are highest in the southern sections. This is the opposite of the pattern for parallel sections of Interstate 880, which has higher traffic volumes in the northern sections. This likely indicates that these two corridors function independently in the existing condition.

Historical Traffic Growth. Daily volumes for Interstate 880 are growing at a faster rate than peak hour volumes, indicating that vehicle trips are occurring over a longer period (peak spreading). Daily and peak hour volumes for the Project Corridor are growing at the same rate, likely indicating the Project Corridor is not at capacity in the peak hour.

Traffic Volume Forecasts. Forecasted traffic volumes for the Project Corridor show substantial growth for the sections north of Decoto Rd due to diversion from Interstate 880. Forecasted traffic volumes for Interstate 880 show a small annual growth between today and 2040 due to the freeway approaching capacity in existing conditions.

Existing Traffic Speeds. Average peak period travel speeds along the Project Corridor do not show any significant sections operating at speeds classified as LOS D or worse. Interstate 880 adjacent to the Project Corridor is congested today, with the slowest speeds between A St and Davis St. However, Interstate 880 provides faster travel speeds today than the Project Corridor, meaning that regional through trips from the freeway are unlikely to divert to the Project Corridor under typical conditions.

Traffic Speed Forecasts. Forecasted vehicle speeds for the Project Corridor indicate a significant decrease in speeds for the northern sections north of Decoto Rd; this is due to traffic diversion from Interstate 880. The Warm Springs area of the Project Corridor is expected to experience the greatest decrease in vehicle speeds due to planned employment growth.

Intersection Capacity. The capacity analysis for major intersections along the Project Corridor shows that six intersections currently operate at or above capacity (LOS E or LOS F) with an additional ten intersections operating at LOS D.

Goods Movement. Higher heavy vehicle percentages of 5 to 10 percent are found along northbound E. 14th St and Mission Blvd during the AM peak hour. Lower heavy vehicle percentages are found during the PM peak hour and for other sections of the Project Corridor.

Section 6
Transit Circulation

Section 6

Transit Circulation

This section provides a summary of the transit providers and associated transit services along the Project Corridor. Transit services provide mobility options for those who choose not to drive or are unable to do so due to physical or other limitations. Transit also provides an alternative to vehicular capacity improvements for accommodating travel demand.

Topics covered in this section are:

- Existing transit network and transit providers
- Multimodal transportation hubs
- BART service frequencies and ridership
- AC Transit service frequencies and ridership
- Bus travel speeds
- Travel time comparison
- Regional transit improvements
- Relevant plans and projects

6.1 EXISTING TRANSIT NETWORK AND PUBLIC TRANSIT PROVIDERS

Figure 6-1 shows the existing transit network in the Study Area.

Seven different transit providers operate within the Study Area, serving both local and regional trips.

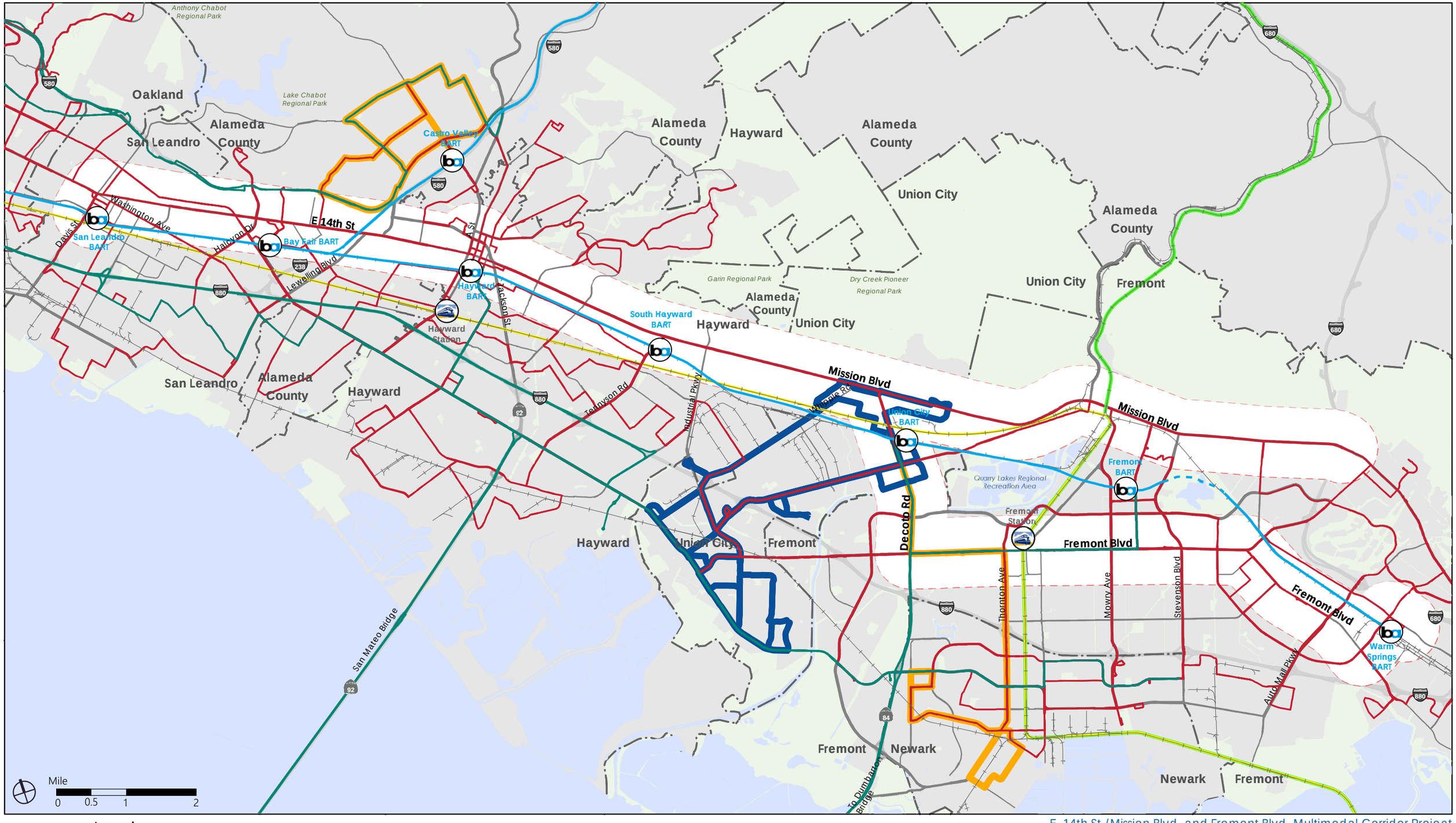
- **Bay Area Rapid Transit (BART).** BART provides rail transportation within the San Francisco Bay Area, connecting residential neighborhoods and employment centers in San Francisco, Alameda, Contra Costa, Santa Clara and San Mateo counties. The BART alignment in the Study Area runs parallel to the Project Corridor from San Leandro to Fremont and offers an important transportation alternative to automobile driving along the Corridor.

  There are seven BART stations in the Study Area:

  - San Leandro
  - Bay Fair
  - Hayward
  - South Hayward
  - Union City
  - Fremont
  - Warm Springs

An additional BART station is planned in the Irvington neighborhood between the Fremont and Warm Springs stations.

- **Alameda-Contra Costa Transit District (AC Transit)**. AC Transit provides transit service to 13 cities and unincorporated areas across Alameda and Contra Costa Counties. In the Study Area, AC Transit provides four types of services:
  - **Local routes** provide day- and night-time fixed service for the East Bay and operate at 15- to 60-minute headways.
  - **All-Nighter routes** operate when BART is closed, from 1:00 AM to 5:00 AM daily, and operate at 60-minute headways.
  - **Transbay routes** connect the East Bay to San Francisco or the Peninsula and operate at 20- to 60-minute headways.
  - **Flex routes** are offered as an alternative to local fixed routes in low-density and low-demand areas. Flex routes are a form of microtransit, in that they operate with a flexible route and schedule. The two flex routes in the Study Area each have one timepoint with 30- to 60-minute headways.
- **Union City Transit.** Union City Transit is a local transit provider for the City of Union City. The system includes a total of eight routes, with main hubs located at Union City BART and Union Landing Shopping Center. The majority of the system operates within City limits, except for portions of routes serving Whipple Road and Industrial Parkway in Hayward.
- **Capitol Corridor.** Amtrak's Capitol Corridor line provides weekday and weekend passenger rail service from Sacramento to Oakland and San Jose. The Capitol Corridor serves two stations in the Study Area: the Hayward Amtrak station and the Fremont-Centerville Amtrak/ACE station.
- **Altamont Corridor Express (ACE).** ACE is a commuter rail service provided by the San Joaquin Regional Rail Commission. ACE provides weekday peak period service from Stockton to San Jose. ACE serves one station in the Study Area at Fremont-Centerville.
- **Dumbarton Express.** Dumbarton Express is an express/commuter bus service which runs weekday routes from Union City BART to Stanford University and Palo Alto via Decoto Road and the Dumbarton Bridge. Dumbarton Express is overseen by a consortium of local and transit agencies; the service is administered by AC Transit.
- **Santa Clara Valley Transportation Authority (VTA).** VTA is the primary transit service provider in Santa Clara County and operates express bus routes between Fremont BART and Warm Springs BART and various locations in Santa Clara County.



Legend:

- BART Station
- BART Above/Below Ground
- Capitol Corridor Stations
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial
- Water Bodies
- Parks/Open Space
- AC Transit Local Routes
- AC Transit Transbay Routes
- AC Transit Flex Service
- Union City Transit
- Capitol Corridor
- ACE Corridor

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E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

Note: Additional transit service provided to Fremont BART by VTA Routes 120, 140, 180, 181. Flex service runs 6:00 AM to 8:00 PM and is an on-demand service.

Source: AC Transit (April 2018), Union City Transit (April 2018), Amtrak (2018)

Figure 6-1 Existing Transit Network

May 2018

Table 6-1 summarizes the hours of operation for the transit service providers in the Study Area. In terms of overall service (hours of operation and level of physical coverage), AC Transit and BART are the primary public transit providers for the Study Area.

Table 6-1.Study Area Public Transit Service Providers

Transit Provider	Mode	Study Area Jurisdictions Served	Weekday Hours of Operation	Weekend Service?
BART	Rail	All	5:00 AM – 1:00 AM	Yes
AC Transit	Bus	All	All day	Yes
Union City Transit	Bus	Union City	4:30 AM – 10:20 PM	Yes
Capitol Corridor	Rail	Hayward, Fremont	6:30 AM – 9:30 PM	Yes
ACE	Rail	Fremont	4:20 AM – 9:20 AM 3:30 PM – 8:50 PM	No
Dumbarton Corridor Express	Bus	Union City Fremont	5:30 AM – 8:45 PM	No
VTA	Express Bus	Fremont	6:00 AM – 12:00 PM	Yes

6.2 SHUTTLE SERVICES

There are several other transportation modes that supplement the public transit network, including private employer shuttles, public shuttles, and private carpool shuttles. **Table 6-2** summarizes the shuttle service providers in the Study Area; these providers were identified based on field observations at BART stations and are described below.

- **Employer Commuter Shuttles.** Several employers operate shuttle services that provide connections to and from BART stations. As shown in the table, some shuttles are associated with employers within the Study Area while others are associated with larger employers located in San Mateo and Santa Clara counties.
- **San Leandro Links**. Links is a free shuttle managed by the San Leandro Transportation Management Organization, with two loop routes that connect San Leandro BART to employment and activity centers to the west. Links operates during the AM and PM peak periods on weekdays only.
- **Alameda County Shuttle**. Alameda County operates two shuttles in the Study Area, the San Leandro Shuttle and the Hayward Shuttle, which provide first/last mile connection between Bay Fair BART, Hayward BART, and County government facilities. Both shuttles operate on weekdays only and are available during the AM peak, PM peak, and midday periods.

Table 6-2. Study Area Shuttles and Private Transit Service Providers

Service Provider	BART Stations Served
Employer Commuter Shuttles	
Apple	Union City, Fremont
Cisco	Fremont
Stanford Hospital	Union City, Fremont
Google	Union City
Facebook	Union City
Employer First/Last Mile Shuttles	
Kaiser Hospital	San Leandro
Fairmont Hospital	Bay Fair
Cal State University, East Bay	Hayward
Tesla	Warm Springs
Public First/Last Mile Shuttles	
San Leandro Links	San Leandro
Flex (seniors and paratransit)	San Leandro
Alameda County Shuttle	Bay Fair, Hayward

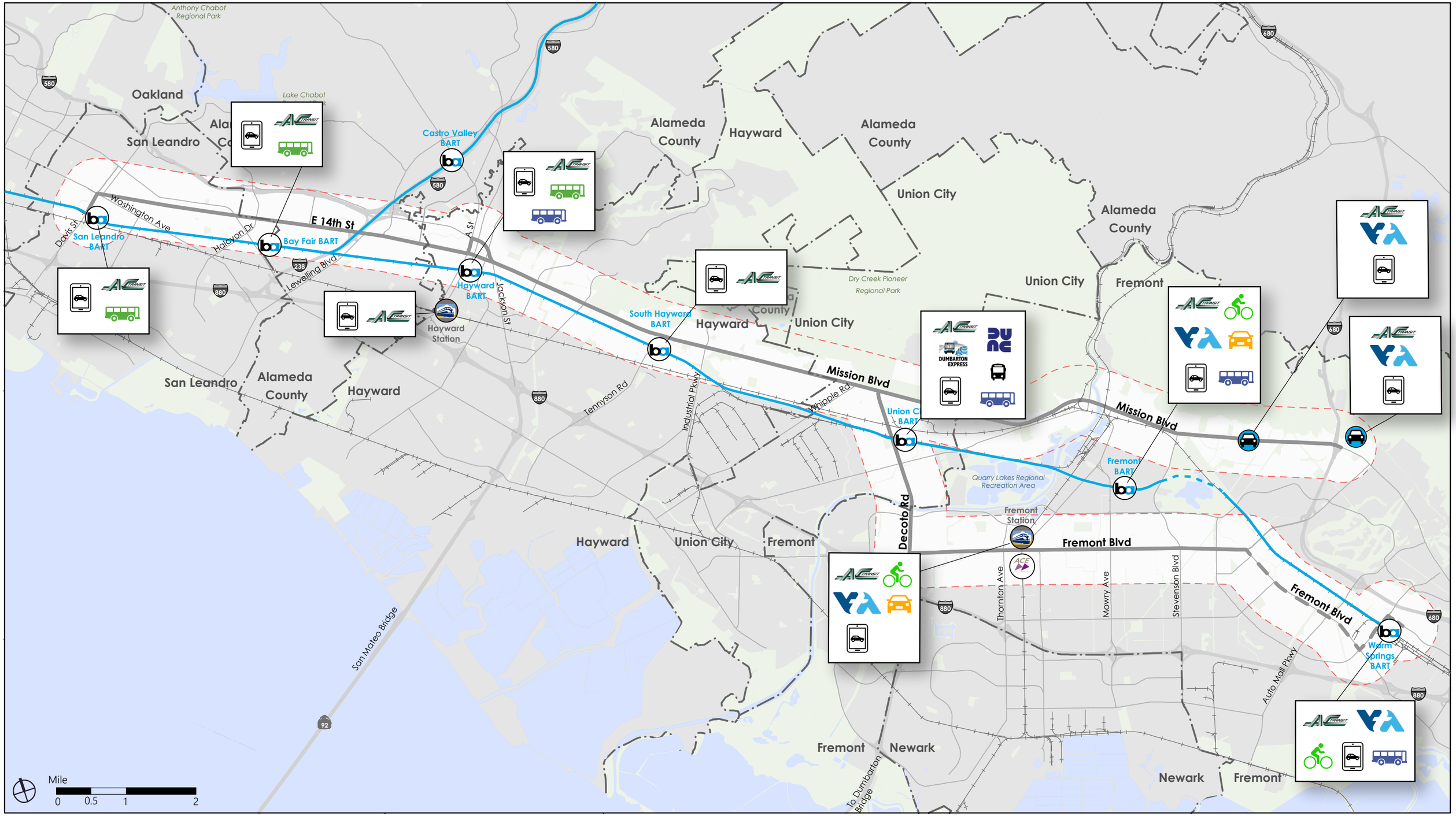
6.3 MULTIMODAL TRANSPORTATION HUBS

Transit service in the Study Area is organized around numerous transportation hubs that allow for transfers between transit services and other transportation modes.

Figure 6-2 shows the existing transportation hubs and the transportation options available at each. Key points regarding the multimodal transportation hubs are as follows:

Existing multimodal transportation hubs in the Study Area are BART stations, ACE and Amtrak stations, and park and ride lots.

- While the majority of the multimodal transportation hubs are BART stations, other transportation hubs include the two passenger rail stations (Hayward Amtrak and Fremont-Centerville Amtrak and ACE) and two public park and ride lots (Mission San Jose Park and the Mission Blvd/I-680 interchange).
- For bus service in the Study Area, BART stations serve as the transfer points between routes. BART stations also serve as the termini for individual routes.
- No single transportation hub serves all the transit providers operating within the Study Area.
- Other modes serving the transportation hubs include public shuttles (e.g., San Leandro Links), private employer shuttles, carshare, bikeshare, and transportation network companies (TNCs, e.g., Lyft/Uber).



Legend:

- BART Station
- BART Above/Below Ground
- Capitol Corridor Stations
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial
- Water Bodies
- Parks/Open Space

Transfer Stations:

- BART Station
- Amtrak
- ACE Station
- Park and Ride

Mode of Access:

- AC Transit
- Carshare
- VTA
- TNC
- Microtransit
- Union City Transit
- Bikeshare
- Regional Shuttle
- Local Shuttle
- Dumbarton Express

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E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

Note: Inventory of access modes as of June 2018.

Source: AC Transit (2018), Union City Transit (2018), Amtrak (2018), Lime Bike (2018), Union City Transit (2018), VTA (2018), Uber (2018), Zip Car (2018)

Figure 6-2 | Multimodal Transportation Hubs

February 2019

6.4 BART FREQUENCIES AND RIDERSHIP

BART services operate parallel to the Project Corridor and provide regional and local connectivity for the Study Area.

