ALAMEDA
County Transportation Commission

CENTRAL ALAMEDA COUNTY COMPREHENSIVE MULTIMODAL CORRIDOR PLAN

Part 2

November 2022

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5. Performance and Needs Assessment

An existing (2020) and future (2040) conditions assessment was conducted for the CACCMCP study area. The assessment compiles and organizes the information into the following profiles, each discussed in this chapter:

- **Safety Profile** focuses on documenting the Countywide High Injury Network along the study area arterial corridors, with an emphasis on safety for bicyclists and pedestrians.
- **Mobility Profile** focuses on traffic volumes, auto speeds, vehicle delays, and bottlenecks.
- **Reliability Profile** focuses on travel time reliability for autos and on-time performance for transit.
- **Sustainability Profile** focuses on documenting performance related to multimodal accessibility, connectivity, pollution, and vehicle miles traveled (VMT).
- **Equity Profile** presents how the performance of the transportation system impacts MTC Equity Priority and state defined (SB 535) Disadvantaged Communities.

The performance assessment is based on a combination of existing documentation review and modeling of existing and future project conditions. The existing conditions data was obtained from a variety of sources, generally representing pre-COVID conditions. Where data was unavailable from observed conditions through previous studies, the Alameda CTC 2040 Countywide Travel Demand Model was used for existing (2020) and future (2040) conditions. The future conditions were obtained from the model's 2040 no project scenario. The needs assessment is combined with the equity profile that further investigates safety, mobility, reliability, and sustainability.

For the CACCMCP, the intent is to show quantitative differences between future no project and future with the project. While MTC has updated the regional model to Plan Bay Area 2050 (PBA 2050), the reason behind not using this model is it would incorrectly capture major land use policies and assumptions (e.g., significant TOD, ALT by 2035) that drive the majority of PBA2050 outcomes. The PBA2050 does not have a scenario that shows the impacts of only projects without policies. Chapter 7 presents the benefits of planned projects according to the listed performance measures.

Table 5-1 summarizes the list of performance measures reviewed for this assessment with associated geography for evaluation and source of data. Some of these performance metrics are required for the Solutions of Congested Corridor Program (SCCP) as listed in the California Transportation Commission's (CTC) Senate Bill 1 (SB1) Technical Performance Measurement Methodology Guidebook. [1]

[1] California Transportation Commission, *Senate Bill 1 (SB1) Technical Performance Measurement Methodology Guidebook,* https://catc.ca.gov/-/media/ctc-media/documents/ctc-workshops/2022/sb-1/performance-measurement-guidebook-final-draft.pdf.

Table 5-1: List of Performance Measures

Profile	Performance Measure	Study Limits	Data Source	SCCP Required/ Optional
Safety	Rate of fatalities per 100 million VMT	Primary corridors/ major connections	TIMS 2014-19, ADT from various sources	**Required**
	Rate of serious injuries per 100 million VMT	Primary corridors/ major connections	TIMS 2014-19, ADT from various sources	**Required**
	Number of non-motorized fatalities	Primary corridors/ major connections	TIMS 2014-19	Optional
	Non-motorized serious injuries	Primary corridors/ major connections	TIMS 2014-19	Optional
	Countywide High Injury Network	Primary corridors/ major connections	Alameda Countywide Active Transportation Plan 2019	Optional
Mobility	Daily and peak period vehicle volumes	Primary corridors/ major connections	Various sources	Optional
	Daily and peak period truck volumes	Primary corridors/ major connections	Caltrans Traffic Census Program and Northern Alameda County Truck Access Management Study	Optional
	Transit frequency	Transit routes	AC Transit	Optional
	Average vehicle delay (LOS)	Primary corridors/ major connections	Alameda CTC 2018 Congestion Management Program (CMP) Multimodal Monitoring Report and Alameda CTC Countywide Travel Demand Model	Optional
	Vehicle hours of delay	Areawide	Alameda CTC Countywide Travel Demand Model	Optional
	Bottlenecks	Primary corridors/ major connections	INRIX 2019	Optional
Reliability	Travel time reliability (planning time index or buffer time index)	Freeways only	Alameda CTC 2018 CMP Multimodal Monitoring Report	**Required**
	Level of transit delay	Transit routes	California Integrated Travel Project (Cal-ITP)	**Required**
	Transit on-time performance	Transit routes	BART and AC Transit	Optional

Profile	Performance Measure	Study Limits	Data Source	SCCP Required/ Optional
Sustainability	Changes in daily VMT	Primary corridors/ major connections	Alameda CTC Countywide Travel Demand Model	**Required**
	Air quality	Jurisdictions	Alameda CTC Countywide Travel Demand Model	**Required**
	Miles of bikeway network facilities	Jurisdictions	Active transportation planned projects	Optional
	Miles of first/last mile connections to major transit stations (qualitative evaluation)	Transit stations	10-minute walk and bike shed around a major transit stop and bicycle facilities	Optional
	Population in Priority Development Areas	Jurisdictions	Association of Bay Area Governments and U.S. Census Bureau	Optional
	Percent of short trips	Jurisdictions	Alameda CTC Countywide Travel Demand Model	Optional

Source: Kittelson & Associates, Inc., 2022.

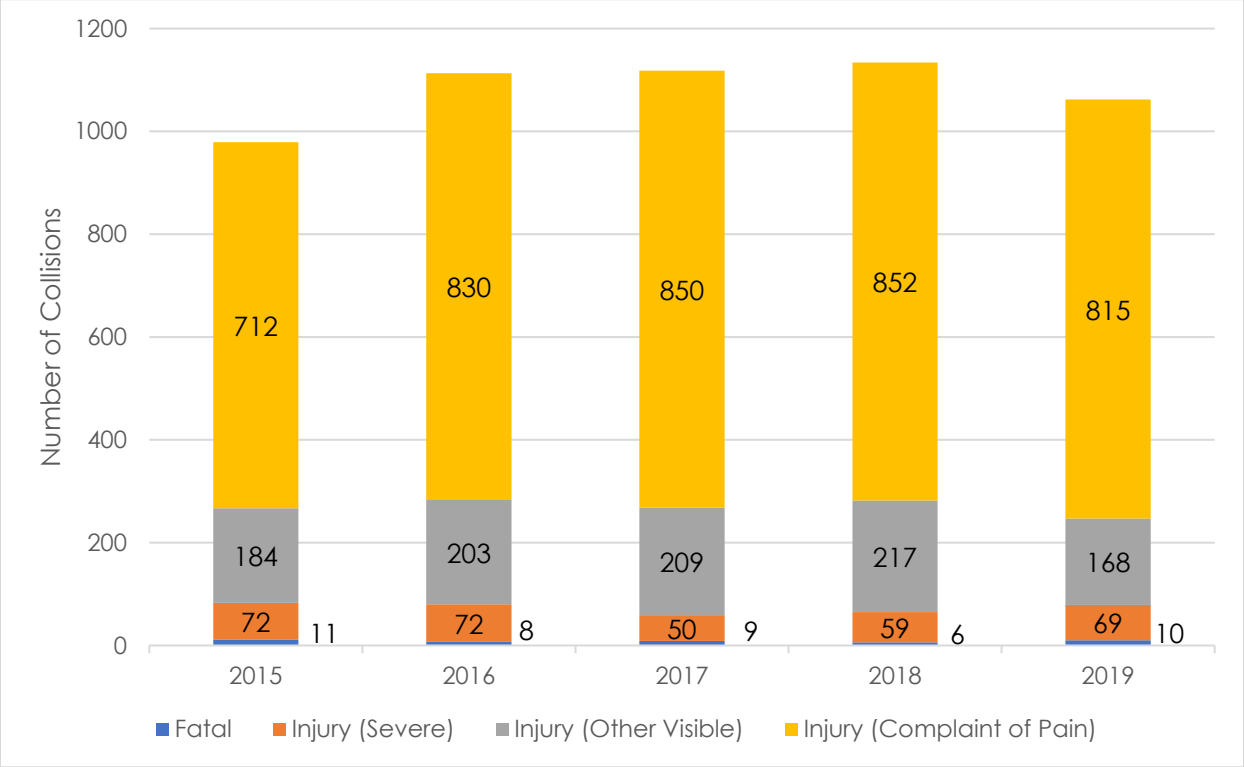
5.1 Safety Performance

The safety profile focuses on documenting the Countywide High Injury Network along the study area arterial corridors, with an emphasis on safety for bicyclists and pedestrians. The five most recent years (2015-2019) of reported crash data from the University of California, Berkeley, Transportation Injury Mapping System (TIMS) database was utilized to develop the safety profile for the study area.

Collisions by Severity

Approximately 1 percent of the total study area (44 out of 5,406) collisions resulted in fatalities and 6 percent (322 out of 5,406) resulted in serious injuries. As per the collision data, the highest number of collisions occurred in 2018 with 1,134 collisions. While auto travel fell during the COVID-19 pandemic, the Fatality Analysis Reporting System (FARS) data shows there has been an increase (1 percent) in fatalities in Alameda County (7 percent nationwide).[2] **Figure 5-1** illustrates the collision trend by severity for the CACCMCP study area. **Figure 5-2** through **Figure 5-5** show study area maps for collisions by severity.

Figure 5-1: Collision Trend by Severity (2015-2019)



Sources: Data compiled from the University of California, Berkeley, Transportation Injury Mapping System (2015-19), accessed July 4, 2022; Kittelson & Associates, Inc., 2022.

[2] National Highway Traffic Safety Administration. Fatality Analysis Reporting System (FARS), accessed from https://www-fars.nhtsa.dot.gov/Main/index.aspx

Figure 5-2: Collisions by Severity (2015-19) and High Injury Network (2012-16) (Page 1 of 4)

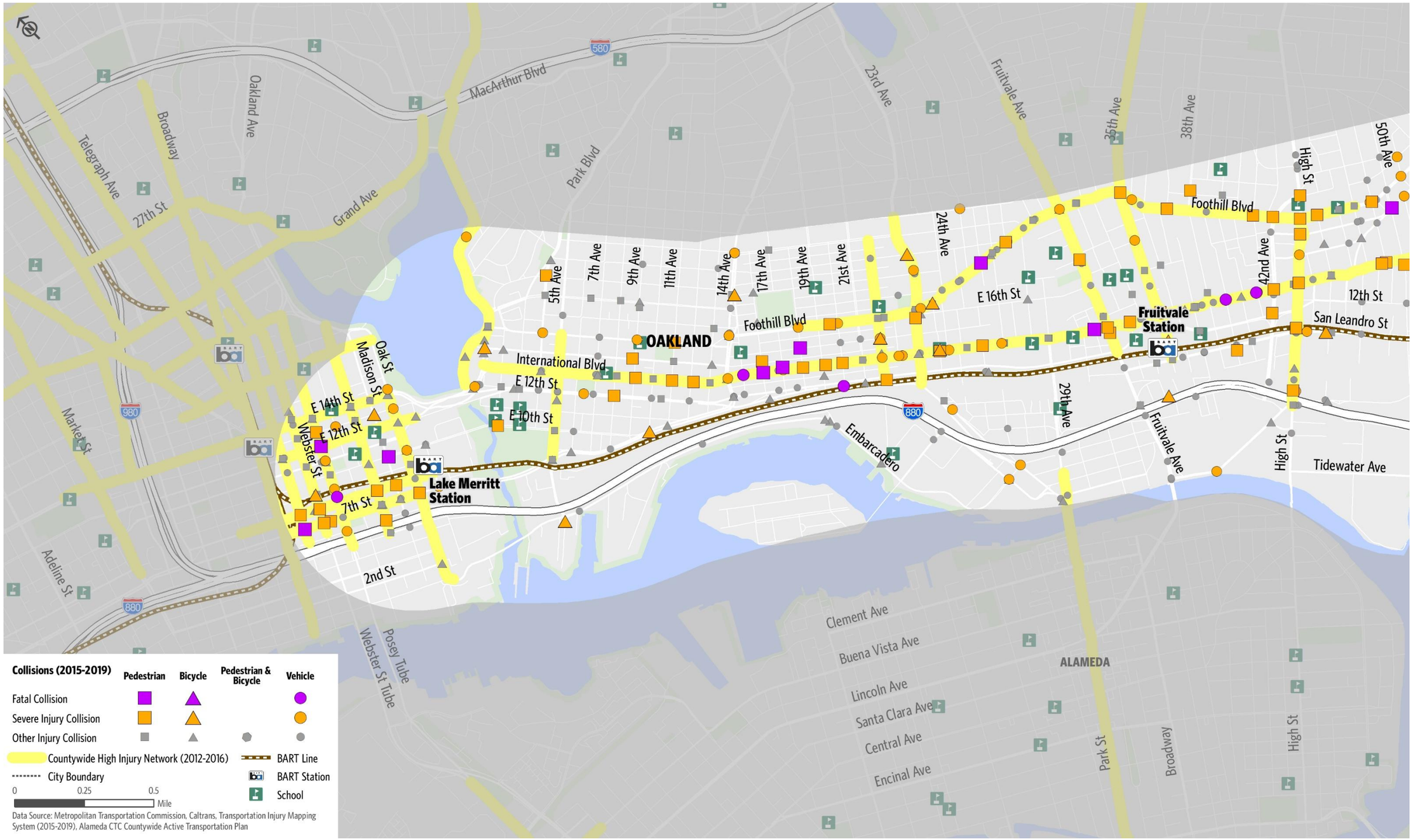


Figure 5-3: Collisions by Severity (2015-19) and High Injury Network (2012-16) (Page 2 of 4)

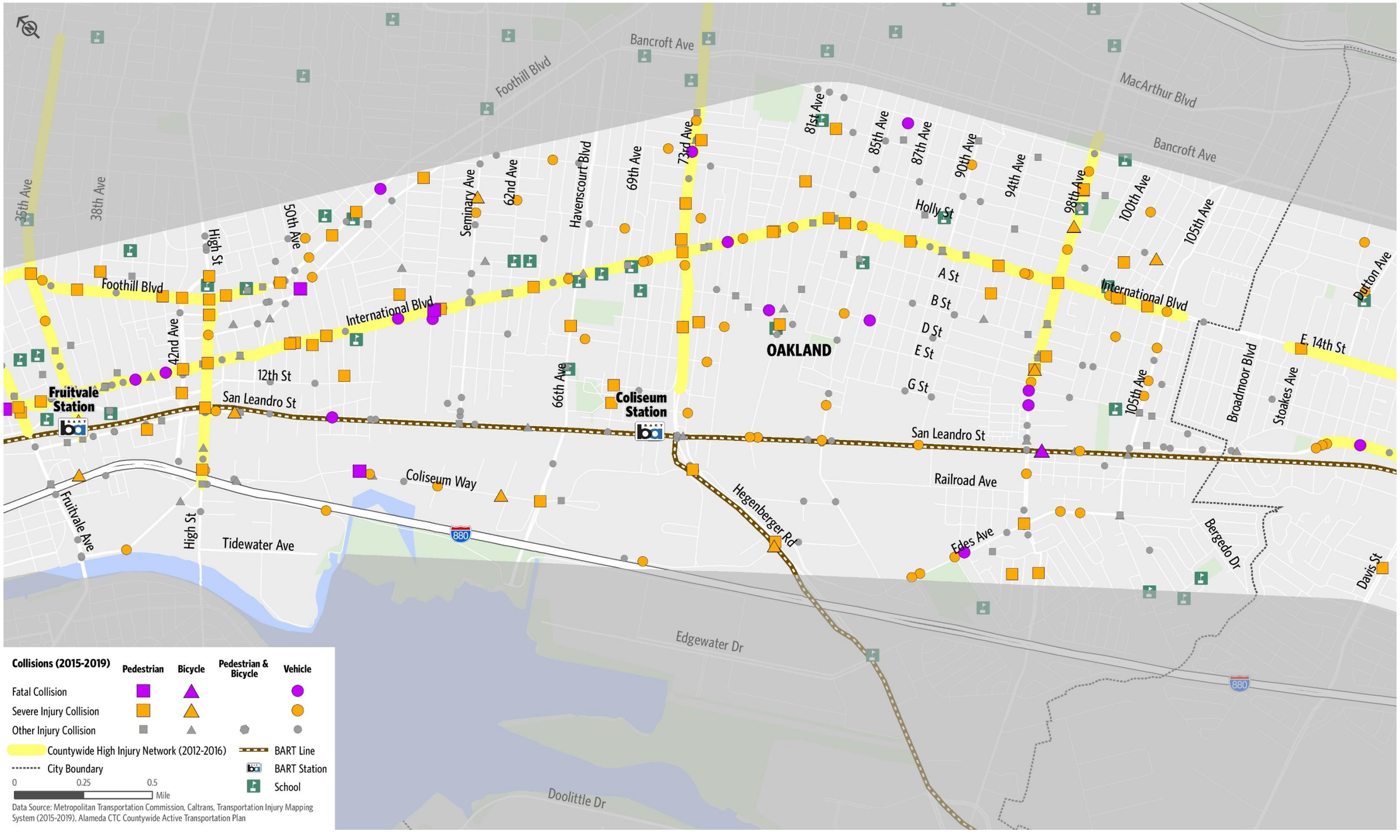


Figure 5-4: Collisions by Severity (2015-19) and High Injury Network (2012-16) (Page 3 of 4)

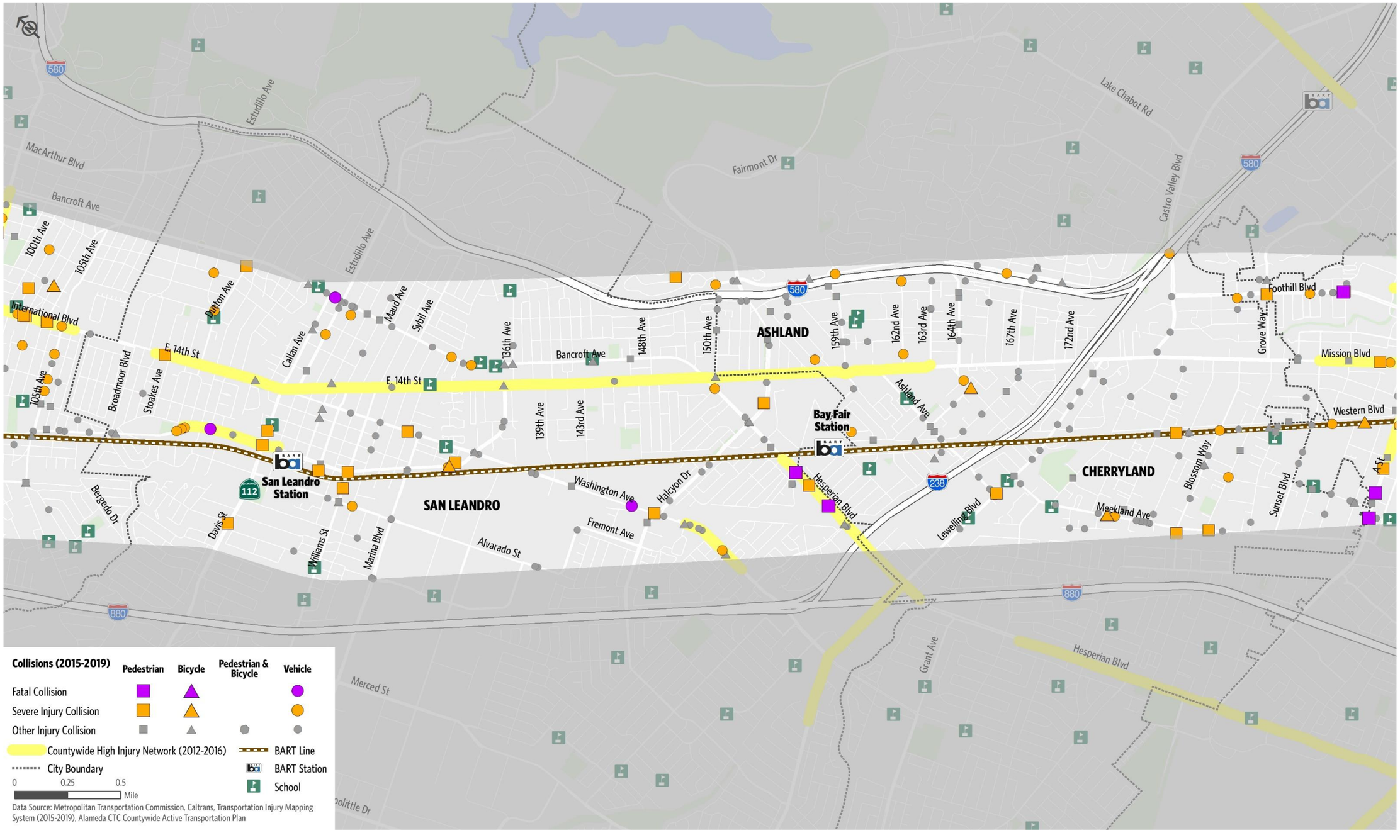
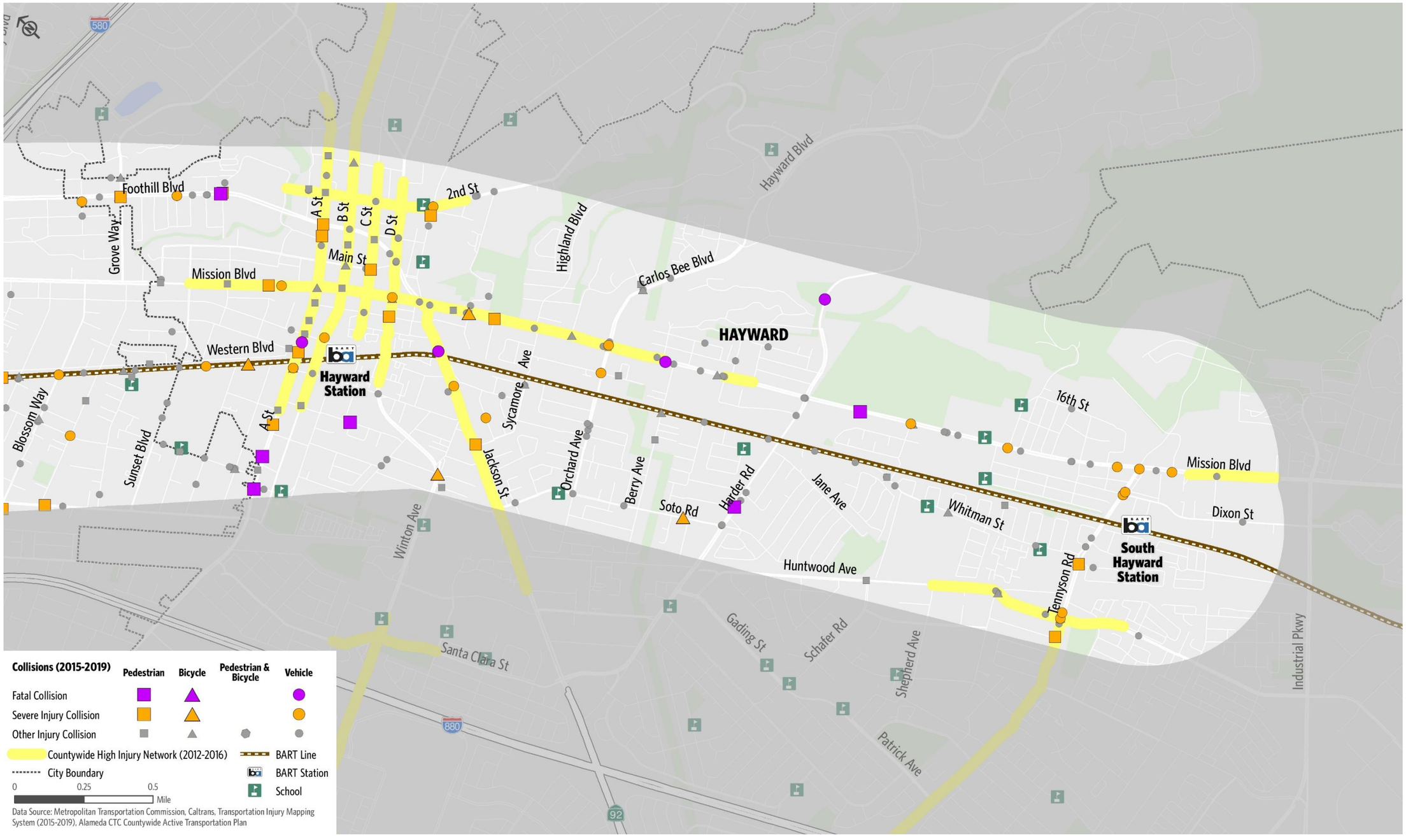


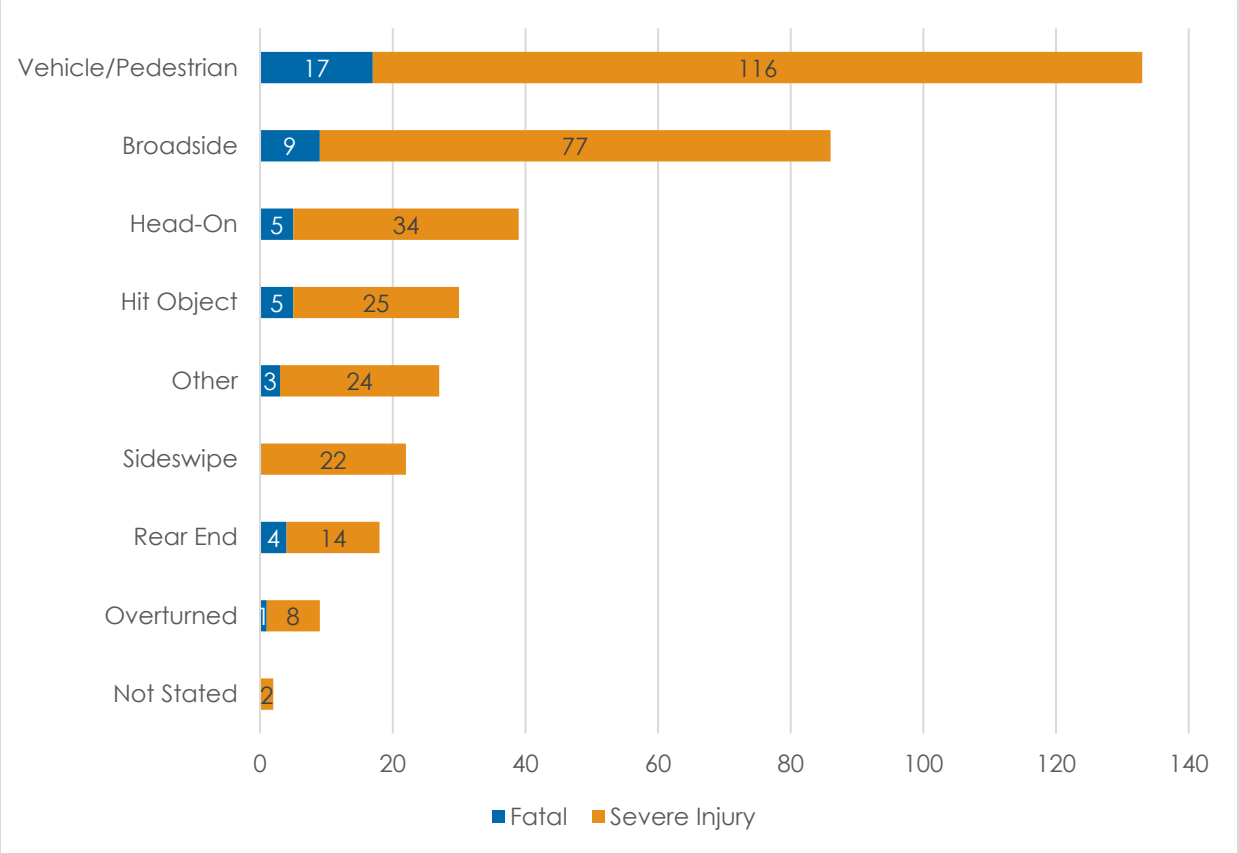
Figure 5-5: Collisions by Severity (2015-19) and High Injury Network (2012-16) (Page 4 of 4)



Collisions by Type

The top three collision types resulting in a fatality or serious injury were vehicle/pedestrian (37 percent, 133 out of 366), broadside (24 percent, 86 out of 366), and head-on (11 percent, 39 out of 366). These three types of collisions collectively accounted for 71 percent of the total collisions (258 out of 366) that resulted in fatality and severe injury. Collisions by type and severity are shown in **Figure 5-6**.

Figure 5-6: Collisions by Type and Severity (2015-2019)



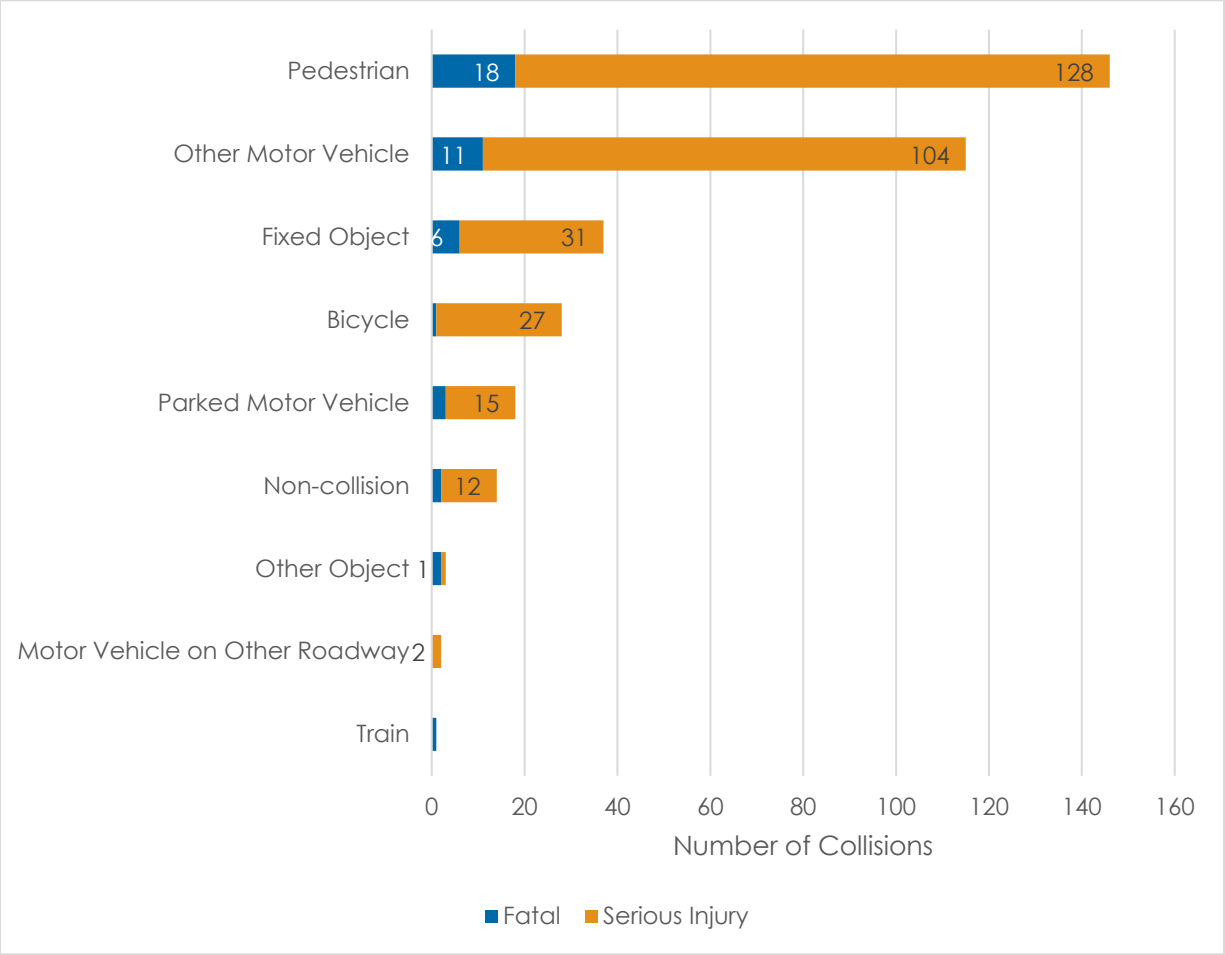
Sources: Data compiled from the University of California, Berkeley, Transportation Injury Mapping System (2015-19), accessed July 4, 2022; Kittelson & Associates, Inc., 2022.

Collisions by Mode of Transportation

Pedestrians and bicyclists are typically considered the most vulnerable users of the street. When involved in a collision, the extent of injuries suffered by these users is typically greater and increases exponentially with the speed of the roadway. For the study area, about 40 percent (146 out of 366) of the total fatal and severe injury collisions involved a pedestrian and about 8 percent (28 out of 366) involved a bicyclist.

Figure 5-7 shows the mode of transportation involved in collisions that resulted in a fatality or severe injury.

Figure 5-7: Collisions by Mode and Severity (2015-2019)

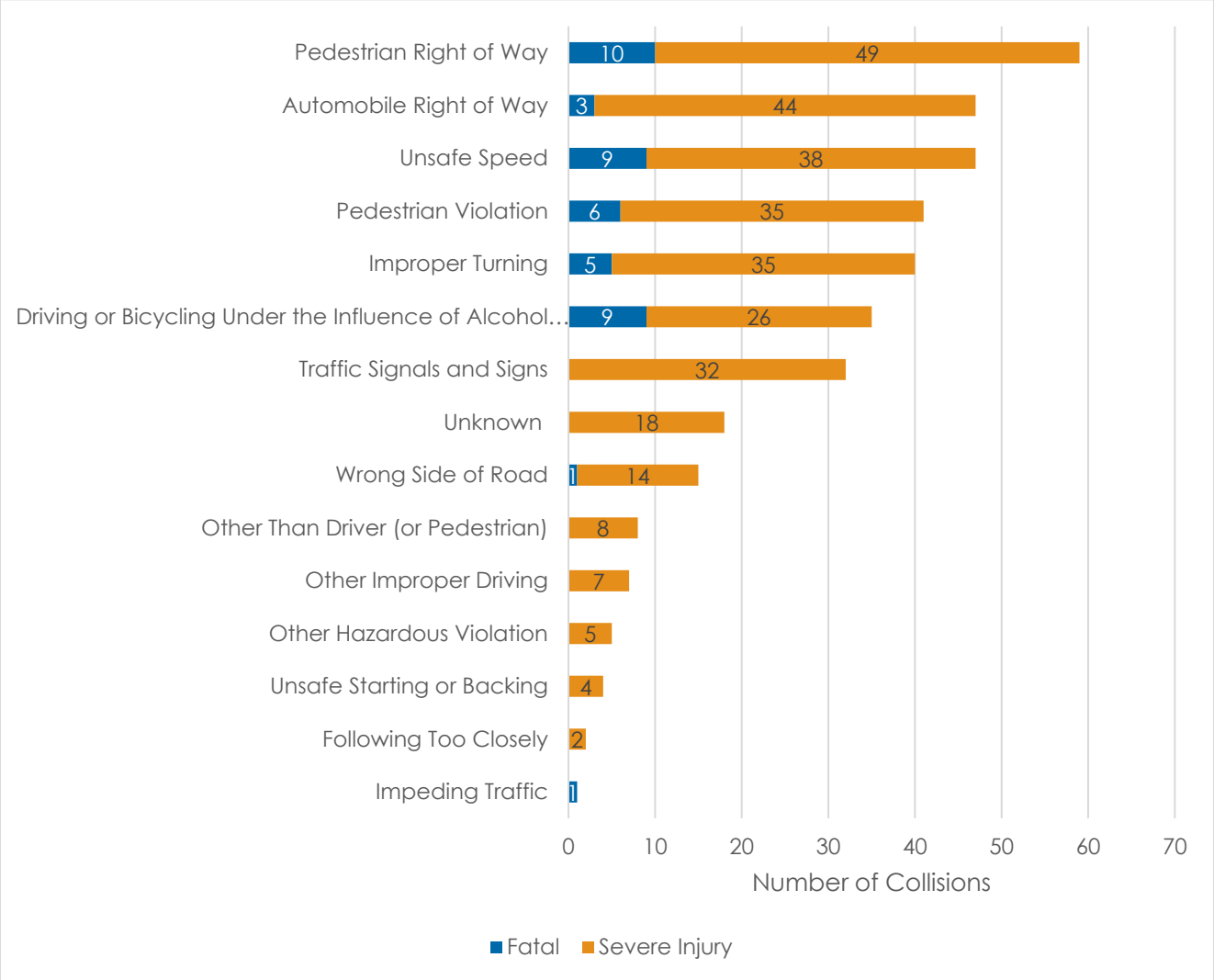


Sources: Data compiled from the University of California, Berkeley, Transportation Injury Mapping System (2015-19), accessed July 4, 2022; Kittelson & Associates, Inc., 2022.

Collisions by Violation Factor

Based on the collision data, pedestrian right-of-way violation[3] (16 percent, 59 out of 366) and pedestrian violation[4] (11 percent, 41 out of 366) are important contributors to the high number of fatal and severe injuries. Other factors, such as automobile right-of-way violation (13 percent, 47 out of 366) and unsafe speed violations (13 percent, 47 out of 366), are among the top violation factors, as shown in **Figure 5-8**.

Figure 5-8: Collisions by Primary Violation Factor (2015-2019)



Sources: Data compiled from the University of California, Berkeley, Transportation Injury Mapping System (2015-19), accessed July 4, 2022; Kittelson & Associates, Inc., 2022.

[3] Pedestrian right-of-way violation: Driver was cited as at fault for violating pedestrian legal right of way.
[4] Pedestrian violation: Pedestrian was cited as at fault by the reporting officer.

Countywide High Injury Network

The Alameda 2019 Countywide Active Transportation Plan (CATP) identifies a countywide high injury pedestrian and bicycle network by analyzing the TIMS collision data from 2012 to 2016. The countywide High Injury Network (HIN) represents the top 20 percent of streets with the highest number of collisions based on severity or frequency, weighted based on reported severity (i.e., most collisions and/or most severe collisions over a five-year period countywide).[5] For the CACCMCP study area, of the total pedestrian and bicyclist collisions between 2015 and 2019, the highest number of collisions occurred in Oakland (978), followed by Hayward (150). **Table 5-2** shows the bicycle and pedestrian HIN on Primary Corridors with the CACCMCP study area. **Figure 5-2** through **Figure 5-5** show the combined bicycle and pedestrian HIN within the study area.

Table 5-2: Countywide Bicycle and Pedestrian HIN on Primary Corridors within the Study Area

Jurisdiction	Bicycle HIN	Pedestrian HIN
Oakland	• International Boulevard between 1st Avenue and 105th Avenue • San Leandro Street between 37th Avenue to 47th Avenue	• International Boulevard between 1st Avenue and 105th Avenue • San Leandro Street, between 66th Avenue and Hegenberger Road
San Leandro	• East 14th Street between 105th Avenue and Fairmont Drive • East 14th Street between Belleview Drive and Hesperian Boulevard • San Leandro Street between Broadmoor Boulevard to Estudillo Avenue	• East 14th Street between Durant Avenue and Castro Street • East 14th Street between Hesperian Boulevard and Plaza Drive • San Leandro Boulevard between Best Avenue and Hudson Lane
Ashland	• East 14th Street between 150th Avenue and 164th Avenue	• East 14th Street between 150th Avenue and Mattox Road
Cherryland	• None noted	• East 14th Street between Mattox Road and Grove Way
Hayward	• Mission Boulevard between Grove Way and Berry Avenue	• Mission Boulevard between Grove Way and Jackson Street

Source: Alameda Countywide Active Transportation Plan, 2020.

[5] The analysis used a scoring metric of annualized equivalent property damage only (EPDO). EPDO represents the relative societal cost of a location's collision history in terms of property damage only collisions (e.g., a location with a score of 12 has experienced on average the equivalent of 12 property damage collisions per year) through a combination of collision frequency and severity.

Safety Performance Measures

The evaluation framework provided in Chapter 2 identifies the following performance measures related to safety:

- **Rate of fatalities per 100 million vehicle miles traveled (VMT):** The ratio of total number of fatalities to the number of VMT (in million VMT) in a calendar year.

$$Fatal\ Crash\ Rate = \frac{(Number\ of\ Fatal\ Crashes\ 2015-19)\ X\ (100{,}000{,}000)}{Average\ Daily\ Traffic\ (ADT)\ X\ Length\ of\ segment\ X\ 5\ X\ 365}$$

- **Rate of serious injuries per 100 million VMT:** The ratio of total number of serious injuries to the number of VMT (in 100 million VMT) in a calendar year.

$$Serious\ Injuries\ Crash\ Rate = \frac{(Number\ of\ Serious\ Injuries\ Crashes\ 2015-19)\ X\ (100{,}000{,}000)}{Average\ Daily\ Traffic\ (ADT)\ X\ Length\ of\ segment\ X\ 5\ X\ 365}$$

- **Number of non-motorized fatalities:** The combined total number of bicycle and pedestrian fatalities involving a motor vehicle during a calendar year.
- **Number of non-motorized serious injuries:** The combined total number of bicycle and pedestrian serious injuries involving a motor vehicle during a calendar year.

Safety in Numbers (2015-19)

5406 Injury collisions in the CACCMCP study area

366 Fatal and severe injury collisions

174 Injury fatal or severe injury collisions involving a pedestrian or a bicyclist

100 Fatal or severe injury collisions due to pedestrian right-of-way or pedestrian violation

International Boulevard between 1st Avenue and 42nd Avenue was found to have the highest number of fatalities and severe injuries amongst all primary corridors and major connections within the study area. The highest number of non-motorized fatalities and severe injuries also occurred on this segment.

The relatively short segment of 73rd Avenue between Arthur Street and International Boulevard has the highest fatality rate of 17.16 fatalities per 100 million VMT. This is more than 15 times higher than the statewide 5-year average fatality rate, which was 1.078 in the year 2019.[6] This segment was also found to have the highest serious injuries rate of 137.25 serious injuries per 100 million VMT. This is 33 times higher than the statewide 5-year average severe injury rate, which was 4.123 in the year 2019. Despite the high number of fatality and severe injury collisions on this segment, the high fatality rates could be attributed to the short roadway segment length. A total of three non-motorized serious injuries occurred on this segment.

The results of the performance measure evaluation for the primary corridors and major connections within the CACCMCP study area are shown in **Table 5-3**.

[6] https://dot.ca.gov/-/media/dot-media/programs/federal-liaison/documents/2021-spmt-a11y.pdf

Table 5-3: Safety Performance Measures

Roadway Segments	Segment Limit	Miles	ADT[1]	Number of Fatalities	Number of Serious Injuries	Fatalities per 100M VMT[2]	Serious Injuries per 100M VMT	Number of Non-motorized Fatalities	Number of Non-motorized Serious Injuries
International Boulevard	Between 1st Avenue and 42nd Avenue	2.87	12,680	6	34	9.02	51.13	3	15
A Street	Between 3rd Street and Martin Luther King Drive	1.34	15,500	3	9	7.93	23.78	2	5
International Boulevard	Between 42nd Avenue and Seminary Avenue	1.06	26,800	3	13	5.76	24.96	1	6
Washington Avenue	Between Juana Avenue and Monterey Boulevard	2.04	9,800	2	3	5.48	8.23	-	2
Hesperian Boulevard	Between East 14th Street and College Street	1.15	20,800	2	2	4.59	4.59	2	1
Mission Boulevard	Between Jackson Street and Tennyson Street	2.66	27,000	2	19	1.53	14.50	1	5
73rd Avenue	Between Arthur Street and International Boulevard	0.47	6,750	1	8	17.16	137.25	-	3
Madison Street	Between Lakeside Drive and 2nd Street	0.90	10,350	1	2	5.89	11.79	1	2
San Leandro Street	Between 85th Avenue and Broadmoor Blvd	1.49	8,500	1	2	4.34	8.68	1	-
Jackson Street	East 14th Street and Soto Road	0.80	16,800	1	2	4.10	8.20	-	1
San Leandro Boulevard	Between Broadmoor Boulevard and Davis Street	0.74	22,100	1	7	3.36	23.50	-	-
San Leandro Street	Between Fruitvale Avenue and 69th Avenue	2.09	13,000	1	4	2.02	8.06	-	1

Roadway Segments	Segment Limit	Miles	ADT[1]	Number of Fatalities	Number of Serious Injuries	Fatalities per 100M VMT[2]	Serious Injuries per 100M VMT	Number of Non-motorized Fatalities	Number of Non-motorized Serious Injuries
International Boulevard	Between Seminary Avenue and 86th Avenue	1.53	24,100	1	22	1.48	32.62	-	6
International Boulevard	Between 86th Avenue and Broadmoor Blvd	1.42	24,300	-	13	-	20.63	-	6
East 14th Street	Between Broadmoor Avenue and Davis Street	0.73	23,300	-	1	-	3.24	-	1
East 14th Street	Between Davis Street and Sybil Avenue	0.54	17,700	-	-	-	-	-	-
East 14th Street	Between Sybil Avenue and Hesperian Boulevard	1.46	22,800	-	-	-	-	-	-
East 14th Street	Between Hesperian Boulevard and 150th Avenue	0.05	23,300	-	-	-	-	-	-
East 14th Street	Between 150th Avenue and 168th Avenue	1.49	20,600	-	-	-	-	-	-
East 14th Street/Mission Boulevard	Between 168th Avenue and Mattox Road	0.58	21,500	-	-	-	-	-	-
Mission Boulevard	Between Mattox Road and Rose Street	0.66	18,100	-	-	-	-	-	-
Mission Boulevard	Between Rose Street and A Street	0.57	22,000	-	2	-	8.81	-	1
Mission Boulevard	Between A Street and Jackson Street	0.39	16,550	-	2	-	17.14	-	-
San Leandro Street	Between 69th Avenue and 85th Avenue	0.78	9,250	-	10	-	76.34	-	2

Roadway Segments	Segment Limit	Miles	ADT[1]	Number of Fatalities	Number of Serious Injuries	Fatalities per 100M VMT[2]	Serious Injuries per 100M VMT	Number of Non-motorized Fatalities	Number of Non-motorized Serious Injuries
San Leandro Boulevard	Between Davis Street and Marina Boulevard	0.70	19,500	-	3	-	12.06	-	1
San Leandro Boulevard	Between Marina Boulevard and East 14th Street	0.71	11,300	-	4	-	27.17	-	2
Oak Street	Between Lakeside Drive and 2nd Street	0.64	2,720	-	3	-	94.83	-	1
Fruitvale Avenue	Between Foothill Boulevard and Fernside Boulevard	1.28	22,250	-	6	-	11.53	-	5
High Street	Between Carrington Street and Fernside Boulevard	1.31	18,200	-	12	-	27.66	-	7
Hegenberger Road	Between International Boulevard and Coliseum Way	1.22	26,400	-	8	-	13.65	-	4
Davis Street	Between East 14th Street and Preda Street	0.69	23,650	-	4	-	13.51	-	4
Tennyson Road	Between Huntwood Avenue and Vista Grande Drive	1.13	5,900	-	7	-	57.77	-	1

Sources: ADT- Caltrans Traffic Census Program, 2019; Highway Performance Monitoring System, 2018; City of Oakland General Plan Update, 2022; Alameda CTC Countywide Travel Demand Model; and various traffic studies.

5.2 Mobility Performance

The mobility performance assessment focuses on existing and future roadway volumes, travel speeds and times, level of service (LOS), delay, and bottlenecks.

Every two years, Alameda CTC monitors the performance of 553 miles of major roads throughout Alameda County under its Congestion Management Program (CMP). The CMP network includes five types of facilities: freeways, highways, principal arterials, major arterials, and major roads. There is less data available on minor local roads which are not included in the CMP network.

The CMP network has historically been divided into Tier 1 and Tier 2 networks. The CMP network's Tier 1 roadways were initially adopted in 1991 and updated in 1992, and include all freeways, highways, selected principal arterials and freeway ramp connectors. Tier 2 roadways were added to the CMP network in 2011 and included additional principal and major arterials not already part of the CMP network. Alameda CTC added 225 miles of Tier 2 roads for the 2018 monitoring cycle. For mobility performance, automobile speeds are referred from the 2018 CMP multimodal monitoring report.

Table 5-4 shows the segments from the CACCMCP study area that have been included in this program. Data for segments not included in the CMP network are collected directly from the INRIX tool.

Table 5-4: CMP Network Included in the Study Area

Tier	CMP Route	From	To	Jurisdiction
1	SR 77/42nd Avenue	I-880	SR 185 /East 14th Street	Oakland
1	SR 185 /International Boulevard	SR 77/42nd Avenue	San Leandro City Limit	Oakland
1	Hegenberger Road	I-880	Hawley Street	Oakland
1	Hegenberger Road	Hawley Street	SR 185 /East 14th Street	Oakland
1	I-880	I-980	Hegenberger Road	Oakland
1	SR 185/East 14th Street	Oakland City Limit	SR 61/112/ Davis Street	Oakland
1	SR 61/112/ Davis Street	SR 61 (Doolittle Drive)	SR 185 /East 14th Street	Oakland
1	150th Avenue	Hesperian Boulevard	I-580	Oakland
1	SR 185/East 14th Street	Oakland City Limit	Ashland	Oakland
1	Hesperian Boulevard	SR 185 /East 14th Street	San Lorenzo City Limit	Oakland
1	I-880	Hegenberger Avenue	I-238	Oakland
1	East 14th Street	San Leandro City Limit	172nd Avenue	Ashland

Tier	CMP Route	From	To	Jurisdiction
1	Mission Boulevard	172nd Avenue	Hayward City Limit	Cherryland
1	Hesperian Boulevard	San Leandro City Limit	Hayward City Limit	Ashland
1	SR 185/Mission Boulevard	Ashland	SR 92/Jackson Street	Hayward
1	SR 92	I-880	Mission Boulevard	Hayward
1	SR 238 (Foothill Boulevard)	Ashland	SR 185 (Mission Boulevard)	Hayward
1	Mission Boulevard	SR 92/Jackson Street	Union City Limit	Hayward
1	A Street	I-880	SR 238 (Foothill Boulevard)	Hayward
1	Tennyson Road	Hesperian Boulevard	Mission Boulevard	Hayward
2	Fruitvale Avenue	Tilden Way	MacArthur Boulevard	Oakland
2	International Boulevard	1st Avenue	42nd Avenue	Oakland
2	San Leandro Street	Fruitvale Avenue	San Leandro City Limit	Oakland
2	73rd Avenue	International Boulevard	I-580	Oakland
2	High Street	Otis Drive	I-580	Oakland
2	San Leandro Boulevard	East 14th Street	San Leandro City Limit	San Leandro
2	Washington Avenue	Juana Avenue	Lewelling Boulevard	San Leandro

Source: Alameda CTC Congestion Management Program (CMP), 2018.

Volumes

Vehicle and truck volumes on the CACCMCP primary corridors and major connections are described in the following sections. Volume data was collected from several sources presented in a variety of formats.

Vehicle Volumes

Existing volumes were collected from various sources such as the Caltrans Traffic Census Program (2019), Highway Performance Monitoring System (2018), City of Oakland General Plan Update, and various traffic studies. The future 2040 traffic volumes are drawn from the Alameda CTC Countywide 2040 Travel Demand Model. **Table 5-5** provides a directional summary for daily, AM (7 am - 9 am), and PM (4 pm - 6 pm) peak hour traffic volumes.

Table 5-5: Existing and Future Peak Travel Volumes

Roadway Segments	Segment Limit	Direction	Miles	Average Daily			AM Peak			PM Peak		
				Existing (2020)	Future (2040)	% Change	Existing (2020)	Future (2040)	% Change	Existing (2020)	Future (2040)	% Change
I-880	Between I-980 and Hegenberger Road	SB	6.7	196,000	206,300	5.3%	6,360	6,760	6.3%	8,060	8,960	11.2%
I-880	Between I-980 and Hegenberger Road	NB	6.7				7,430	8,220	10.6%	7,230	7,870	8.9%
I-880	Between Hegenberger Road to I-238	SB	4.7	288,000	295,400	2.6%	9,230	10,380	12.5%	7,340	7,970	8.6%
I-880	Between Hegenberger Road to I-238	NB	4.7				12,800	12,680	-0.9%	7,640	8,050	5.4%
I-238	Between I-580 and I-880	EB	1.6	167,000	177,400	6.2%	3,140	3,080	-1.9%	4,870	5,270	8.2%
I-238	Between I-580 and I-880	WB	1.6				7,880	8,570	8.8%	3,570	4,210	17.9%
International Boulevard	Between 1st Avenue and 42nd Avenue	NB	2.87	12,680	18,700	47.5%	510	690	35.3%	960	980	2.1%
International Boulevard	Between 1st Avenue and 42nd Avenue	SB	2.87				580	620	6.9%	750	920	22.7%
International Boulevard	Between 42nd Avenue and Seminary Avenue	NB	1.06	26,800	31,200	16.4%	630	810	28.6%	1,030	1,040	1.0%
International Boulevard	Between 42nd Avenue and Seminary Avenue	SB	1.06				1,270	1,280	0.8%	630	810	28.6%
International Boulevard	Between Seminary Avenue and 86th Avenue	NB	1.53	24,100	29,900	24.1%	590	830	40.7%	1,040	1,050	1.0%
International Boulevard	Between Seminary Avenue and 86th Avenue	SB	1.53				1,240	1,240	0.0%	680	920	35.3%
International Boulevard	Between 86th Avenue and Broadmoor Blvd	NB	1.42	24,300	30,400	25.1%	890	1,260	41.6%	550	740	34.5%
International Boulevard	Between 86th Avenue and Broadmoor Blvd	SB	1.42				870	960	10.3%	600	930	55.0%

Roadway Segments	Segment Limit	Direction	Miles	Average Daily			AM Peak			PM Peak		
				Existing (2020)	Future (2040)	% Change	Existing (2020)	Future (2040)	% Change	Existing (2020)	Future (2040)	% Change
East 14th Street	Between Broadmoor Avenue and Davis Street	NB	0.73	23,300	28,700	23.2%	1,120	1,450	29.5%	440	730	65.9%
East 14th Street	Between Broadmoor Avenue and Davis Street	SB	0.73				700	930	32.9%	840	980	16.7%
East 14th Street	Between Davis Street and Sybil Avenue	NB	0.54	17,700	28,100	58.8%	480	880	83.3%	1,470	2,010	36.7%
East 14th Street	Between Davis Street and Sybil Avenue	SB	0.54				980	1,480	51.0%	830	1,260	51.8%
East 14th Street	Between Sybil Avenue and Hesperian Boulevard	NB	1.46	22,800	28,400	24.6%	740	950	28.4%	1,380	1,930	39.9%
East 14th Street	Between Sybil Avenue and Hesperian Boulevard	SB	1.46				1,220	1,770	45.1%	710	910	28.2%
East 14th Street	Between Hesperian Boulevard and 150th Avenue	NB	0.05	23,300	29,100	24.9%	710	800	12.7%	2,880	3,180	10.4%
East 14th Street	Between Hesperian Boulevard and 150th Avenue	SB	0.05				970	1,370	41.2%	1,680	1,570	-6.5%
East 14th Street	Between 150th Avenue and 168th Avenue	NB	1.49	20,600	26,700	29.6%	460	610	32.6%	1,760	2,090	18.8%
East 14th Street	Between 150th Avenue and 168th Avenue	SB	1.49				1,600	2,260	41.3%	550	740	34.5%
East 14th Street/Mission Boulevard	Between 168th Avenue and Mattox Road	NB	0.58	21,500	26,600	23.7%	1,040	1,400	34.6%	980	1,540	57.1%
East 14th Street/Mission Boulevard	Between 168th Avenue and Mattox Road	SB	0.58				900	1,230	36.7%	970	1,270	30.9%
Mission Boulevard	Between Mattox Road and Rose Street	NB	0.66	18,100	27,500	51.9%	1,740	1,800	3.4%	890	1,450	62.9%

Roadway Segments	Segment Limit	Direction	Miles	Average Daily			AM Peak			PM Peak		
				Existing (2020)	Future (2040)	% Change	Existing (2020)	Future (2040)	% Change	Existing (2020)	Future (2040)	% Change
Mission Boulevard	Between Mattox Road and Rose Street	SB	0.66				300	520	73.3%	1,690	2,140	26.6%
Mission Boulevard	Between Rose Street and A Street	NB	0.57	22,000	30,600	39.1%	2,400	2,820	17.5%	600	1,070	78.3%
Mission Boulevard	Between Rose Street and A Street	SB	0.57				200	320	60.0%	1,080	2,070	91.7%
Mission Boulevard	Between A Street and Jackson Street	NB	0.39	16,550	21,000	26.9%	1,290	1,190	-7.8%	4,110	4,170	1.5%
Mission Boulevard	Between Jackson Street and Tennyson Street	NB	2.66	27,000	33,600	24.4%	1,300	1,330	2.3%	2,090	2,140	2.4%
Mission Boulevard	Between Jackson Street and Tennyson Street	SB	2.66				1,260	1,330	5.6%	2,090	2,210	5.7%
San Leandro Street	Between Fruitvale Avenue and 69th Avenue	NB	2.09	13,000	27,100	108.5%	520	1,200	130.8%	1,050	2,000	90.5%
San Leandro Street	Between Fruitvale Avenue and 69th Avenue	SB	2.09				540	1,340	148.1%	530	1,420	167.9%
San Leandro Street	Between 69th Avenue and 85th Avenue	NB	0.78	9,250	16,800	81.6%	240	480	100.0%	1,540	2,090	35.7%
San Leandro Street	Between 69th Avenue and 85th Avenue	SB	0.78				920	1,670	81.5%	310	660	112.9%
San Leandro Street	Between 85th Avenue and Broadmoor Blvd	NB	1.49	8,500	17,100	101.2%	210	420	100.0%	660	1,680	154.5%
San Leandro Street	Between 85th Avenue and Broadmoor Blvd	SB	1.49				760	1,620	113.2%	440	830	88.6%
San Leandro Boulevard	Between Broadmoor Boulevard and Davis Street	NB	0.74	22,100	32,700	48.0%	650	940	44.6%	640	1,690	164.1%
San Leandro Boulevard	Between Broadmoor Boulevard and Davis Street	SB	0.74				1,760	2,680	52.3%	510	1,160	127.5%

Roadway Segments	Segment Limit	Direction	Miles	Average Daily			AM Peak			PM Peak		
				Existing (2020)	Future (2040)	% Change	Existing (2020)	Future (2040)	% Change	Existing (2020)	Future (2040)	% Change
San Leandro Boulevard	Between Davis Street and Marina Boulevard	NB	0.70	19,500	27,100	39.0%	990	1,360	37.4%	870	1,430	64.4%
San Leandro Boulevard	Between Davis Street and Marina Boulevard	SB	0.70				970	1,310	35.1%	1,340	1,660	23.9%
San Leandro Boulevard	Between Marina Boulevard and East 14th Street	EB	0.71	11,300	16,200	43.4%	220	420	90.9%	860	1,320	53.5%
San Leandro Boulevard	Between Marina Boulevard and East 14th Street	WB	0.71				910	1,150	26.4%	330	450	36.4%
Oak Street	Between Lakeside Drive and 2nd Street	EB	0.64	2,720	3,300	21.3%	150	230	53.3%	260	250	-3.8%
Madison Street	Between Lakeside Drive and 2nd Street	WB	0.90	10,350	12,400	19.8%	760	970	27.6%	800	970	21.3%
Fruitvale Avenue	Between Foothill Boulevard and Fernside Boulevard	EB	1.28	22,250	29,200	31.2%	920	730	-20.7%	2,200	3,400	54.5%
Fruitvale Avenue	Between Foothill Boulevard and Fernside Boulevard	WB	1.28				1,590	1,970	23.9%	370	420	13.5%
High Street	Between Carrington Street and Fernside Boulevard	EB	1.31	18,200	20,900	14.8%	570	710	24.6%	1,000	1,000	0.0%
High Street	Between Carrington Street and Fernside Boulevard	WB	1.31				1,000	1,010	1.0%	690	880	27.5%
73rd Avenue	Between Arthur Street and International Boulevard	EB	0.47	6,750	14,700	117.8%	180	300	66.7%	2,640	3,460	31.1%

Roadway Segments	Segment Limit	Direction	Miles	Average Daily			AM Peak			PM Peak		
				Existing (2020)	Future (2040)	% Change	Existing (2020)	Future (2040)	% Change	Existing (2020)	Future (2040)	% Change
73rd Avenue	Between Arthur Street and International Boulevard	WB	0.47				420	760	81.0%	1,060	1,010	-4.7%
Hegenberger Road	Between International Boulevard and Coliseum Way	EB	1.22	26,400	34,800	31.8%	600	790	31.7%	3,140	3,990	27.1%
Hegenberger Road	Between International Boulevard and Coliseum Way	WB	1.22				1,880	2,180	16.0%	1,140	1,230	7.9%
Davis Street	Between East 14th Street and Preda Street	EB	0.69	23,650	29,400	24.3%	660	910	37.9%	1,640	1,710	4.3%
Davis Street	Between East 14th Street and Preda Street	WB	0.69				1,060	960	-9.4%	1,080	1,250	15.7%
Washington Avenue	Between Juana Avenue and Monterey Boulevard	EB	2.04	9,800	12,200	24.5%	330	410	24.2%	720	990	37.5%
Washington Avenue	Between Juana Avenue and Monterey Boulevard	WB	2.04				410	570	39.0%	290	420	44.8%
Hesperian Boulevard	Between East 14th Street and College Street	EB	1.15	20,800	26,300	26.4%	680	900	32.4%	2,190	2,480	13.2%
Hesperian Boulevard	Between East 14th Street and College Street	WB	1.15				800	1,010	26.3%	1,620	1,780	9.9%
A Street	Between 3rd Street and Martin Luther King Drive	EB	1.34	15,500	19,500	25.8%	940	1,060	12.8%	750	1,140	52.0%
A Street	Between 3rd Street and Martin Luther King Drive	WB	1.34				1,120	1,260	12.5%	1,090	1,560	43.1%
Jackson Street	East 14th Street and Soto Road	EB	0.80	16,800	16,300	-3.0%	520	600	15.4%	3,000	2,840	-5.3%
Jackson Street	East 14th Street and Soto Road	WB	0.80				470	500	6.4%	2,050	2,080	1.5%

Roadway Segments	Segment Limit	Direction	Miles	Average Daily			AM Peak			PM Peak		
				Existing (2020)	Future (2040)	% Change	Existing (2020)	Future (2040)	% Change	Existing (2020)	Future (2040)	% Change
Tennyson Road	Between Huntwood Avenue and Vista Grande Drive	EB	1.13	5,900	7,200	22.0%	390	490	25.6%	50	90	80.0%
Tennyson Road	Between Huntwood Avenue and Vista Grande Drive	WB	1.13				110	130	18.2%	130	250	92.3%

Sources: Caltrans Traffic Census Program, 2019; Highway Performance Monitoring System, 2018; City of Oakland General Plan Update; Alameda CTC Countywide Travel Demand Model, various traffic studies; and Kittelson & Associates, Inc., 2022.
Note: Tempo service, opened in August 2020, is not included in this analysis.

Truck Volumes

Existing and future truck volume data was collected from the Caltrans Traffic Census Program[7] and the Northern Alameda County Truck Access Management Study, respectively, and is described below.

Existing

Within the CACCMCP study area, I-880 is identified as part of the Primary Highway Freight System.[8] SR 185, SR 112, 42nd Avenue, and Jackson Street serve as local truck routes. **Table 5-6** shows the average daily truck traffic for the major truck routes within the study area. Expectedly, I-880 carries the most truck traffic, with more than 21,000 daily trips within the CACCMCP study area (10.3 percent share of the total traffic). SR 185 near 44th Avenue sees more than 600 daily trips (2.44 percent share of the total traffic), followed by 42nd Avenue with more than 200 daily trips (2.17 percent share of the total traffic). Jackson Street near Mission Boulevard observes approximately 600 daily trips (1.46 percent share of the total traffic).

Table 5-6: Existing Truck Traffic Volumes for Study Area Freight Routes

Roadway	Location	Daily Truck Traffic (AADTT)	Truck Share of Total Traffic (% of AADT)
I-880	Near High Street, Oakland	21,609	10.3%
I-880	Near Davis Street, San Leandro	20,268	8.6%
I-880	Near I-238, Cherryland	16,150	8.5%
SR 185	Near 44th Avenue, Oakland	654	2.44%
42nd Avenue	Near International Boulevard, Oakland	265	2.17%
Jackson Street	Near Mission Boulevard, Hayward	613	1.46%

Sources: Caltrans Traffic Census Program-Truck Traffic, 2019; Kittelson & Associates, Inc., 2022.
Notes: AADT = Average Annual Daily Traffic, AADTT = Average Annual Daily Truck Traffic

[7] Caltrans, Traffic Census Program, accessed September 8, 2022, https://dot.ca.gov/programs/traffic-operations/census.

[8] FHWA, National Highway Freight Network Map and Tables, accessed January 6, 2022, https://ops.fhwa.dot.gov/Freight/infrastructure/ismt/state_maps/states/california.htm.

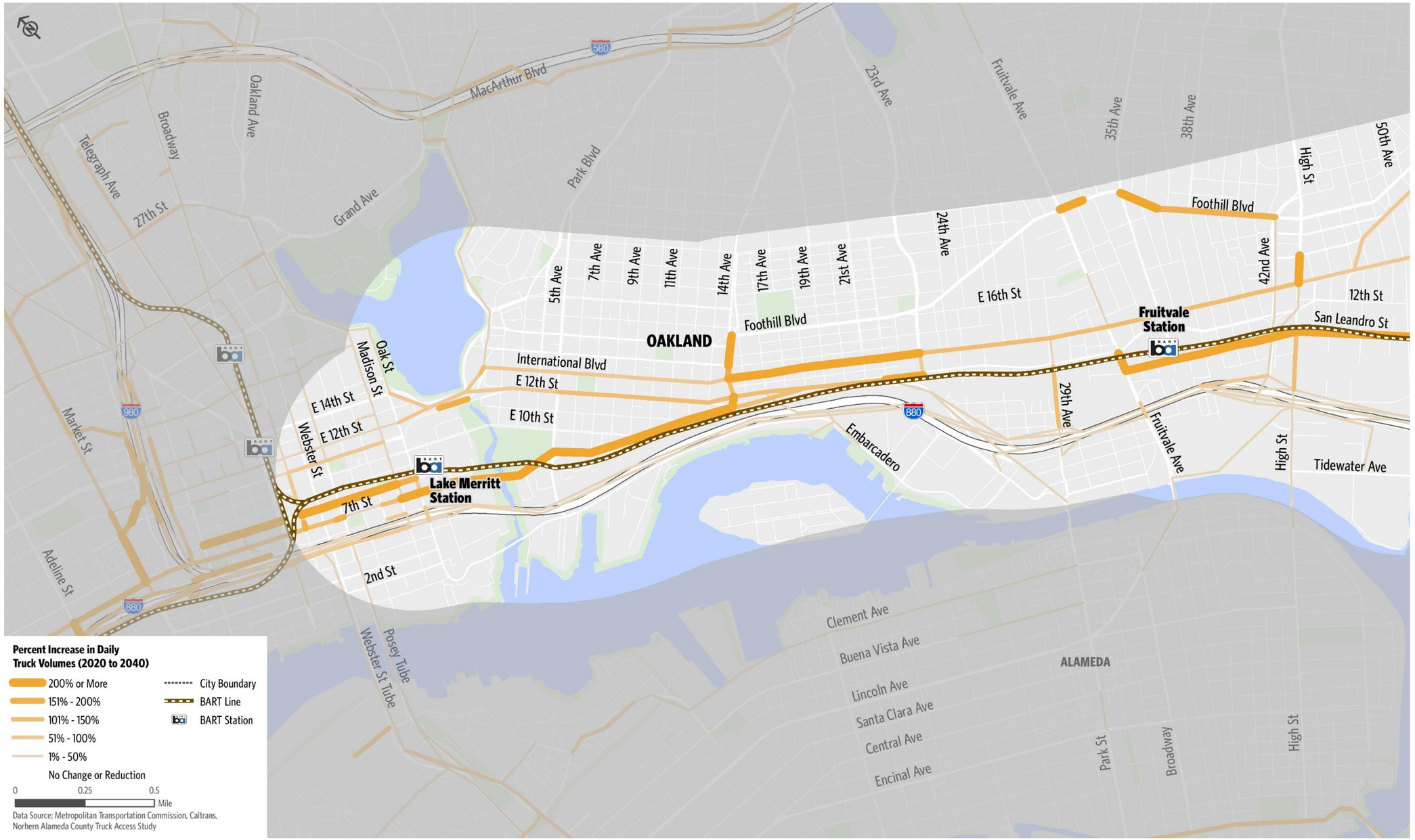
Future

Forecast truck volumes for the CACCMCP primary corridors and major connections were extracted from the Northern Alameda County Truck Access Management Study. The study used the Alameda Countywide Travel Demand Model 2040 to identify corridors where truck traffic is expected to grow. The model was also used in the study to identify locations where predicted changes in truck or total vehicle volume may disrupt truck freight movement or may lead to undesirable changes in truck patterns that increase conflicts between trucks, other road users, and residents.

According to the model, land use changes anticipated in Alameda County between 2020 and 2040 will prompt an increase in truck freight traffic. The model projects an increase in truck traffic concentrated in and around the Port of Oakland, with I-880 being the most impacted. Roadway segments parallel to the highway are projected to see the greatest overall percentage increase in truck trips due to diversion of truck traffic seeking to avoid congestion.

Figure 5-9 through **Figure 5-12** show the forecasted net and percent change in freight traffic expected between 2020 and 2040 on Northern Alameda County roads.

Figure 5-9: Percent Increase in Daily Truck Volumes (2020 to 2040) (Page 1 of 4)



Sources: Kittelson & Associates, Inc; Alameda CTC, Northern Alameda County Truck Access Management Plan, 2021, p. 63.
Note: These figures focus only on segments with at least 50 existing daily truck trips to avoid highlighting low-volume segments that have a high percentage increase when adding only one or two trucks.

Figure 5-10: Percent Increase in Daily Truck Volumes (2020 to 2040) (Page 2 of 4)

Figure 5-11: Percent Increase in Daily Truck Volumes (2020 to 2040) (Page 3 of 4)

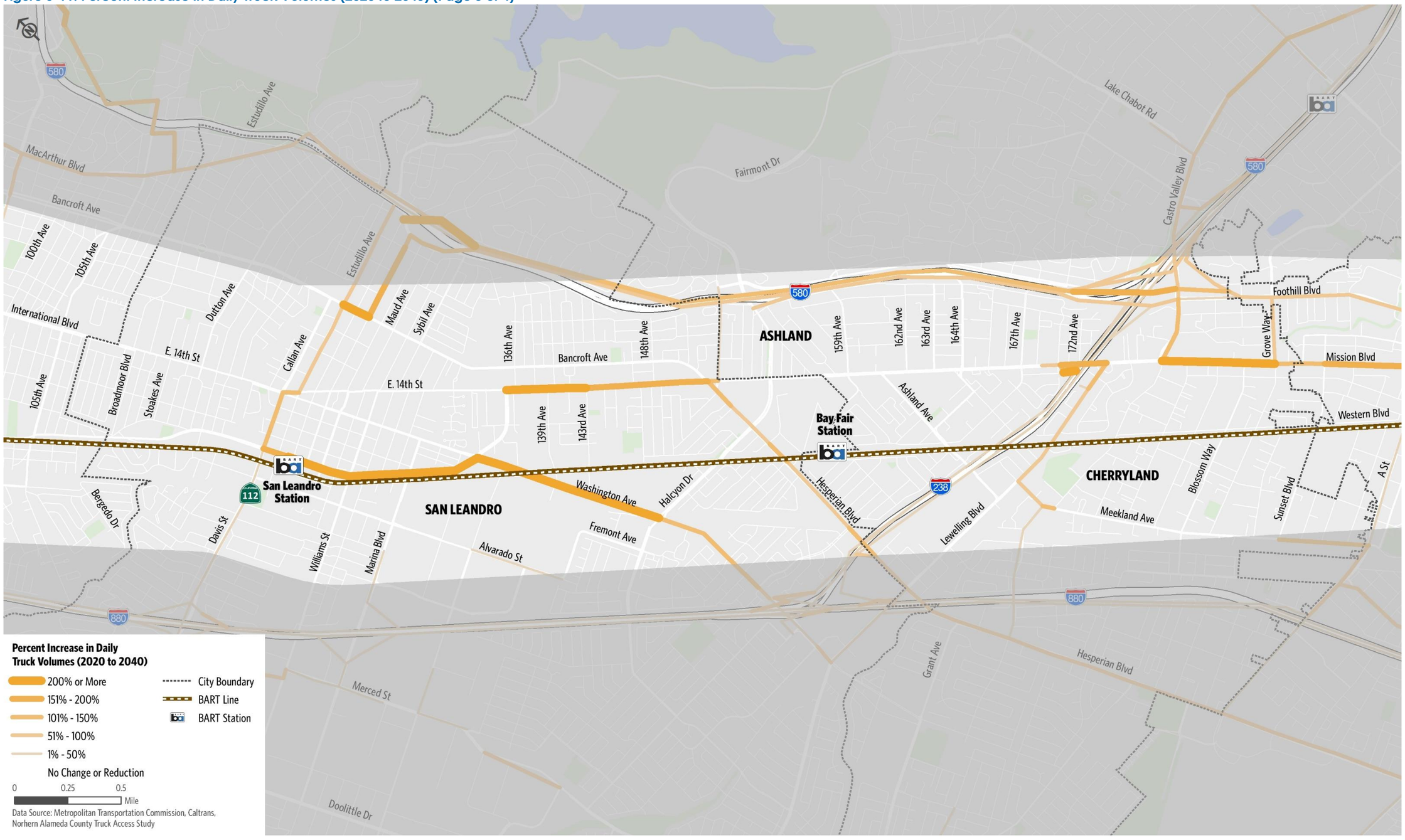


Figure 5-12: Percent Increase in Daily Truck Volumes (2020 to 2040) (Page 4 of 4)

Sources: Kittelson & Associates, Inc; Alameda CTC, Northern Alameda County Truck Access Management Plan, 2021, p. 64.
Note: These figures focus only on segments with at least 50 existing daily truck trips to avoid highlighting low-volume segments that have a high percentage increase when adding only one or two trucks.