Table 6-3 summarizes the BART lines serving the stations within the Study Area. All BART stations within the Study Area are located along the Warm Springs/South Fremont– Richmond and Warm Springs/South Fremont– Daly City lines. The San Leandro and Bay Fair stations are also served by the Dublin/Pleasanton– Daly City line.

Table 6-3. BART Lines and Headways

Line	Study Area Stations Served	Weekday Headway	
		Northbound	Southbound
Warm Springs/ South Fremont – Richmond	All	15 min (Before 7:30 PM) 20 min (After 7:30 PM)	15 min (Before 9 PM) 20 min (After 9 PM)
Warm Springs/ South Fremont – Daly City	All	15 min (Before 6 PM) No Service After 6 PM	15 min (Before 6 PM) No Service After 6 PM
Dublin/Pleasanton– Daly City	San Leandro Bay Fair	15 min (Before 7:30 PM) 20 min (After 7:30 PM)	15 min (Before 8 PM) 20 min (After 8 PM)

Source: BART, 2018

Average weekday ridership entries and exits at BART stations in the Study Area are summarized in **Table 6-4**. The Fremont, San Leandro, and Bay Fair stations have the highest ridership of the BART stations in the Study Area. Compared to the BART system as a whole, however, all stations in the Study Area except for Fremont have ridership levels below the systemwide median. It is important to note that the systemwide median is influenced by high-ridership BART stations serving employment centers in downtown San Francisco, Oakland, and Berkeley.

All Study Area BART stations except Fremont have ridership levels below the systemwide median.

Enhanced multimodal connections in the Study Area and first/last mile access improvements may promote and increase BART ridership. These connections will also support anticipated growth in the Study Area.

Table 6-4. BART Weekday Ridership by Station

Station	Daily Entries	Daily Exits
San Leandro	6,058	6,104
Bay Fair	5,548	5,418
Hayward	4,702	4,661
South Hayward	3,157	3,006
Union City	4,714	4,697
Fremont	6,674	6,664
Warm Springs/ South Fremont	3,526	3,224
Systemwide Median	**6,508**	**6,312**

Source: BART, March 2018

Multimodal access to and from BART stations is an important factor in understanding existing ridership levels on BART. In addition to the multimodal transportation hub descriptions in the prior section, this report contains the following data regarding BART station ridership:

- Section 4, Travel Market Analysis, summarizes mode of access data for the Study Area BART stations. Walk and bike access to BART is highest for stations in the northern portion of the Study Area (as high as 50 percent in San Leandro) and decreases as one moves south (as low as 15 percent in Fremont). However, bus access to BART does not exhibit the same patterns as walk and bike access, with the highest shares (8 percent) found at the Bay Fair and Fremont BART stations.
- Section 7, Bicycle and Pedestrian Circulation, identifies existing facilities and planned improvements for access to BART stations.

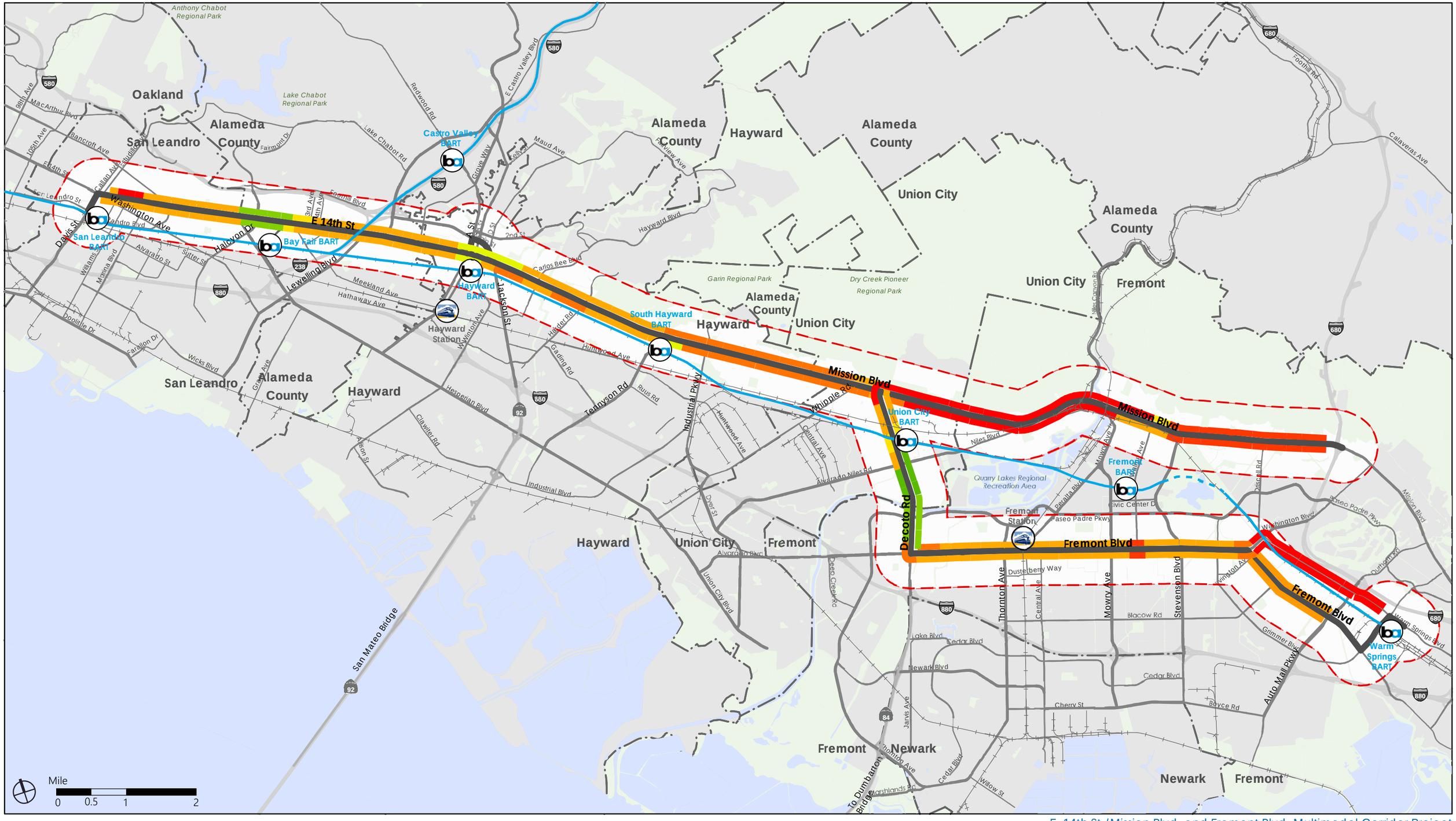
6.5 BUS FREQUENCIES AND RIDERSHIP

This section summarizes service frequencies and ridership for bus services within the Study Area. Data includes AC Transit bus routes, with data for Union City Transit and Dumbarton Express routes included where available.

Figure 6-3 shows existing bus frequencies along the Project Corridor for the Weekday PM peak period, including AC Transit, Union City Transit, and Dumbarton Express services. Multiple, overlapping bus routes operate along the Project Corridor, and no single route runs the length of the Project Corridor. **Figure 6-3** shows the combined frequencies across all routes and service providers.

The highest frequencies of bus service are found between the San Leandro and South Hayward BART stations, and along Decoto Road.

The highest bus frequencies are found generally between the San Leandro and South Hayward BART stations, and along Decoto Road west of the Union City BART station. Bus frequencies for these areas of the Project Corridor are as high as 13 buses per hour; for the Decoto Road corridor, these bus frequencies reflect a combination of transit providers, service types, and destinations.



Legend:

- BART Station
- BART Above/Below Ground
- Capitol Corridor Stations
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial
- Water Bodies
- Parks/Open Space

Total Bus Frequency

High Frequency (13 buses/hour)

Low Frequency (1 bus/hour)

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E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

Note: Transit frequencies reflect the number of times a segment, between "Stop A" and "Stop B", is served during an average hour in the PM period (3:00PM - 7:00PM).

Source: AC Transit (2018), Union City Transit (2018)

Figure 6-3 Existing Bus Frequencies, Weekday PM Peak Period

May 2018

The lowest bus frequencies are found generally along Mission Boulevard south of Decoto Road, and in south Fremont near the Warm Springs BART station. A portion of Fremont Boulevard near the Warm Springs BART station is not served by fixed-route bus service. (It should be noted that AC Transit and the City of Fremont are currently working on restructuring bus services within Fremont.)

6.5.1 Ridership by Route

Table 6-5 summarizes the weekday ridership for AC Transit and Dumbarton Express routes operating along portions of the Project Corridor. (It is important to note that these ridership totals include the entire route, both within and outside of the Project Corridor and Study Area.) AC Transit Lines 10 and 99 have the highest weekday ridership of those serving the Project Corridor. These routes are classified as Major Corridors by AC Transit.[1]

While several routes operating along portions of the Project Corridor have weekday ridership levels above the systemwide median (1,200 riders), overall ridership levels are more than 75 percent below those found along the highest-ridership routes (12,700 riders). As such, while routes that serve the Project Corridor do not represent the highest ridership routes, there is notable use of transit along the Project Corridor relative to the AC Transit system.

Table 6-5. Average Weekday Bus Ridership for Study Area Routes

Line or Route	Jurisdictions Served	BART Stations Served	Other Study Area Multimodal Hubs Served	Average Weekday Ridership, 2017
AC Transit				
10	San Leandro Alameda County Hayward	San Leandro Bay Fair Hayward	None	3,100
99	Hayward Union City Fremont	Hayward South Hayward Union City Fremont	Fremont-Centerville ACE/Amtrak	3,000
217	Fremont	Fremont Warm Springs	Mission San Jose Park and Ride Mission Blvd/ I-680 Park and Ride	1,900
210	Union City Fremont	None	Fremont-Centerville ACE/Amtrak	1,800
212	Fremont	Fremont	None	1,200
239	Fremont	Fremont Warm Springs	None	700

[1] AC Transit has identified 12 Major Corridors that represent over 50 percent of the systemwide daily ridership. In 2016, AC Transit released the Major Corridors Study that identifies infrastructure investments to prioritize transit along these corridors.

Table 6-5, continued

Line or Route	Jurisdictions Served	BART Stations Served	Other Study Area Multimodal Hubs Served	Average Weekday Ridership, 2017
AC Transit, continued				
232	Fremont	Union City Fremont	None	400
215	Fremont	Fremont Warm Springs	None	300
Highest Ridership Line in System				**12,700**
Systemwide Median (1)				**1,200**
Dumbarton Express				
DB	Union City Fremont	Union City	None	520
DB1	Union City Fremont	Union City	None	560

(1) Excludes AC Transit Transbay and Owl lines
(2) Data not available for Union City Transit routes.

Sources: AC Transit Annual Ridership and Route Performance Report, 2017; Dumbarton Express Monthly Report, September 2017

6.5.2 Ridership by Stop

AC Transit Lines 99, 210 and 10 together make up more than half of the PM peak bus ridership for the Study Area.

For bus stops within the Study Area, **Table 6-6** summarizes the average hourly boardings by route during the PM peak period (3:00 – 7:00 PM) for February 2018. No single route carries the majority of bus passengers within the Study Area. However, Lines 99, 210, and 10 have the highest ridership and together make up more than half of boardings during the PM peak.

Table 6-7 summarizes the average hourly boardings for bus stops located at BART stations in the Study Area. BART stations serve as the termini for AC Transit routes and, as such, have higher boarding activity. As summarized in the table, BART stations represent 41 percent of the PM peak period bus boardings within the Study Area. This total includes ridership for routes that serve Study Area BART stations but do not run along the Project Corridor. (Additional data regarding bus access to BART is provided in Section 4, Travel Market Analysis.)

Excluding BART stations, the highest ridership bus stops in the Study Area have between 10 and 55 boardings per hour during the peak period.

Figure 6-4 depicts PM peak boardings for AC Transit stops within the Study Area, excluding BART stations. The ten highest ridership stops excluding BART stations are listed in **Table 6-8**.

Table 6-6. Average PM Peak Hour Ridership at Stops within Study Area

AC Transit Line	PM Peak Boardings per Hour	Share of Total
99	95	27%
210	51	14%
10	42	12%
40	16	5%
22	13	4%
95	13	4%
200	11	3%
32	10	3%
217	10	3%
212	8	2%
All Other Routes	84	24%
Total	**353**	**100%**

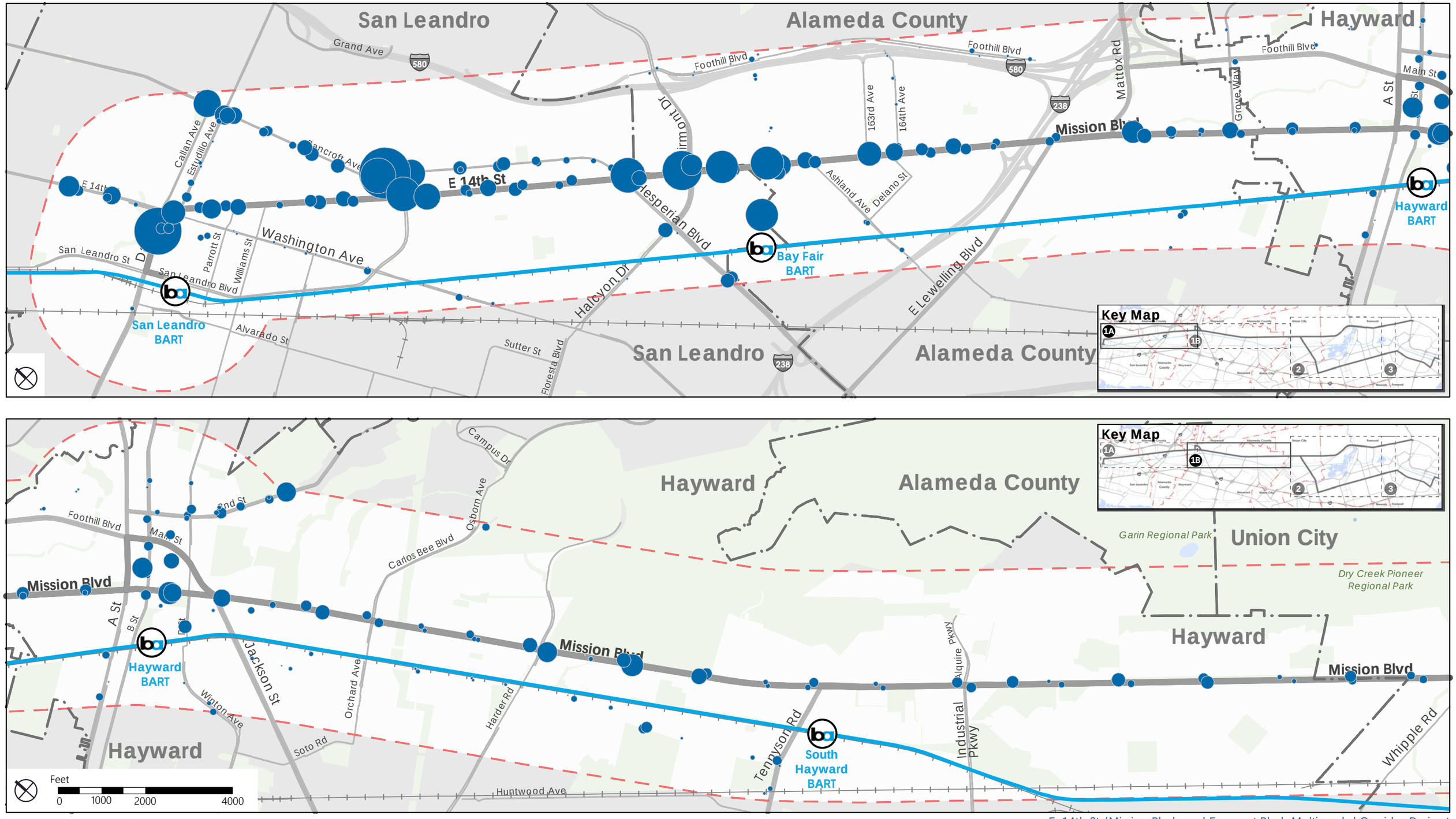
Source: AC Transit, February 2018

Table 6-7. Average PM Peak Bus Ridership at BART Stations

BART Station	PM Peak Bus Boardings per Hour[2]	Share of Study Area Total
San Leandro	124	13%
Bay Fair	97	10%
Hayward	61	6%
South Hayward	28	3%
Union City	34	4%
Fremont	45	5%
Warm Springs	2	<1%
Total – Study Area BART Stations	**391**	**41%**
All Other Study Area Bus Stops	565	59%
Total	**956**	**100%**

Source: AC Transit, February 2018

[2] Ridership totals reflect all bus routes that serve the station, including those that do not operate directly along the Project Corridor.