Auto Speeds

Existing and future speeds for each of CACCMCP study area corridors are presented in **Table 5-8**. Speed data was sourced from the Alameda CTC 2018 CMP Multimodal Monitoring Report (Observed Speeds) and Countywide Travel Demand Model. The model speeds presented are averaged over the hours of each time period, which are defined in the model as 6:00-10:00 AM for the AM peak period, 3:00-7:00 PM for the PM peak period. **Figure 5-13** to **Figure 5-20** show existing peak period vehicle operating conditions. The thresholds used in the figures are defined based on roadway segment operating speeds as shown in **Table 5-7** Existing and projected speeds are listed for both peak AM and PM time periods and for each travel direction for each segment in **Table 5-8** Segments that currently or are projected to experience significant delays or forced delays are marked in **red**.

Table 5-7: Relationship between Speed and Operating Thresholds

Roadway Classification	Freeway	Tier I Arterial	Tier II Arterial	Others
Range of Free Flow Speed (mph)	65	45 to 35	35 to 30	35 to 25
Free Flow / Underutilized	≥ 60	≥ 35	≥ 30	≥ 25
Minimal Delays / Somewhat Utilized	≥ 55	≥ 28	≥ 24	≥ 19
Stable Flow / Optimal Utilization	≥ 49	≥ 22	≥ 18	≥ 13
Tolerable Delays / Optimal Utilization	≥ 41	≥ 17	≥ 14	≥ 9
Significant Delays / Somewhat Overutilized	≥ 30	≥ 13	≥ 10	≥ 7
Forced Flow / Overutilized	< 30	< 13	< 10	< 7

Sources: Alameda CTC CMP Multimodal Monitoring Report, 2018; Kittelson & Associates, Inc.

Under existing conditions, International Boulevard between Seminary Avenue and 86th Avenue is the only arterial found to be operating under congested (forced flow) conditions. Both freeway I-880 and I-238 are also operating under congested conditions in at least one of the peak periods, whereas Mission Boulevard south of Jackson Street, Hegenberger Road, and Hesperian Boulevard are operating in underutilized (free flow) conditions. Typically, roadways operating under stable flow or tolerable delay conditions are considered to be optimally utilized and not considered to encourage unsafe speeds.

Figure 5-21 to **Figure 5-28** show future peak period vehicle operating conditions. Under no project future conditions, both freeways (I-880 and I-238) continue to operate under congested conditions with speeds decreasing by 15 to 30 percent. International Boulevard/East 14th Street/Mission Boulevard is likely to observe a decrease in speed by 50 percent on certain segments. All other corridors will likely observe a slight decrease in speeds within the CACCMCP study area.

Table 5-8: Existing and Projected Speeds

Roadway Segments	Segment Limit	CMP Tier	Direction	Posted Speed	AM Peak			PM Peak		
					Existing (2018)	Future (2040)	% Change	Existing (2020)	Future (2040)	% Change
I-880	Between I-980 and Hegenberger Road	F	EB	65	61.8	52.2	-16%	**37.5**	**24.5**	-35%
I-880	Between I-980 and Hegenberger Road	F	WB	65	**19.1**	**12.8**	-33%	55.1	41.3	-25%
I-880	Between Hegenberger Road to I-238	F	EB	65	65.2	42.2	-35%	55.7	**39.4**	-29%
I-880	Between Hegenberger Road to I-238	F	WB	65	**24.5**	**23.9**	-2%	57.3	49.9	-13%
I-238	Between I-580 and I-880	F	EB	65	43.3	43.3	0%	**39.7**	**37.2**	-6%
I-238	Between I-580 and I-880	F	WB	65	**19.6**	**15.4**	-21%	43.9	**40.7**	-7%
International Boulevard	Between 1st Avenue and 42nd Avenue	2	WB	30	19.0	18.9	-1%	18.5	14.8	-20%
International Boulevard	Between 1st Avenue and 42nd Avenue	2	EB	30	16.7	16.7	0%	18.1	17.6	-3%
International Boulevard	Between 42nd Avenue and Seminary Avenue	1	EB	25	20.7	20.6	0%	17.6	**15.8**	-10%
International Boulevard	Between 42nd Avenue and Seminary Avenue	1	WB	25	**16.6**	**15.1**	-9%	**15.1**	**15.0**	-1%

Roadway Segments	Segment Limit	CMP Tier	Direction	Posted Speed	AM Peak			PM Peak		
					Existing (2018)	Future (2040)	% Change	Existing (2020)	Future (2040)	% Change
International Boulevard	Between Seminary Avenue and 86th Avenue	1	EB	25	**13.1**	**13.1**	0%	**7.9**	**6.3**	-20%
International Boulevard	Between Seminary Avenue and 86th Avenue	1	WB	25	**13.8**	**13.0**	-6%	**13.4**	**13.3**	-1%
International Boulevard	Between 86th Avenue and Broadmoor Boulevard	1	EB	25	19.3	19.2	-1%	**15.5**	**15.5**	0%
International Boulevard	Between 86th Avenue and Broadmoor Boulevard	1	WB	25	**15.9**	**15.9**	0%	**15.0**	**14.9**	-1%
East 14th Street	Between Broadmoor Avenue and Davis Street	1	EB	25	19.3	19.0	-2%	17.4	17.3	0%
East 14th Street	Between Broadmoor Avenue and Davis Street	1	WB	25	19.9	19.9	0%	**16.3**	**16.0**	-2%
East 14th Street	Between Davis Street and Sybil Avenue	1	EB	25	19.1	19.1	0%	**15.7**	**15.3**	-2%
East 14th Street	Between Davis Street and Sybil Avenue	1	WB	25	**15.4**	**15.3**	0%	**13.7**	**13.7**	0%
East 14th Street	Between Sybil Avenue and Hesperian Boulevard	1	EB	35	21.8	21.8	0%	17.9	17.6	-2%

Roadway Segments	Segment Limit	CMP Tier	Direction	Posted Speed	AM Peak			PM Peak		
					Existing (2018)	Future (2040)	% Change	Existing (2020)	Future (2040)	% Change
East 14th Street	Between Sybil Avenue and Hesperian Boulevard	1	WB	35	19.6	19.5	0%	20.1	20.1	0%
East 14th Street	Between Hesperian Boulevard and 150th Avenue	1	EB	35	19.8	19.8	0%	**16.6**	**8.3**	-50%
East 14th Street	Between Hesperian Boulevard and 150th Avenue	1	WB	35	20.1	20.0	0%	**14.7**	**14.7**	0%
East 14th Street	Between 150th Avenue and 168th Avenue	1	EB	35	20.0	20.0	0%	18.6	**12.9**	-31%
East 14th Street	Between 150th Avenue and 168th Avenue	1	WB	35	19.8	18.3	-8%	**16.6**	**16.6**	0%
East 14th Street/Mission Boulevard	Between 168th Avenue and Mattox Road	1	EB	35	21.3	21.3	0%	19.3	19.3	0%
East 14th Street/Mission Boulevard	Between 168th Avenue and Mattox Road	1	WB	35	25.2	25.2	0%	22.0	22.0	0%
Mission Boulevard	Between Mattox Road and Rose Street	1	EB	35	20.3	**10.4**	-49%	19.9	19.9	0%
Mission Boulevard	Between Mattox Road and Rose Street	1	WB	35	23.2	23.2	0%	21.2	**10.6**	-50%

Roadway Segments	Segment Limit	CMP Tier	Direction	Posted Speed	AM Peak			PM Peak		
					Existing (2018)	Future (2040)	% Change	Existing (2020)	Future (2040)	% Change
Mission Boulevard	Between Rose Street and A Street	1	EB	25	**16.7**	**16.5**	-1%	**16.9**	**16.9**	0%
Mission Boulevard	Between Rose Street and A Street	1	WB	25	20.4	20.4	0%	19.9	17.0	-15%
Mission Boulevard	Between A Street and Jackson Street	NA	EB	25	20.8	20.8	0%	19.5	11.2	-43%
Mission Boulevard	Between Jackson Street and Tennyson Street	1	EB	35	24.1	18.1	-25%	22.8	20.9	-8%
Mission Boulevard	Between Jackson Street and Tennyson Street	1	WB	35	23.7	**16.7**	-29%	19.7	**11.7**	-41%
San Leandro Street	Between Fruitvale Avenue and 69th Avenue	2	EB	30	21.2	21.1	0%	19.3	18.3	-5%
San Leandro Street	Between Fruitvale Avenue and 69th Avenue	2	WB	30	16.5	16.4	-1%	19.4	19.3	0%
San Leandro Street	Between 69th Avenue and 85th Avenue	2	EB	30	21.2	21.2	0%	19.3	14.1	-27%
San Leandro Street	Between 69th Avenue and 85th Avenue	2	WB	30	16.5	16.2	-2%	19.4	19.4	0%
San Leandro Street	Between 85th Avenue and Broadmoor Blvd	2	EB	30	21.2	21.2	0%	19.3	19.1	-1%

Roadway Segments	Segment Limit	CMP Tier	Direction	Posted Speed	AM Peak			PM Peak		
					Existing (2018)	Future (2040)	% Change	Existing (2020)	Future (2040)	% Change
San Leandro Street	Between 85th Avenue and Broadmoor Blvd	2	WB	30	16.5	15.9	-3%	19.4	19.4	0%
San Leandro Boulevard	Between Broadmoor Boulevard and Davis Street	2	EB	30	20.9	20.9	0%	20.7	20.6	-1%
San Leandro Boulevard	Between Broadmoor Boulevard and Davis Street	2	WB	30	19.1	18.8	-2%	20.5	20.5	0%
San Leandro Boulevard	Between Davis Street and Marina Boulevard	2	EB	30	20.9	20.9	0%	20.7	20.6	0%
San Leandro Boulevard	Between Davis Street and Marina Boulevard	2	WB	30	19.1	19.1	0%	20.5	20.4	0%
San Leandro Boulevard	Between Marina Boulevard and East 14th Street	2	NB	40	20.9	20.9	0%	20.7	20.6	0%
San Leandro Boulevard	Between Marina Boulevard and East 14th Street	2	SB	40	19.1	19.1	0%	20.5	20.5	0%
Oak Street	Between Lakeside Drive and 2nd Street	NA	NB	25	10.9	10.9	0%	11.5	11.5	0%
Madison Street	Between Lakeside Drive and 2nd Street	NA	SB	25	11.9	11.9	0%	11.5	11.5	0%

Roadway Segments	Segment Limit	CMP Tier	Direction	Posted Speed	AM Peak			PM Peak		
					Existing (2018)	Future (2040)	% Change	Existing (2020)	Future (2040)	% Change
Fruitvale Avenue	Between Foothill Boulevard and Fernside Boulevard	2	NB	25	**13.1**	**13.1**	0%	14.0	**7.0**	-50%
Fruitvale Avenue	Between Foothill Boulevard and Fernside Boulevard	2	SB	25	**13.3**	**6.7**	-50%	**11.7**	**11.7**	0%
High Street	Between Carrington Street and Fernside Boulevard	2	NB	30	**11.1**	**11.1**	0%	**10.2**	**11.3**	11%
High Street	Between Carrington Street and Fernside Boulevard	2	SB	30	**13.5**	**11.7**	-13%	**10.3**	**10.2**	-1%
73rd Avenue	Between Arthur Street and International Boulevard	2	NB	30	19.7	19.7	0%	19.1	19.1	0%
73rd Avenue	Between Arthur Street and International Boulevard	2	SB	30	19.9	19.9	0%	20.2	20.2	0%
Hegenberger Road	Between International Boulevard and Coliseum Way	1	NB	35	27.6	27.6	0%	24.4	24.4	0%
Hegenberger Road	Between International Boulevard and Coliseum Way	1	SB	35	30.5	30.5	0%	31.0	31.0	0%

Roadway Segments	Segment Limit	CMP Tier	Direction	Posted Speed	AM Peak			PM Peak		
					Existing (2018)	Future (2040)	% Change	Existing (2020)	Future (2040)	% Change
Davis Street	Between East 14th Street and Preda Street	1	NB	30	**14.6**	**14.6**	0%	**13.1**	**13.1**	0%
Davis Street	Between East 14th Street and Preda Street	1	SB	30	**12.3**	**12.3**	0%	**12.0**	**12.0**	0%
Washington Avenue	Between Juana Avenue and Monterey Boulevard	2	NB	25	17.7	17.7	0%	16.6	16.6	0%
Washington Avenue	Between Juana Avenue and Monterey Boulevard	2	SB	25	19.5	19.5	0%	17.5	17.5	0%
Hesperian Boulevard	Between East 14th Street and College Street	NA	NB	40	19.8	19.8	0%	16.4	16.4	0%
Hesperian Boulevard	Between East 14th Street and College Street	NA	SB	40	20.5	20.5	0%	16.3	16.3	0%
A Street	Between 3rd Street and Martin Luther King Drive	1	NB	25	**12.2**	**12.2**	0%	**10.8**	**10.8**	0%
A Street	Between 3rd Street and Martin Luther King Drive	1	SB	25	**16.3**	**16.3**	0%	**14.1**	**14.1**	0%
Jackson Street	East 14th Street and Soto Road	1	NB	30	24.5	24.5	0%	**16.1**	**16.3**	1%

Roadway Segments	Segment Limit	CMP Tier	Direction	Posted Speed	AM Peak			PM Peak		
					Existing (2018)	Future (2040)	% Change	Existing (2020)	Future (2040)	% Change
Jackson Street	East 14th Street and Soto Road	1	SB	30	22.3	**16.0**	-28%	20.8	**10.4**	-50%
Tennyson Road	Between Huntwood Avenue and Vista Grande Drive	1	NB	25	17.9	17.9	0%	18.1	18.1	0%
Tennyson Road	Between Huntwood Avenue and Vista Grande Drive	1	SB	25	18	18.0	0%	18.2	18.2	0%

Sources: Alameda CTC Countywide Travel Demand Model; Alameda CTC CMP Multimodal Monitoring Report, 2018; Kittelson & Associates, Inc., 2022.
Notes: Tempo service, opened in August 2020, is not included in this analysis.
Red text represents significant delays and forced flow conditions.

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Figure 5-13: Existing 2018 AM Vehicle Operations (1 of 4)

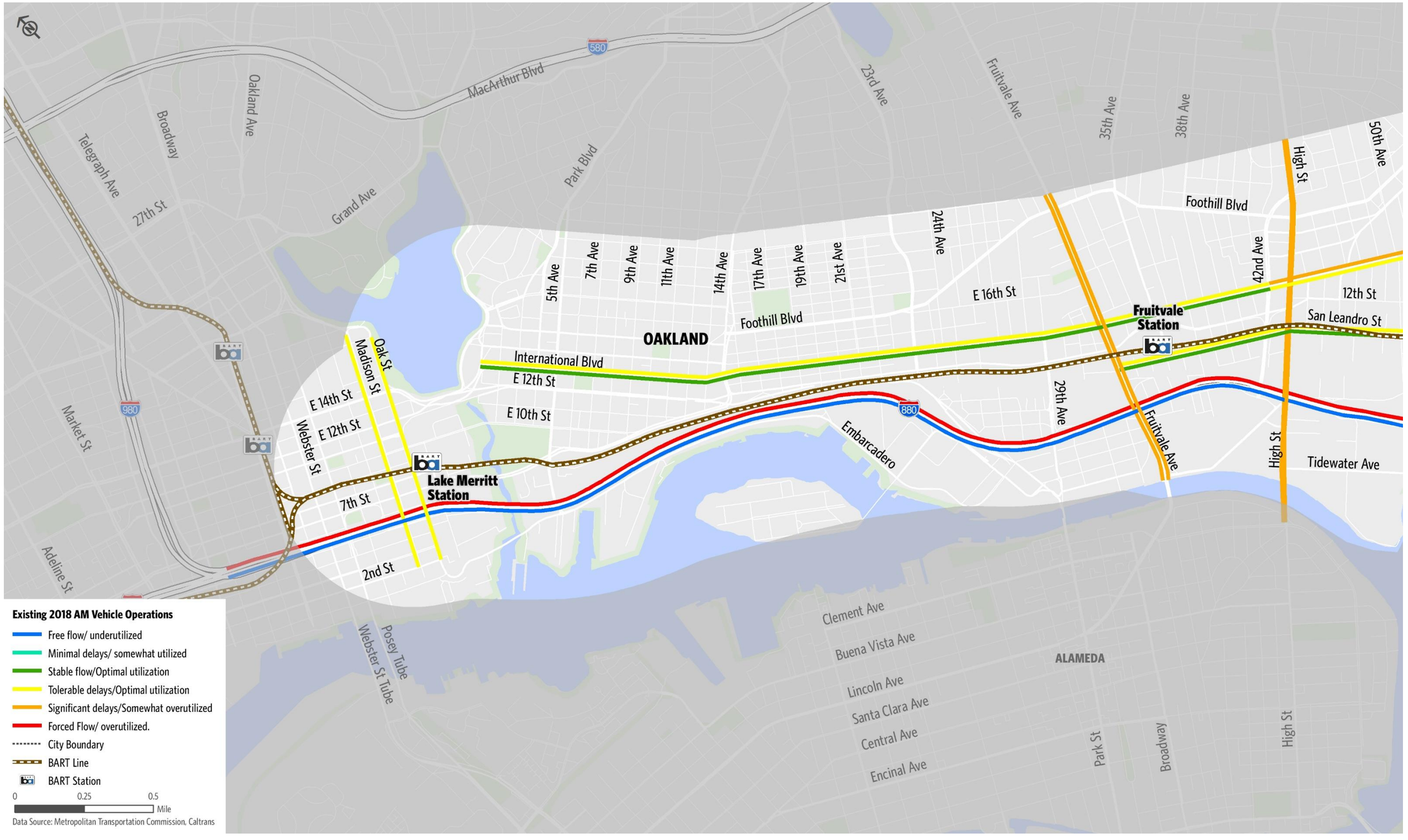


Figure 5-14: Existing 2018 AM Vehicle Operations (2 of 4)

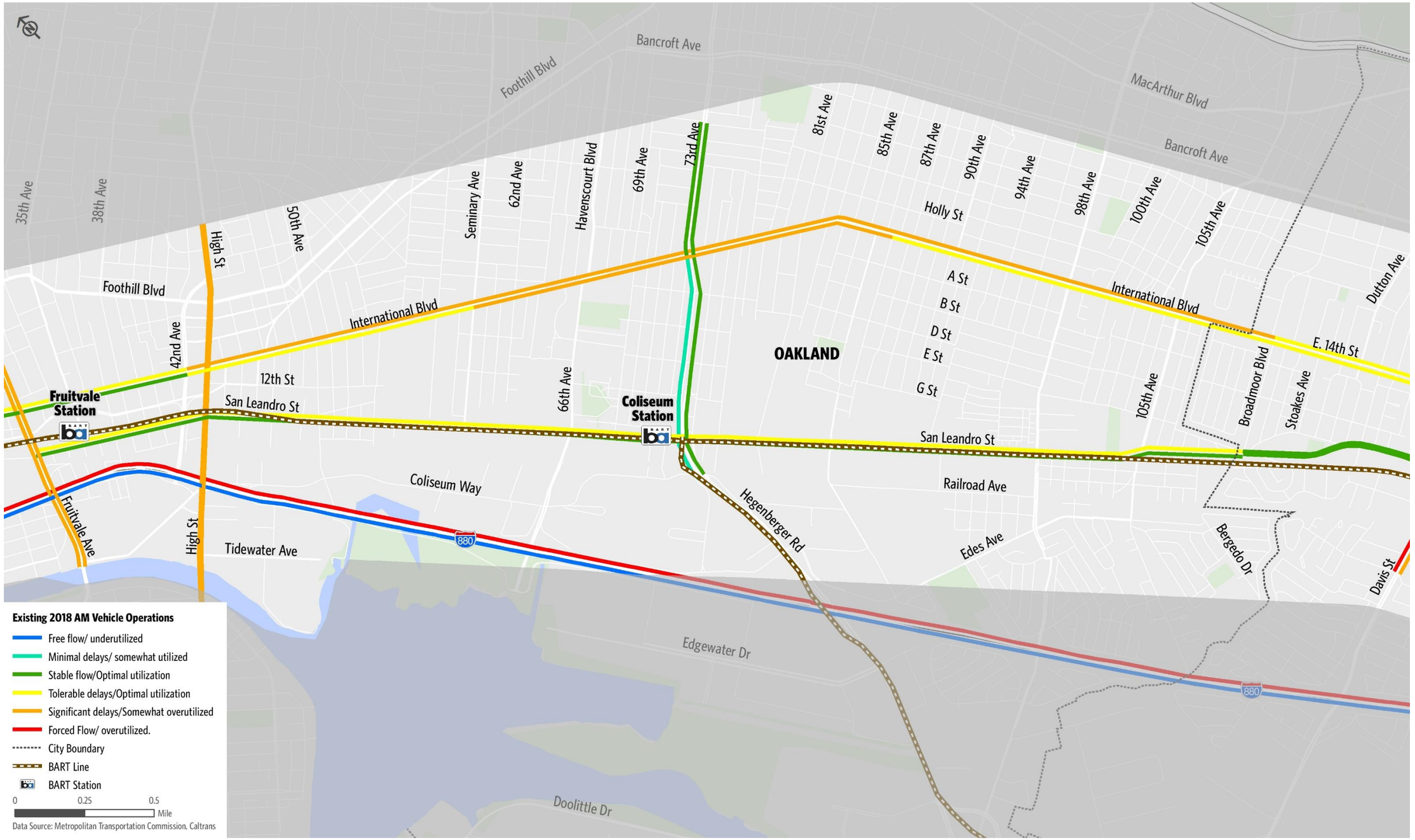


Figure 5-15: Existing 2018 AM Vehicle Operations (3 of 4)

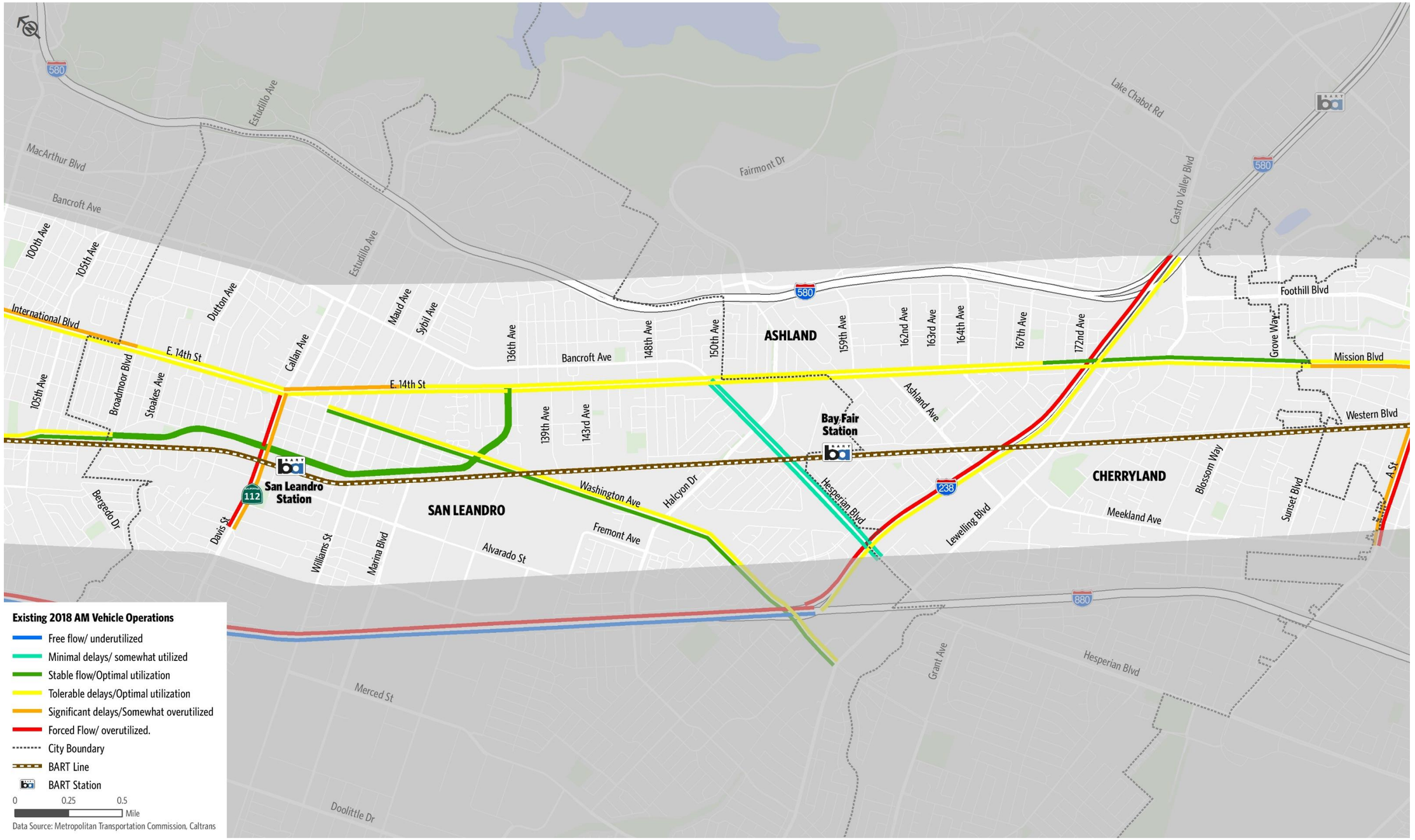


Figure 5-16: Existing 2018 AM Vehicle Operations (4 of 4)

Figure 5-17: Existing 2018 PM Vehicle Operations (1 of 4)

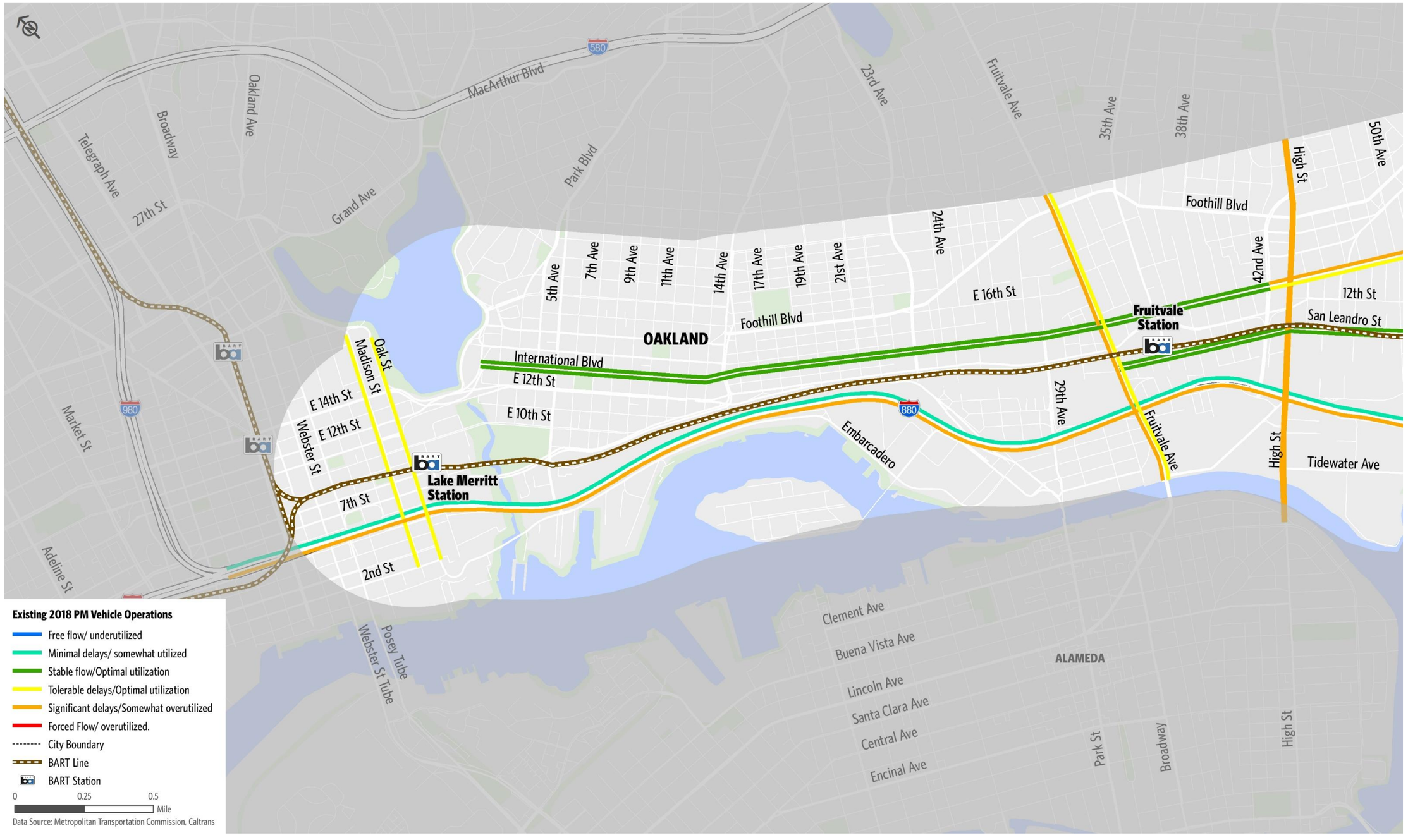


Figure 5-18: Existing 2018 PM Vehicle Operations (2 of 4)

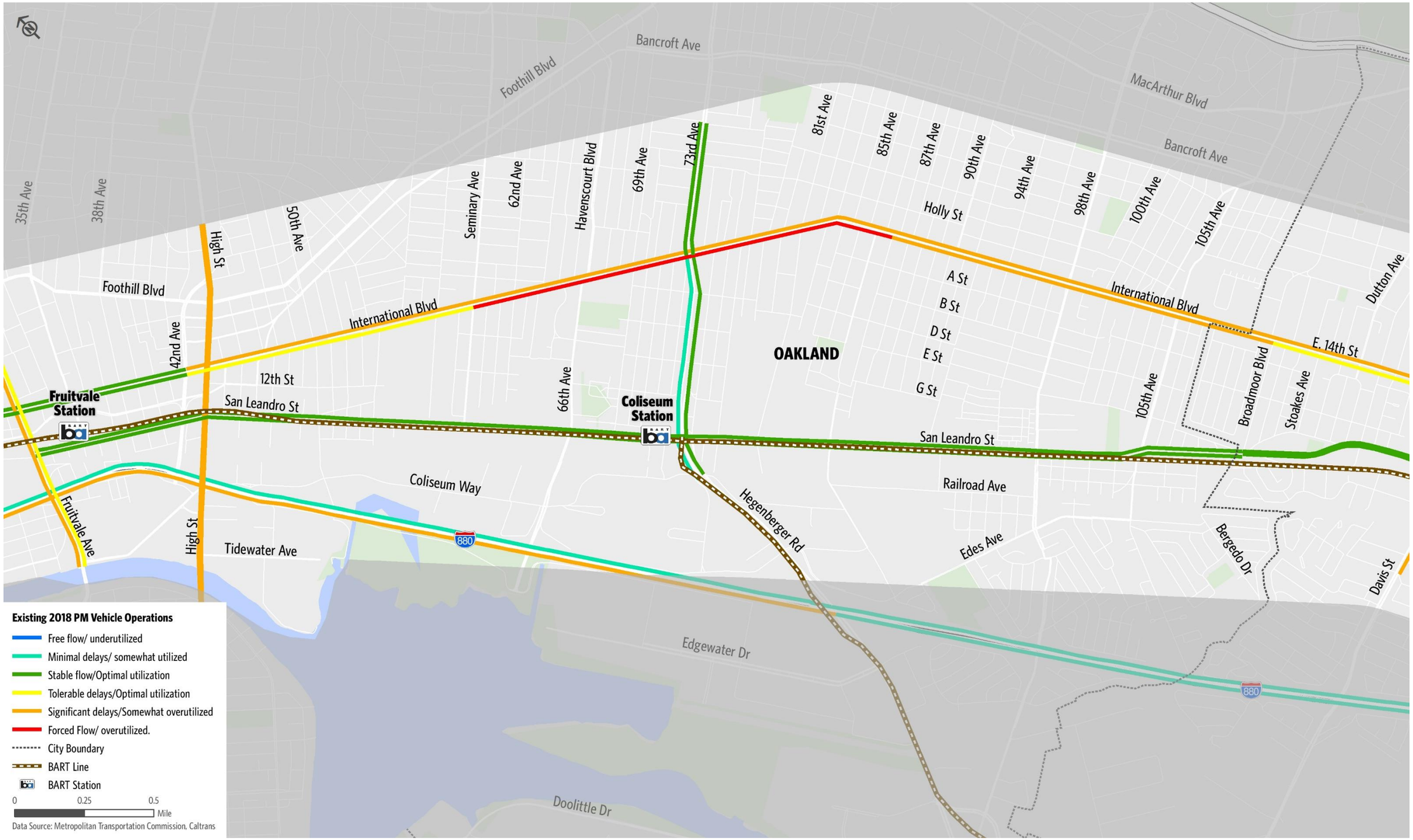


Figure 5-19: Existing 2018 PM Vehicle Operations (3 of 4)

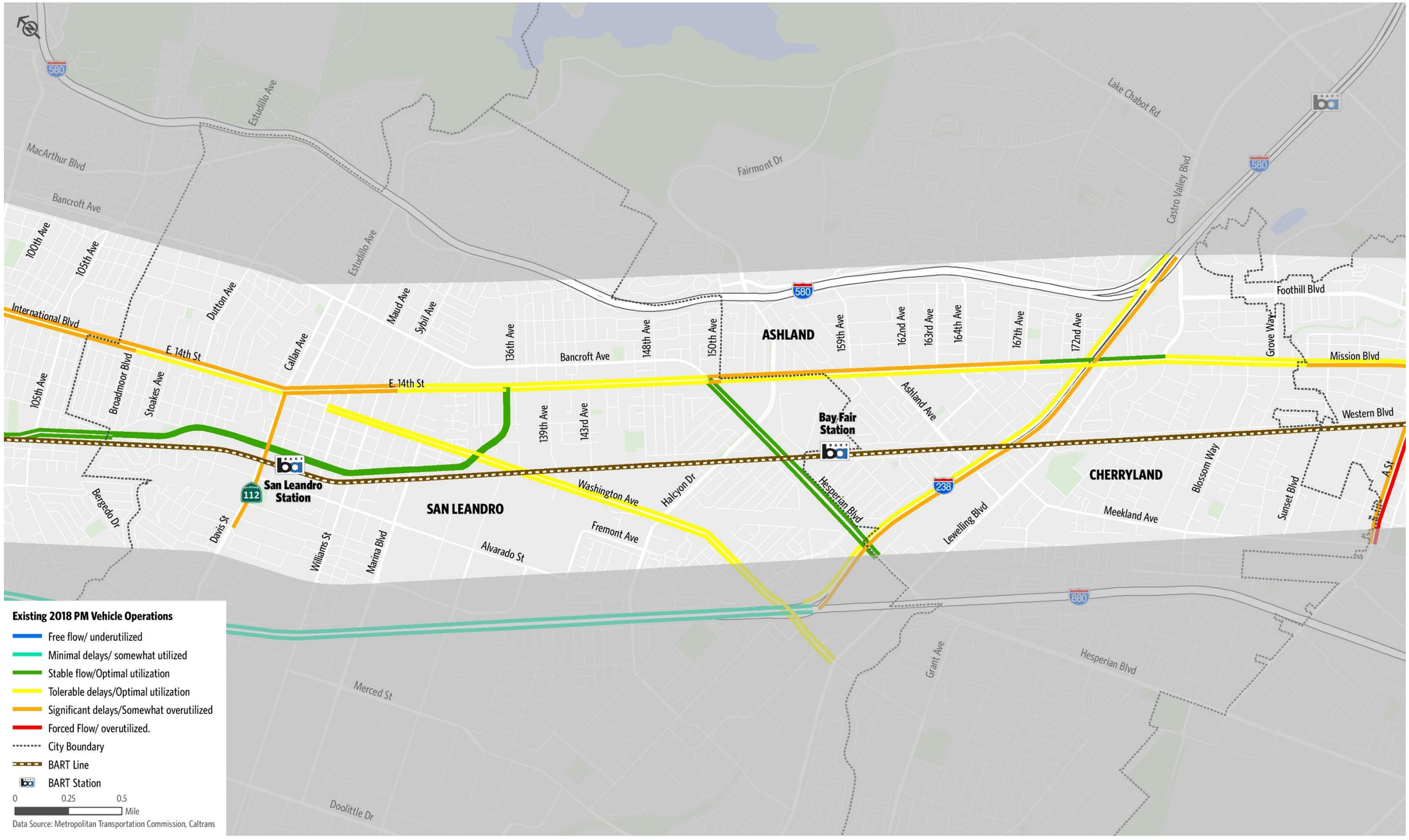


Figure 5-20: Existing 2018 PM Vehicle Operations (4 of 4)

Figure 5-21: 2040 Future AM Vehicle Operating Conditions (1 of 4)

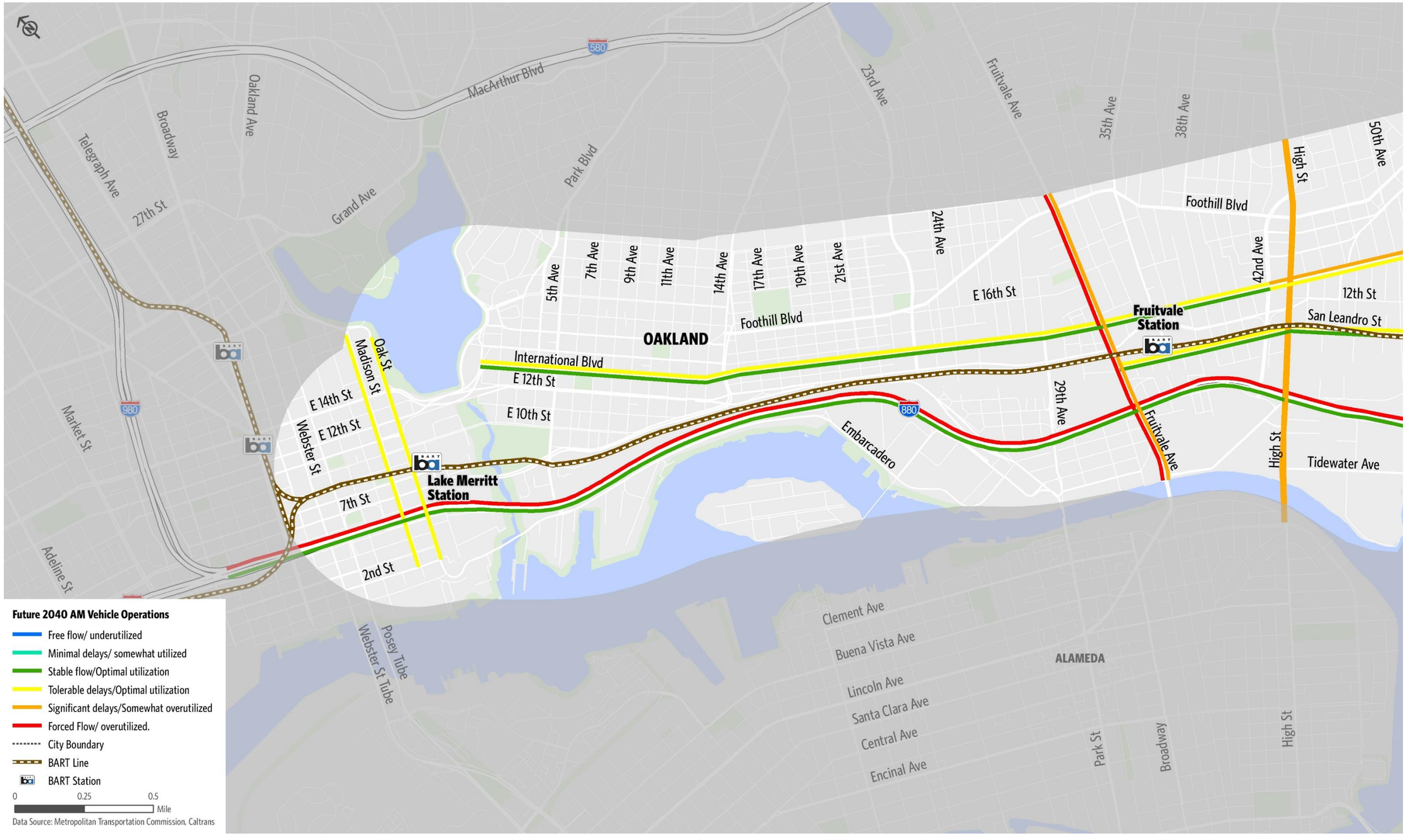


Figure 5-22: 2040 Future AM Vehicle Operating Conditions (2 of 4)

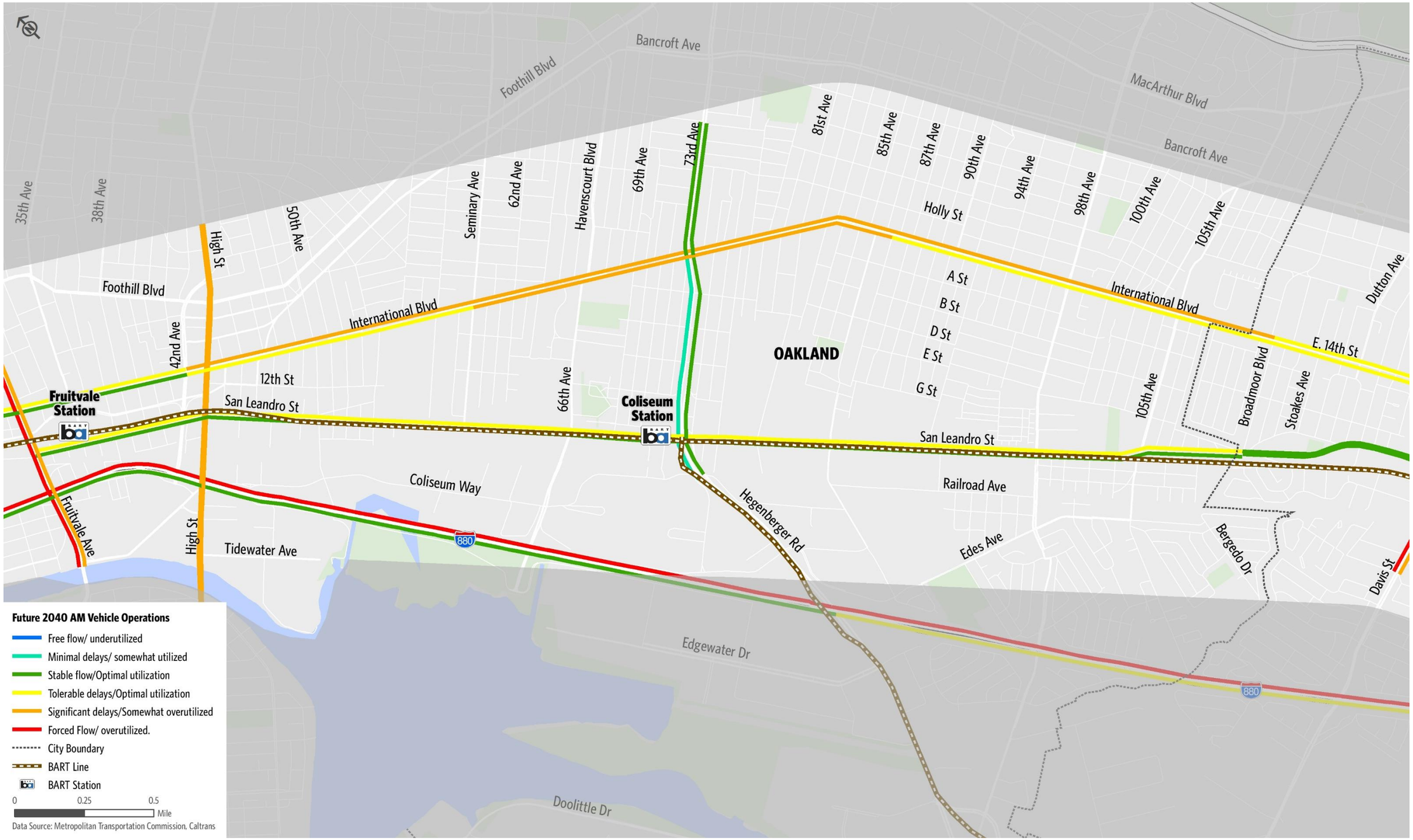


Figure 5-23: 2040 Future AM Vehicle Operating Conditions (3 of 4)

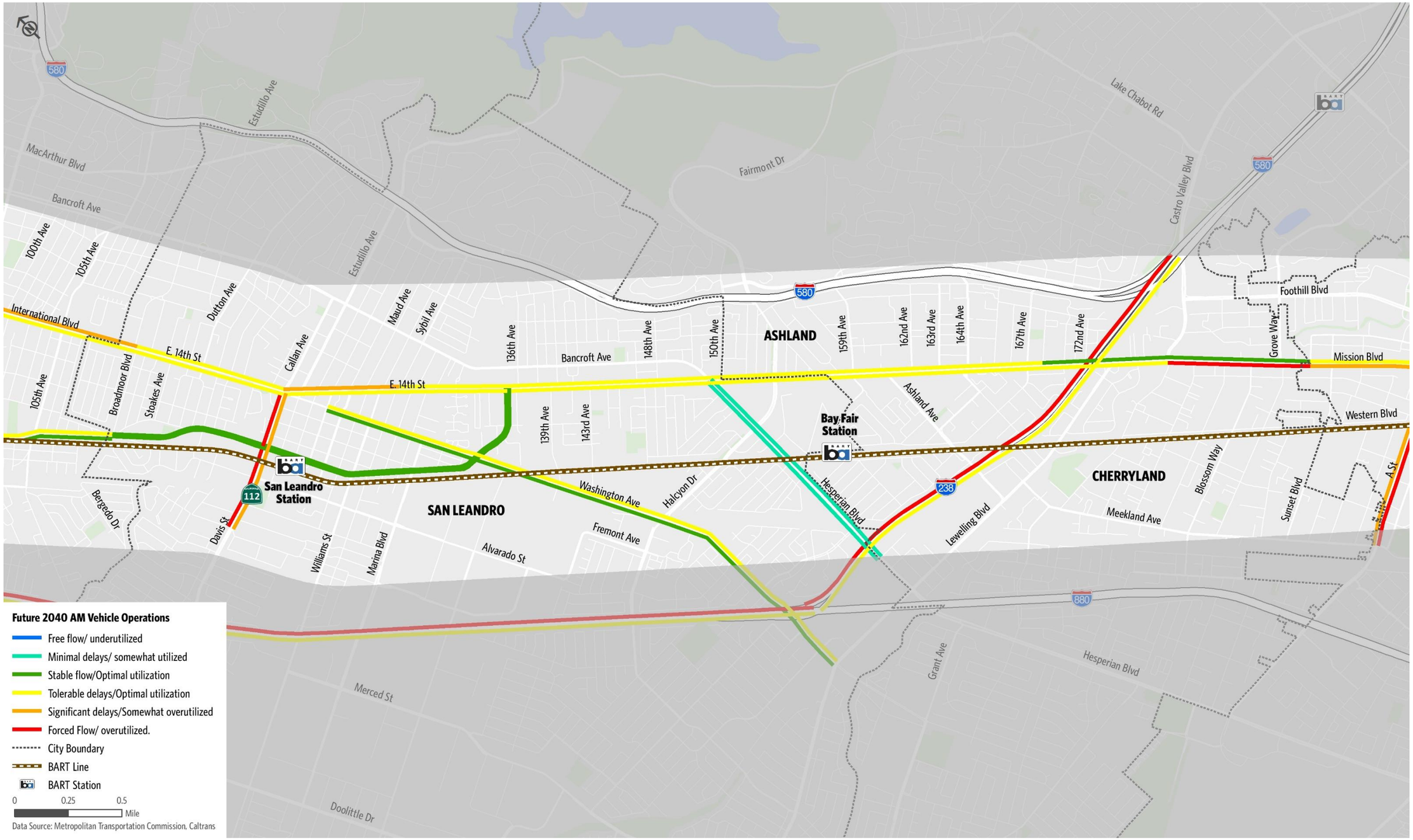


Figure 5-24: 2040 Future AM Vehicle Operating Conditions (4 of 4)

Figure 5-25: 2040 Future PM Vehicle Operating Conditions (1 of 4)

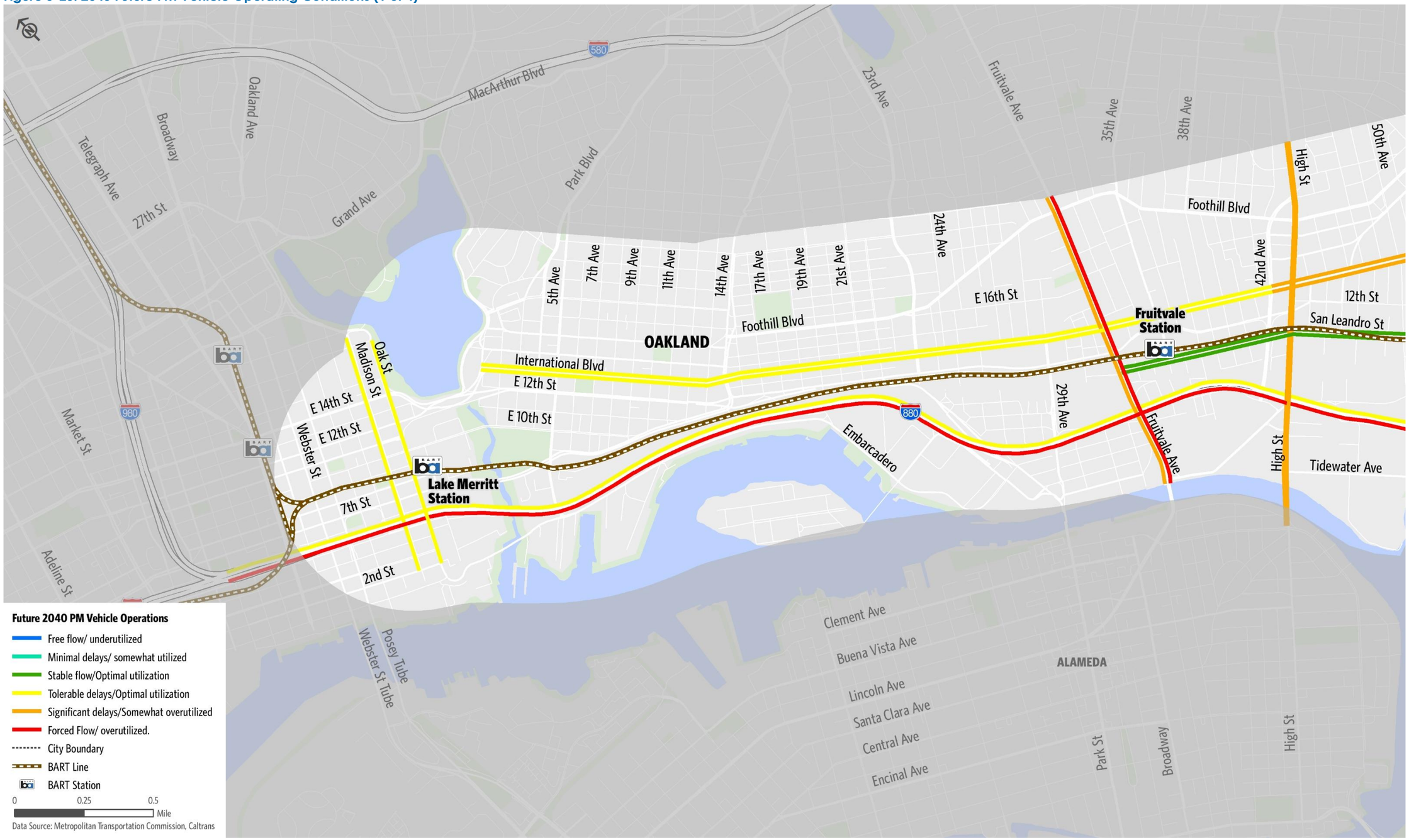


Figure 5-26: 2040 Future PM Vehicle Operating Conditions (2 of 4)

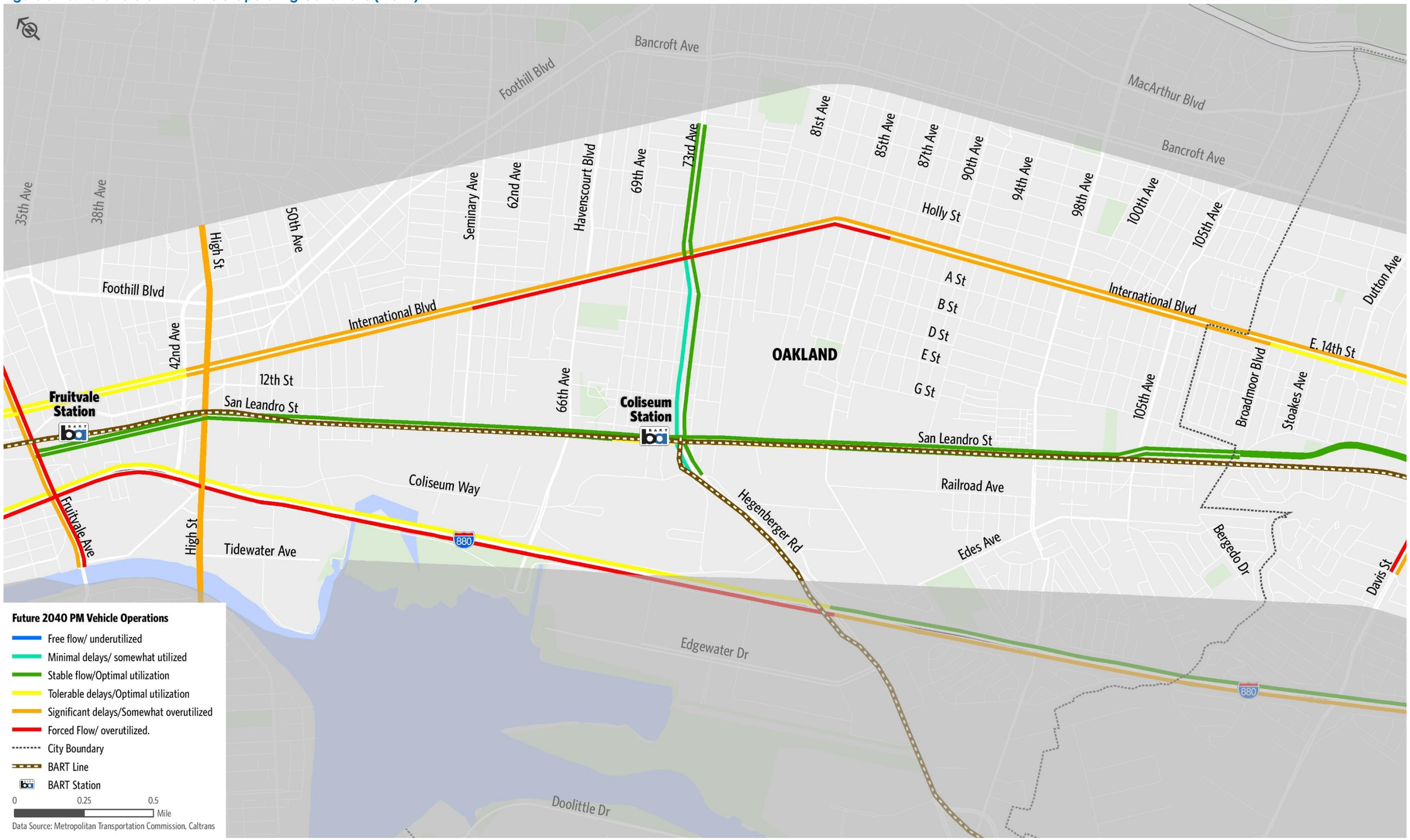


Figure 5-27: 2040 Future PM Vehicle Operating Conditions (3 of 4)

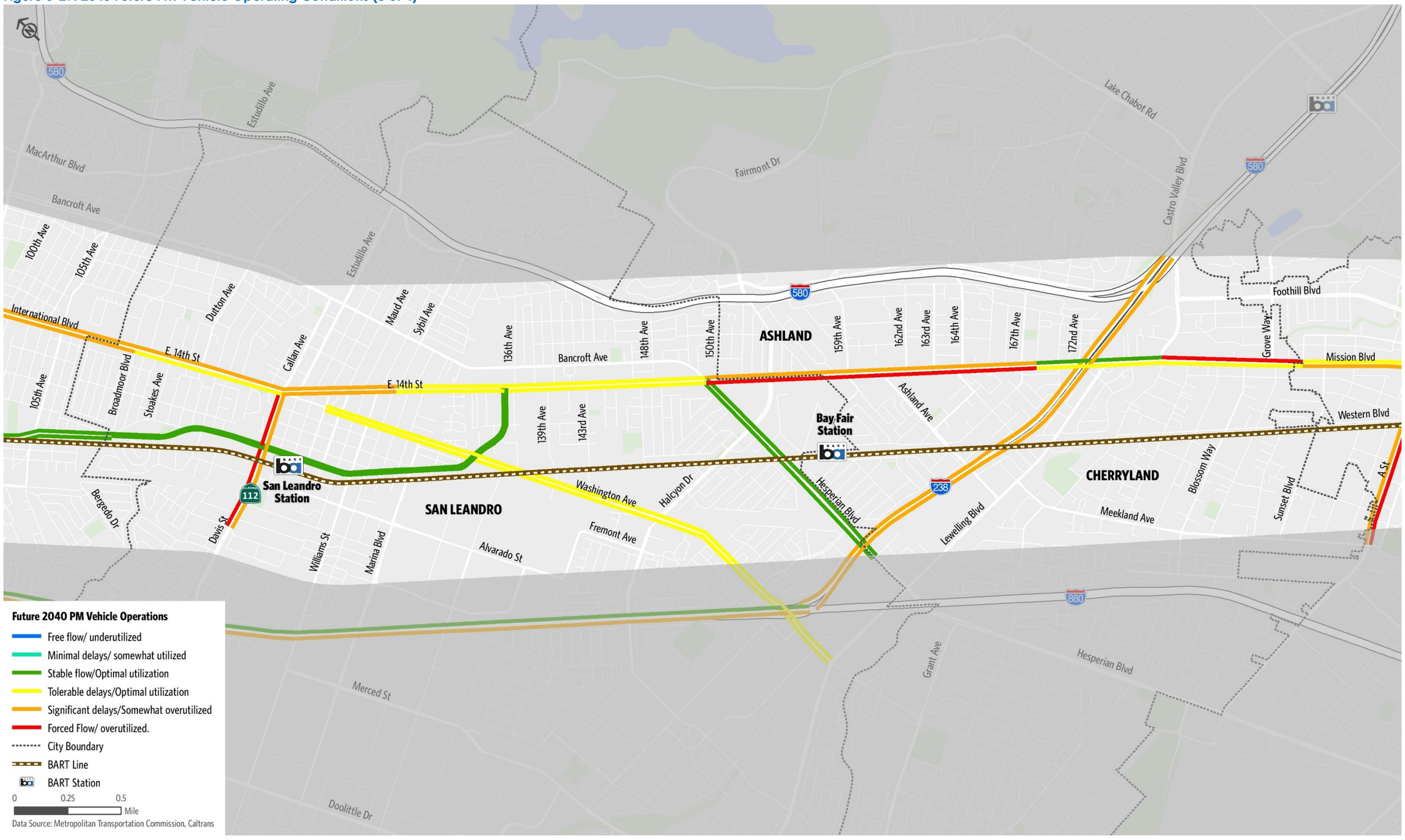
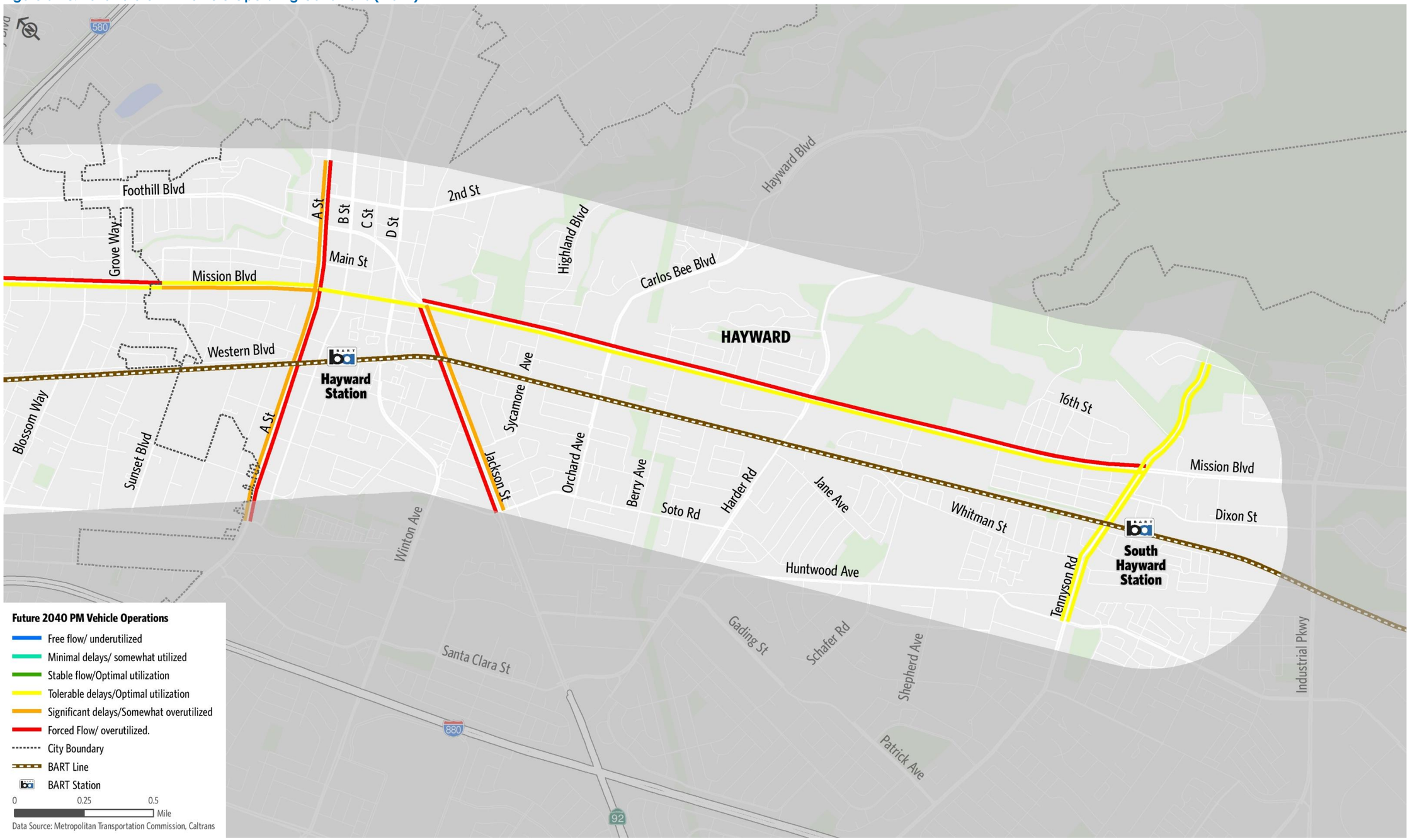


Figure 5-28: 2040 Future PM Vehicle Operating Conditions (4 of 4)



Vehicle Hours of Delay

Average weekday vehicle hours of delay were calculated for subareas of the CACCMCP study area as shown in **Table 5-9** and **Figure 5-29**. The Hayward and Unincorporated subareas are projected to see the largest increases in vehicular hours of delay, increasing 101.4 percent and 88.8 percent respectively. The overall CACCMCP study area is forecast to experience a 79.4 percent increase in vehicular hours of delay, just under the 81.3 percent expected increase for Alameda County as a whole.

Table 5-9: Areawide Vehicle Hours of Delay

Study Area Classification	Existing (2020)	Future (2040)	Change
Oakland Subarea	15,660	27,828	77.7%
San Leandro Subarea	7,970	12,166	52.7%
Unincorporated Subarea	3,178	6,000	88.8%
Hayward Subarea	9,602	19,339	101.4%
Subtotal CACCMCP Study Area	***36,409***	***65,333***	***79.4%***
Total Alameda County	*320,505*	*581,062*	*81.3%*
Total Bay Area	1,111,349	2,166,707	95.0%

Sources: Alameda CTC Countywide Travel Demand Model, 2020; Kittelson & Associates, Inc., 2022.

Bottlenecks

Bottlenecks occur at roadway locations with persistent and significant drops below free flow speed. Recurring bottlenecks impacting the CACCMCP corridors are described below, including their location, direction, and queue characteristics. The bottleneck analysis is conducted for freeways only. Bottleneck information was collected from INRIX for October 2019. INRIX detects bottlenecks based on comparisons of observed speeds to reference speeds (design speed), which are the proxy of free flow or uncongested speed.[9] A potential bottleneck is detected when speeds on a segment drop to 65 percent of the reference speed. A bottleneck is published if speeds stay below 65 percent and causes 120 seconds of delay. As long as the speed remains below 75 percent of the reference speed, the bottleneck will not be cleared. **Table 5-10** provides the bottleneck summary for the freeways within the CACCMCP study area. The bottleneck for I-880 forms near Edes Avenue and Hegenberger Road in the eastbound direction at approximately 4:00 PM and does not dissipate until 7:00 PM. Similarly, the westbound bottleneck occurs around 7:30 AM and could last until 10:00 AM.

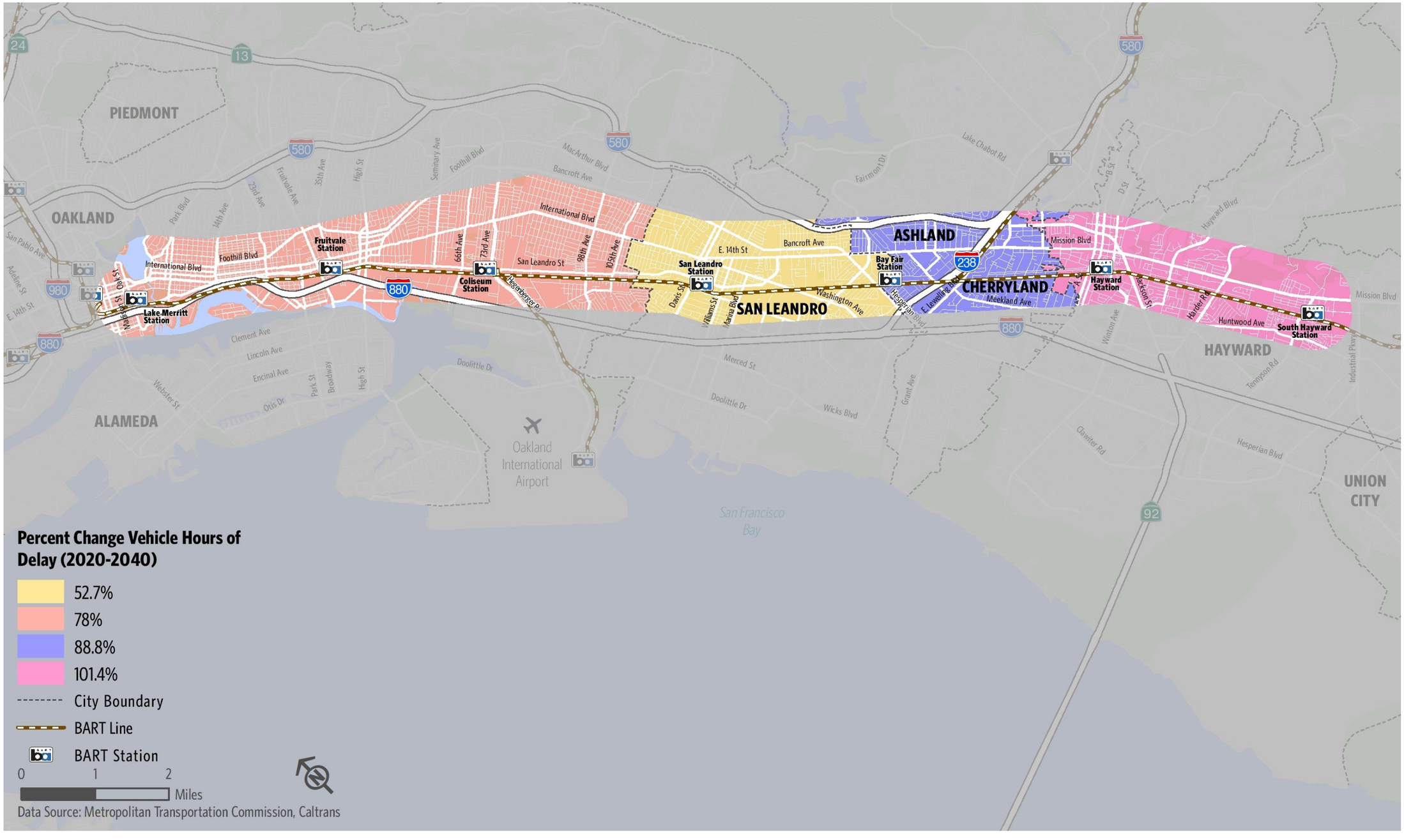
[9] INRIX Performance Measures, https://inrix.com/wp-content/uploads/2016/11/INRIX_Performance_Measures_Brochure.pdf.

Table 5-10: I-880 and I-238 Bottleneck Summary

Roadway Segments	Segment Limit	Direction	Intersection Location	Time Period	Average Congested Time (mins)[1]
I-880	Between I-980 and Hegenberger Road, Oakland	SB	I-880 Exit 36 / Edes Avenue / Hegenberger Road	4:00-7:00 PM	39
I-880	Between I-980 and Hegenberger Road, Oakland	SB	I-880 Exit 38 / CA-77 42nd Avenue / Coliseum Way	4:00-7:00 PM	59
I-880	Between I-980 and Hegenberger Road, Oakland	NB	I-880 Exit 40 / Embarcadero / 10th Avenue	7:30-10:00 AM	125
I-880	Between Hegenberger Road and I-238, Oakland	SB	I-880 Exits 31, 31A, 31B / I-238 Exits 16A, 17A / Washington Avenue	5:00-7:00 PM	14
I-880	Between Hegenberger Road and I-238, Oakland	NB	I-880 Exit 35 / 98th Avenue	7:00-8:30 AM; 4:00-7:00 PM	30
I-238	Between I-580 and I-880, Ashland	EB	I-580 and I-238 Interchange	4:00-7:00 PM	52
I-238	Between I-580 and I-880, Ashland	WB	I-880 Exits 31, 31A,3 1B / I-238 Exits 16A,17A / Beatrice Street	7:30-10:00 AM	30

Sources: [1]INRIX platform data collected in October 2019; Kittelson & Associates, Inc., 2022.

Figure 5-29: Percent Change in Vehicle Hours of Delay (2020-2040)



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5.3 Reliability Performance

The reliability performance assessment focuses on vehicle and transit facility characteristics (e.g., recurring significant variations in travel time and issues like bus bunching that lead to not meeting schedules) that make travel times unpredictable for users of the system.