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- Capitol Corridor Station
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial/Collector/Local
- Water Bodies
- Parks/Open Space
- Low Ridership (1) (min)
- High Ridership (55) (max)

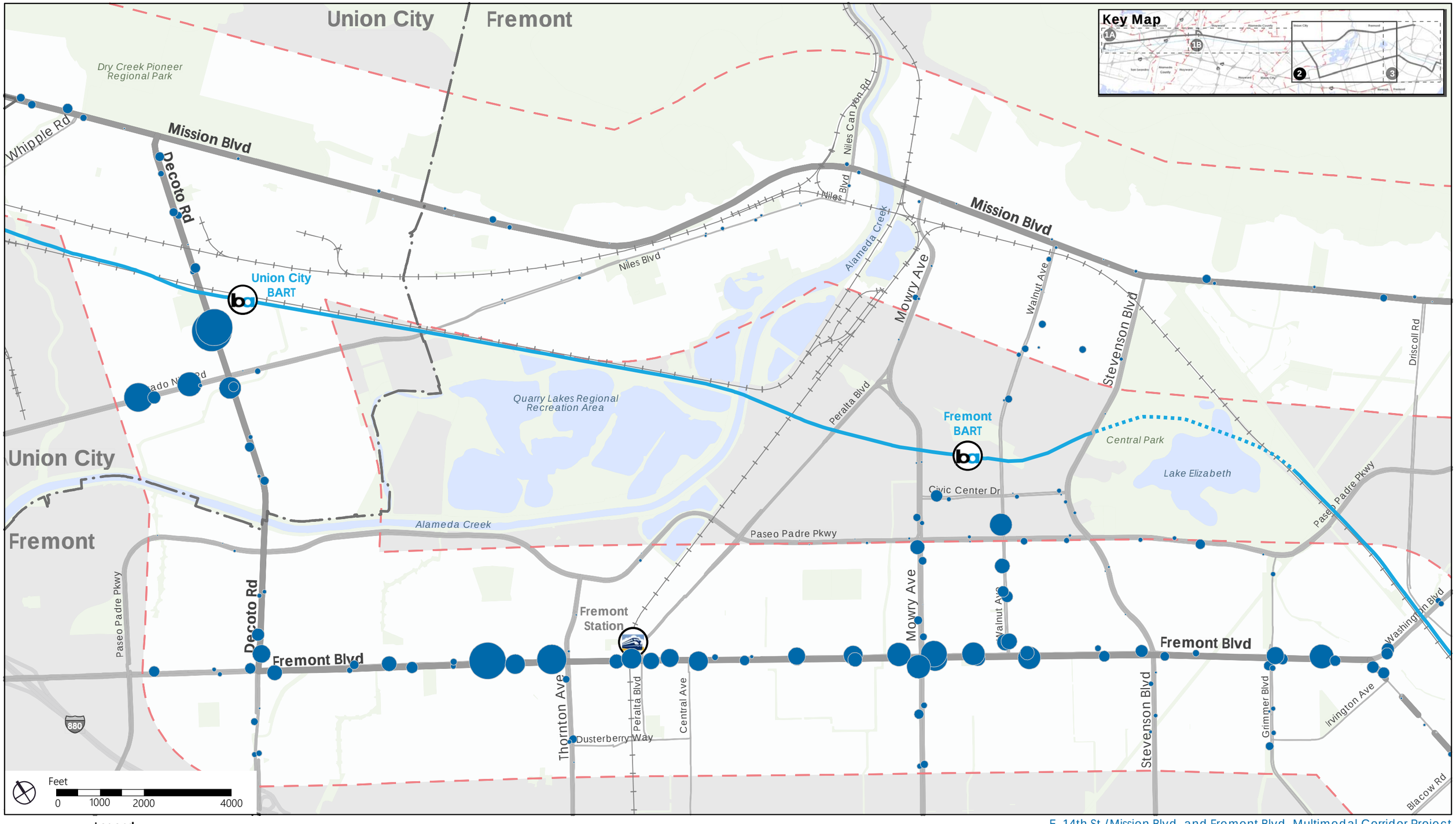
Note: Data shown for AC Transit routes operating within project corridor only, PM peak period (3:00PM-7:00PM). Transit ridership shown within ½ mile of the Project corridor. Ridership at BART stations not shown on map. Union City transit ridership not included.

Source: AC Transit (February 2018)

E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

Figure 6-4a Bus Ridership by Stop, Weekday PM Peak Period
E. 14th St./Mission Blvd. between Davis St. and Whipple Rd.

May 2018



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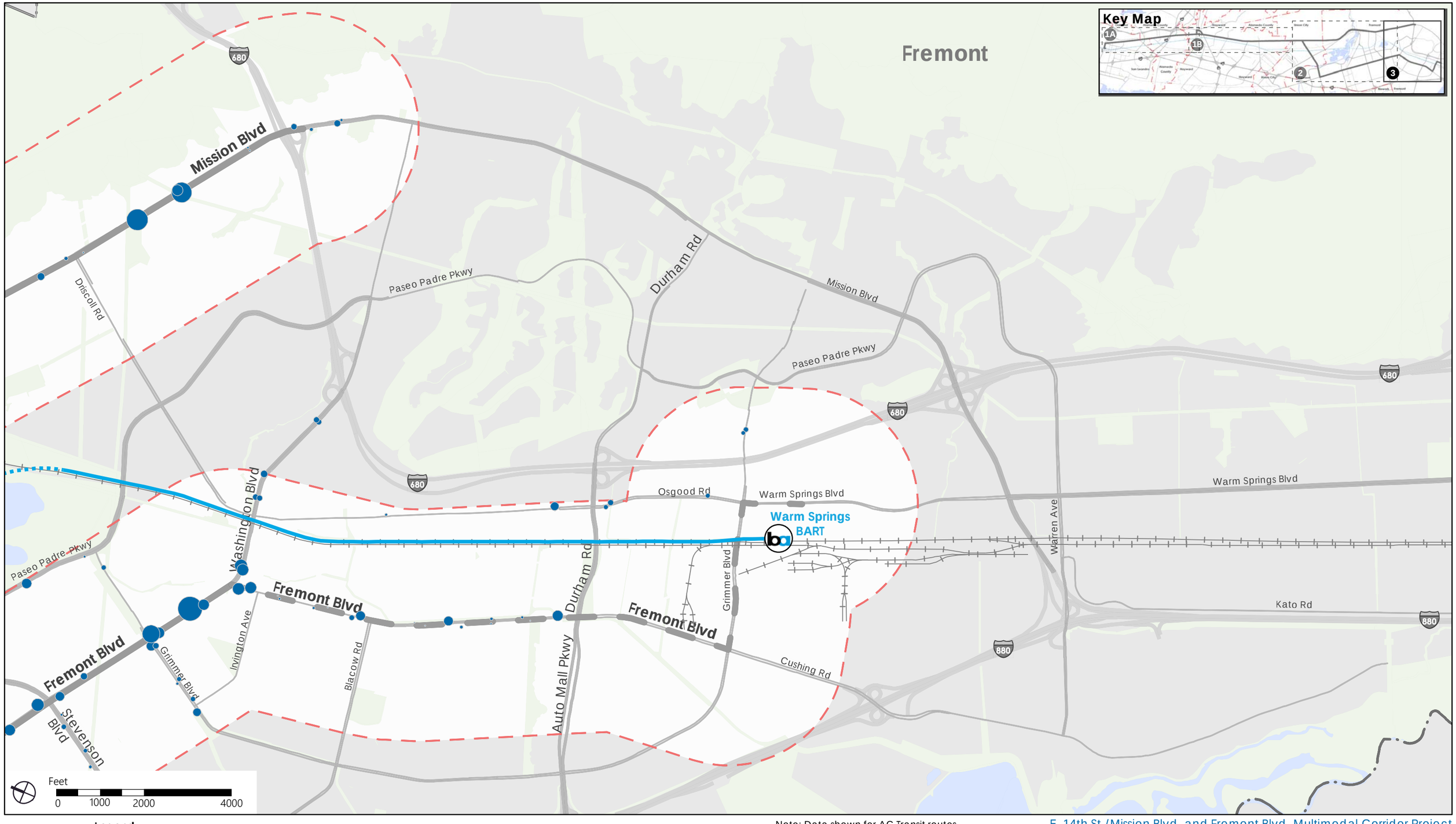
- Water Bodies
- Parks/Open Space
- Low Ridership (1) (min)
- High Ridership (55) (max)

Note: Data shown for AC Transit routes operating within project corridor only, PM peak period (3:00PM-7:00PM). Transit ridership shown within ½ mile of the Project corridor. Ridership at BART stations not shown on map.

Source: AC Transit (February 2018)

E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

Figure 6-4b Bus Ridership by Stop, Weekday PM Peak Period
Mission Blvd. between Whipple Rd. and Driscoll Rd. and Fremont Blvd. between Decoto Rd. and Washington Blvd.



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- BART Above/Below Ground
- Capitol Corridor Station
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial/Collector/Local
- Water Bodies
- Parks/Open Space
- Low Ridership (1) (min)
- High Ridership (55) (max)

Note: Data shown for AC Transit routes operating within project corridor only, PM peak period (3:00PM-7:00PM). Transit ridership shown within ½ mile of the Project corridor. Ridership at BART stations not shown on map.
Source: AC Transit (February 2018)

E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

Figure 6-4c Bus Ridership by Stop, Weekday PM Peak Period

Mission Blvd. between Driscoll Rd. and I-680 and Fremont Blvd. between Washington Blvd. and Warm Springs BART

May 2018

6.5.3 Bus Stop Amenities

Amenities for transit users are an important component in making transit a convenient and attractive travel option. Facilities such as shelters, benches, lighting, and trash containers increase the safety and comfort for passengers. Implementation of more advanced improvements, such as real-time signage, could improve the customer experience. Concrete bus pads provide a durable pavement surface at high-volume bus stops and prevent problems related to asphalt distortion.

The highest ridership AC Transit bus stops in the Study Area (excluding BART stations) were evaluated to identify facilities that are present and potential opportunities for improvement. **Table 6-8** lists the bus stop locations and the facilities available at each. (It should be noted that AC Transit is in the process of finalizing a systemwide bus stop inventory, which will inform opportunities at all bus stops in the Study Area.) While AC Transit does not have a prescribed standard for bus stop amenities, potential opportunities exist at many of these high-ridership stops, in particular for real-time signage and lighting. Additionally, none of the highest ridership stops currently has a concrete bus pad.

Table 6-8. Facilities at High-Ridership Bus Stops

Location	Jurisdiction	PM Peak Ridership (Boardings per Hour)	Shelter	Real-Time Signage	Bench	Lighting	Trash Container	Bus Pad
Bancroft Ave. /San Leandro High School (NB)	San Leandro	23	✗	✗	✗	✗	✓	✗
Davis St/Hays Street (SB)	San Leandro	20	✗	✗	✗	✗	✗	✗
Decoto Rd/Meyers Dr (SB)	Union City	14	✓	✗	✓	✗	✓	✗
E. 14th Street/ 153rd Ave (NB)	Alameda County	14	✓	✗	✓	✗	✗	✗
Fremont Blvd/ Alder Ave (NB)	Fremont	12	✓	✗	✓	✗	✓	✗
Decoto Rd/Union Dr (NB)	Union City	12	✗	✗	✗	✗	✗	✗
Bancroft Ave. /San Leandro High School (SB)	San Leandro	11	✗	✗	✓	✗	✗	✗
E. 14th Street/ 150th Ave (NB)	San Leandro	11	✓	✗	✓	✓	✓	✗
E. 14th Street/ San Leandro Blvd (NB)	San Leandro	10	✗	✗	✓	✓	✓	✗
E. 14th St / 159th St (NB)	Alameda County	10	✗	✗	✓	✓	✗	✓

✗ = Amenity is not present at bus stop

✓ = Amenity is present at bus stop

6.6 BUS TRAVEL SPEEDS

The attractiveness of transit as a travel option is influenced by its travel speeds, operating schedule, and reliability, particularly relative to other modes such as driving. Transit travel speeds and times were analyzed for the Project Corridor to identify opportunities to improve travel times and increase transit mode share.

To assess bus travel time and speeds automated passenger counter (APC) and automatic vehicle location (AVL) data were obtained from AC Transit for February 2018. This dataset includes records of bus stop arrival/departure times and dwell times.[3] (Dwell time accounts for approximately five percent of the total end to end travel time.)

Bus travel speeds along the Project Corridor are lowest near BART stations and in San Leandro, Alameda County, and north Hayward.

Figure 6-5 shows average bus travel speeds along the Project Corridor during the PM peak period. As noted earlier, the Project Corridor is served by multiple overlapping bus routes, and no single route serves the entire Project Corridor. Therefore, the data shown represents the combined results for multiple bus routes. Existing bus speeds is based on AC Transit travel speeds aggregated from Automatic Vehicle Location (AVL) data from February 2018; these data account for delays associated with dwelling at bus stops,.

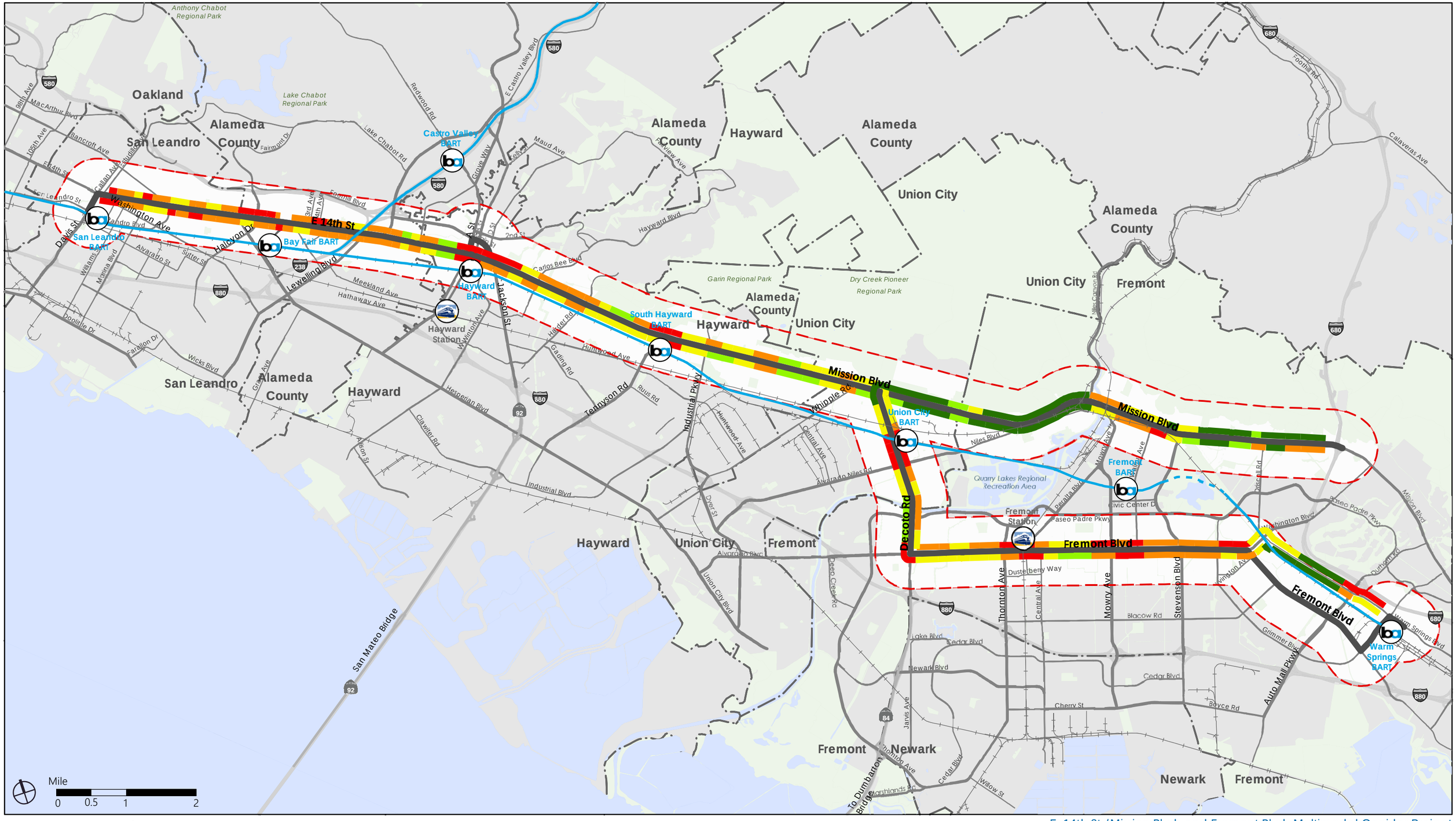
The inputs to bus travel speeds along the Project Corridor are as follows:

- Bus moving speed, including delays at traffic signals
- Bus dwell time at stops
- Bus service to BART stations, including diversion from the Project Corridor and bus dwell times for stops along the diversion route

The lowest recorded bus speeds are less than 10 miles per hour and occur at locations near BART stations, as well as along the portion of the Project Corridor between San Leandro to downtown Hayward. Higher bus speeds are found along Mission Boulevard south of Decoto Road and along portions of Osgood Road in Fremont. Since the Project Corridor currently does not have bus priority treatments (e.g., transit signal priority or bus-only lanes), bus travel speeds are dictated by automobile travel speeds (as discussed in Section 5, Vehicular Traffic Circulation) and the level of passenger activity at stops.[4]

[3] Dwell times are the amount of time the bus is at every stop on the run. Cumulative dwell time along with the travel time between stops on the route alignment accounts for overall travel time of the transit run.

[4] Automobile travel speeds are affected by intersection delay, segment delay, and overall segment and intersection volume to capacity.



Legend:

- BART Station
- BART Above/Below Ground
- Capitol Corridor Stations
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial
- Water Bodies
- Parks/Open Space

Bus Speed (mph)

- 0-10
- 11-15
- 16-20
- 21-25
- 25+

Note: Existing bus speed is based on AC Transit travel speed, including delay associated with dwelling at bus stops. The illustrated northbound and southbound travel speeds includes speed associated with the diversion to the Bay Fair, Hayward, South Hayward, Union City, and Fremont BART stations.

Source: AC Transit (February 2018)

Figure 6-5 Existing Bus Speed, Weekday PM Peak Period

6.7 CORRIDOR END-TO-END TRAVEL TIMES

End-to-end bus travel times were calculated for the Project Corridor to provide a baseline for comparison between bus, rail, and auto travel modes.

Table 6-9 summarizes the bus end-to-end travel times in both directions between the San Leandro BART and Fremont BART stations. Travel times are calculated based on the AC Transit AVL data set from February 2018. Notes regarding the bus travel time analysis are as follows:

- To allow for consistent comparisons between modes, travel times are presented between the San Leandro BART and Fremont BART stations, as auto travel speed data are not available for portions of Fremont Boulevard south of Stevenson Boulevard.
- For travel by bus, there are two route options for travel between the Union City BART and Fremont BART stations. AC Transit Line 232 travels along Mission Boulevard, while Line 99 travels along Decoto Road and Fremont Boulevard. **Table 6-9** shows both route options.

As shown in the table, bus travel times between the San Leandro and Fremont BART stations range from 91 to 102 minutes depending on the direction and route option. Key considerations regarding the travel times are as follows:

- The travel times account for the required transfers between routes, as there is no single bus route that provides end to end service for the Project Corridor.
- The largest proportion of the total travel time are 1) bus moving time and 2) travel time to serve BART stations.

The travel times associated with BART station access suggest opportunities to improve bus travel time through targeted infrastructure improvements around BART stations.

Table 6-9 also summarizes the travel time associated with bus routes leaving and reentering the Project Corridor to serve BART stations. **Table 6-10** summarizes the bus travel times associated with serving individual BART stations in the Study Area. Approximately one third of the total end to end travel time is associated with service to BART stations. However, as summarized in **Table 6-7,** more than 40 percent of the PM peak period bus ridership in the Study Area is associated with BART stations. Service to individual BART stations contributes five to twelve minutes of travel time, with service to the Hayward and Fremont BART stations being the longest. The relative travel times to serve BART stations may help identify potential bus operational improvements.

The connection between bus services and BART stations is critical for multimodal mobility. (As discussed in Section 4, Travel Markets, bus access to BART ranges from 3 percent for the San Leandro BART station to 8 percent for the Bay Fair and Fremont BART stations, as compared to 8 percent for all BART stations.) The travel times associated with BART station access suggest opportunities to

improve bus travel time (and increase bus access to BART) through targeted infrastructure improvements around BART stations.

Table 6-9. End to End Bus Travel Time, PM Peak Period

Direction	Route	End to End Travel Time (minutes)	Transit Service to/from BART Stations	
			Minutes	Share of Total Time
Southbound	Via Mission Blvd.	91	30	33%
Southbound	Via Decoto Rd. and Fremont Blvd.	94	24	25%
Northbound	Via Mission Blvd.	92	34	37%
Northbound	Via Decoto Rd. and Fremont Blvd.	102	32	31%

Table 6-10. Bus Travel Time for Service to and from BART Stations, PM Peak Period[1]

Direction	Bay Fair	Hayward [2]	South Hayward	Union City	Fremont[3]
Southbound	6.2	6.6	5.1	5.7	12.8
Northbound	7.3	12.8	5.5	5.8	8.5

[1] The San Leandro and Warm Springs BART stations do not have associated service times as these two stations are the end points for the Project Corridor.
[2] The distance to serve Hayward BART is longer in the Northbound direction than in the Southbound direction due to the one-way configuration of the Hayward Loop, resulting in increased travel time in the Northbound direction.
[3] The travel time is longer in the Southbound direction due to lower travel speeds resulting from congestion.

6.8 TRAVEL TIME COMPARISON BY MODE

Table 6-11 compares the average travel times along the Project Corridor for bus, rail (BART), and automobile trips in both directions. This comparison builds upon the end to end bus travel times presented in the prior section. Travel times are for the weekday PM peak period. Sources for the travel time data are as follows:

- Bus – AC Transit AVL data set, February 2018
- BART – Published BART schedule, May 2018
- Auto – INRIX auto travel speed data set, March 1, 2017 to March 1, 2018 (discussed in Section 5, Traffic Circulation)

BART provides the fastest travel time for end to end corridor trips. However, first- and last-mile connections are required to leverage its effectiveness.

As shown, BART has a significant travel time advantage over bus and auto modes for longer-distance trips within the Study Area. However, BART stations do not represent the final destination for trips, meaning that transfers to other modes are required. This highlights the need

for strong first- and last-mile connections to BART (via bus and other modes) to leverage its travel time advantage.

Table 6-11. End to End Travel Time Comparison by Mode, PM Peak Period

Direction	Bus (AC Transit)		Rail (BART)	Auto	
	Via Mission Blvd.	Via Decoto Rd. and Fremont Blvd.		Via Mission Blvd.	Via Decoto Rd. and Fremont Blvd
Southbound	91	94	22	45	53
Northbound	92	102	21	50	59

6.9 REGIONAL TRANSIT IMPROVEMENTS

Several regional transit improvements are currently under construction and will provide connectivity between the Study Area and the rest of the Bay Area. These projects are as follows:

- **East Bay Bus Rapid Transit (BRT)** – AC Transit's East Bay BRT project is currently under construction and will provide a high-capacity transit connection between the San Leandro BART station and downtown Oakland. Within the Study Area, the East Bay BRT alignment follows Davis Street and San Leandro Boulevard (from Davis Street to the BART station entrance). BRT service between San Leandro BART and Bay Fair BART was considered as part of prior project planning stages but not advanced for construction. East Bay BRT is construction is anticipated through 2019.
- **BART Silicon Valley** – The BART Silicon Valley project extends BART service from the Warm Springs station south to Santa Clara. Phase I is under construction and extends from the Warm Springs station to the Berryessa District of San Jose. Phase II extends BART service from the Berryessa station through downtown San Jose to Santa Clara. Phase I is expected to be completed in 2019 and Phase II in 2026.

6.10 RELEVANT PLANS AND PROJECTS

Transit conditions for the Project Corridor are also addressed through the following completed and ongoing plans. In some cases, the data and analysis from these documents were used as part of the analysis presented in this section.

- SamTrans Dumbarton Transportation Corridor Study, 2017
- MTC Dumbarton Forward, 2018
- AC Transit Major Corridors Study, 2016
- AC Transit Short-Range Transit Plan, 2016
- Union City Transit Short-Range Service Plan, 2013-2022

- BART Short Range Transit Plan and Capital Improvement Program, 2017

6.11 KEY FINDINGS

Based on the data and analysis presented in this section, the key findings for transit along the corridor are as follows:

- **Transit Coverage.** Seven public transit providers operate within the Study Area. Of these, AC Transit and BART are the primary providers in terms of geographic coverage and hours of operation. Other transit providers include Union City Transit, Capitol Corridor, Altamont Corridor Express, Dumbarton Express, and VTA. As project improvements are developed for the Study Area, coordination among transit providers will allow for seamless connections between services.
- **Shuttle Services.** Multiple types of shuttle services supplement the transit routes provided within the Study Area. Employer shuttles include regional commuter shuttles and first/last mile shuttles for employers in the Study Area. Other services include public first/last mile shuttles and private carpool shuttles such as Chariot. Shuttle services provide important first/last mile connections and can supplement recommended transit improvements.
- **Multimodal Transportation Hubs.** The majority of the multimodal connections in the Study Area are provided at BART stations. Other transportation hubs include the two passenger rail stations (Amtrak and ACE) and two park and ride lots. No single transportation hub serves all the transit providers operating within the Study Area, suggesting opportunities for improved connectivity.
- **BART Service and Ridership.** Seven existing BART stations serve the Study Area, with one planned in the Irvington neighborhood. The Fremont, San Leandro, and Bay Fair stations have the highest ridership of the BART stations in the Study Area. Compared to the BART system as a whole, however, all stations in the Study Area except for Fremont have ridership levels below the systemwide median.
- **AC Transit Service and Ridership.** Bus service frequencies vary widely along the Project Corridor, with greater bus frequencies near Bay Fair BART, Hayward BART, and along Decoto Road. Ridership in the Project Corridor is more concentrated in the northern sections between the San Leandro and Hayward BART stations. BART stations represent 41 percent of the PM peak period bus boardings within the Study Area. Excluding BART stations, the bus stops with the highest ridership have between 10 and 55 boardings per

hour during the PM peak period. Transit rider amenities at these high-ridership stops are limited.

- **Bus Travel Speed and Time**. The lowest travel speeds along the Project Corridor are less than 10 miles per hour and occur at locations near BART stations, as well as along the portion of the Project Corridor between San Leandro to downtown Hayward. End to end bus travel times between the San Leandro and Fremont BART stations range from 91 to 102 minutes, with approximately one third of the total time associated with service to BART stations likely due to operational inefficiencies or limitations. The travel times associated with BART station access suggest opportunities to improve bus travel time (and increase bus access to BART) through targeted infrastructure improvements around BART stations.
- **Travel Time Comparison by Mode.** BART provides the fastest travel time for end-to-end corridor trips. BART travel times during the PM peak period are approximately half of auto travel times and approximately one quarter of bus travel times. This highlights the need for strong first- and last-mile connections to BART (via bus and other modes) to leverage its travel time advantage.
- **Regional Transit Improvements.** The East Bay BRT project is under construction and will provide a high-capacity transit connection between the San Leandro BART station and downtown Oakland to the north. The BART Silicon Valley project extends BART service from the Warm Springs station south to Santa Clara, with Phase I to Berryessa currently under construction. These projects provide near-term improvements to connect the Study Area to the larger region.

Section 7
Bicycle and Pedestrian Circulation

Section 7

Bicycle and Pedestrian Circulation

Biking and walking provide mobility options for shorter-distance trips within the Project Corridor and for groups such as youth and seniors who are not able to drive. Bicyclist and pedestrian networks are an important part of providing safe access to transit services.

This section provides a summary of bicycle and pedestrian infrastructure and circulation along the Project Corridor.

Topics covered in this section are:

- Existing and planned bicycle facilities
- Bicyclist and pedestrian volumes
- Sidewalk facilities and ADA accommodations
- Pedestrian crossings and planned pedestrian improvements
- Pedestrian activity areas
- Relevant plans and projects

7.1 EXISTING AND PLANNED BICYCLE FACILITIES

Figure 7-1 presents existing and planned bicycle facilities along the Project Corridor, parallel to the corridor, and facilities that provide connections to BART stations.

There are four classes of bicycle facilities, defined as follows:

- Class I – Provides a completely separated facility designed for the exclusive use of bicyclists and pedestrians with crossing points minimized.
- Class II – Provides a restricted right-of-way designated lane for the exclusive or semi-exclusive use of bicycles with through travel by motor vehicles or pedestrians prohibited, but with vehicle parking and cross-flows by pedestrians and motorists permitted.
    - Class II-b – Provides a Class II designated bicycle lane with painted buffer between the bicycle lane and vehicle travel lane.

- Class III – Provides a right-of-way designated by signs or permanent markings and shared with pedestrians and motorists.
- Class IV – Provides a bikeway for the exclusive use of bicycles and includes a separation required between the separated bikeway and the through vehicular traffic. The separation may include, but is not limited to, grade separation, flexible posts, inflexible physical barriers, or on-street parking.

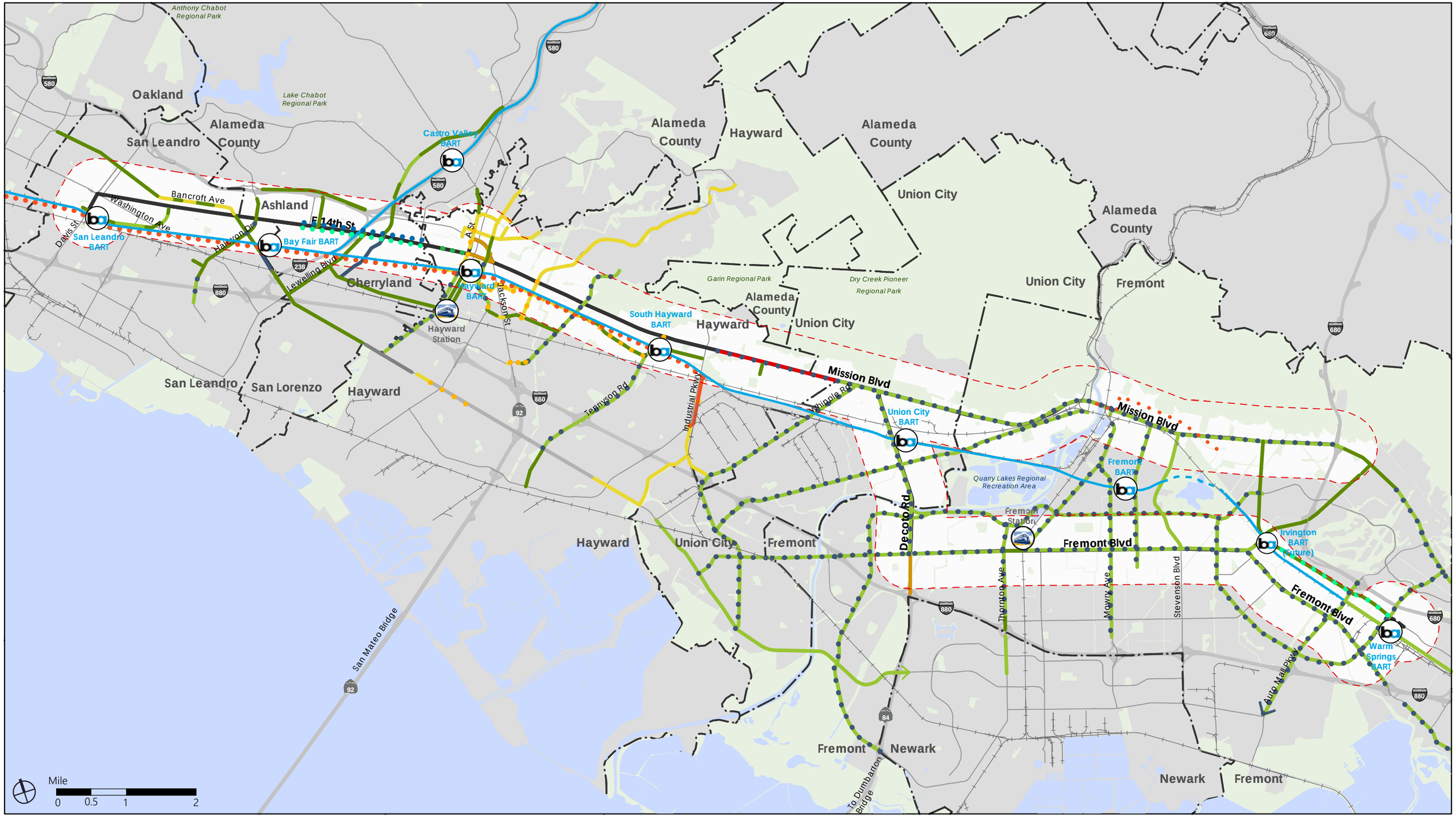
Much of the Project Corridor has existing Class II bike lanes, with improvements to protected bike lanes planned in many areas.

Along the Project Corridor

Much of the Project Corridor has either Class II bike lanes or Class IIb buffered bike lanes. Sections of the Project Corridor without bike facilities are located in San Leandro, unincorporated Alameda County, and Hayward.

Planned improvements along the Project Corridor are as follows:

- In San Leandro, E.14th St does not have bicycle facilities. Bancroft Ave adjacent to E. 14th St has Class II bike lanes and Class III bike routes. The 2017 San Leandro Bicycle and Pedestrian Master Plan recommends a corridor study for the E. 14th St corridor to determine the appropriate improvement.
- In Alameda County, the E. 14th St/Mission Corridor Improvement Project calls for Class IIb bike lanes on the west side of the street and Class IV bike lanes on the east side. Phase II will extend from 162nd Avenue to I-238; Phase III will extend from I-238 to Rose St.
- In north Hayward, the Mission Blvd Phase III project, extending from the northern City limit to the Hayward Loop, calls for Class II bike lanes.
- In south Hayward, the Mission Blvd Phase II project is currently under construction and includes Class IV bike lanes separated from traffic by landscape strips alternating with striped buffers.
- In Union City and Fremont, Class IV bike lanes are planned for the Mission Blvd, Decoto Rd, and Fremont Blvd portions of the Project Corridor.



Legend:

- BART Station
- BART Above/Below Ground
- Capitol Corridor Stations
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial
- Water Bodies
- Parks/Open Space

Existing Bicycle Network
Facility Type

- Class I
- Class II
- Class IIb
- Class III
- Class IV
- Mixed

Proposed Bicycle Network
Facility Type

- Class I
- Class II
- Class IIb
- Class III
- Class IV

E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

Figure 7-1 Existing & Planned Bicycle Facilities

Notes: Only bike facilities within corridor buffer and main thoroughfares are displayed.
San Leandro Bicycle & Pedestrian Master Plan 2017 recommends corridor study for full length of the Corridor within the jurisdiction.
Planned bicycle facilities include near-term and long-term plans.

November 2018
Source: Alameda CTC and local jurisdictions

Parallel to the Project Corridor

Several portions of the Project Corridor have parallel bike facilities; specific examples include Bancroft Ave in San Leandro and Paseo Padre Pkwy in Fremont. These parallel routes provide connectivity for shorter-distance trips within the respective jurisdictions.

Planned improvements parallel to the Project Corridor are as follows:

The planned East Bay Greenway project will provide a parallel bike route that connects BART stations in San Leandro, Alameda County, and Hayward.

- The East Bay Greenway is a planned Class I bicycle path that will run along within or adjacent to the BART alignment. Within the Study Area, the East Bay Greenway would extend from the San Leandro BART station to the South Hayward BART station. (Led by Alameda CTC)
- In Fremont, a portion of the East Bay Greenway exists between Central Park and Washington Blvd. For the remainder, the City's Bicycle and Pedestrian Plans depict a planned alignment that runs parallel to BART from the Union City limit to Alameda Creek. From Alameda Creek to Central Park, the alignment follows an abandoned railroad right of way, and the alignment runs parallel to BART from the Irvington area to S. Grimmer Blvd, with an ultimate connection to the Bay Trail west of I-880. (Led by the City of Fremont)
- In Fremont, the Alameda Creek Trail to Fremont Central Park is a Class I bicycle and pedestrian trail with a bridge across Mission Blvd. (Led by East Bay Regional Parks District)

Connections to BART Stations

Class II or Class IIb facilities exist adjacent to all the BART stations within the Study Area. Class IV facilities are planned for the connections to the Hayward, South Hayward, Union City, Fremont, and Warm Springs stations. The East Bay Greenway will provide additional bicycle access to the San Leandro, Bay Fair, Hayward, and South Hayward BART stations.

Cross-street intersections with these facilities provide locations for potential improvements to facilitate bicyclist movement across the Project Corridor.