Peak Period Travel Time Reliability Index

Reliability is a measure of the impact of one-time, unexpected events, such as construction activities and collisions. Therefore, the travel time reliability index is calculated only for the existing conditions due to the challenges in estimating future reliability. Additionally, the SB 1 Technical Performance Measurement Methodology Guidebook only requires this measure to be calculated for highways.

In the 2018 Level of Service Monitoring Report, Alameda CTC evaluated reliability using the Planning Time Index (PTI) and Buffer Time Index (BTI) for its corridor segments for the AM and PM peak periods.

Vehicle Planning Time Index

Planning Time Index (PTI) is computed as the 95th percentile travel time divided by the free-flow travel time (i.e., 95 percent of the surveyed trips will be shorter than planning time). The PTI represents the total travel time that should be planned when an adequate buffer time is included. The planning time index differs from the buffer index (which only measures the impacts of congestion) in that it includes typical delay as well as unexpected delay. [10]

To allow for comparison across different routes and different trip lengths, the PTI is a ratio of the 95th percentile travel time to the free-flow travel time. For example, if a trip takes 20 minutes in free-flow conditions, a planning time of 30 minutes will ensure on-time arrival in 95 percent of the cases, then the planning time index is 1.5.

$$Planning\ Time\ Index\ (PTI) = \frac{95th\ Percentile\ Travel\ Time}{Free\ Flow\ Travel\ Time}$$

Vehicle Buffer Time Index

BTI is used to express the extra travel time cushion that travelers must add to the average travel time when planning trips to ensure on-time arrival based on their knowledge of recurring variations like congestion. BTI is represented as a ratio of average travel time, calculated as follows:

$$Buffer\ Time\ Index = \frac{95th\ Percentile\ Travel\ Time - Average\ Travel\ Time}{Average\ Travel\ Time}$$

A higher BTI implies a greater departure of the 95th percentile travel time from the average travel time, and therefore, worse travel time reliability. The least reliable corridor segments are shown in **Table 5-12** using BTI as the primary metric categorized as follows:

[10] Federal Highway Administration. *Travel Time Reliability: Making It There On Time, All The Time, accessed from https://ops.fhwa.dot.gov/publications/tt_reliability/ttr_report.htm#:~:text=Thus%2C%20the%20planning%20time%20index,%C3%97%201.60%20%3D%2024%20minutes).*

Table 5-11: Reliability Index

Reliability	BTI Index
Reliable	< 25%
Mostly Reliable	25 – 50%
Less Reliable	50 – 100%
Unreliable	> 100%

Source: North Alameda County Core Connections Plan (NACCCP), 2022.

Table 5-12: Freeway Least Reliable Segments Planning Time Index and Buffer Time Index

Reliability Segment ID	Peak Period	Description	Segment Length (mile)	Planning Time Index	Buffer Time Index
N5	AM	I-238 EB from I-880 to I-580	2.6	2.9	0.9
N26	PM	I-880 SB from I-80 to SR 92	18.8	4	0.9
N6	AM	I-238 WB from I-580 to I-880	2.5	5.8	0.7

Source: Alameda CTC, Level of Service Monitoring Report, 2018.

I-238 westbound between I-580 and I-880 has a PTI of 5.8 during the AM peak period, which shows potential for significant delays as a result of non-recurring congestion and means that it can take up to 12 minutes to travel two miles. With a BTI of 0.7, this roadway segment is less reliable and will require an additional 70 percent buffer time to ensure on-time arrival.

Level of Travel Time Reliability

Level of travel time reliability (LOTTR) refers to the ratio of the 80th percentile travel time to the normal travel time (i.e., the 50th percentile occurring throughout a full calendar year) using data from FHWA's National Performance Management Research Data Set (NPMRDS). NPMRDS includes travel time data on the National Highway System (NHS), and LOTTR is used to assess the performance of the NHS. LOTTR data was obtained from Caltrans Travel Time Metrics.[11]

$$LOTTR = \frac{80th\ percentile\ travel\ time}{50th\ percentile\ travel\ time}$$

LOTTR is available for four time periods. However, for the CACCMCP, information for the morning (6:00 AM – 10:00 AM) and evening (4:00 PM – 8:00 PM) periods is included. The LOTTR is compared to the value to 1.5 (a federal threshold). If both morning and evening period LOTTR values are below the 1.5 threshold, the reporting segment is deemed to be reliable; if not, it is deemed to be unreliable. **Table 5-13** provides the LOTTR for CACCMCP freeway segments. It should also be noted that a value of closer to one (1) could also mean that the roadway segment observes regular congestion.

[11] Caltrans, Travel Time Metrics, accessed September 8, 2022, https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=0f811efc3ff344408d2c8fc36c922a89.

Table 5-13: Freeway Level of Travel Time Reliability

Roadway Segments	Segment Limit	Direction	LOTTR AM	LOTTR PM
I-880	Between I-980 and Hegenberger Road	EB	1.13	1.06
I-880	Between I-980 and Hegenberger Road	WB	**1.72**	1.3
I-880	Between Hegenberger Road and I-238	EB	1.05	1.14
I-880	Between Hegenberger Road and I-238	WB	**3.03**	1.1
I-238	Between I-580 and I-880	EB	1.14	1.32
I-238	Between I-580 and I-880	WB	1.16	1.24

Source: Caltrans Travel Time Metrics, 2019.
Notes: **Bold** represents unreliable segments.

Transit On-time Performance

On-time performance is the most common way for transit agencies to measure the reliability of their service. It is defined as the percentage of buses/trains that arrive at the transit stop no more than one minute before or five minutes after the scheduled time.

BART on-time performance data was obtained through the BART strategic plan indicators webpage and is shown in **Table 5-14**. BART's 2015 Strategic Plan had a target to increase customer on-time performance—or the percentage of riders who arrive at their destination no more than one minute before or five minutes after the scheduled time—to 92 percent.[12]

Within the study area, there are seven BART stations: Lake Merritt Station, Fruitvale Station, Coliseum Station, San Leandro Station, Bay Fair Station, Hayward Station, and South Hayward Station. On-time performance at each individual station is not available.

Table 5-14: BART On-time Performance

Route	Days	Trains Arriving On Time	Riders Arriving On Time
Systemwide	Weekdays	84%	90%
	Weekends	88%	94%

Sources: BART System Performance, 2017; Kittelson & Associates, Inc., 2022.

AC Transit bus on-time performance data was obtained through automated passenger counter (APC) and automatic vehicle location (AVL) for October 2019. Route 1T (Tempo) began service in August 2020, and therefore only limited data is available.

Table 5-15 provides on-time performance data for the AC Transit routes that serve the CACCMCP study area.

[12] BART *2015 Strategic Plan Framework* accessed September 7, 2022, https://www.bart.gov/kpi/performance.

Table 5-15: AC Transit On-time Performance

Route	Study Area Jurisdictions Served	Frequency	Major Destinations/BART Connection	On-time Performance
1T	Oakland and San Leandro	Weekdays – 10 mins	Uptown Oakland, Civic Center, Downtown San Leandro, and San Leandro BART	NA[1]
		Weekends – 30 mins		NA[1]
14	Oakland	Weekdays – 17 mins	Downtown Oakland and Fruitvale BART	62%
		Weekends – 30 mins		70%
62	Oakland	Weekdays – 19 mins	Lake Merritt BART	75%
		Weekends – 30 mins		74%
96	Oakland	Everyday – 30 mins	Alameda Point, Dimond District, and Lake Merritt BART	61%
45	Oakland	Weekdays – 20 mins	Eastmont Transit Center, Foothill Square, and Coliseum BART/Amtrak	74%
		Weekends – 40 mins		77%
34	Oakland, San Leandro, Ashland, Cherryland, and Hayward	Everyday – 1 hour	Hayward BART	50%
35	Oakland, San Leandro, and Ashland	Everyday – 1 hour	Bay Fair BART and San Leandro BART	80%
28	San Leandro, Ashland, and Hayward	Everyday – 1 hour	Hayward BART	55%
10	San Leandro, Ashland, Cherryland, and Hayward	Weekdays – 17 mins	Hayward BART	81%
		Weekends – 20 mins		81%
40	Oakland, San Leandro, and Ashland	Weekdays – 20 mins	Eastmont Transit Center and Bay Fair BART	62%
		Weekends – 30 mins		71%
99	Hayward	Weekdays – 20 mins	Hayward BART and South Hayward BART	74%
		Weekends – 30 mins		82%
41	Hayward	Everyday – 1 hour	Hayward BART and South Hayward BART	80%
93	San Leandro, Ashland, Cherryland, and Hayward	Everyday – 1 hour	Bay Fair BART and Hayward BART	64%

Sources: AC Transit, 2019; Kittelson & Associates, Inc., 2022.
Notes: [1] Tempo service, opened in August 2020, is not included in this analysis.

Level of Transit Delay

The level of transit delay performance metric is required if a transit agency identified in the list of transit agencies with General Transit Feed Specification Realtime (GTFS-RT) access is located within the CACCMCP study area.[13] To help attain this performance metric, the project team reached out to California Integrated Travel Project (Cal-ITP)[14] as suggested in the SB 1 Technical Performance Measurement Methodology Guidebook.

To calculate which routes would be considered within the CACCMCP study area, the routes with at least half of their stops within the corridor are filtered first. The data is then filtered for those trips to the subset of each trip from the last stop before entering the study area to the first stop after leaving the study area. As a result of this analysis, the following routes were identified: 801, 73, 10, 41, 45, 1T, 90, 840, and 40.

Schedule-Based Metric

The schedule-based metric is a daily average of the sum of median trip stop delays along the transit route. For each route trip for which the data is available, Caltrans examined the delay in comparison to the schedule at each stop, after subtracting any delay present as the trip entered the study area. Caltrans then took the median delay of all stops along the area and summed these medians to create the metric for each day. The final metric is a simple daily average of the daily metric for a nine-day period (April 30, 2022, to May 8, 2022). The schedule-based metric for the CACCMCP study area is **462 minutes**.

Speed-Based Metric

The speed-based metric is a daily average of the sum of delays for each trip traversing the transit route as compared to a reference speed of 16 miles per hour. For each corridor trip for which the data is available, Caltrans calculated the hypothetical time it would take for that trip to traverse the corridor at a speed of 16 miles per hour. The difference between the actual time it took for the trip to traverse the corridor and the hypothetical time is the speed-based delay for that trip and summed those delays to create the metric for each day. The final metric is a simple daily average of the daily metric for a nine-day period (April 30, 2022, to May 8, 2022). The speed-based metric for the CACCMCP study area provided is **4,820 minutes,** more than ten times the scheduled-based metric**.**

Figure 5-30 through **Figure 5-37** show AC Transit bus speeds with a map for both the morning peak and evening peak periods on June 1, 2022 (Wednesday). The routes are split into segments corresponding to the distance between two stops.

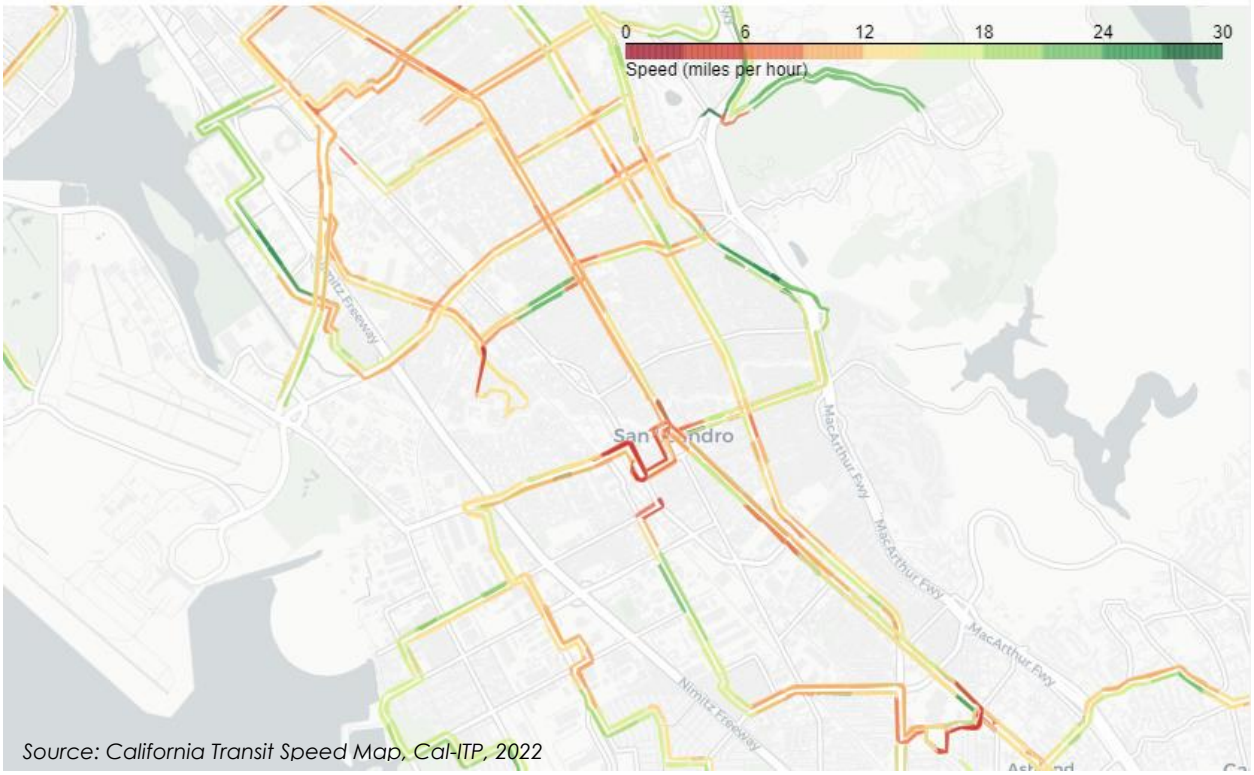
Route 1T (Tempo), the bus rapid transit system on International Boulevard/East 14th Street, currently operates at a speed ranging from 6 to 12 miles per hour. Tempo is equipped with bus-only lanes, transit priority signals, and pay before riding.

[13] List of agencies with GTFS-RT, accessed September 13, 2022, https://github.com/cal-itp/data-infra/blob/main/airflow/data/agencies.yml.
[14] Cal-ITP, https://dot.ca.gov/cal-itp.

Figure 5-30: Morning Peak Period Transit Speed (1 of 4)

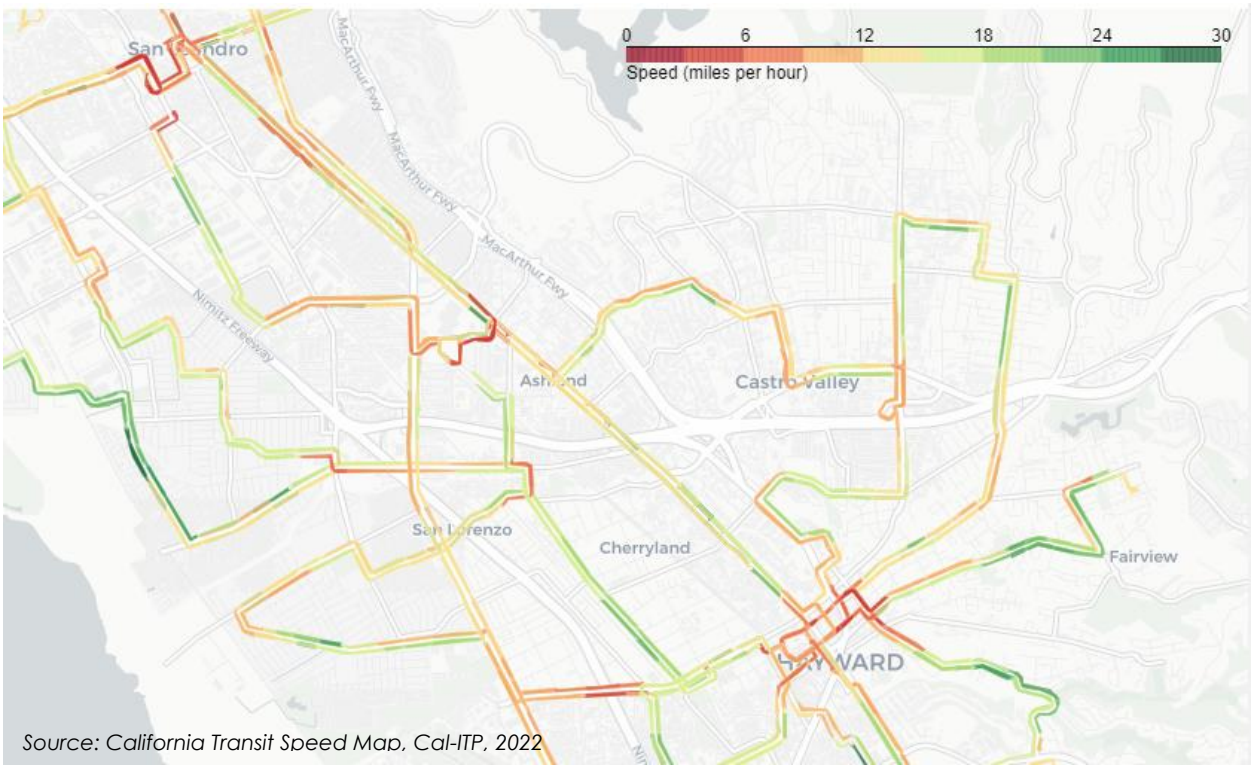
Source: California Transit Speed Map, Cal-ITP, 2022

Figure 5-31: Morning Peak Period Transit Speed (2 of 4)



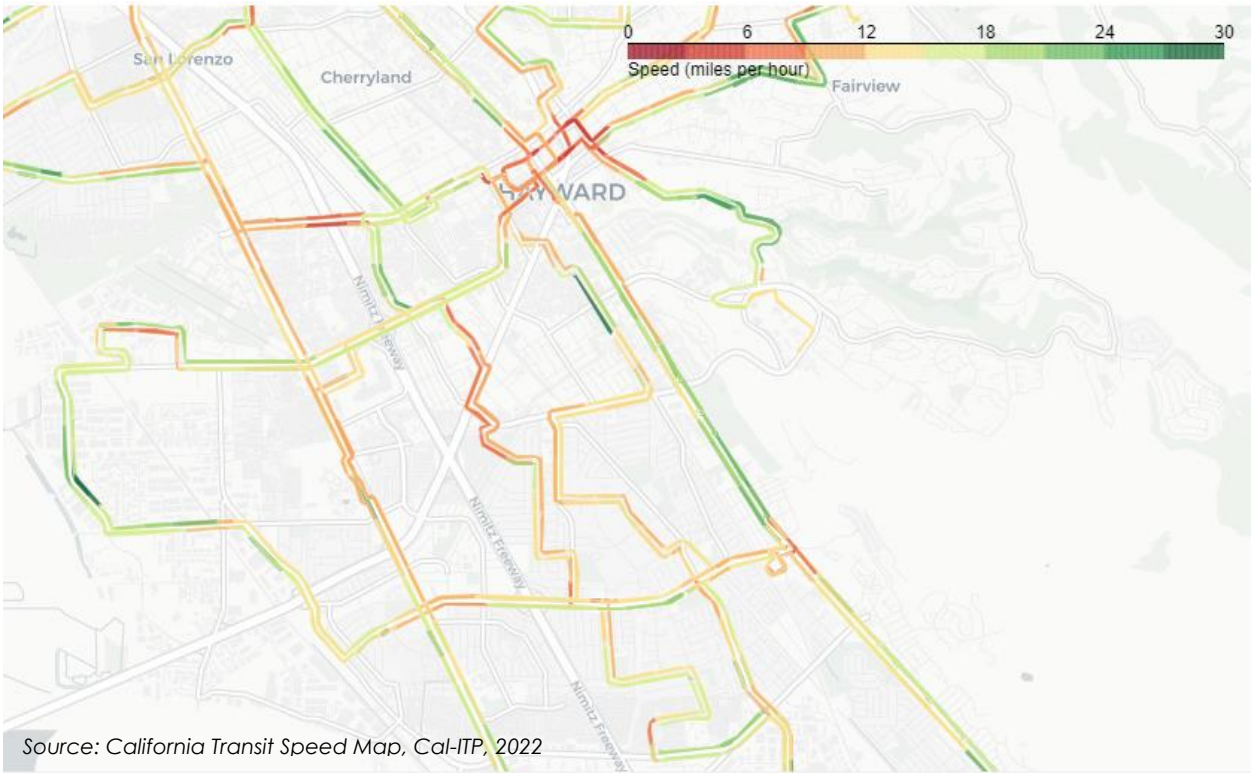
Source: California Transit Speed Map, Cal-ITP, 2022

Figure 5-32: Morning Peak Period Transit Speed (3 of 4)



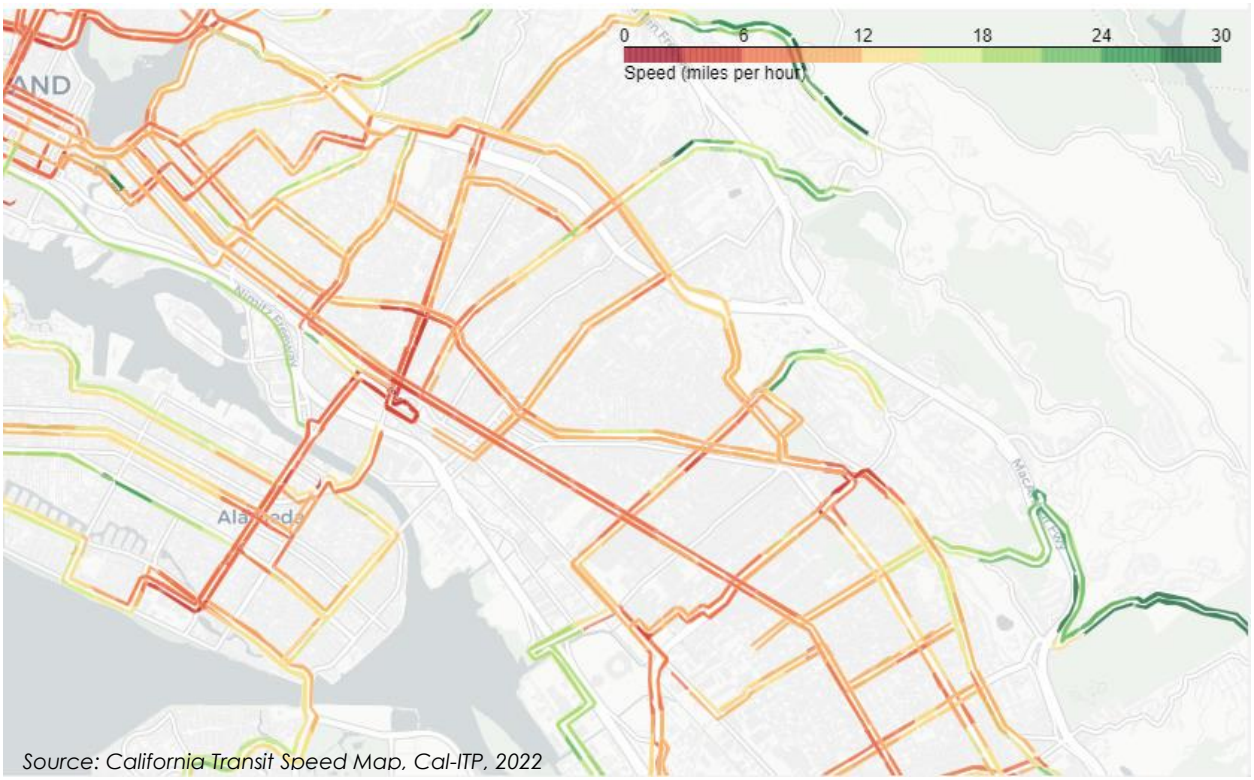
Source: California Transit Speed Map, Cal-ITP, 2022

Figure 5-33: Morning Peak Period Transit Speed (4 of 4)



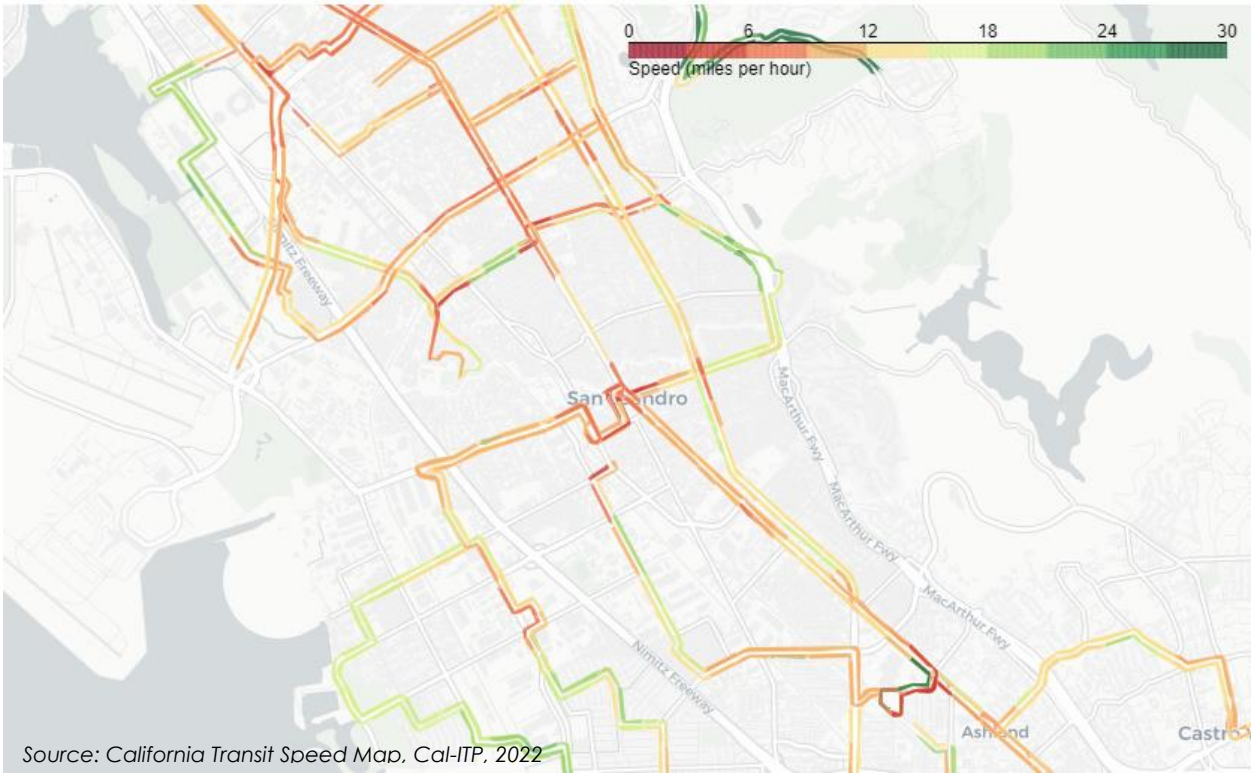
Source: California Transit Speed Map, Cal-ITP, 2022

Figure 5-34: Evening Peak Period Traffic Speed (1 of 4)



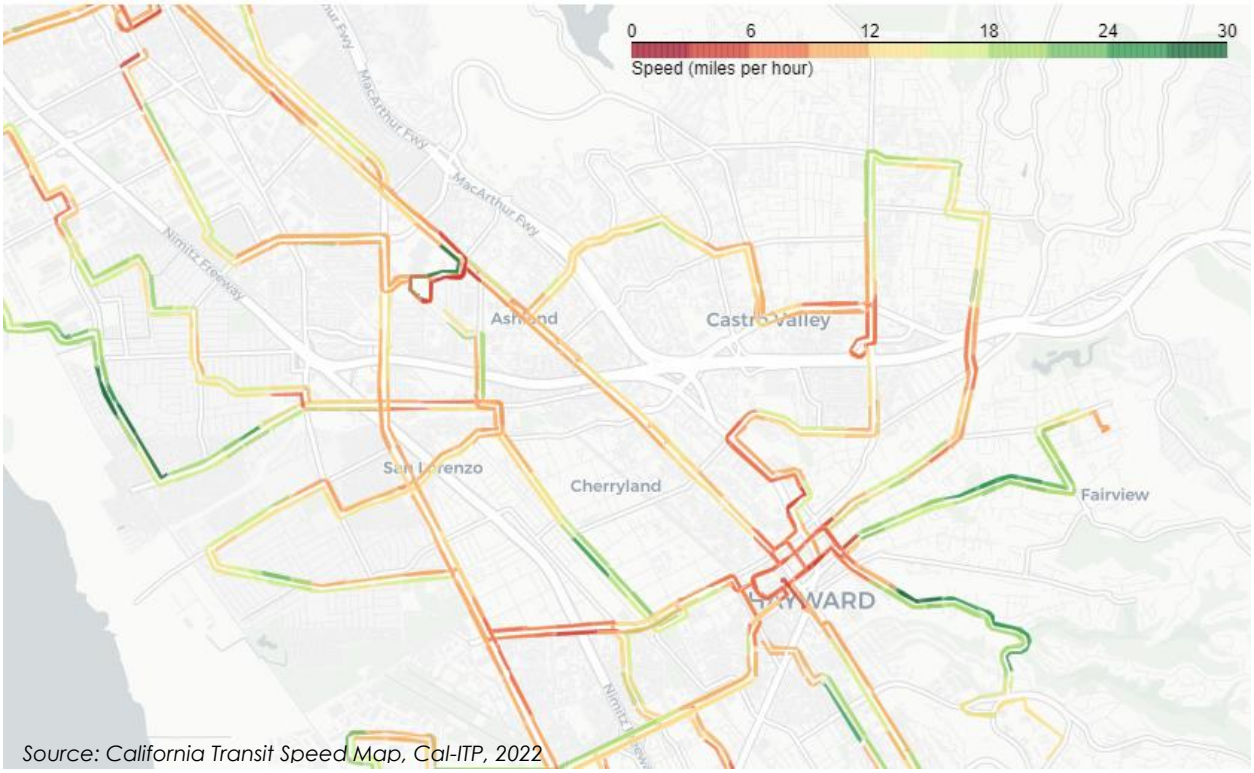
Source: California Transit Speed Map, Cal-ITP, 2022

Figure 5-35: Evening Peak Period Traffic Speed (2 of 4)



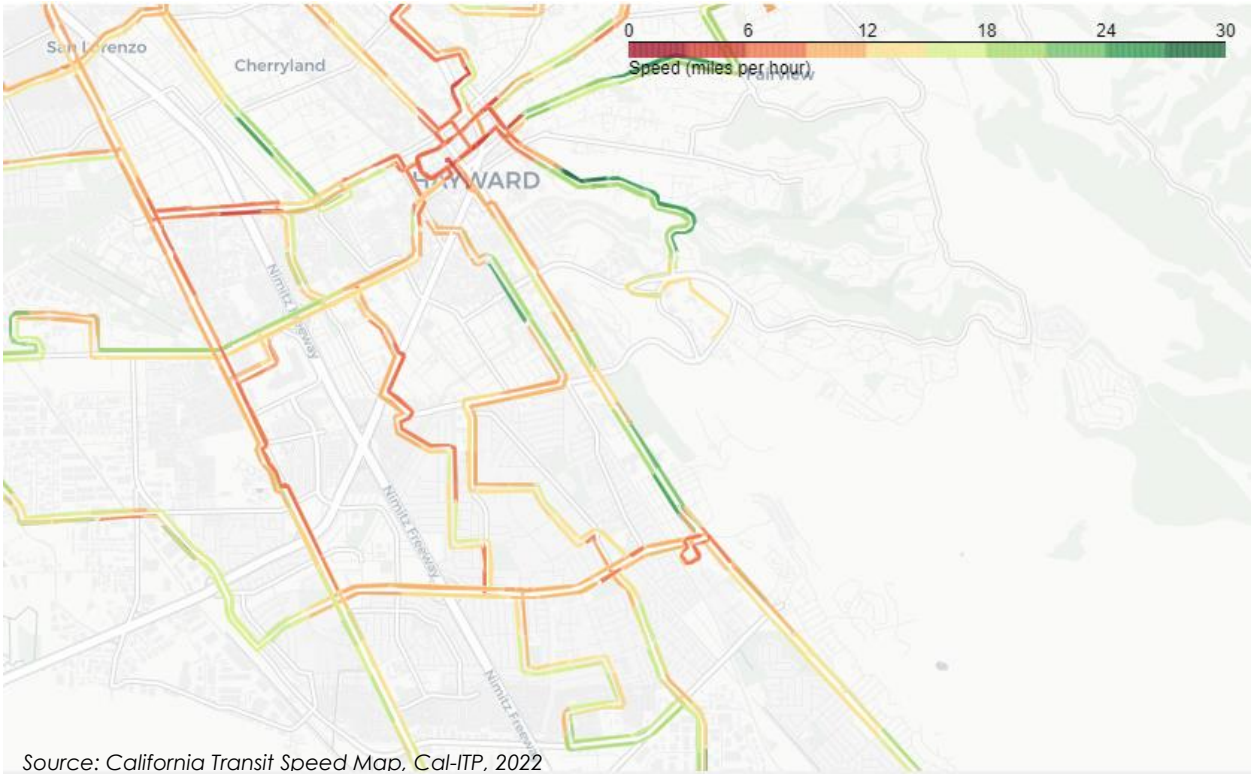
Source: California Transit Speed Map, Cal-ITP, 2022

Figure 5-36: Evening Peak Period Traffic Speed (3 of 4)



Source: California Transit Speed Map, Cal-ITP, 2022

Figure 5-37: Evening Peak Period Traffic Speed (4 of 4)



Source: California Transit Speed Map, Cal-ITP, 2022

5.4 Sustainability Performance

The sustainability profile focuses on several performance measures intended to assess a transportation network's impact on the environment. Analysis includes car usage within the CACCMCP study area using vehicle miles traveled and vehicle hours traveled as measures. Access to alternative forms of transportation was assessed by evaluating the miles of first- and last-mile connections to major transit stops, the miles of bikeway facilities within the study area, the percentage of trips taken by residents within the neighborhood, and the total population within priority development areas. Finally, the impact of existing and future emissions was evaluated.

Vehicle Miles Traveled (VMT)

VMT is directly related to greenhouse gas emissions. It is calculated by summating the number of miles traveled by each vehicle throughout each area and regardless of direction. VMT was analyzed for the subareas, CACCMCP study area, Alameda County, and Bay Area using the Alameda CTC Countywide Travel Demand Model. The results of these calculations are shown **Table 5-16** and **Figure 5-38**.

It is expected that VMT will increase for the CACCMCP study area by 15 percent from 2020 to 2040. Of the subareas, the Oakland subarea increases the most by 17 percent. The study area overall is expected to increase less than the projected increases of Alameda County and the entire Bay Area, which are estimated to increase VMT by 17 percent and 18 percent, respectively.