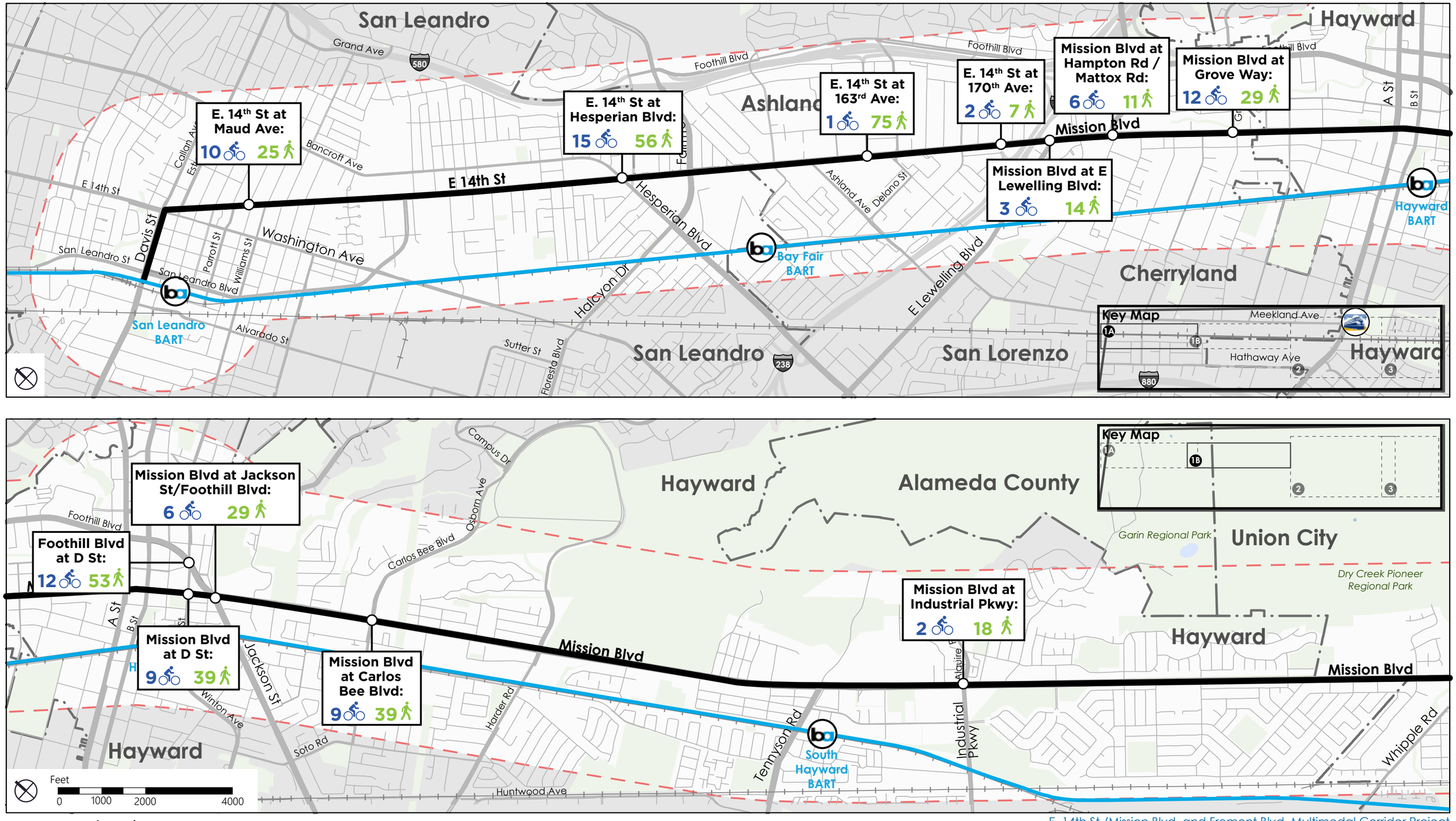
7.2 BICYCLIST AND PEDESTRIAN VOLUMES

Intersections with the highest bicyclist and pedestrian volumes are located in the Fremont and Union City portions of the Project Corridor.

Figure 7-2 summarizes peak hour bicyclist and pedestrian volumes for intersections along the Project Corridor where data is available. Turning movement counts were collected to evaluate traffic operations. The City of Fremont provided supplemental data.

For bicyclists, intersections with the highest levels of peak hour activity are located along Fremont Blvd and Decoto Rd. For pedestrians, the highest intersection volumes are recorded near the Fremont and Union City BART stations.

Several factors contribute to these concentrations in the southern portion of the Project Corridor, including proximity to BART stations and schools. In the northern portion of the Project Corridor, the presence of a fine-grained street grid, particularly in San Leandro, results in pedestrian activity being distributed across multiple routes and intersections.



Legend:

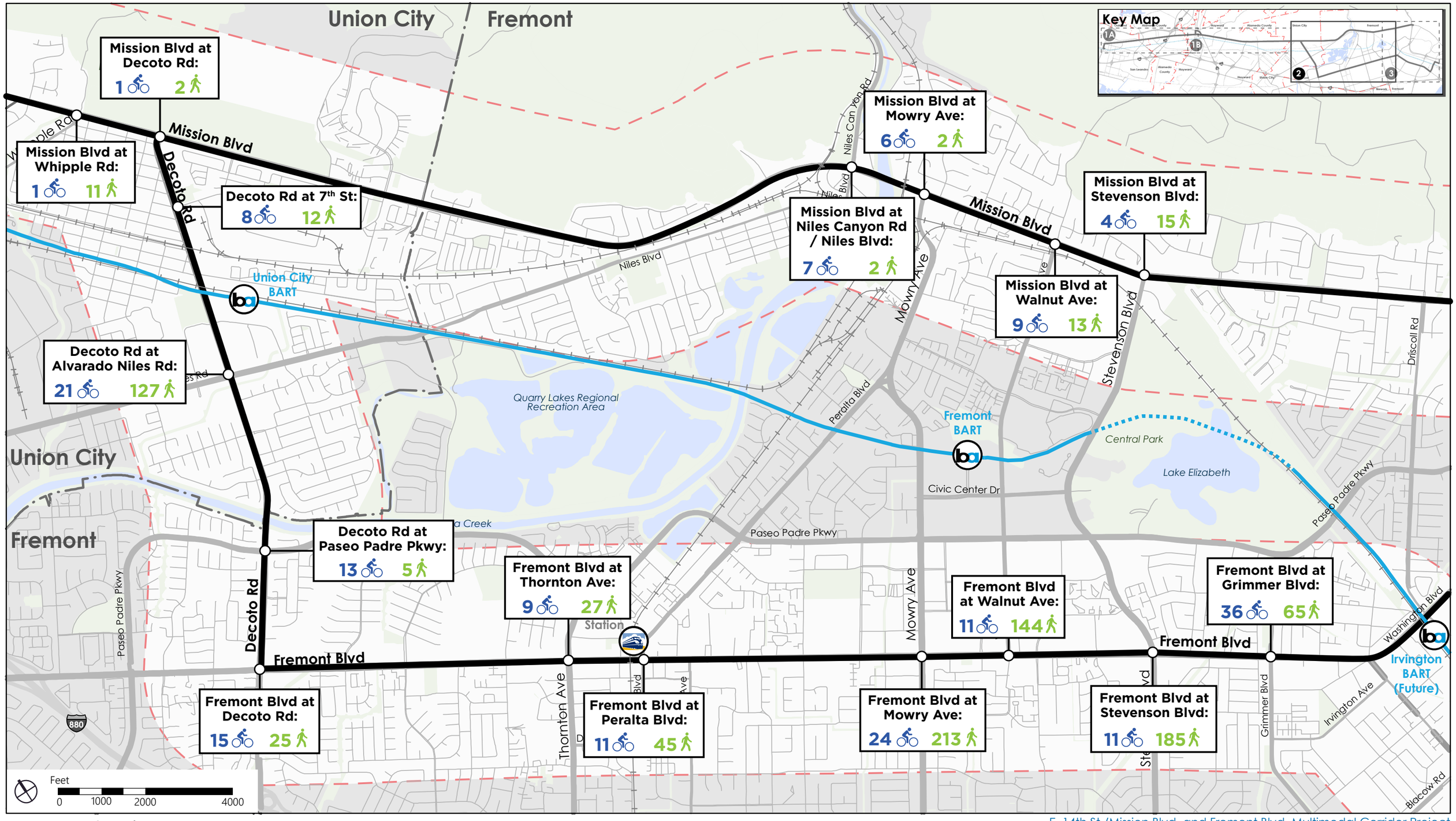
- BART Station
- BART Above/Below Ground
- Capitol Corridor Station
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial/Collector/Local
- Water Bodies
- Parks/Open Space

E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

7-2a Peak Hour Bicyclist and Pedestrian Volumes

September 2018

Source: Alameda CTC Multimodal Counts, 2016; City of Fremont, 2017; Kittelson & Associates, Inc., 2018



E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

Legend:

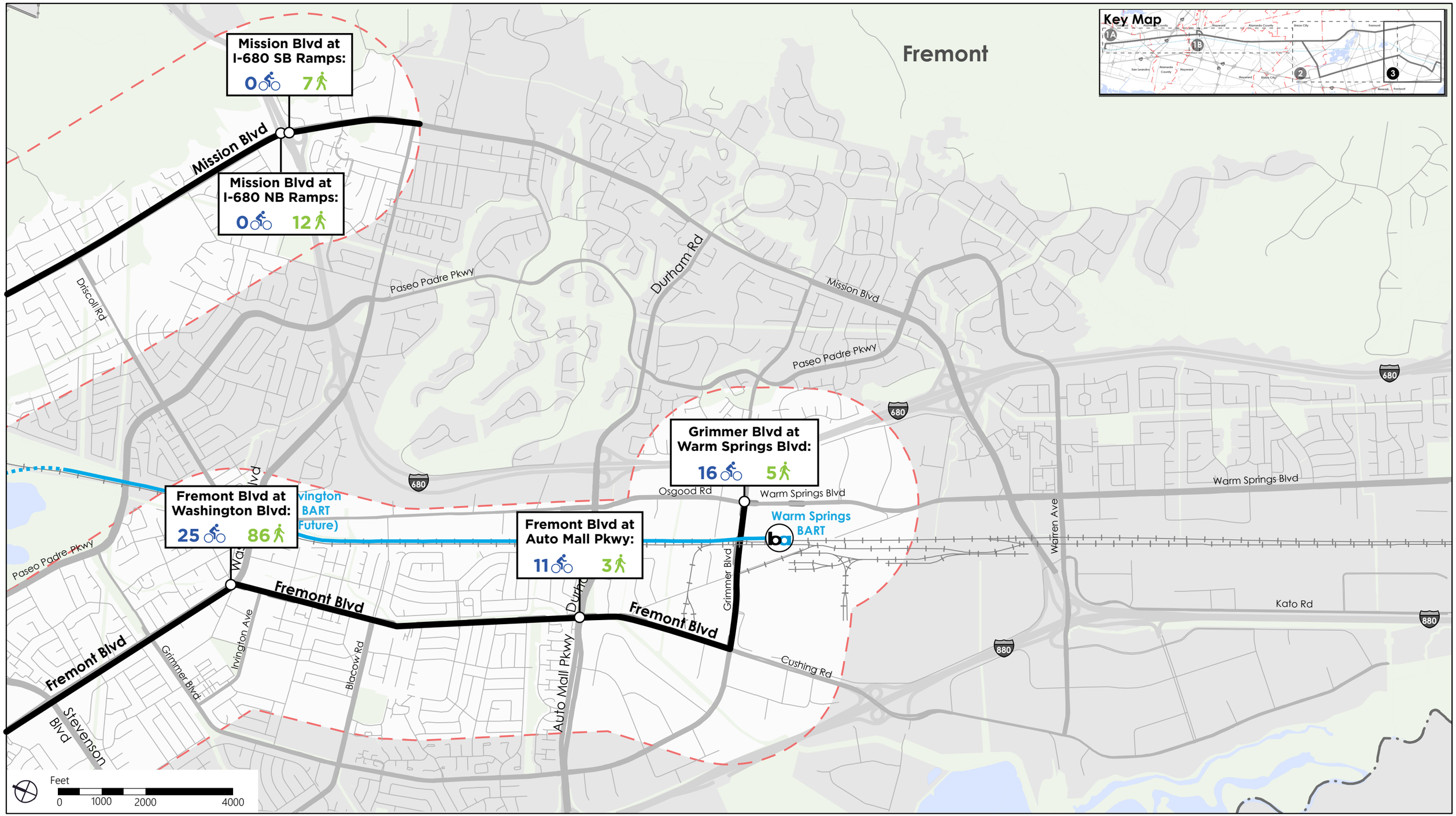
- BART Station
- BART Above/Below Ground
- Capitol Corridor Station
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial/Collector/Local
- Water Bodies
- Parks/Open Space

ALAMEDA County Transportation Commission

7-2b PM Peak Hour Bicyclist and Pedestrian Volumes

September 2018

Source: Alameda CTC Multimodal Counts, 2016; City of Fremont, 2017; Kittelson & Associates, Inc., 2018



E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

Legend:

- BART Station
- BART Above/Below Ground
- Capitol Corridor Station
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial/Collector/Local
- Water Bodies
- Parks/Open Space

ALAMEDA County Transportation Commission

7-2c PM Peak Hour Bicyclist and Pedestrian Volumes

September 2018

Source: Alameda CTC Multimodal Counts, 2016; City of Fremont, 2017; Kittelson & Associates, Inc., 2018

7.3 SIDEWALK FACILITIES AND ADA ACCOMMODATIONS

The presence of sidewalks is a basic element of pedestrian mobility. Where sidewalk facilities are present, the Americans with Disabilities Act (ADA) ensures that the design of these facilities provides for ease of use by individuals of all abilities.

A preliminary review of the Project Corridor was completed to identify general areas where sidewalk gaps and/or ADA deficiencies are present. For ADA compliance, the review focused on the following requirements:

- Sufficient sidewalk clearance for wheelchair-bound individuals
- Sidewalk slopes and ramps consistent with slope requirements
- Curb ramps compliant with slope requirements and containing detectable warning devices

While the majority of the Project Corridor has sidewalks on both sides, sidewalk gaps and ADA deficiencies are found throughout the corridor.

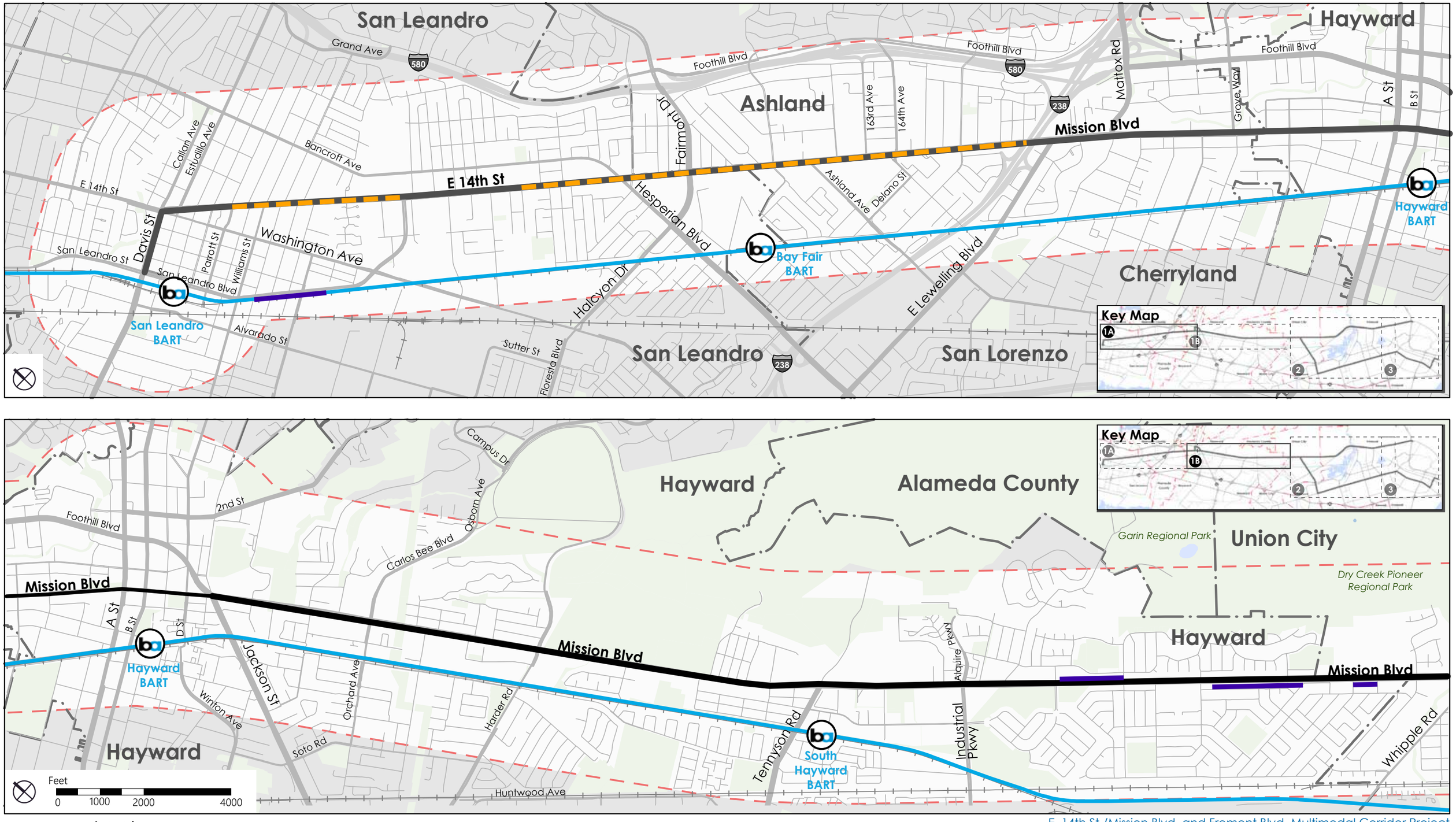
Figure 7-3 presents areas with sidewalk gaps and ADA deficiencies along the Project Corridor. The majority of the Project Corridor (85%, or 24.8 miles) has sidewalks on both sides of the street. Areas with significant sidewalk gaps include Mission Blvd in Union City and Fremont and Grimmer Blvd near the Warm Springs BART station.

The majority of the Project Corridor has ADA-compliant sidewalk clearances, slopes, and ramps per the review items listed above. Sections of the corridor requiring improvements to meet ADA standards include the following:

- E 14th St south of downtown San Leandro
- E 14th St near the Bay Fair BART station
- E 14th St in Alameda County
- Mission Blvd in Union City
- Mission Blvd in Fremont north of Alameda Creek
- Decoto Rd in Union City and Fremont
- Fremont Blvd through downtown Fremont

As projects are developed, more focused data collection efforts may reveal additional specific locations with sidewalk uplift or obstructions, which would necessitate improvements.

As noted in the Roadway Infrastructure chapter, Caltrans has planned and programmed several improvements to address ADA deficiencies and improve pedestrian crossings within their right-of-way.



Legend:

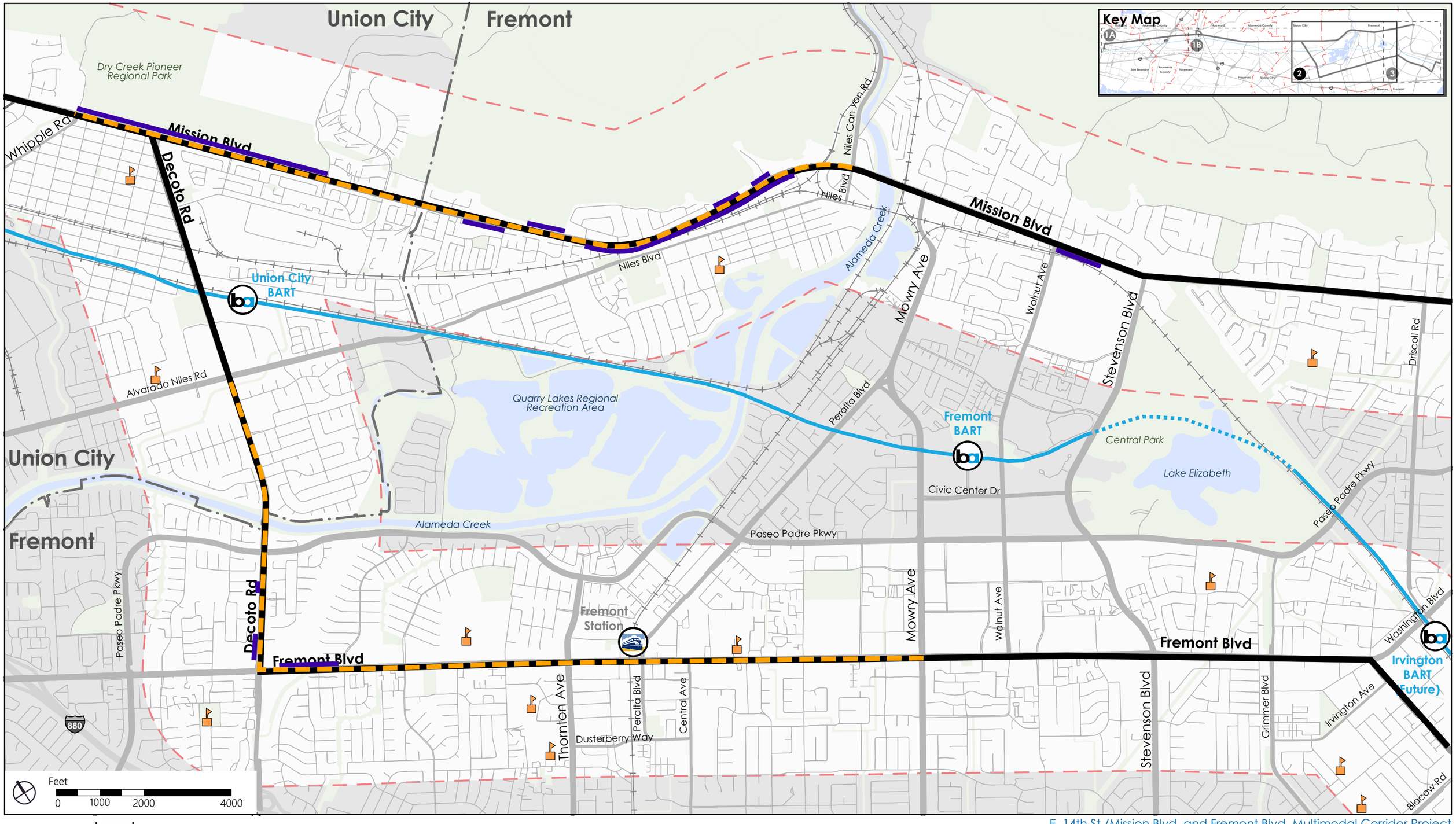
- BART Station
- BART Above/Below Ground
- Capitol Corridor Station
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial/Collector/Local
- Water Bodies
- Parks/Open Space
- Sidewalk Gap
- ADA Sidewalk, Ramp, and/or Driveway Deficiencies

ALAMEDA County Transportation Commission

E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

7-3a Sidewalk Gaps and ADA Deficiencies

September 2018



Legend:

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- BART Above/Below Ground
- Capitol Corridor Station
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial/Collector/Local
- Water Bodies
- Parks/Open Space
- Sidewalk Gap
- ADA Sidewalk, Ramp, and/or Driveway Deficiencies
- School

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E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

7-3b Sidewalk Gaps and ADA Deficiencies

September 2018

Fremont

Mission Blvd
Driscoll Rd
Paseo Padre Pkwy
Durham Rd
Mission Blvd
Paseo Padre Pkwy
680
680
680
Osgood Rd
Warm Springs Blvd
Warm Springs Blvd
Irvington BART (Future)
Warm Springs BART
Washington Blvd
Paseo Padre Pkwy
Fremont Blvd
Fremont Blvd
Fremont Blvd
Grimmer Blvd
Irvington Ave
Blacow Rd
Durham Rd
Auto Mall Pkwy
Grimmer Blvd
Warren Ave
Kato Rd
880
880
Cushing Rd
Stevenson Blvd
Feet
0 1000 2000 4000

E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

Legend:

- BART Station
- BART Above/Below Ground
- Capitol Corridor Station
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial/Collector/Local
- Water Bodies
- Parks/Open Space
- Sidewalk Gap
- ADA Sidewalk, Ramp, and/or Driveway Deficiencies
- School

ALAMEDA County Transportation Commission

7-3c Sidewalk Gaps and ADA Deficiencies

September 2018

7.4 PEDESTRIAN CROSSINGS AND PLANNED PEDESTRIAN IMPROVEMENTS

Another important element of pedestrian mobility is the ability to cross the Project Corridor safely and conveniently, particularly given vehicular traffic volumes and speeds. Pedestrian crossings that are signal controlled (by either a traffic signal or a pedestrian signal) allow for pedestrians to access destinations on both sides of the corridor.

Figure 7-4 presents the existing controlled crossings along the Project Corridor. The figure also presents locations for planned pedestrian improvements, many of which are associated with existing or planned pedestrian crossings. **Table 7-1** lists the planned improvements in detail.

As shown in the figure, controlled crossings along the Project Corridor are generally 500 to 1,500 feet apart. Crossings are most closely spaced on E 14th St in downtown San Leandro, and on Mission Blvd in downtown Hayward. Distances between controlled pedestrian crossings are longest along Mission Blvd in Fremont. Having longer distances between crossings encourages pedestrians to cross at random along the Corridor, increasing the risk of people being hit by automobiles.

Uncontrolled mid-block crossings present double-threat situations where people walk across two or more travel lanes for both directions of travel. A driver in the outer lane may yield, indicating it is safe for the person to begin crossing. However, a driver in another lane may not see the person crossing, may not yield, and ultimately may crash into the person. The long distance between controlled crossings along these segments present opportunities for creating more crossing options at mid-block to meet the needs of people walking within the Study Area.

Planned pedestrian improvements are identified through Safe Routes to School Plans and pedestrian plans for local jurisdictions along the Project Corridor. In general, the planned improvements focus on the following:

- Access to schools
- Pedestrian crossings
- Closure of sidewalk gaps
- ADA compliance

Pedestrian improvements planned for the Project Corridor focus on safe access to schools, pedestrian crossings, closure of sidewalk gaps, and ADA compliance.

Alameda County and the City of Hayward are currently completing pedestrian plans which may identify additional improvements for the Project Corridor. Additional pedestrian improvements may also be provided through the planned near-term corridor projects in Alameda County and Hayward.

Legend:

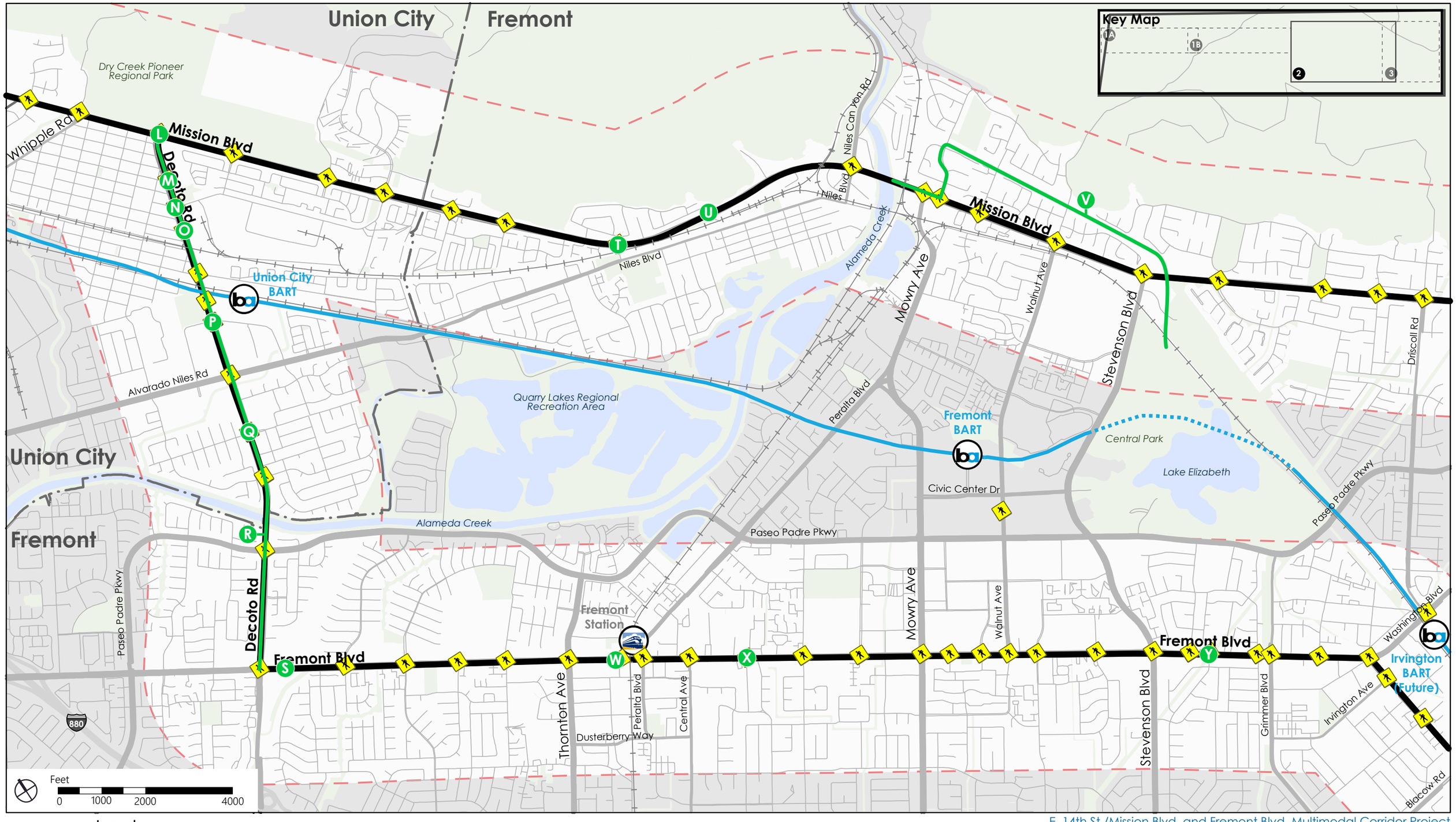
- BART Station
- BART Above/Below Ground
- Capitol Corridor Station
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial/Collector/Local
- Water Bodies
- Parks/Open Space
- Planned Improvements
- Continuous Planned Improvements
- Controlled Crossing Locations

ALAMEDA County Transportation Commission

E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

7-4a Planned Pedestrian Improvements

March 2019



E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

Legend:

- BART Station
- BART Above/Below Ground
- Capitol Corridor Station
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial/Collector/Local
- Water Bodies
- Parks/Open Space
- Planned Improvements
- Continuous Planned Improvements
- Controlled Crossing Locations

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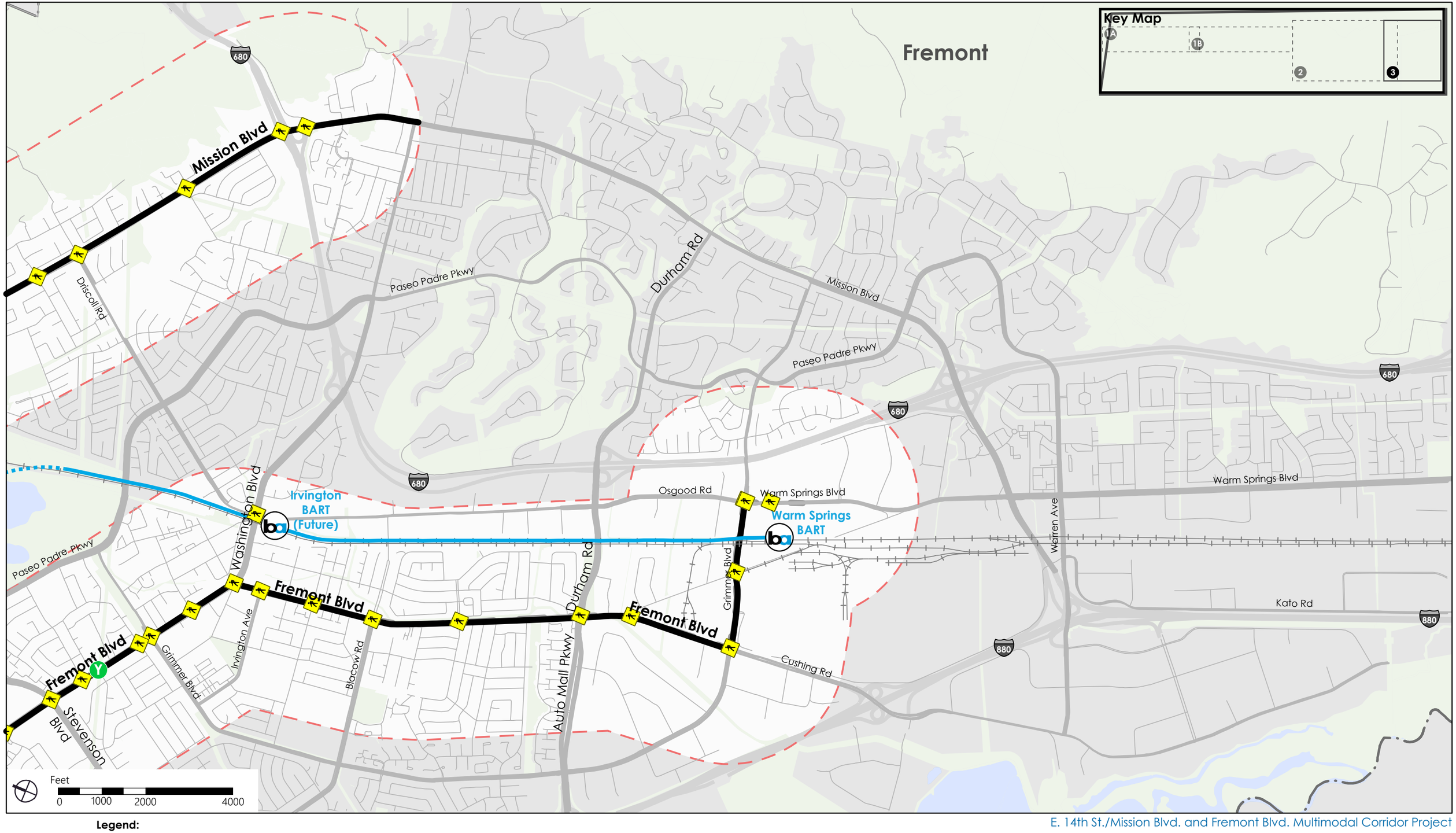
7-4b Planned Pedestrian Improvements

March 2019



E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

Legend:

- BART Station
- BART Above/Below Ground
- Capitol Corridor Station
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial/Collector/Local
- Water Bodies
- Parks/Open Space
- Planned Improvements
- Controlled Crossing Locations

ALAMEDA County Transportation Commission

7-4c Planned Pedestrian Improvements

March 2019

Table 7-1: Planned Pedestrian Facilities

Location (refer to figure)	Type of Improvement(s)	Source
San Leandro		
A. Davis St and Carpentier St	HAWK Signal	City of San Leandro
B. E 14th St and Joaquin Ave	Pedestrian Scramble Phase Signal	City of San Leandro
C. E 14th St and Warren Ave	Yellow Transverse Crosswalk, ADA-Compliant Curb Ramps	City of San Leandro Bicycle and Pedestrian Master Plan (2018)
D. E 14th St and Estabrook St	High-Visibility Crosswalk, ADA-Compliant Curb Ramp	City of San Leandro Bicycle and Pedestrian Master Plan (2018)
E. E 14th St and Cornwall Way/Blossom Way	HAWK Signal	City of San Leandro
F. E 14th St and San Leandro Blvd	Pedestrian Refuge Islands, Curb Extension, ADA-Compliant Curb Ramps	City of San Leandro Bicycle and Pedestrian Master Plan (2018)
G. E. 14th St and 144th Ave	HAWK signal	City of San Leandro
Alameda County		
G. E 14th St and Ashland Ave	Textured Crosswalks, Improved Street Lighting	Alameda County Bicycle and Pedestrian Master Plan for Unincorporated Areas (2012)
H. E 14th St and 162nd Ave to E 14th St and 170th Ave	Sidewalk Widening	
I. E 14th St and 170th Ave to Mission Blvd and E Lewelling Blvd	Sidewalk Widening	
J. Mission Blvd and E Lewelling Blvd to Mission Blvd and Rufus Court	Sidewalk Widening	
Hayward		
K. Mission Blvd and Calhoun St	Leading Pedestrian Interval at Crosswalk	Alameda County SR2S Program Completed Assessments (2015)
Union City		
L. Mission Blvd and Decoto Rd	Construct Sidewalk, Curb Extension, Install Fence in Median	Alameda County SR2S Program Completed Assessments (2016)
M. 5th St and Decoto Rd	School Area Warning Signage, Retime Pedestrian Countdown Signals	City of Union City Pedestrian and Bicycle Master Plan (2012)
N. 7th St and Decoto Rd	School Area Warning Signage, Retime Pedestrian Countdown Signal	

Table 7-1, Planned Pedestrian Facilities, continued

Location	Type of Improvement(s)	Source
	Union City	
O. 9th St and Decoto Rd	Pedestrian Warning Signage	City of Union City Pedestrian and Bicycle Master Plan (2012)
P. Meyers Dr/Union Square and Decoto Rd	High-Visibility Crosswalks	
Q. Perry Rd and Decoto Rd	High-Visibility Crosswalks, Retime Pedestrian Countdown Signals	
R. Mission Blvd and Decoto Rd to Fremont Blvd and Decoto Rd	Sidewalk Widening, Placement of Pedestrian Push Buttons at Signalized Intersections	
	Fremont	
S. Near Decoto Rd/Fremont Blvd intersection	Trail crossing of Fremont Blvd south of Decoto Rd	City of Fremont
T. Mission Blvd and Nursery Ave	Construct Sidewalk	Alameda County SR2S Program Completed Site Assessments (2014)
U. Mission Blvd and Nichols Ave	Construct Sidewalk, High-Visibility Crosswalk, Install Beacon	
V. Alameda Creek Trail to Fremont Central Park	Class I Bi-Directional Bicycle and Pedestrian Trail Construct a Mission Blvd Bridge with pedestrian safety improvements	East Bay Greenway Rails-to-Trails: Central Park to Alameda Creek Final Project Scoping Report (2016)
W. Fremont Blvd and Bonde Way	HAWK Signal	City of Fremont
X. Fremont Blvd and Norris Rd	HAWK Signal	
Y. Fremont Blvd and Margery Dr	Rapid Rectangular Flashing Beacon	

7.5 PEDESTRIAN EMPHASIS AREAS

While existing pedestrian volumes reflect current land use conditions and development patterns, several portions of the Project Corridor have planned land uses that will result in increased pedestrian activity. (These areas are discussed in the Demographics and Land Use section of the report.) To understand where higher pedestrian activity can be expected, several indicators for increased pedestrian activity were mapped.