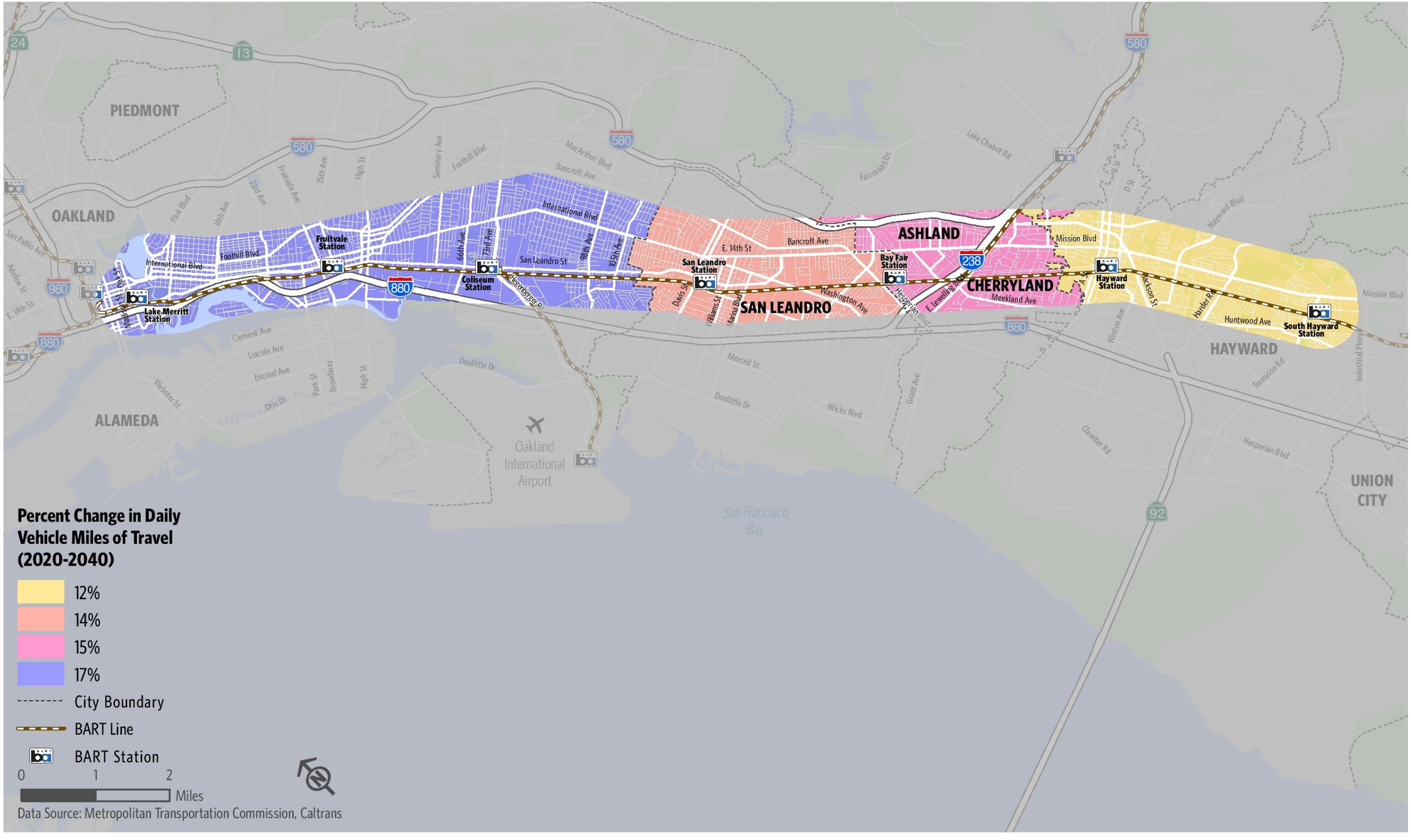
Table 5-16: Areawide Daily Vehicle Miles Traveled

Area Classification	Existing (2020)	Future (2040)	Change
Oakland Subarea	4,326,211	5,062,499	17%
San Leandro Subarea	1,846,670	2,102,105	14%
Unincorporated Subarea	1,212,915	1,400,301	15%
Hayward Subarea	1,910,689	2,131,348	12%
Subtotal CACCMCP Study Area	***9,296,484***	***10,696,251***	**15%**
Other Alameda County	31,118,245	36,893,493	19%
Total Alameda County	*49,711,214*	*58,285,996*	17%
Total Bay Area	184,046,641	217,598,345	18%

Sources: Alameda CTC Countywide Travel Demand Model; Kittelson & Associates, Inc., 2022.

As stated above, this analysis presents a comparison between year 2020 and year 2040 conditions. Plan Bay Area 2050 analyzes year 2050 land use and transportation networks and includes a number of strategies that are not included in this analysis.

Figure 5-38: Percent Change in Daily Vehicle Miles of Travel (2020-2040)



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Vehicle Hours of Travel

While VMT is a measure of distance, vehicle hours traveled (VHT) is the sum of the total number of hours traveled by each vehicle within a given area and can be an indicator of increasing traffic congestion. Likewise, VHT calculates data from the Alameda CTC Countywide Travel Demand Model. As shown in **Table 5-17**, the CACCMCP study area is projected to increase the VHT by 26 percent from 2020 to 2040, with both the Oakland and Hayward subareas having the highest increases among subareas at 28 percent. The increase in VHT for the study area is forecast to be 10 percent less compared to Alameda County and 8 percent less compared to the entire Bay Area.

Table 5-17: Areawide Vehicle Hours of Travel

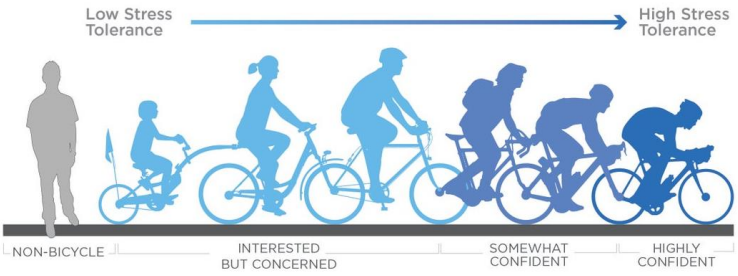
Area Classification	Existing (2020)	Future (2040)	Change
Oakland Subarea	112,605	143,715	28%
San Leandro Subarea	47,657	57,669	21%
Unincorporated Subarea	26,398	33,052	25%
Hayward Subarea	55,979	71,659	28%
Subtotal CMCP Study Area	***242,639***	***306,096***	**26%**
Other Alameda County	927,663	1,263,450	36%
Total Alameda County	*1,412,941*	*1,875,642*	33%
Total Bay Area	5,373,739	7,225,628	34%

Sources: Alameda CTC Countywide Travel Demand Model; Kittelson & Associates, Inc., 2022.

Miles of Bikeway Network Facilities

The total number of miles of bikeway is a metric that evaluates how much bike infrastructure is available and contributes to cycling becoming a realistic alternative to driving. Within the CACCMCP study area, bike facilities are built and maintained by several agencies including the Cities of Oakland, San Leandro and Hayward, Alameda County, Metropolitan Transportation Commission and Caltrans. Together, these agencies have developed an existing network that comprises a total of 138 miles of bikeways as shown in **Table 5-18** and **Figure 5-39** to **Figure 5-42**.

Planned facilities within the study area, such as the East Bay Greenway Urban Trail, will help expand the network, while there are plans for other facilities to upgrade existing facilities to increase the safety and comfort of cyclists. Planned facilities are also shown in **Figure 5-39** to **Figure 5-42**.



Within the broader community, there is a spectrum of types of bicyclists with varying levels of comfort and skill. One method for categorizing bicyclists is based on bicyclist confidence and tolerance of traffic stress, but due to the data limitation, this analysis was not completed as a part of the CACCMCP. However, local bicycle and pedestrian plans include level of traffic stress analysis. The planned facilities should be designed to make cycling on the CACCMCP study area less stressful.

Table 5-18: Miles of Existing and Planned Bikeway Facilities

Bikeway Classification	Existing (miles)	Planned (miles)
Class I – Multi-use Path	9.25	17.91
Class II – Bike Lane	77.36	10.09
Class III – Bike Route	48.79	27.11
Class IV – Separated Bike Lane	2.95	17.36
Total	**138.35**	**72.47**

Sources: Alameda Countywide Active Transportation Plan, 2019; Oakland Bike Plan, 2019; San Leandro Bicycle and Pedestrian Master Plan, 2018; Hayward Bike and Pedestrian Master Plan, 2020; and Alameda County Bicycle and Pedestrian Plan for Unincorporated Areas, 2019; Kittelson & Associates, Inc., 2022.

Miles of First/Last Mile Connections to Major Transit Stations

To encourage the use of transit, riders must be able to access multimodal transportation options to and from the station safely and comfortably. Many transit trips start as walking and biking trips to the station—these first- and last-mile connections are critical for the vitality of the transit network. To spatially understand these connections to the BART Station within the CACCMCP study area, 10-minute walk and bike sheds were analyzed and are shown in **Figure 5-39** to **Figure 5-42**.

Although walk sheds represent reasonable walking distances, they do not necessarily represent areas that are comfortable or safe to walk through. The Alameda Countywide Active Transportation Plan (2019) uses additional designations and considers, for instance, Lake Merritt Station to be a "Walker's Paradise" while the Coliseum Station is considered "Somewhat Walkable," noting the car-centric design surrounding that station.

Most of the CACCMCP study area is within biking distance to a BART Station (see **Figure 5-39** to **Figure 5-42**). However, bike network quality and access to these stations vary. The Lake Merritt Station has several direct connections to the surrounding dense bike network of existing Class II bikeways, with additional upgrades and connections planned in the surrounding area. Fruitvale Station also has several existing bikeways connecting to the bike network, but the network is less dense compared to Lake Merritt Station in Downtown Oakland. The Coliseum, San Leandro, Bay Fair, Hayward, and South Hayward Stations all lack direct bike connections to the surrounding bike network even though they all have a bikeway within proximity to the station. All stations within the study area have at least one plan to add a direct connection to the surrounding bike

network—one being the East Bay Greenway, which will install bike infrastructure between the main corridor (East 12th Street, International Boulevard, East 14th Street, and Mission Boulevard) to the main streets accessing all BART stations within the study area.

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Figure 5-39: 10-minute Walking and Biking Sheds to BART Stations within CACCMCP Study Area (Page 1 of 4)

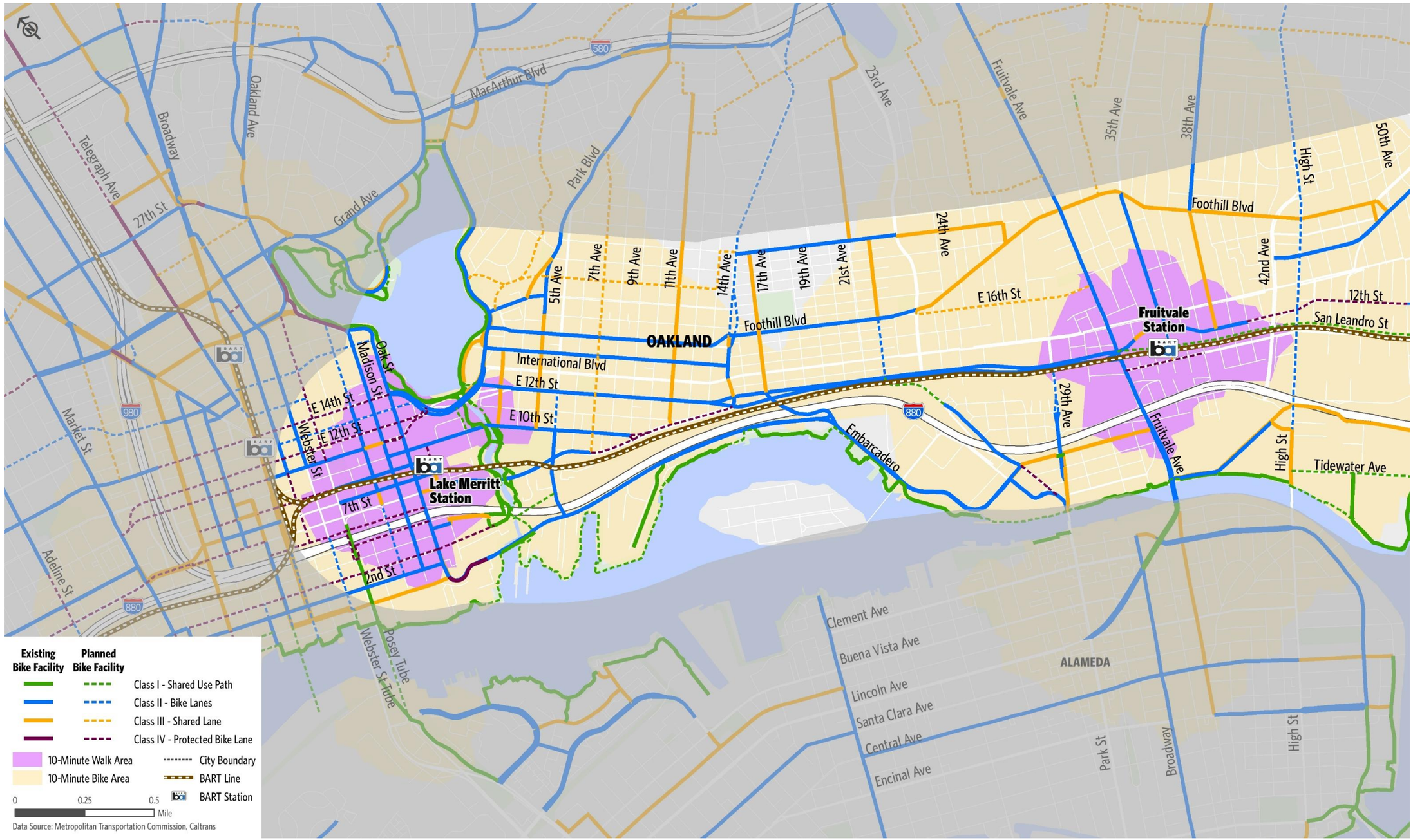


Figure 5-40: 10-minute Walking and Biking Sheds to BART Stations within CACCMCP Study Area (Page 2 of 4)

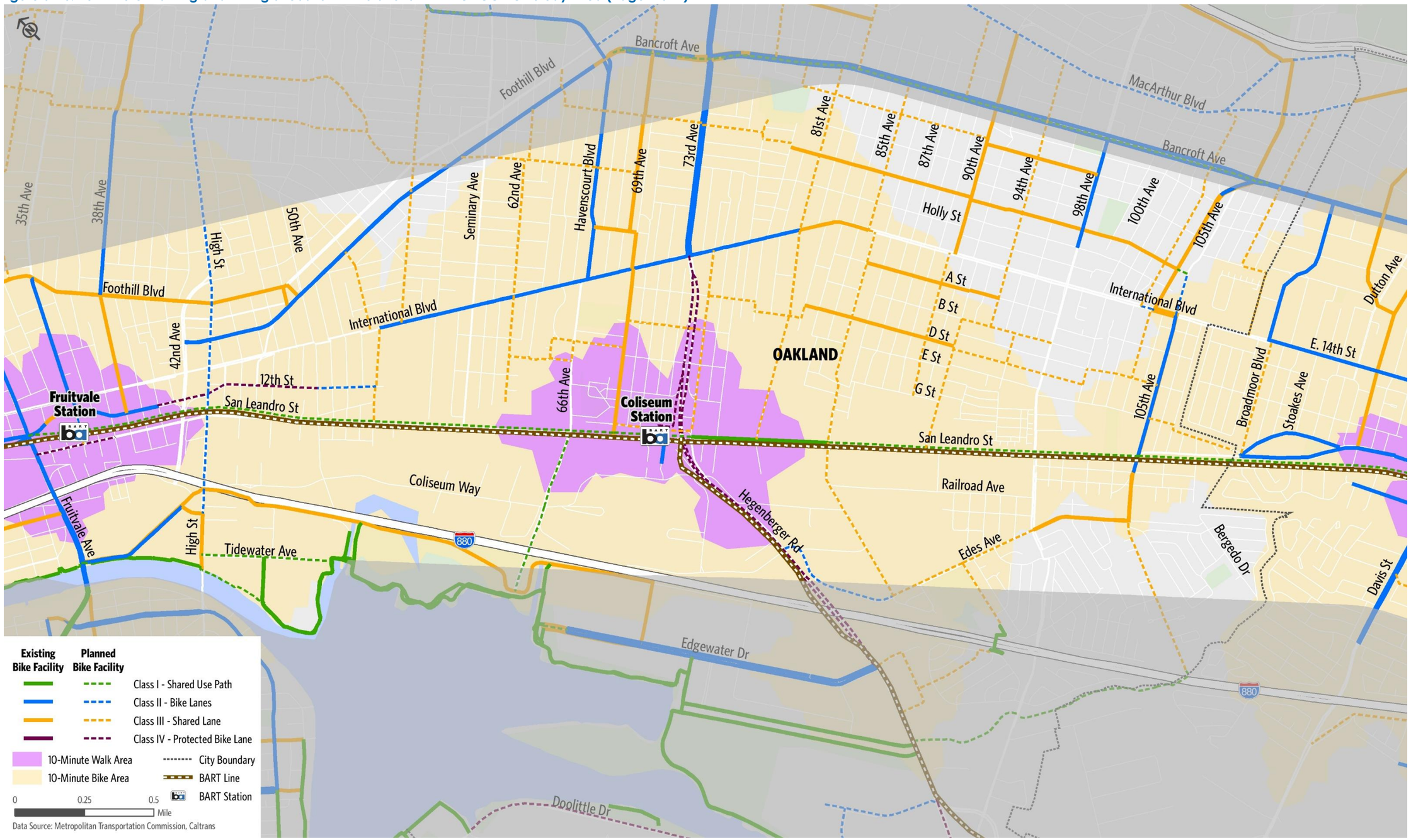


Figure 5-41: 10-minute Walking and Biking Sheds to BART Stations within CACCMCP Study Area (Page 3 of 4)

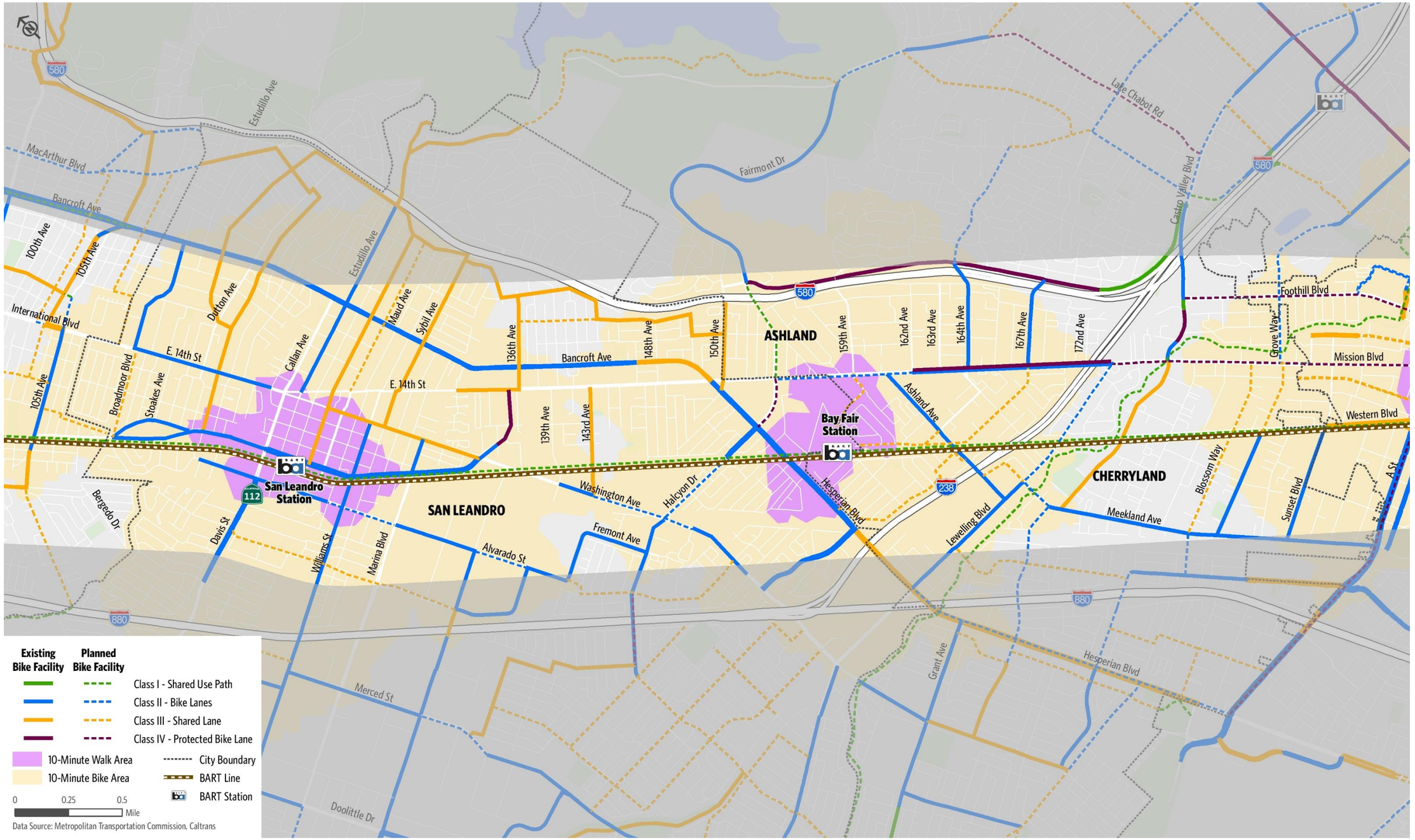
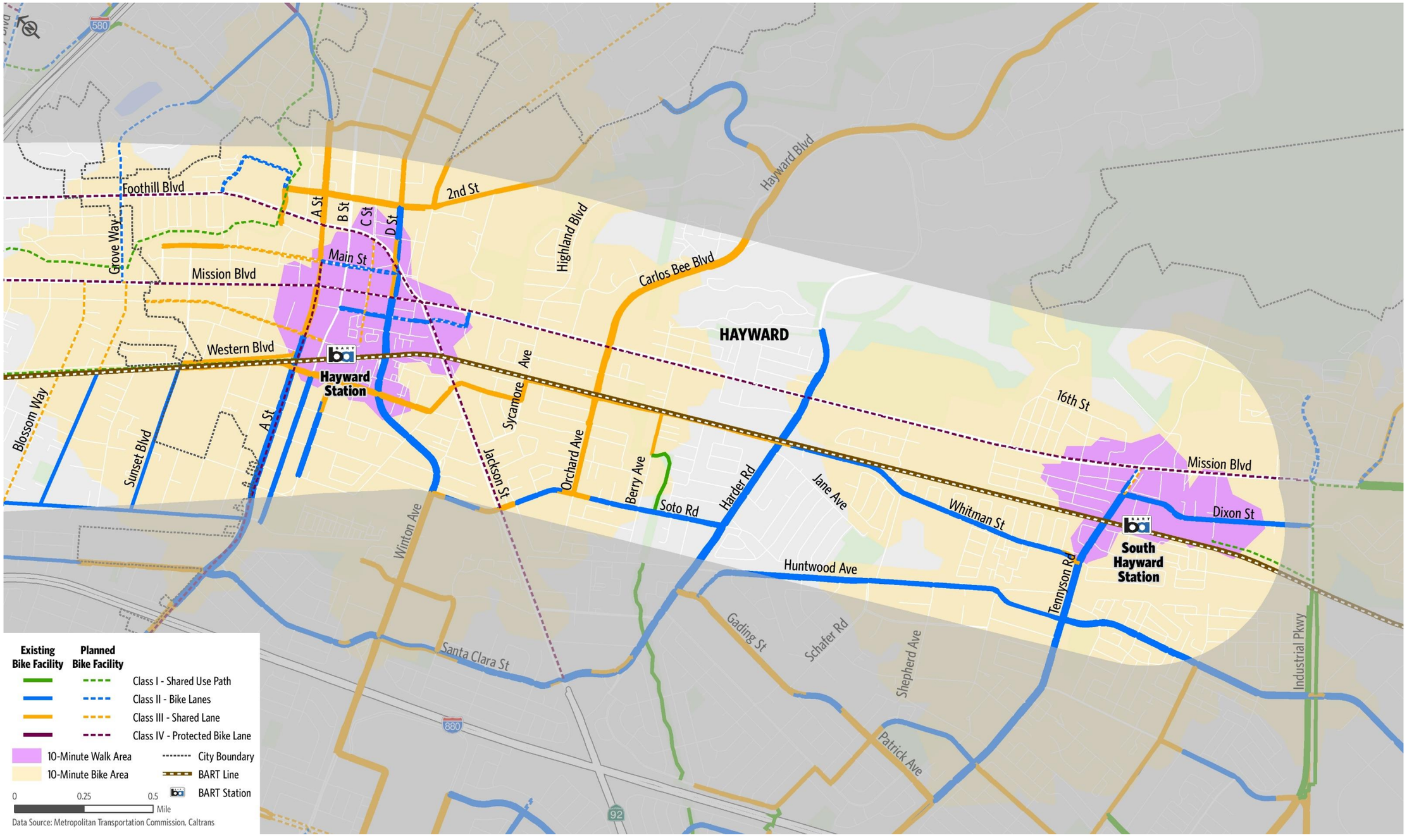


Figure 5-42: 10-minute Walking and Biking Sheds to BART Stations within CACCMCP Study Area (Page 4 of 4)



Population in Priority Development Areas

Transit-rich Priority Development Areas (PDAs) are defined as locations within a half-mile of a rail station, a ferry terminal with bus or rail service, or a bus stop with service frequencies of 15 minutes or less. They can also be areas with a planned rail, ferry, or bus stop that would meet the aforementioned criteria. Transit-rich PDAs are planned for new mixed-use developments that help residents' shift from car-use to walking, biking, and transit. The more residents who live in these developing areas, the greater the number of trips that can be realistically shifted to alternative modes. The following analysis considers the existing population in the CACCMCP study area and Alameda County that live within transit-rich PDAs as a sustainability measure.

To estimate the population within transit-rich PDAs, Census Block Groups were spatially joined with 2019 American Communities Survey (ACS) population data. If the Census Block Group overlapped with transit-rich PDAs that are within the area of inquiry, its population was added to the total population. This process was completed both for the CACCMCP and Alameda County with results shown in **Table 5-19**. 62.8 percent of the population of the CACCMCP study area live within a transit-rich PDA, whereas 45.9 percent of Alameda County's population actually lives within one.

Table 5-19: Population within Transit-rich PDAs

Area Classification	Total Population	Population in Transit-rich PDAs	Share of Population in Transit-rich PDAs
CACCMCP Study Area	**348,227**	**218,833**	**62.8%**
Total Alameda County	*1,671,329*	*766,572*	*45.9%*

Note: Total population for the CACCMCP study area was estimated by adding the ACS populations from Census Block Groups that intercepted with the study area and manually adjusting to provide the best coverage. To estimate the population in Transit Rich PDAs, Census Block Groups were selected whose centroid was in the CACCMCP study area and Transit Rich PDAs.

Neighborhood Trips

The purpose of this neighborhood trips performance assessment is to find the number of potential short trips that could be transferred to walking (less than a half-mile) and bicycling (less than three miles). The information was extracted from the Alameda CTC Countywide Travel Demand Model.

Table 5-20 shows that around 123,000 out of over 2 million total trips (5.9 percent) within the CACCMCP study area are walkable, and over 1 million out of over 2 million total trips (52.1 percent) are bikeable under existing conditions. Under future (2040) conditions, over 147,000 out of nearly 2.5 million total trips (6 percent) are walkable, and over 1.3 million out of nearly 2.5 million total trips (53.9 percent) are bikeable. The increase in number of walkable and bikeable trips in the future is potentially due to more in-fill and mixed-use development.

Table 5-20: Areawide Potential Walkable and Bikeable Trips

	Oakland Subarea	San Leandro Subarea	Unincorporated Subarea	Hayward Subarea	Corridor Study Area	Alameda County
Existing (2020)						
All Trips	1,160,385	351,125	191,836	367,302	2,070,647	9,269,039
Walkable Trips <= 0.5 miles	63,945	21,035	12,918	25,277	123,175	579,486
Percent	**5.5%**	**6.0%**	**6.7%**	**6.9%**	**5.9%**	**6.3%**
Bikeable Trips <= 3.0 miles	614,054	181,177	99,516	185,055	1,079,803	4,411,134
Percent	**52.9%**	**51.6%**	**51.9%**	**50.4%**	**52.1%**	**47.6%**
Future (2040)						
All Trips	1,436,890	407,008	211,026	402,648	2,457,572	10,762,743
Walkable Trips <= 0.5 miles	80,035	26,013	14,346	27,481	147,875	700,325
Percent	**5.6%**	**6.4%**	**6.8%**	**6.8%**	**6.0%**	**6.5%**
Bikeable Trips <= 3.0 miles	790,461	220,608	109,703	203,292	1,324,064	5,224,595
Percent	**55.0%**	**54.2%**	**52.0%**	**50.5%**	**53.9%**	**48.5%**

Sources: Alameda CTC Countywide Travel Demand Model; Kittelson & Associates, Inc., 2022.

Air Quality and Emissions

Greenhouse gas (GHG) emissions and pollutants were calculated using the California Air Resources Board Emission Factor (EMFAC 2021). Emissions are calculated using VMT and speed data where lower speeds and vehicle delay can lead to higher GHG emissions even though travel distances may be short. The criteria pollutants evaluated include nitrogen dioxide (NOx), sulfur oxides (SOx), and particulate matter 2.5 (PM 2.5), while carbon dioxide (CO2) is the only GHG evaluated. The reduction observed in the future (2040) conditions is mostly due to more fuel-efficient vehicles.

Table 5-21: Existing and Future Pollutants

Area Classification	CO2 Tons			NOx (pounds)			SOx (Pounds)			PM 2.5 (Pounds)		
	Existing (2020)	Future (2040)	% Change	Existing (2020)	Future (2040)	% Change	Existing (2020)	Future (2040)	% Change	Existing (2020)	Future (2040)	% Change
Oakland Subarea	2,096,965	1,721,902	-18%	2,619,452	886,646	-66%	129,890	105,553	-19%	82,985	29,555	-64%
San Leandro Subarea	895,102	714,987	-20%	1,118,129	368,163	-67%	55,444	43,829	-21%	35,423	12,272	-65%
Unincorporated Subarea	587,914	476,283	-19%	734,401	245,249	-67%	36,417	29,196	-20%	23,266	8,175	-65%
Hayward Subarea	926,133	724,933	-22%	1,156,891	373,284	-68%	57,367	44,439	-23%	36,651	12,443	-66%
Subtotal CACCMCP Study Area	4,506,113	3,638,104	-19%	5,628,873	1,873,341	-67%	279,118	223,017	-20%	178,325	62,445	-65%
Other Alameda County	15,083,373	12,548,544	-17%	18,841,600	6,461,526	-66%	934,294	769,229	-18%	596,910	215,384	-64%
Total Alameda County	24,095,599	19,824,753	-18%	30,099,345	10,208,209	-66%	1,492,529	1,215,263	-19%	953,561	340,274	-64%
Total Bay Area	89,209,531	74,011,492	-17%	111,437,297	38,110,174	-66%	5,525,816	4,536,925	-18%	3,530,383	1,270,339	-64%

Sources: Alameda CTC Countywide Travel Demand Model; California Air Resources Board, EMFAC, 2021; Kittelson & Associates, Inc., 2022.

5.5 Equity Performance

The purpose of this section is to analyze the existing conditions for equity communities in the CACCMCP study area with the intention of shedding light on key equity issues and helping Alameda CTC work toward a corridor where everyone has equitable and safe access to transportation options that connect them to opportunities like jobs, healthcare, education, and community resources. Equity communities are defined in this CACCMCP using two designations – Equity Priority Communities (EPCs) and Disadvantaged Communities (DACs), as explained in Chapter 3.

This equity profile analyzes the outputs from the safety, mobility, sustainability, and reliability performance indicators in the EPC census tracts, DAC census tracts, and the census tracts that are designated as both EPCs and DACs. EPCs and DACs differ in their derivations: EPCs are designated based on demographic information, and DACs are designated based mostly on the presence of pollution in communities. Previous CMCPs have relied on the DAC designations for their equity profile so it is included here for consistency. MTC's EPC designation presents a new opportunity to bring a more detailed and localized dataset to the CACCMCP effort and was included in this analysis to ensure all potential equity issues were taken into consideration through the CMCP process. **Figure 5-43** through **Figure 5-46** show where those designations are located within the CACCMCP study area at the census tract level.

Figure 5-43 through **Figure 5-46** and **Table 5-22** reveal that almost the entire CACCMCP study area (76.34 percent) is designated as an EPC, while communities that are widely recognized as disadvantaged locally—Ashland and Cherryland—are left out of the DAC designation, illustrating one of the key reasons that the equity profile includes both designations in its analysis.

Table 5-22: Study Area Census Tracts Designated as EPC, DAC, Both EPC and DAC, and Total EPC/DAC

	EPC Census Tracts	DAC Census Tracts	Both EPC and DAC Census Tracts	Total EPC/DAC Census Tracts
Percent of CACCMCP study area	76.34%	37.28%	36.84%	76.78%

Source: HNTB, 2022.