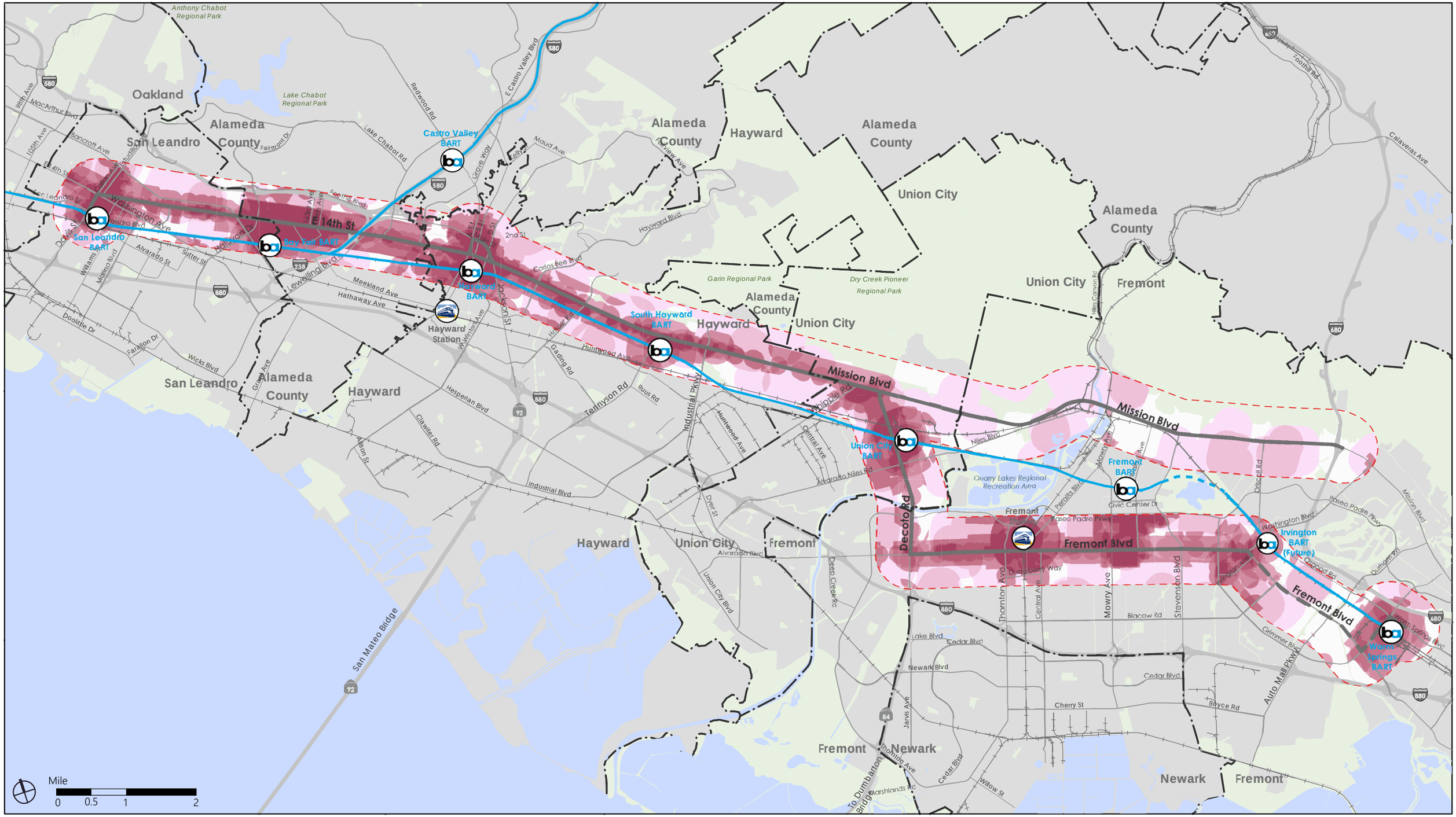
Figure 7-5 presents the overall pattern of pedestrian-oriented land uses and destinations along the Project Corridor. The specific categories include uses such as schools, parks, public buildings, and high-ridership bus stops, and are listed in **Table 7-2**.

Table 7-2 Pedestrian Activity Indicators

Pedestrian Activity Indicator	Buffer
Transit	
BART, Capitol Corridor, ACE Stations	1/4 mile 1/2 mile
AC Transit Priority and Crosstown Routes	1/4 mile 1/2 mile
Local Bus Stops	1/8 mile
High-ridership Bus Stops (as presented in the Transit section of the report)	1/4 mile
Demographics	
Communities of Concern	No Buffer
Employment Growth Areas (defined by ACTC 2016 CTP)	No Buffer
Land Use	
Priority Development Areas	No Buffer
Planned Commercial or Mixed-Use Areas	1/8 mile
Activity Centers (including institutions and regional parks)	1/4 mile
Local Schools	1/4 mile
Local Parks	1/4 mile

Based on existing and planned land use patterns and transit facilities, high levels of pedestrian activity are expected for most of the Project Corridor.

As shown in the figure, high levels of pedestrian activity are expected along the majority of the Project Corridor with the highest levels expected around the BART, Capitol Corridor, and ACE rail stations. Areas with fewer pedestrian-oriented uses (existing or planned) are found along Mission Blvd south of Decoto Rd and between the Irvington BART (future) and Warm Springs BART stations.



Legend:

- BART Station
- BART Above/Below Ground
- Capitol Corridor Stations
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial
- Water Bodies
- Parks/Open Space

Number of Pedestrian Activity Areas*

1 2 3 4 5 6 7+

*Includes PDAs, transit buffers, education centers, parks, public buildings, Communities of Concern, and supportive landuse.

E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

Pedestrian Activity Area Mapping

September 20, 2018

Source: MTC, AC Transit, Cities Land use & Open Streets Map

7.6 RELEVANT PLANS AND PROJECTS

Bicycle and pedestrian conditions for the Project Corridor are addressed through the following completed and ongoing plans. In some cases, the data and analysis from these documents were used as part of the analysis presented in this section.

- City of San Leandro Bicycle & Pedestrian Master Plan, 2018
- Alameda Countywide Bicycle Plan, 2012 (Update underway)
- Alameda Countywide Pedestrian Plan, 2012 (Update underway)
- Alameda County Bicycle and Pedestrian Master Plan for Unincorporated Areas, 2012 (Update underway)
- Alameda County Systemic Safety Analysis Report (Ongoing)
- City of Hayward Bicycle Master Plan, 2007 (Update underway)
- City of Union City Pedestrian and Bicycle Master Plan, 2012
- City of Fremont Pedestrian Master Plan, 2016
- City of Fremont Draft Bicycle Master Plan, 2017
- City of Fremont East Bay Greenway Rails-to-Trails: Central Park to Alameda Creek Final Project Scoping Report, 2016
- Fremont Vision Zero 2020

7.7 KEY FINDINGS

The following are key findings associated with bicycle and pedestrian circulation:

- **Existing and Planned Bicycle Facilities**. Much of the Project Corridor (67%, or 19.6 miles) has existing bike lanes (either Class II or Class IIb). Near-term improvements to Class IV protected bike lanes are planned for portions of the Project Corridor (8%, or 2.3 miles) in unincorporated Alameda County and Hayward, while long-term improvements to Class IV protected bike lanes are planned for portions of the Project Corridor (65%, or 18.9 miles) in Union City and Fremont.
- **East Bay Greenway**. The planned East Bay Greenway project will provide a bike route and pedestrian path parallel to the Project Corridor that connects BART stations in San Leandro, Alameda County, and Hayward.
- **Bicyclist and Pedestrian Volumes.** Intersections with the highest bicyclist and pedestrian volumes along the Project Corridor are located in the Fremont and Union City portions of the Project Corridor.

- **Sidewalk Facilities and ADA Accommodations.** The majority of the Project Corridor (85%, or 24.8 miles) has sidewalks on both sides of the street with ADA-compliant pedestrian facilities. Areas with significant sidewalk gaps include Mission Blvd in Union City and Fremont and Grimmer Blvd near the Warm Springs BART station. Areas with ADA deficiencies are located throughout the Project Corridor.
- **Pedestrian Crossings and Planned Pedestrian Improvements.** Controlled pedestrian crossings are generally 500' to 1,500' apart and most closely spaced on E 14th St in downtown San Leandro and on Mission Blvd in downtown Hayward. Distances between controlled pedestrian crossings are longest along Mission Blvd in Fremont.
- **Pedestrian Crossings and Planned Pedestrian Improvements.** Planned pedestrian improvements for the Project Corridor focus on access to schools, pedestrian crossings, closure of sidewalk gaps, and ADA facility upgrades.
- **Pedestrian Emphasis Areas.** Based on existing and planned land use patterns and transit facilities, increases in pedestrian activity are expected for most of the Project Corridor in the long-term (10-20 years).

Section 8
Safety Conditions

Section 8

Safety Conditions

Safety for all transportation users is critical element in the Study Area's multimodal network. This section discusses safety conditions along the Project Corridor based on analysis of collision data. The analysis findings will be used to identify safety-related issues, locations, and appropriate improvements.

Topics covered in this section are:

- High-collision locations
- Fatal and severe injury collisions
- Bicyclist high-injury Project Corridor sections
- Pedestrian high-injury Project Corridor sections

The analysis of safety conditions relies on collision data from the Statewide Integrated Traffic Records System (SWITRS) database that is mapped through the Transportation Injury Mapping System (TIMS).

For analysis of high-collision locations and fatal and severe injury collisions, data for all collision types were obtained for June 2012 through May 2017, the most recent five-year period.

The high-injury corridor analyses were performed as part of Alameda CTC's concurrent development of the Countywide Active Transportation Plan (CATP). The CATP began prior to the analysis for this Project; therefore, the high-injury corridor analyses use collision data for January 2012 through December 2016, the most recent five-year period available at that time.

8.1 HIGH- COLLISION LOCATIONS

Table 8-1 presents the rate of collisions per mile for each section of the corridor. As shown in the table, there is a higher concentration of collisions for all collision types in the San Leandro, Alameda County, Hayward, and Union City segments of the corridor, with Alameda County and Union City showing high collision rates. These segments, particularly those in San Leandro and Alameda County, have lower vehicle volumes relative to the rest of the Corridor. However, the higher concentration of collisions is due in part to a denser environment that includes more intersections and driveways, more conflict points, and more pedestrian activity.

Table 8-1: Collisions per Mile by Corridor Section, June 2012- May 2017

Roadway	Section	Collisions per Mile	
		All Collisions	Fatal or Severe Collisions
San Leandro			
Davis St	Between San Leandro Blvd and E 14th St	55	0
E. 14th St	Between Davis St and Plaza Dr	107	5
Alameda County			
E. 14th St/ Mission Blvd	Between Plaza Dr and Rose St	234	3
Hayward			
Mission Blvd	Between Rose St and A St	119	5
Mission Blvd & Foothill Blvd	Between A St and Chapel of the Chimes	83	2
Foothill Blvd	Between A St and Mission Blvd	10	0
Union City			
Mission Blvd	Between Chapel of the Chimes and Decoto Rd	159	2
Mission Blvd	Decoto Rd and Shilom Dr	44	1
Decoto Rd	Between Mission Blvd and Alameda Creek	178	1
Fremont			
Mission Blvd	Between Shilom Dr and I-680	30	2
Decoto Rd	Between Alameda Creek and Fremont Blvd	83	6
Fremont Blvd	Between Decoto Rd and S Grimmer Blvd	52	3
Washington Blvd	Between Fremont Blvd and Osgood Rd	48	10
Osgood Rd	Between Washington Blvd and Warm Springs BART station	23	< 1
S Grimmer Blvd	Between Osgood Rd and Fremont Blvd	2	0

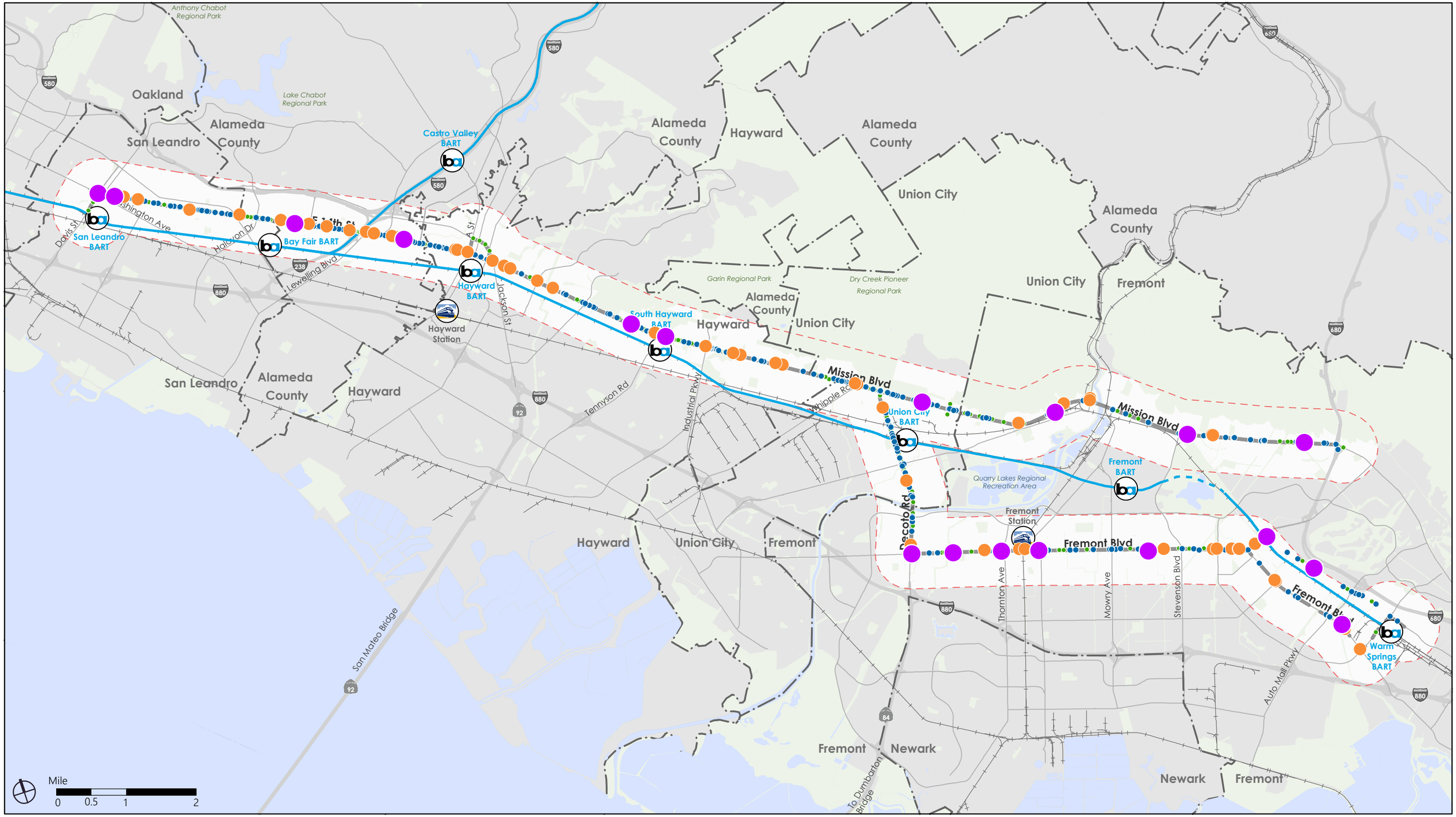
Source: SWITRS, 2018

The highest concentrations of collisions along the Project Corridor are in unincorporated Alameda County and Union City.

8.2 FATAL AND SEVERE INJURY COLLISIONS

Over half of fatal and severe injury collisions along the Project Corridor involved a pedestrian or bicyclist.

Figure 8-1 shows collisions along the corridor between June 2012 and May 2017. Fatal collisions are shown in magenta, and severe injury collisions are shown in orange. During these five years, 18 collisions resulted in a fatality: eight were pedestrian fatalities, and two were bicyclist fatalities. Sixty-eight (68) collisions resulted in severe injuries. Of these, 24 collisions involved pedestrians and eight involved bicyclists.



Legend:

- BART Station
- BART Above/Below Ground
- Capitol Corridor Stations
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial
- Water Bodies
- Parks/Open Space
- Fatal
- Injury (Severe)
- Injury (Other)
- Property Damage Only

E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

ALAMEDA County Transportation Commission

Crash Severity | Figure 8-1

November 2018 | Source: SWITRS, TIMS, Kittelson

Fatal and severe injury collisions occurred along the full Project Corridor. A higher concentration of severe injury collisions occurred in the San Leandro, Alameda County, and Hayward segments of the Project Corridor. At least one fatal collision occurred within the boundaries of each local jurisdiction along the Project Corridor.

8.3 BICYCLIST HIGH-INJURY SECTIONS

The development of the CATP includes analyses of bicyclist and pedestrian collisions to identify high-injury roadway sections within Alameda County. The bicyclist high-injury roadway sections identified for the Study Area are within the top 20 percent countywide for jurisdictions with comparable bike mode shares (i.e., excluding jurisdictions with high mode shares).

Collision severity scores for individual roadway sections have been developed based on the number and severity of collisions that occurred over a five-year period (2012 – 2016). This analysis is then used to identify countywide high-injury sections. Separate high-injury corridors are identified for bicyclists and pedestrians.

For bicyclists, seven miles of the Project Corridor (25 percent of the total length) are identified as countywide high-injury sections. **Table 8-2** presents the list of high-injury sections and the corresponding maximum collision severity score. The sections are illustrated in **Figure 8-2**. In general, bicyclist collisions in these sections involved bicyclists proceeding straight (i.e., not turning left or right).

Twenty-five percent of the Project Corridor is part of the countywide bicyclist high-injury corridor network.

The sections with the highest scores in terms of collision severity are in San Leandro and Fremont:

- Davis St between E. 14th St and San Leandro Blvd (Score 5.2)
- E. 14th St between Davis St and Juana Ave (Score: 5.2)
- Fremont Blvd, Alder Ave to Peralta Blvd (Score: 5.0)

These scores are lower than those found in Alameda County as a whole, for which the maximum collisions severity score for a given roadway segment is16.2 for bicyclists.

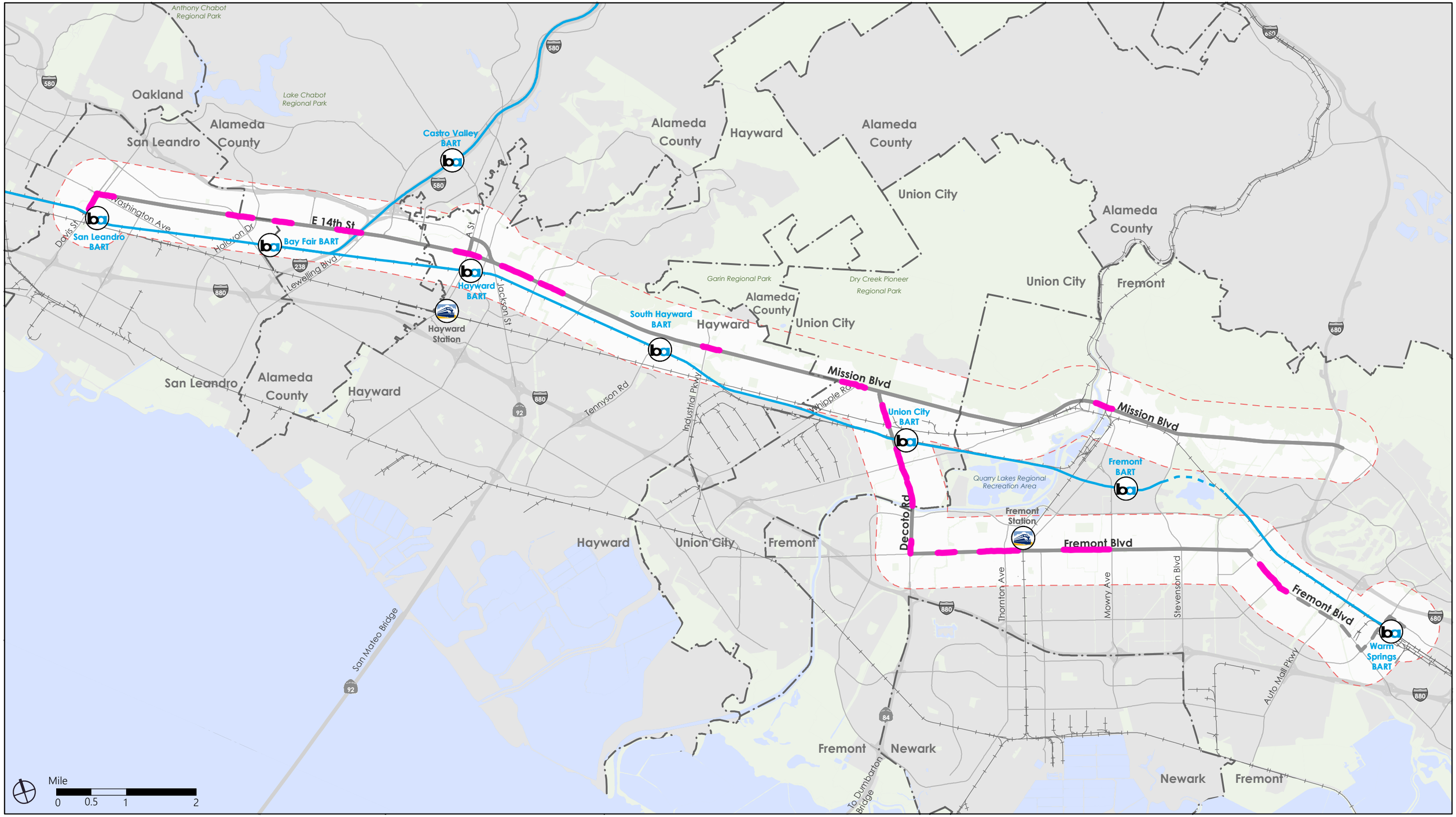
Table 8-2: Bicyclist Maximum Collision Severity Scores along High-Injury Sections, 2012-2016

Roadway	Section	Length (mi)	Maximum Collision Severity Score
	San Leandro		
Davis St	Between E 14th St and San Leandro Blvd	0.3	5.2
E 14th St	Between Davis St and Juana Ave	0.6	5.2

Table 8-2, continued

Roadway	Section	Length (mi)	Maximum Collision Severity Score
San Leandro, continued			
E 14th St	Between Bancroft Ave/Hesperian Blvd and Fairmont Dr	0.4	2.2
Alameda County			
E 14th St	Between Plaza Dr and Ashland Ave	0.3	3.0
E 14th St	Between 167th Ave and E Lewelling Blvd	0.4	3.0
Hayward			
Mission Blvd	Between Grace St and C St	0.7	4.0
Mission Blvd	Between Fletcher Lane and Torrano Ave	0.8	3.0
Mission Blvd	Between Overhill Dr and Garin Ave	0.3	3.0
Union City			
Mission Blvd	Between Tamarack Dr and E St	0.4	3.0
Decoto Rd	Between 5th St and Depot Rd	0.4	2.2
Decoto Rd	Between Meyers Dr and Union Square	0.5	2.4
Decoto Rd	Between Perry Rd and Alameda Creek/City Limit	0.4	3.2
Fremont			
Mission Blvd	Between Tamayo St and Nicolet Ave	0.3	3.0
Decoto Rd	Between Paseo Padre Parkway and Fremont Blvd	0.3	3.0
Fremont Blvd	Between Alder Ave and Peralta Blvd	0.6	5.0
Fremont Blvd	Between Mattos Dr/Heritage Terrace and Mowry Ave	0.7	3.0
Fremont Blvd	Between Washington Blvd and Delaware Dr	0.6	4.0
Decoto Rd	Between Mt Palomar Ct and Fremont Blvd	0.3	3.0

Source: SWITRS, 2018



E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

Legend:

- BART Station
- BART Above/Below Ground
- Capitol Corridor Stations
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial
- Water Bodies
- Parks/Open Space
- Bicycle High-Injury Sections

ALAMEDA County Transportation Commission

Countywide High-Injury Bicycle Sections | Figure 8-2

November 2018| Source: SWITRS, TIMS, Kittelson

8.4 PEDESTRIAN HIGH-INJURY SECTIONS

For pedestrians, 11 miles of the Project Corridor (40 percent of the total length) are identified as countywide high-injury sections. (The pedestrian high-injury roadway sections identified for the Study Area are within the top 20 percent countywide for jurisdictions with comparable walk mode shares (i.e., excluding jurisdictions with high mode shares). For Alameda County as a whole, the maximum collision severity score for a given roadway segment is 26.4 for pedestrians.

Table 8-3 presents the list of high-injury sections and the corresponding maximum collision severity score. The sections are illustrated in **Figure 8-3**.

The locations with the highest scores in terms of severity are in San Leandro, Hayward, and Fremont:

- Fremont Blvd between Grimmer Blvd and Irvington Ave (Score: 15.0)
- Davis St between E 14th St and San Leandro Blvd (Score: 12.4)
- E. 14th St between Davis St and Dolores Ave (Score:12.4)
- Fremont Blvd between Thornton Ave to Norris Rd (Score:10)
- Mission Blvd between Kellogg Ave and Valle Vista Ave (Score:10)

In general, pedestrian collisions in these locations were associated with pedestrians crossing at intersections. In most instances, pedestrians were crossing at a marked crosswalk.

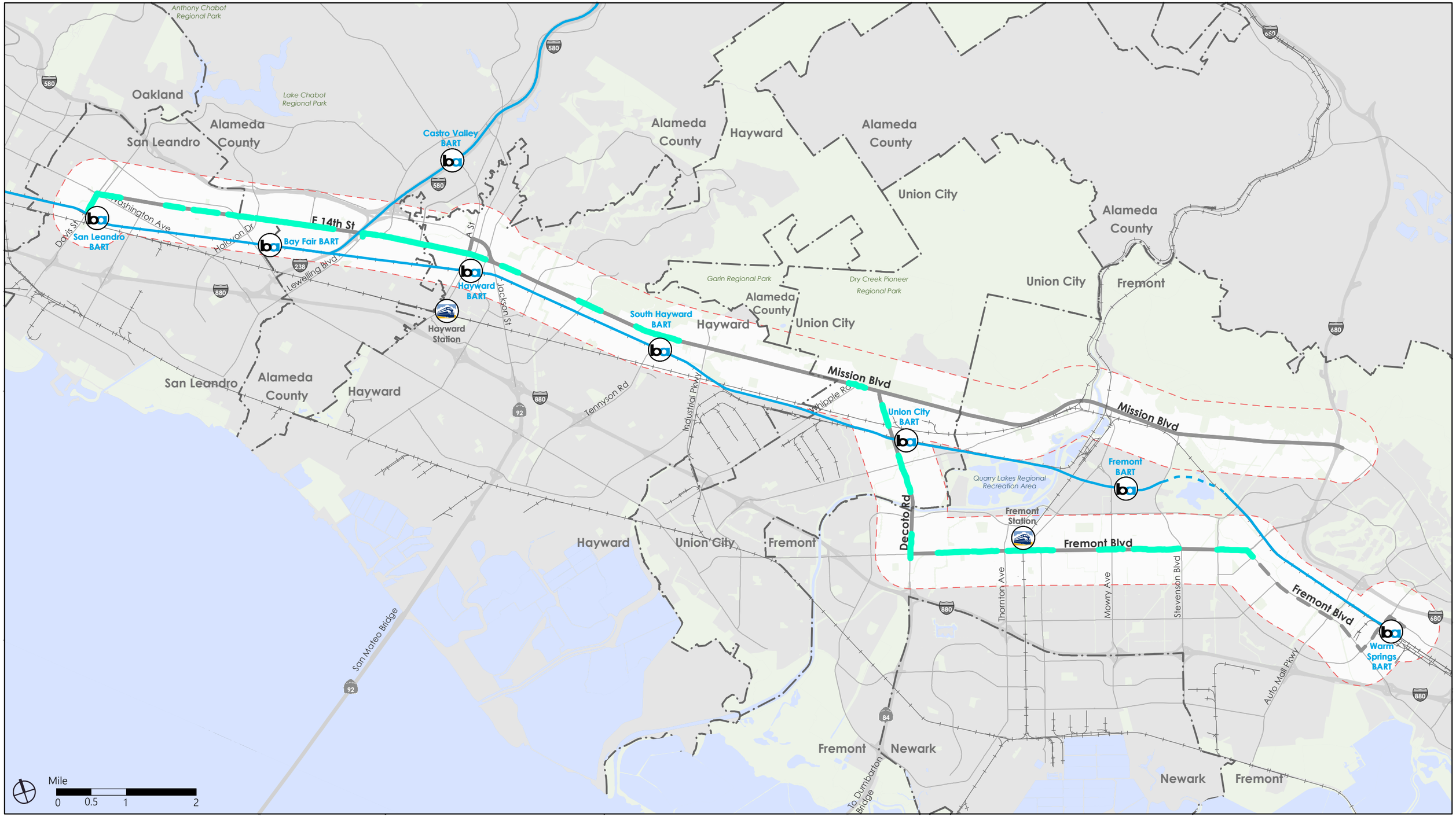
Table 8-3: Pedestrian Maximum Collision Severity Scores along High-Injury Sections, 2012-2016

Roadway	Section	Length (mi)	Maximum Collision Severity Score
	San Leandro		
Davis St	E 14th St to San Leandro Blvd	0.2	12.4
E. 14th St	Between Davis St and Dolores Ave.	0.3	12.4
E. 14th St	Between San Leandro Blvd and 139th Ave	0.3	3.0
E. 14th St	Between 143rd Ave and 148th Ave	0.4	3.0
E. 14th St	Between Bancroft Ave/Hesperian Blvd and Fairmont Dr	0.4	3.0

Table 8-3, continued

Roadway	Section	Length (mi)	Maximum Collision Severity Score
	Alameda County		
E. 14th St	Between Fairmont Dr and Thrush Ave	0.2	3.0
E. 14th St	Between Thrush Ave and 166th Ave	0.9	7.0
Mission Blvd	Between E. Lewelling Blvd and Rufus Ct	0.9	7.0
	Hayward		
Mission Blvd	Between Rose St and D St	0.8	6.0
Mission Blvd	Between Fletcher Ln and Highland Blvd	0.3	3.0
Mission Blvd	Between Harder Rd and Sorensen Rd	0.4	3.0
Mission Blvd	Between Kellogg Ave and Valle Vista Ave	0.7	10.0
	Union City		
Mission Blvd	Between Tamarack Dr and E St	0.3	3.0
Decoto Rd	Between 5th St and Railroad Ave	0.3	3.0
Decoto Rd	Between Meyers Dr/Union Square and Clover St	0.6	4.0
	Fremont		
Decoto Rd	Between Paseo Padre Pkwy and Fremont Blvd	0.4	3.0
Fremont Blvd	Between Tamayo St and Gibraltar Dr	0.5	5.0
Fremont Blvd	Between Gibraltar Dr and Thornton Ave	0.4	4.0
Fremont Blvd	Between Thornton Ave and Norris Rd	0.7	10.0
Fremont Blvd	Between Monroe Ave and Capitol Ave	0.4	3.0
Fremont Blvd	Between Walnut Ave and Stevenson Blvd	0.7	4.0
Fremont Blvd	Between Grimmer Blvd and Irvington Ave	0.6	15.0

Source: SWITRS, 2018



Legend:

- BART Station
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- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial
- Water Bodies
- Parks/Open Space
- Pedestrian High-Injury Sections

E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project

ALAMEDA County Transportation Commission

Countywide High-Injury Pedestrian Sections | Figure 8-3

November 2018 | Source: SWITRS, TIMS, Kittelson

8.5 RELEVANT PLANS AND PROJECTS

Alameda County and the City of Fremont have the following initiatives in place, which address the safety issues along the corridor within their respective jurisdictions. In some cases, the data and analysis from these documents were used as part of the analysis presented in this section.

- Alameda County Systemic Safety Analysis Report (ongoing)
- Fremont Vision Zero 2020
- Fremont Systemic Safety Analysis Report (ongoing)
- Fremont Citywide Safety Priority Network

8.6 KEY FINDINGS

Based on the data and analysis presented in this section, the key findings for safety conditions along the Project Corridor are as follows:

- **High Collision Locations.** There is a higher concentration of collisions for all collision types in the San Leandro, Alameda County, Hayward, and Union City segments of the Project Corridor. In terms of collisions per mile, Alameda County and Union City show high collision rates.
- **Fatal and Severe Injury Collisions.** Between June 2012 and May 2017, 18 collisions along the Project Corridor resulted in a fatality and 68 resulted in severe injuries. Almost half of fatal and severe collisions involved a pedestrian or bicyclist. Fatal and severe injury collisions occurred along the full Project Corridor, with a higher concentration of severe injury collisions in San Leandro, Alameda County, and Hayward.
- **Bicyclist High-Injury Project Corridor Sections.** For bicyclists, seven miles of the Project Corridor (25 percent of the total length) are identified as countywide high-injury sections. In general, bicyclist collisions in these sections involved bicyclists proceeding straight (i.e., not turning left or right). The sections with the highest scores in terms of collision severity are in San Leandro and Fremont
- **Pedestrian High-Injury Project Corridor Sections.** For pedestrians, 11 miles of the Project Corridor (40 percent of the total length) are identified as countywide high-injury sections. In general, pedestrian collisions in these locations were associated with pedestrians crossing at intersections, often at a marked crosswalk. The sections with the highest scores in terms of severity are in San Leandro, Hayward, and Fremont.

Section 9
Next Steps

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Next Steps

Based on the findings of the baseline conditions analyses presented in this report, the following are the near-term next steps for the Project in the development of multimodal improvements to be advanced for implementation:

Corridor Segments and Subsegments – Project Corridor segments and subsegments will be defined to serve as a framework for identifying and describing improvements. The segmentation is intended to document differences and similarities in transportation conditions, land use conditions, and mobility needs along the Project Corridor.

Purpose, Need, and Goals - The statement of purpose, need, and goals will document a common understanding of issues to be addressed through potential projects. The statement will describe desired outcomes associated with a cohesive multimodal corridor that serves the needs of all users and facilitates economic development opportunities. The purpose, need, and goals will reflect the outcomes of the baseline conditions analysis and include input received from Study Area stakeholders.

Improvement Concepts - The primary objective of the Project is to identify near-term, mid-term, and long-term improvement concepts to be advanced for implementation. Potential concepts will be developed based on the findings of the baseline conditions analysis and will be consistent with the Project's purpose, need, and goals.

Subsequent steps include community engagement activities to inform the refinement of improvement concepts. The improvement concepts then will be evaluated based on stakeholder input, technical analyses, and planning level cost estimates. Once the preferred near-term and mid-term improvement concepts are defined, potential funding sources will be identified and the preferred improvements will be advanced for project delivery.