Figure 5-43: Census Tracts Designated as Both EPCs and DACs (1 of 4)

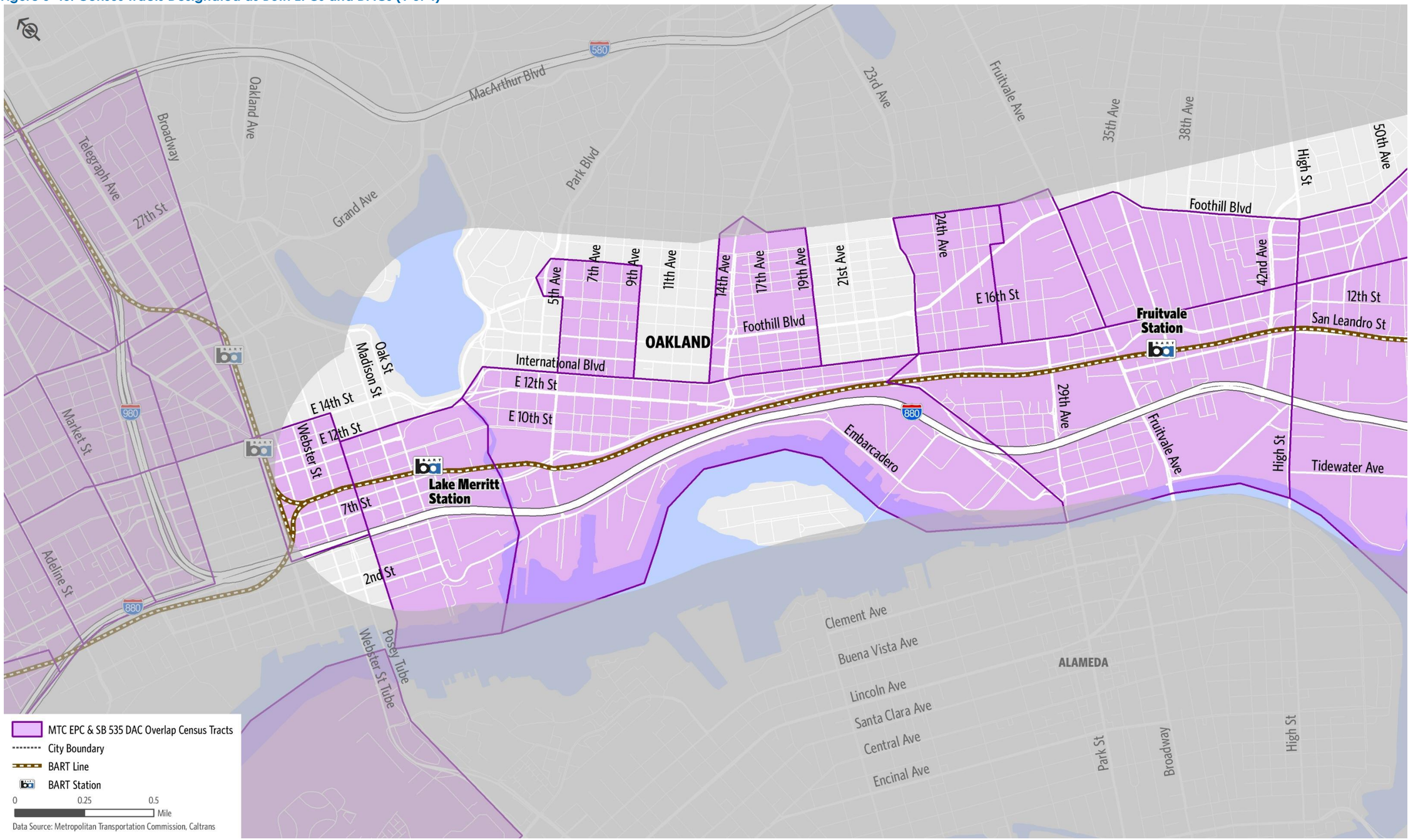


Figure 5-44: Census Tracts Designated as Both EPCs and DACs (2 of 4)

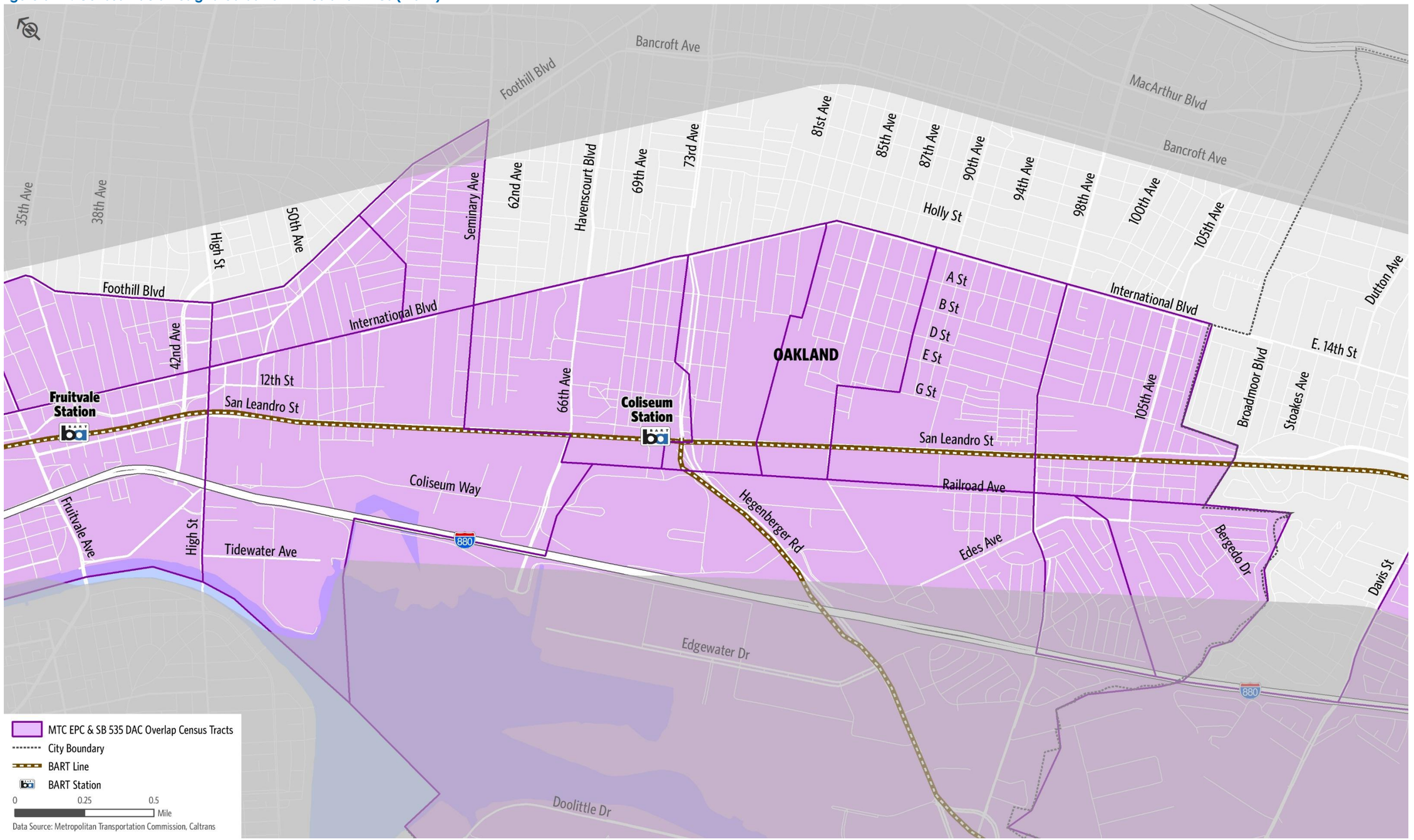


Figure 5-45: Census Tracts Designated as Both EPCs and DACs (3 of 4)

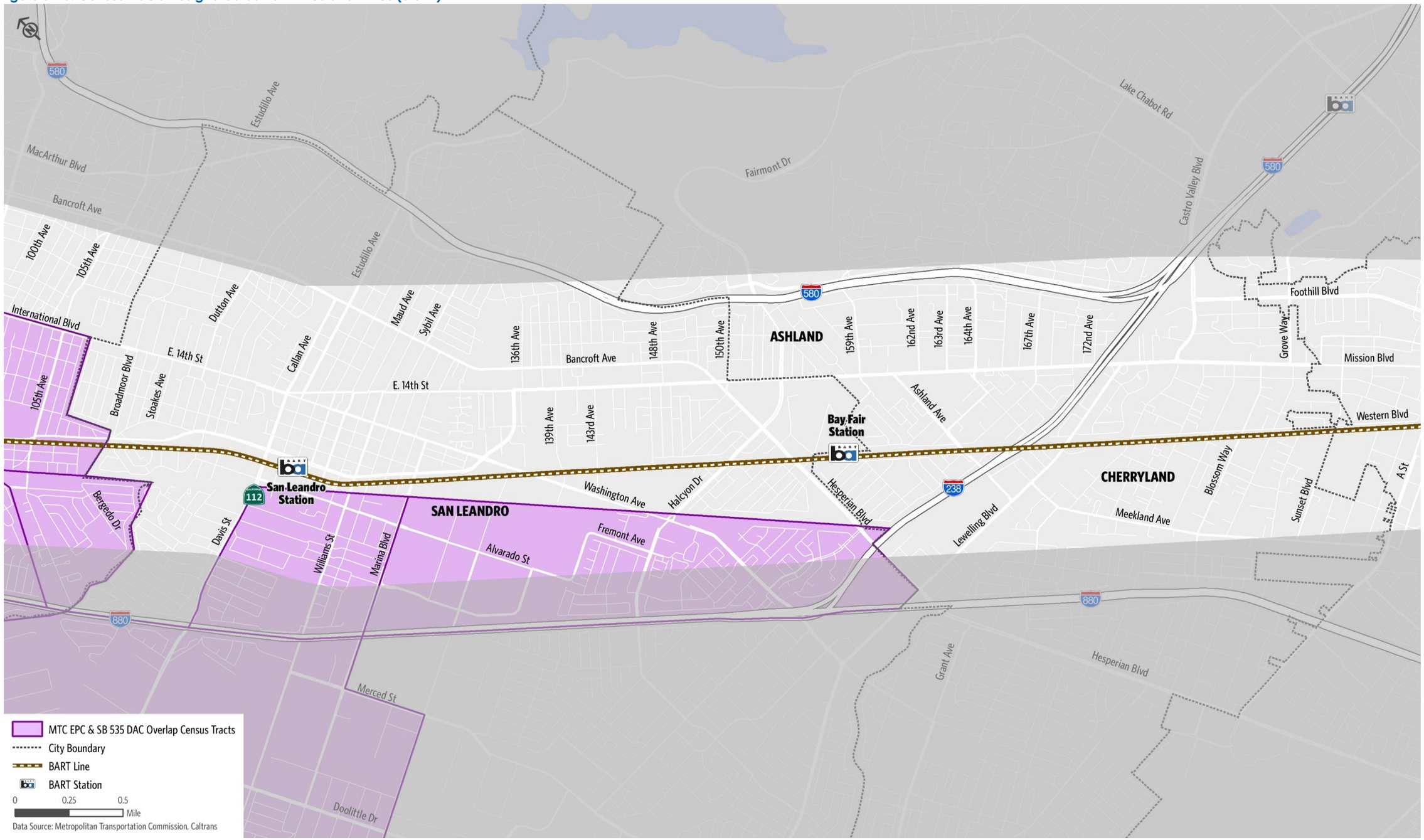
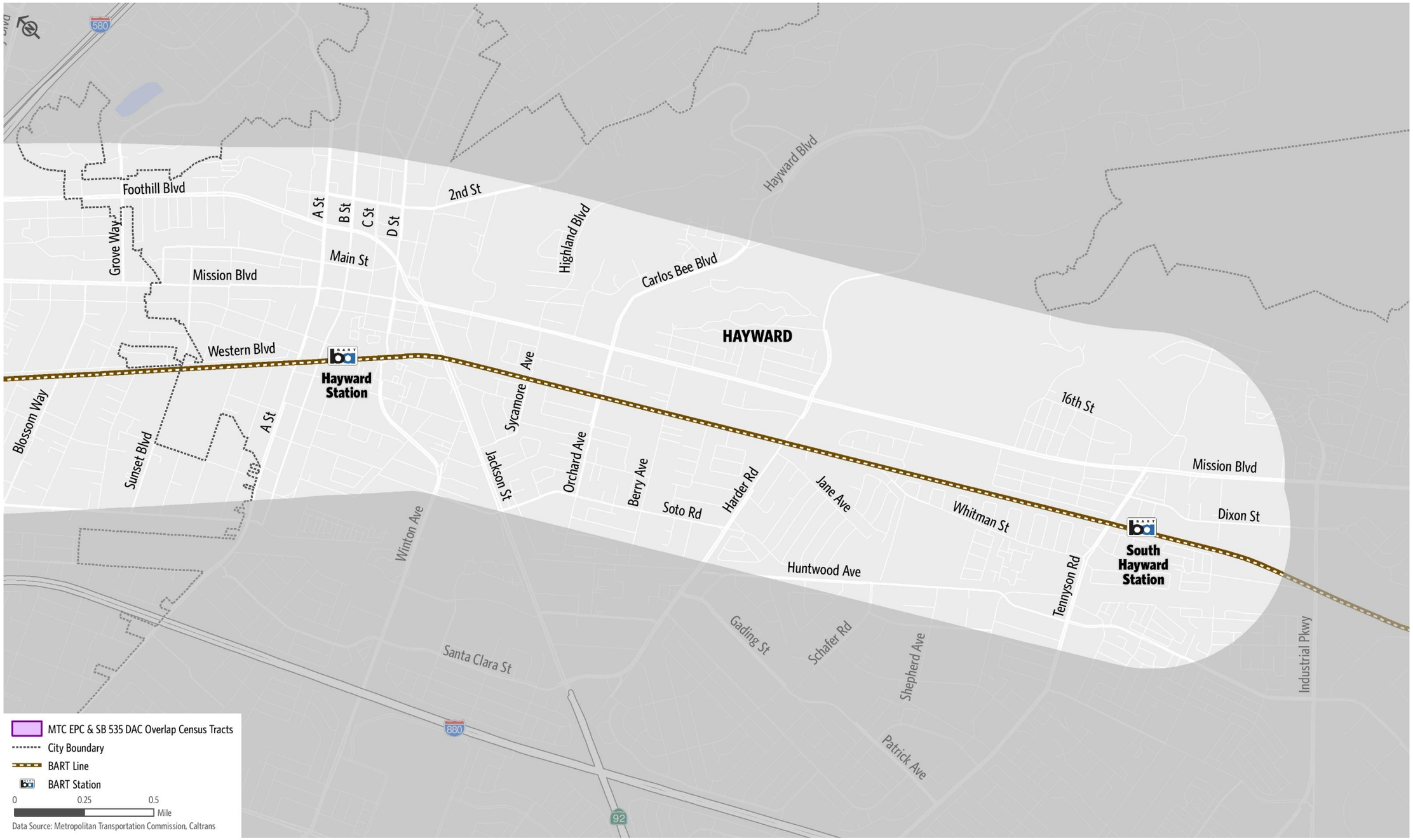


Figure 5-46: Census Tracts Designated as Both EPCs and DACs (4 of 4)



Safety Performance

Safety within transportation systems is a critical indicator of quality of life in communities. This section explores the existing safety conditions for equity communities in the study area. Collision analysis concluded that pedestrians are the most vulnerable users in the CACCMCP study area, with the highest rates of fatalities and severe injuries. These results support prioritizing safety projects.

The High Injury Network (HIN) dataset is an important tool for understanding which communities are facing disproportionate burdens related to active transportation safety. **Table 5-23** details where the HIN network intersects with the CACCMCP study area and the EPCs and DACs. The analysis shows that most of the CACCMCP study area falls within the HIN, and a high percentage of HIN segments are located in EPCs (34 percent) and DACs (39 percent).

Table 5-23: CACCMCP Primary Corridors and Major Connections within the HIN

	Study Area Overall	EPC Census Tracts	DACs Census Tracts	Both EPC and DAC Census Tracts	Total EPC/DAC Census Tracts
Percent of CACCMCP primary corridors and major connections that are part of HIN	34%	34%	39%	39%	35%

Sources: HNTB, 2022; Kittelson & Associates, Inc., 2022.

Understanding where fatalities and serious injuries occur among bicyclists and pedestrians can help guide appropriate planning interventions to address challenges in the built environment that may be contributing to these issues. **Figure 5-47** through **Figure 5-50** show locations of bicycle and pedestrian fatalities and serious injuries within the CACCMCP study area. Clusters of fatalities appear around Hayward, Bay Fair, and Lake Merritt BART Stations, suggesting the need for access-related projects. With few exceptions, all bicycle and pedestrian fatalities within the study area have occurred in an EPC or a DAC. A disproportionate number of pedestrian serious injuries have occurred along East 14th Street/International Boulevard, particularly within the Oakland subarea. Almost all serious injuries within the study area are located in an EPC or DAC.

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Figure 5-47: Bicycle and Pedestrian Fatality and Serious Injuries Locations within the CACCMCP Study Area (1 of 4)

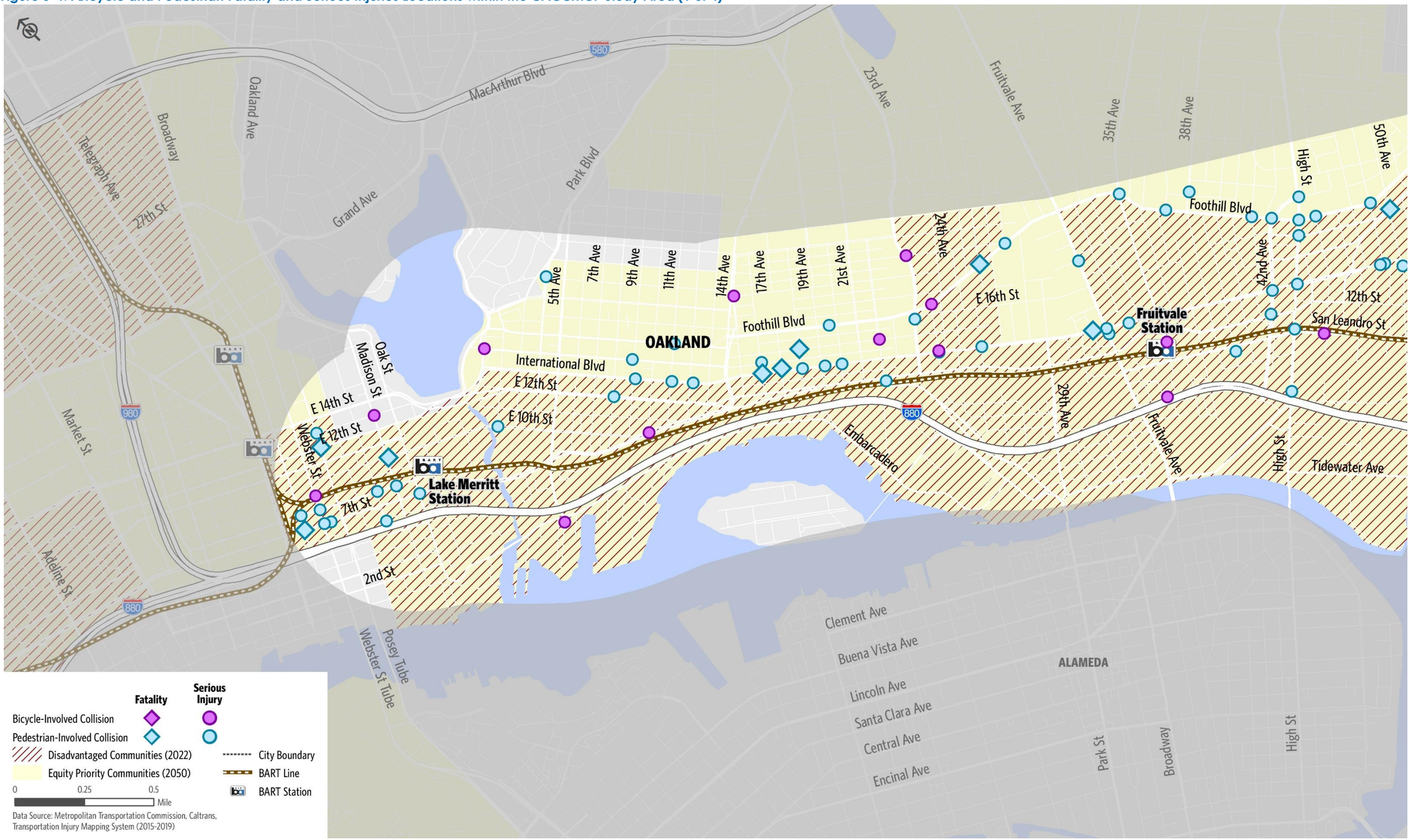

Figure 5-48: Bicycle and Pedestrian Fatality and Serious Injuries Locations within the CACCMCP Study Area (2 of 4)

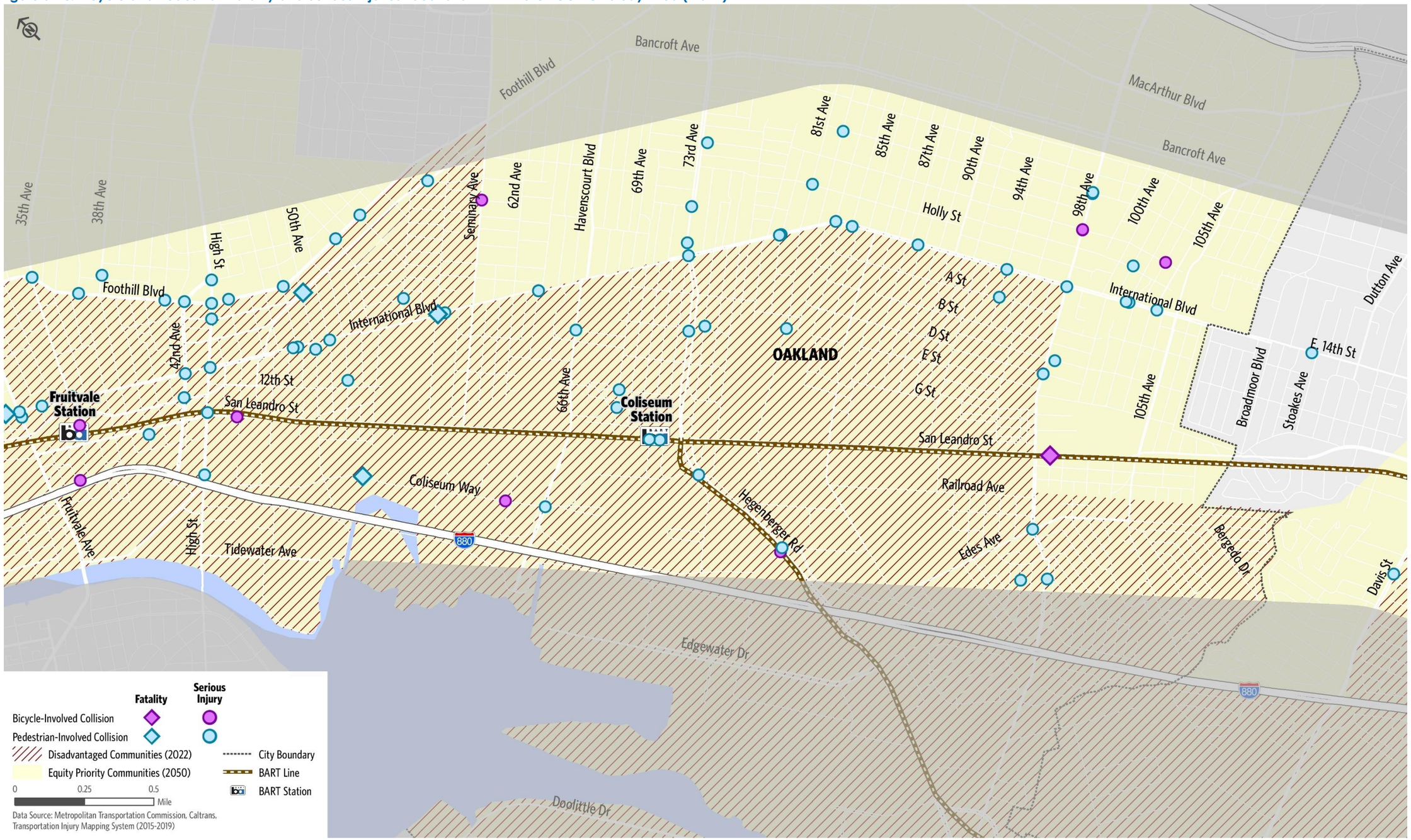

Figure 5-49: Bicycle and Pedestrian Fatality and Serious Injuries Locations within the CACCMCP Study Area (3 of 4)

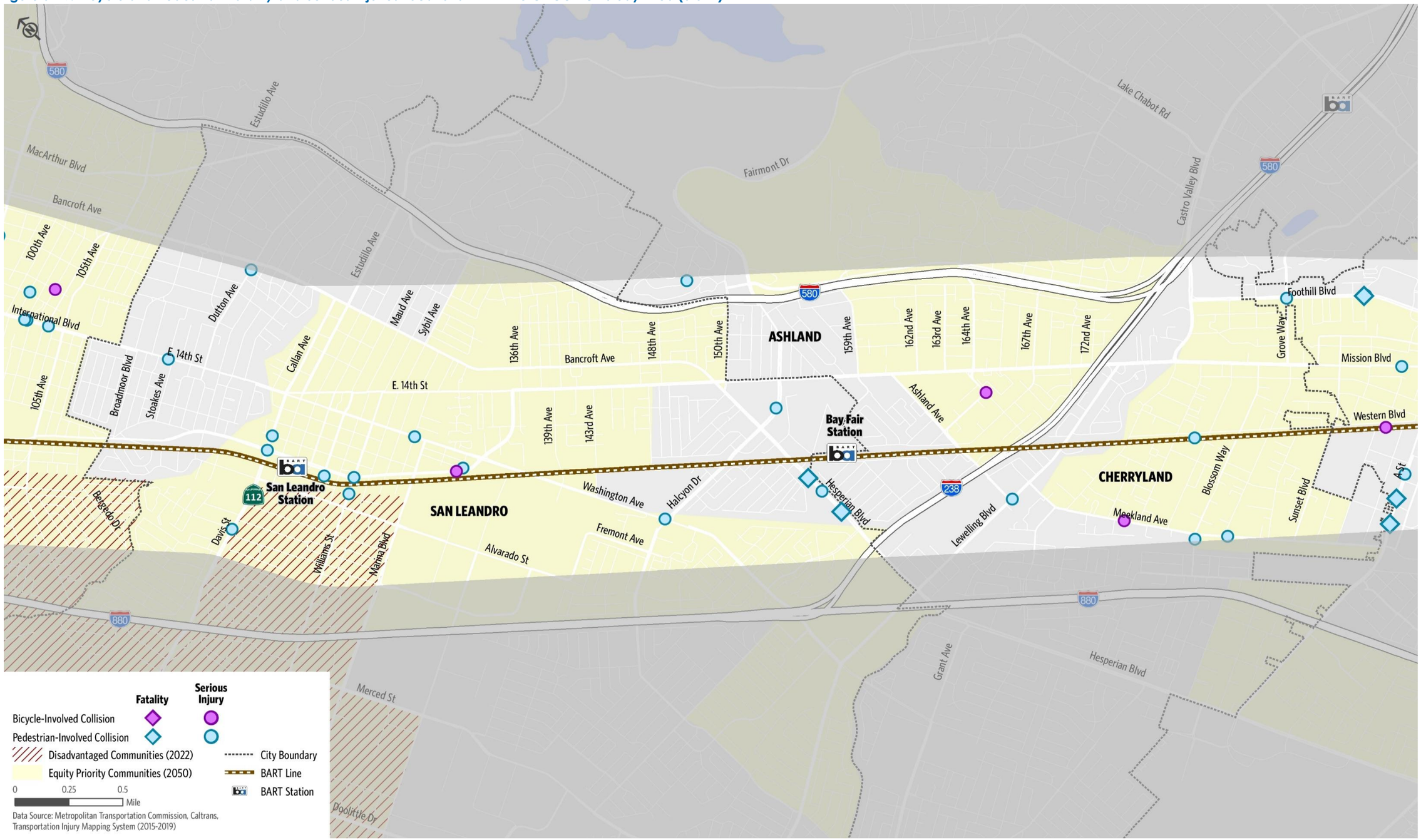

Figure 5-50: Bicycle and Pedestrian Fatality and Serious Injuries Locations within the CACCMCP Study Area (4 of 4)

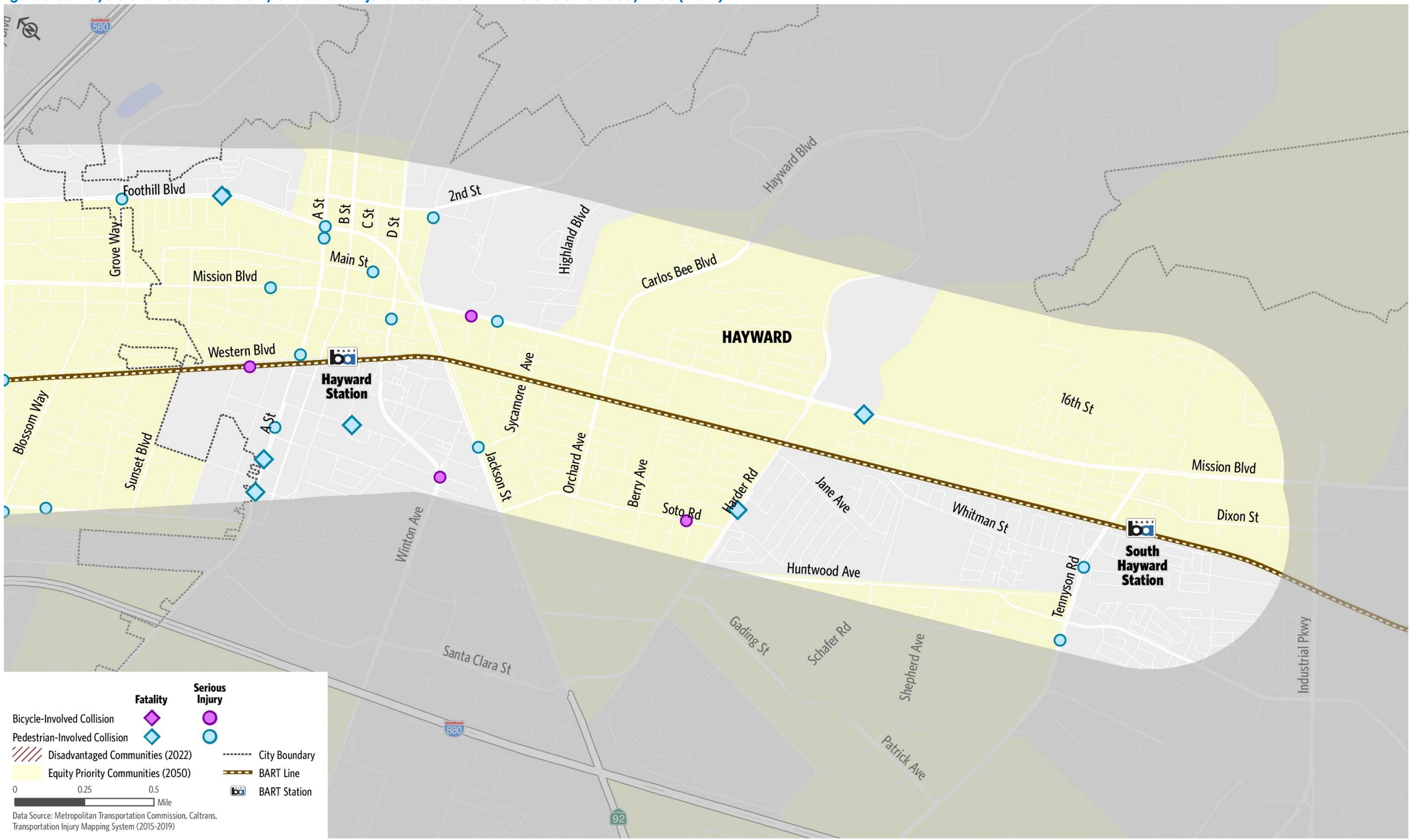

Table 5-24 presents the percentage of CACCMCP study area roadways located within EPCs and DACs compared to the percentage of study area bicycle and pedestrian fatalities and serious injuries. The data show that DACs are especially burdened by bicycle and pedestrian fatalities, containing less than half of CACCMCP study area roadways (43 percent), but 61 percent of the fatalities and 61 percent of the serious injuries. EPCs experience burdens as well, with 84 percent of the study area roadways, and 90 percent of the study area's serious injuries.

Table 5-24: Fatalities and Serious Injuries in Study Area EPCs and/or DACs

	EPC Census Tracts	DAC Census Tracts	Both EPCs and DACs Census Tracts	Total EPCs/DACs Census Tracts
Percent of CACCMCP study area roadways	84%	43%	43%	85%
Percent of CACCMCP study area fatalities	79%	61%	61%	80%
Percent of CACCMCP study area serious injuries	90%	61%	60%	89%

Source: HNTB, 2022.

Mobility Performance

Truck traffic can have a disproportionate impact on equity communities, including reduced safety on roadways, increased congestion, and exposure to pollutants and noise.

Figure 5-51 shows where truck routes intersect with the CACCMCP study area. The routes are gradated to show volume, with darker segments having the highest volume of truck traffic. The map illustrates that most streets in the study area are used for freight operations and truck travel and that routes within the CACCMCP study area by and large are located within EPCs and DACs. DACs and EPCs in the Oakland subarea between Lake Merritt and Fruitvale BART Stations and EPCs in Ashland and Cherryland experience the highest volume of truck travel within their communities. EPCs near the Hayward BART Station also experience impacts from truck travel, but at a lower volume compared to the previously mentioned communities.

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Figure 5-51: Trucking Routes and Volumes in the Study Area

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Table 5-25 further describes the impact of truck travel in the CACCMCP study area overall, and in EPC, DACs and census tracts designated as both EPCs and DACs. The length represents the total miles of truck routes within each of the geographies. EPCs bear a disproportionate burden of the total miles within the study area, hosting 277.7 miles out of the total 353.7 miles of truck routes within the study area.

Table 5-25: Length of Truck Travel in EPCs and/or DACs

	Study Area Overall	EPC Census Tracts	DAC Census Tracts	Both EPC and DAC Census Tracts	Total EPC/DAC Census Tracts
Length (Miles)	352.7	277.4	149.8	149.2	278.4

Sources: HNTB, 2022; Kittelson & Associates, Inc., 2022.

The Northern Alameda County Truck Access Management Study (2021) found that among residential communities, Equity Priority Communities represent a high proportion of communities likely to be impacted by proximity to truck routes. Conversely, higher income areas, including areas along I-580 where trucks are restricted, tend to be located further from both truck generating areas and truck routes. There are significant ongoing efforts, such as community led work conducted through Assembly Bill 617 to comprehensively plan for improving air quality and reducing community pollution exposure.[15]

This analysis is consistent with findings from the study, signaling the opportunity to consider truck restrictions and other mitigation strategies to reduce the burden of truck travel on equity communities in the CACCMCP study area.

[15] California Air Resources Board. Community Air Protection Program (CAPP). East Oakland, accessed from https://ww2.arb.ca.gov/our-work/programs/community-air-protection-program/communities/east-oakland

Reliability Performance

Transit ridership and on-time performance are two critical metrics for understanding reliability of a transit system. For those who are transit dependent—many who live in EPCs and DACS—transit reliability is deeply important, sometimes making the difference in keeping a job. **Figure 5-52** through **Figure 5-55** illustrate transit ridership on AC Transit and on-time performance of AC Transit buses in the CACCMCP study area, separated by weekday and weekend daily averages and overlaid with the EPC/DAC designations. The maps reveal high levels of both weekday and weekend transit riders on the transit lines that run through EPCs and DACs in the study area, with most lines averaging between 250 and 1,100 daily riders on weekdays and 166 and 555 daily riders on weekends. The ridership levels are highest on the main arterials, such as East 14th Street/International Boulevard, and in the Oakland subarea. The existing bus lines serve EPCs and DACs equally.

Weekday and weekend on-time performance rates are low in the Oakland subarea which have high levels of ridership. Weekday on-time performance rates for bus routes in the San Leandro and Hayward subareas are higher but have lower levels of transit ridership outside of the main arterials. This finding highlights the need for additional investments that create improved on-time performance for those AC Transit lines with high ridership, bringing more transit benefits to more people who live and work in the study area.

Figure 5-52: Average AC Transit Ridership During Weekdays (1 of 4)

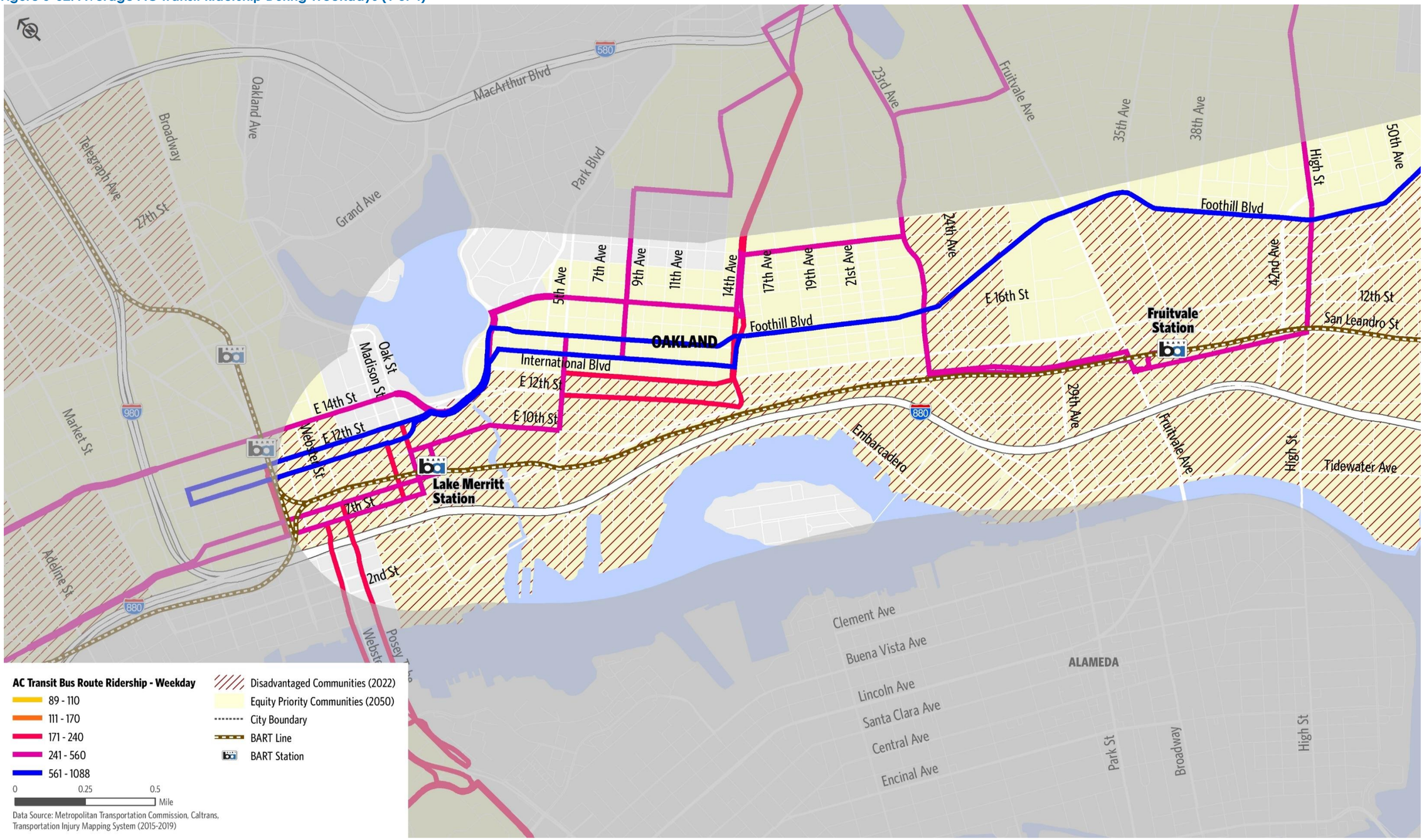


Figure 5-53: Average AC Transit Ridership During Weekdays (2 of 4)

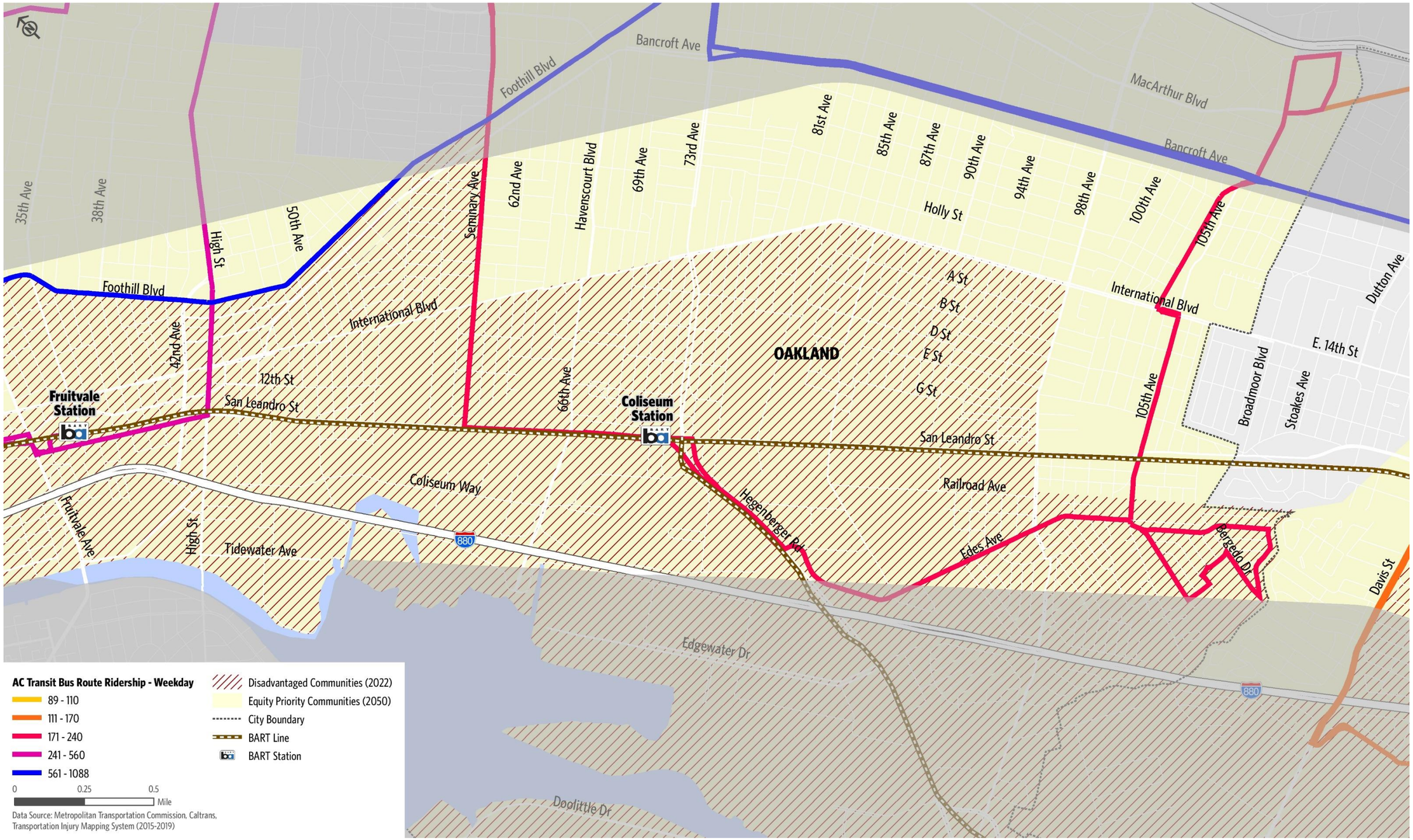


Figure 5-54: Average AC Transit Ridership During Weekdays (3 of 4)

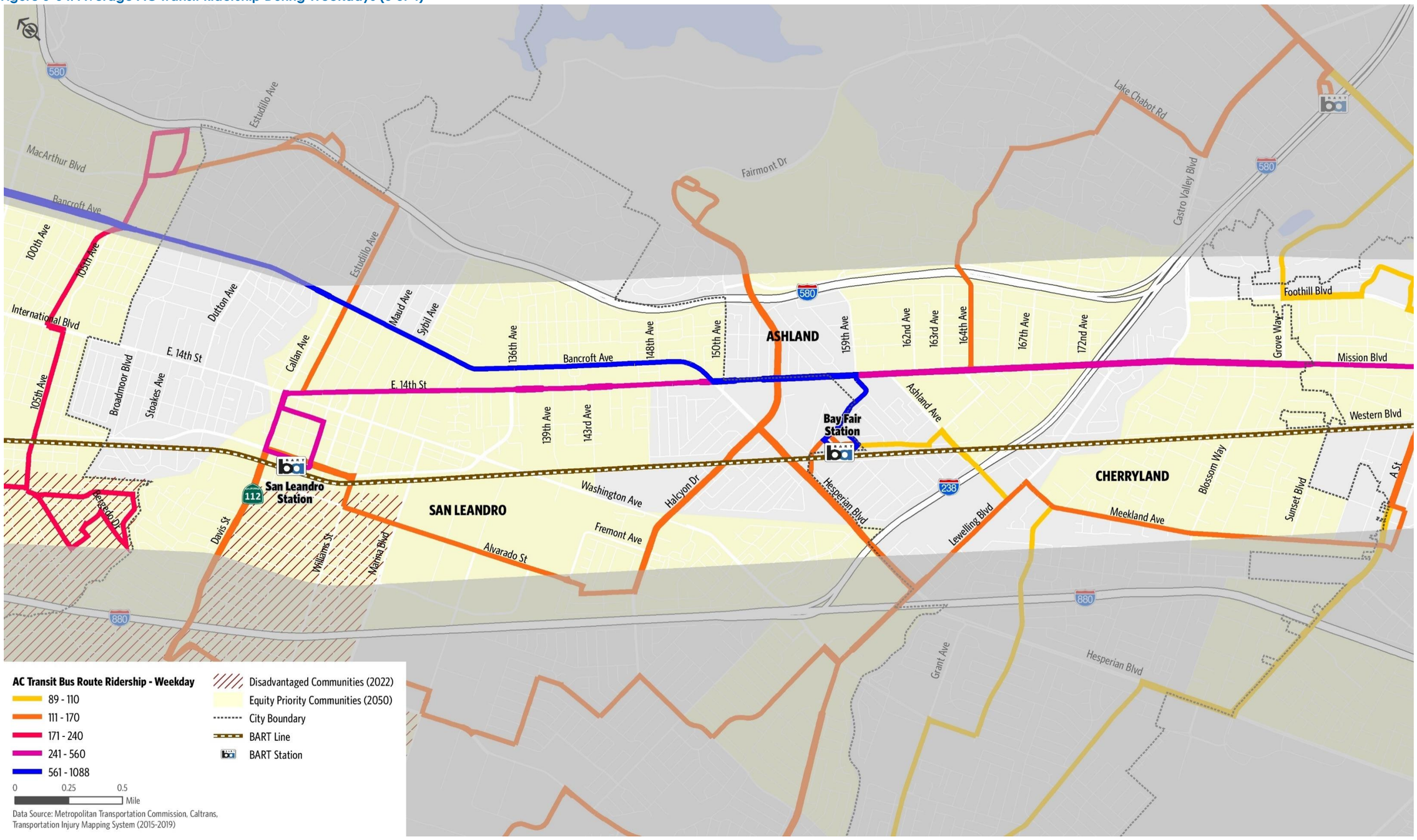


Figure 5-55: Average AC Transit Ridership During Weekdays (4 of 4)

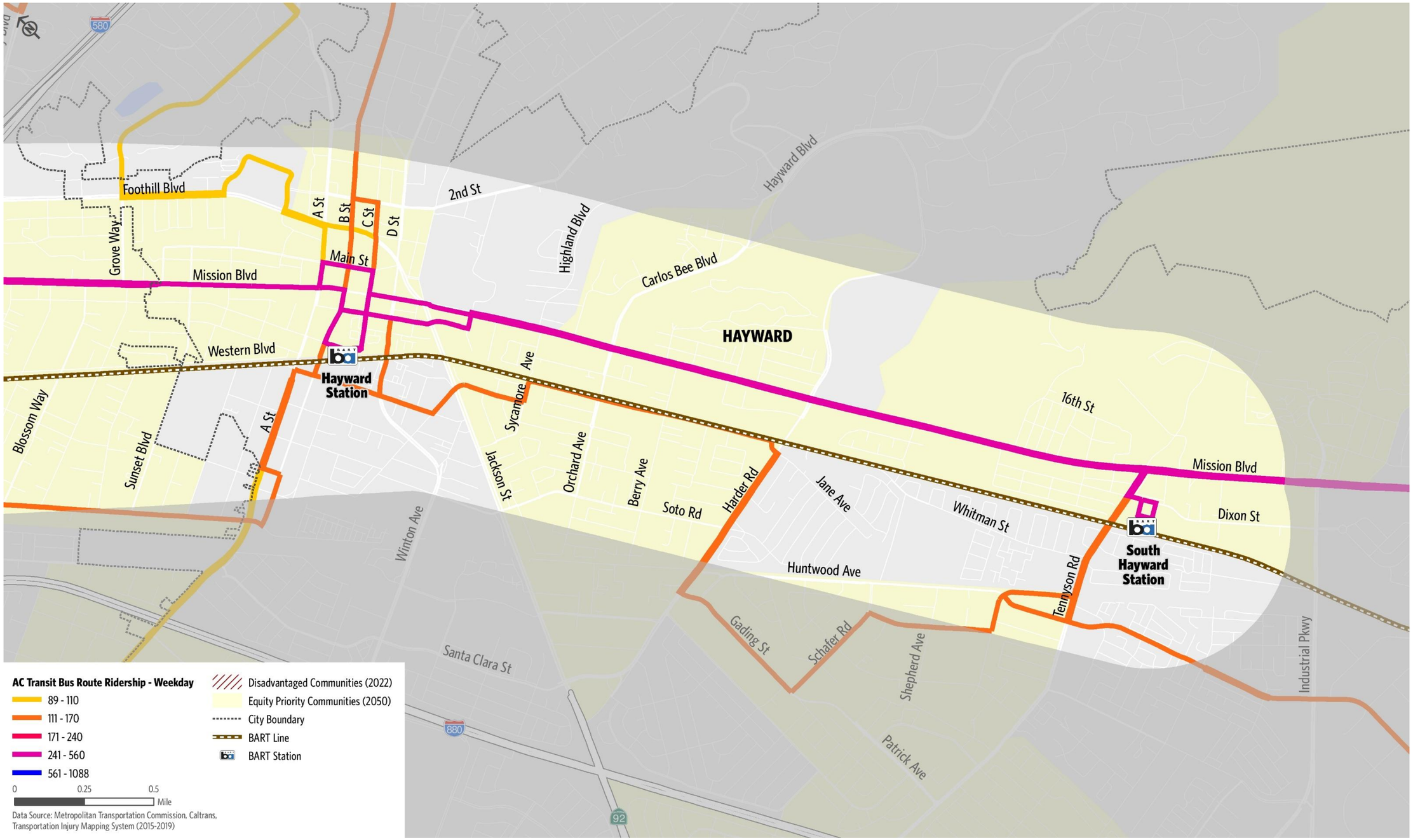


Figure 5-56: Average AC Transit On-time Performance During Weekdays (1 of 4)

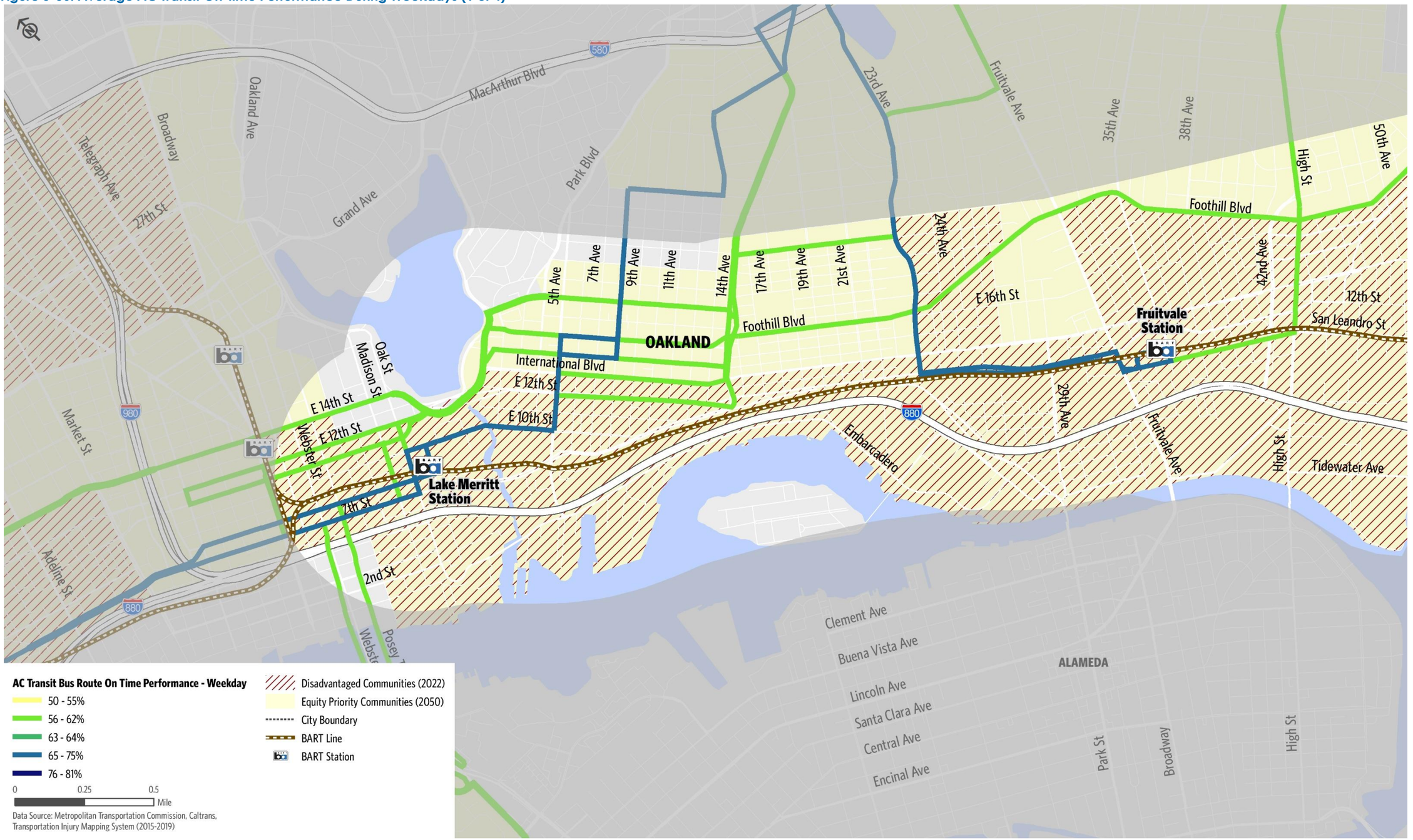


Figure 5-57: Average AC Transit On-time Performance During Weekdays (2 of 4)

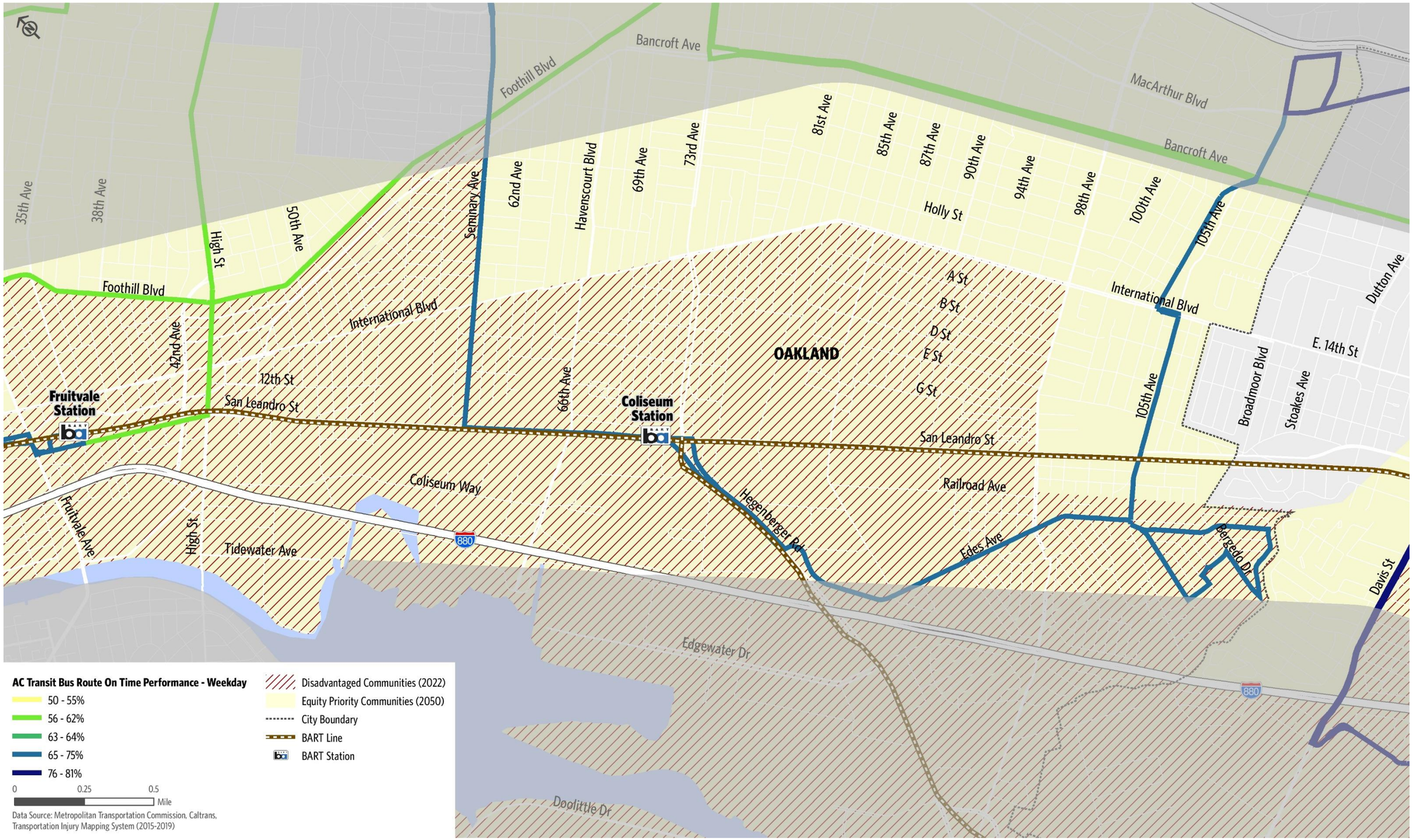


Figure 5-58: Average AC Transit On-time Performance During Weekdays (3 of 4)

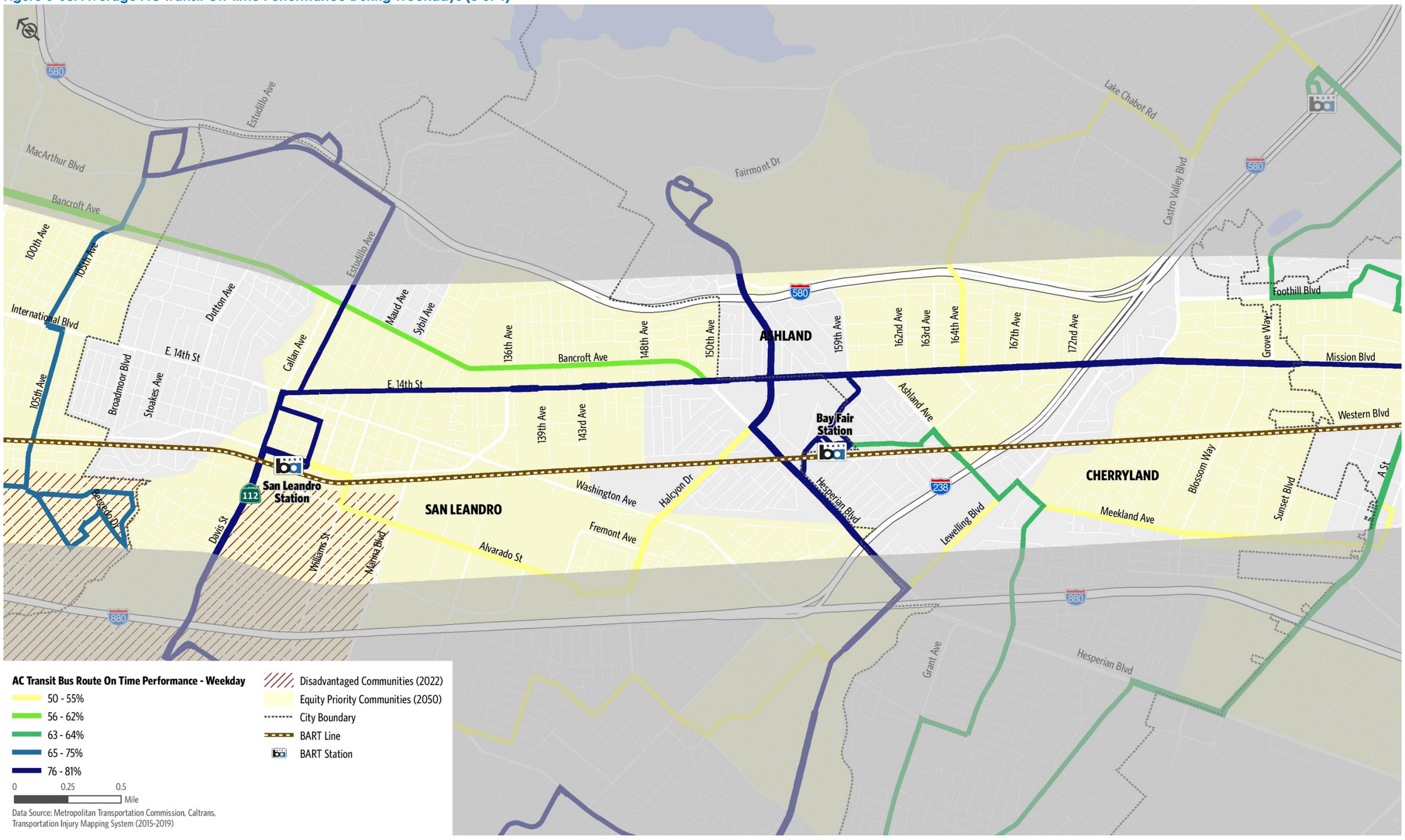
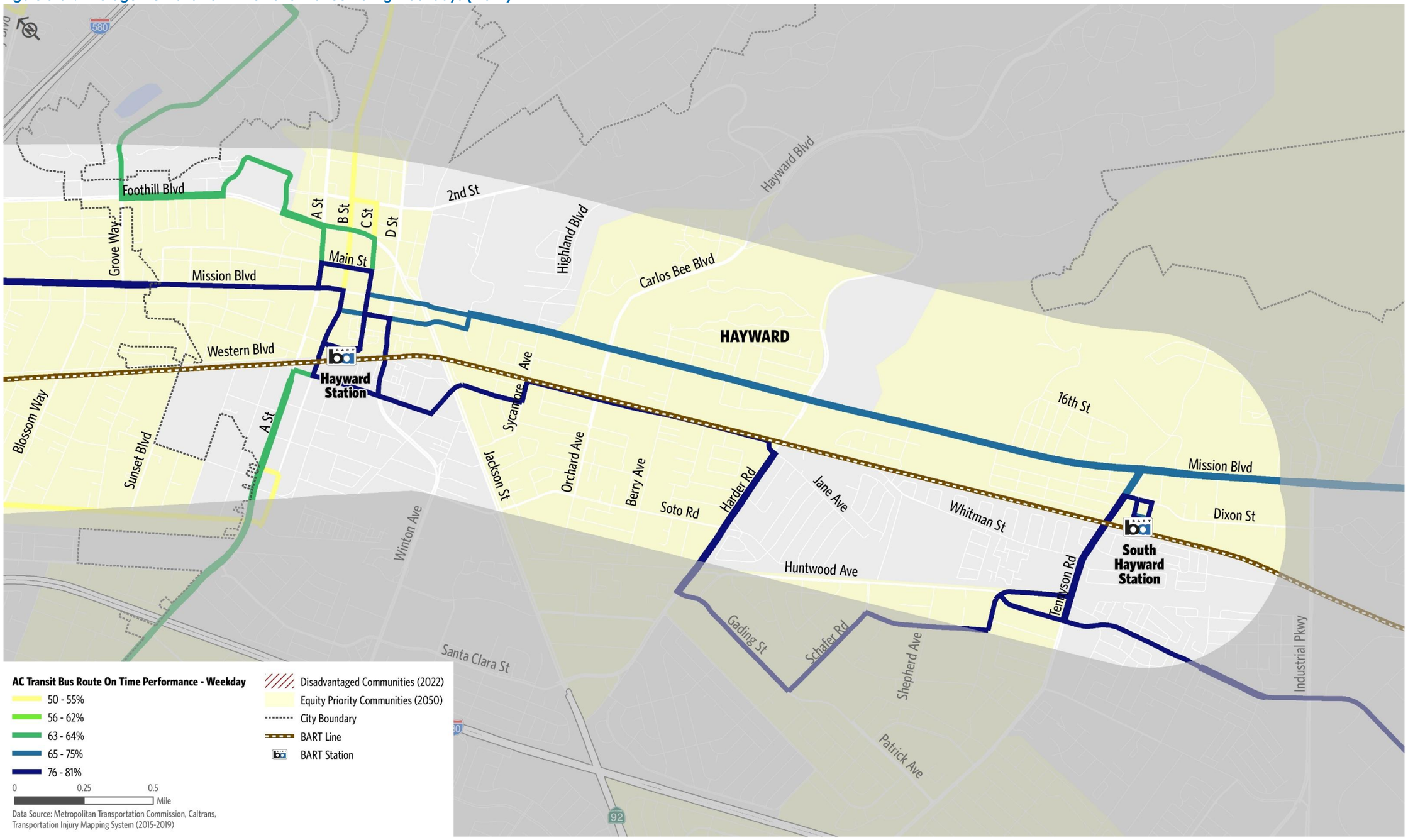


Figure 5-59: Average AC Transit On-time Performance During Weekdays (4 of 4)



Sustainability Performance

Bicycle and pedestrian access to transit is critical to supporting multimodal travel within the CACCMCP study area. For households without access to a vehicle—as is the case for some who live in EPCs and DACs—bicycle and pedestrian access to transit is a lifeline to reach opportunities like work, education and healthcare, and to perform other daily household errands. **Figure 5-60** illustrates 10-minute walk- and bike-sheds (in green), and 10-to-30-minute walk- and bike-sheds (in purple) around the BART Stations within the study area. Lake Merritt, Fruitvale, and Coliseum BART Stations serve EPCs and DACs communities equally within the 10-minute walk- and bike-shed. San Leandro, Bay Fair, Hayward, and South Hayward BART Stations all serve EPCs within a 10-minute walk- and bike-shed. All 10-30-minute walk- and bike-sheds around BART Stations fully or partially contain an EPC and/or a DAC. Broadly, these EPC and DAC communities enjoy high levels of bicycle and pedestrian access to BART Stations within the study area, notwithstanding the need for improvements in specific spots.

The map does not show presence and quality of active transportation infrastructure. The high percentage of serious injuries and fatalities on the roadways within the EPCs and DACs in the study area, as outlined in the Safety Performance section of this chapter, suggests that multimodal investments in the study area could help EPC and DAC communities by creating safer routes to access transit and other opportunities.

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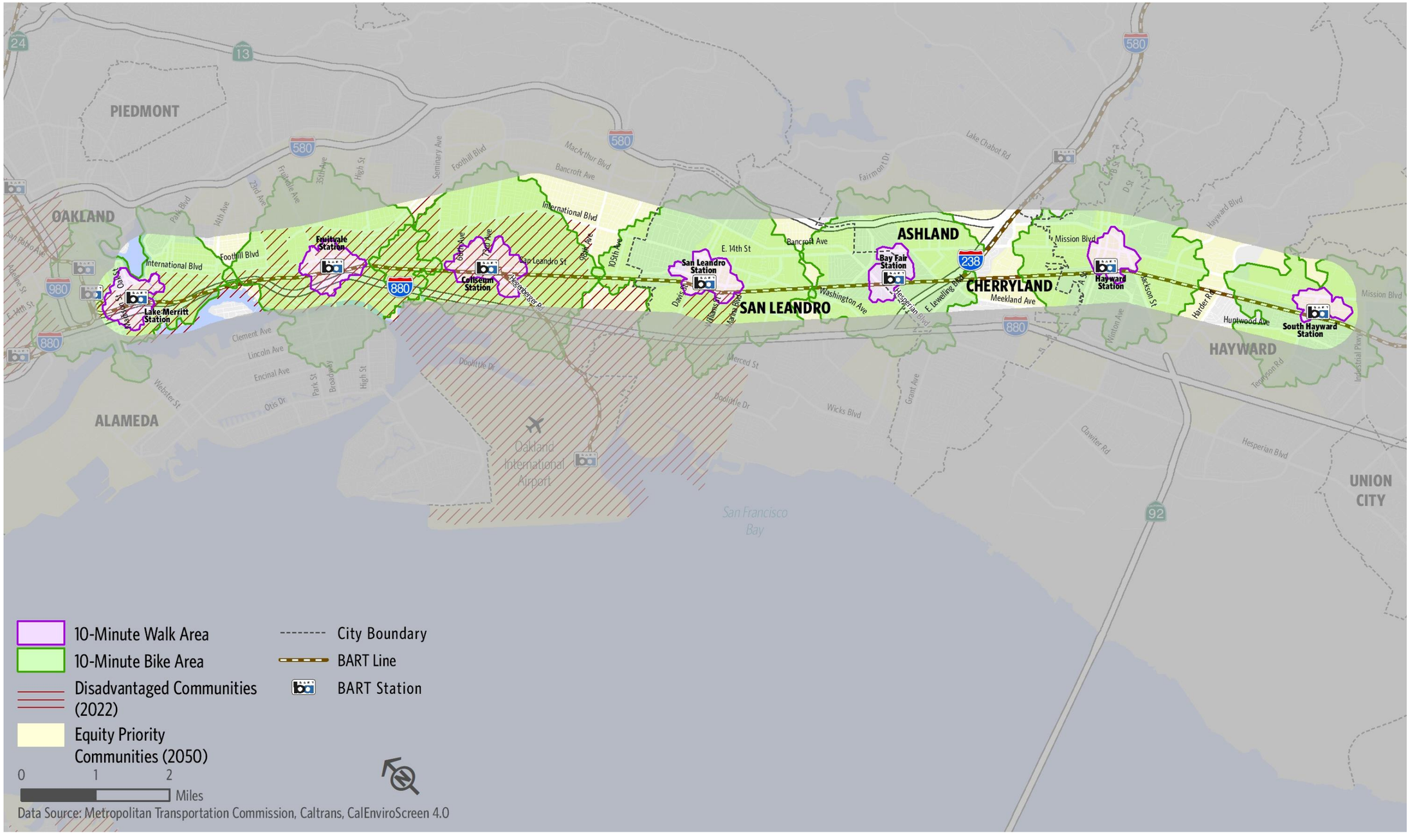
Figure 5-60: Bicycle and Pedestrian Access within the Study Area



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6. Stakeholder and Community Engagement

Significant public outreach and engagement have already been conducted along the Central Alameda County corridor for the different projects and plans that have been developed for the study area. The public outreach and engagement conducted for the CACCMCP served to supplement and update existing work with targeted equitable outreach focused on underserved and underrepresented communities. The public outreach and engagement also served to fill in known gaps for communities and populations not engaged through prior efforts. Results from the CACCMCP outreach are presented in this chapter with summaries of pertinent findings from other regional, local, and project-specific plans. Existing plans and relevant studies, many of which include community outreach efforts, are summarized in Chapter 2.

The following section includes a review of community engagement efforts and activities related to transportation planning efforts in the CACCMCP study area. **Table 6-1** lists the plans and studies with relevant stakeholder and community engagement that inform the development of the project evaluation methodology presented in Chapter 7. The engagement processes performed to support these plans and studies are described below.

Table 6-1: Previous Recent Plans that Included Community Engagement

Plan Type	Source
Regional Plans	• Alameda County Bicycle and Pedestrian Master Plan for Unincorporated Areas, 2019 • Community Based Transportation Plan, 2020
Local Plans	• East Oakland Mobility Action Plan, 2021 • Hayward Bicycle and Pedestrian Master Plan, 2020 • San Leandro Bicycle and Pedestrian Plan, 2018
Project-Specific Engagement	• E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project • East Bay Greenway Multimodal Project (Phase 1)

6.1 Regional Plans

Alameda County Bicycle and Pedestrian Master Plan (BPMP) for Unincorporated Areas, 2019 (led by Alameda County Public Works Department)

The development of the Alameda County BPMP for the unincorporated areas of Alameda County was guided by strategic input from advisory committees, including a Technical Advisory Committee (TAC), a Citizens Advisory Committee (CAC), and the Castro Valley Bicycle and Pedestrian Advisory Committee (CVBPAC). The committees met regularly throughout the process and provided input on stakeholder priorities, feedback from the community, and preferred types of bicycle and pedestrian improvements.

Community engagement for the Alameda County BPMP included two rounds of open house meetings (August 2017 and January 2018) to solicit input from the public. Each open house included multiple meetings to reach as many people as possible.

Outreach efforts also included an online interactive map developed by the Alameda County Public Works Agency (ACPWA) to gather feedback on the existing bicycle and pedestrian network. The outreach attracted over 200 users who provided valuable input about the state of walking and biking in the unincorporated areas of Almeda County.

Residents cited the need for more direct bike routes and greater separation from traffic as top priorities. Of particular concern were bike lanes in the Ashland area, many of which are located on higher-speed, higher-volume streets where bicyclists do not feel comfortable or safe.

Community Based Transportation Plan (CBTP), 2020

Extensive community outreach was conducted for the Alameda County CBTP. Outreach included 14 phone and email interviews with Community-Based Organizations (CBOs) and a countywide phone poll on residents' transportation needs and priorities. Pop-up events were held throughout the county featuring display boards in English, Spanish, and Cantonese. These pop-up events distributed printed fact sheets about the CBTP and invited visitors to take a digital survey. Additional presentations and workshops were held in areas of the county with underserved populations.

The following key concerns were identified in the CBTP:

Transit

The need for higher transit frequency during the weekdays, nights, and weekends was identified as a key theme. There was also a focus on better access to transit, improving connections within East Oakland and more affordable transit. Bus shelters and stops were identified as a priority in North Alameda County (Fruitvale and East Oakland). Safety while using public transit was also identified as a key issue in the north and central areas.

Active Transportation

Residents offered extensive feedback on active transportation (riding scooter, biking, and walking) needs. Residents throughout the county voiced the need for better facilities for walking, with an emphasis on safer crossings, traffic calming, and better sidewalks. There was widespread support for better facilities for bicycling, including high-quality bike lanes (separated bike lanes), trails that are separated from roads, and more bike parking.

Driving

Concern was expressed about the cost of driving and the duration of vehicle trips. In North Alameda County, survey respondents commented on truck traffic and a lack of parking availability. Residents voiced concerns about pavement conditions and the quantity and speed of traffic on city streets, especially during peak hours. Portions of Central County observe a high level of congestion during peak periods and residents highlighted their concerns about cut-through movements from their neighborhood.

6.2 Local Plans

East Oakland Mobility Action Plan (MAP), 2021

Due to impacts from the COVID-19 pandemic, engagement for the East Oakland MAP included a mixture of in-person and online outreach: focus groups (two in-person events and one virtual focus group), pop-ups (two events), virtual engagement (via Instagram), and surveys that focused on anti-displacement efforts, public safety, and infrastructure conditions.

Over the course of engagement efforts, safety was identified as a paramount concern for East Oakland residents. Residents cited a range of improvements that would make them feel safer on East Oakland streets, including protected bike lanes, ADA-compliant sidewalks, traffic calming, more shelters and seating at transit stops, and safe spaces for youth to skate or bicycle.

Hayward Bicycle and Pedestrian Master Plan, 2020

Public engagement for the Hayward BPMP occurred in three phases and was supplemented by a Technical Advisory Committee (TAC), which met four times during plan development. The TAC included staff from Hayward Public Works, Traffic Engineering, Development Services, Hayward Unified School District, transit agencies, and local advocacy groups.

Phase I of outreach was conducted from May through October 2018 and focused on increasing community awareness of the plan and soliciting initial feedback on the plan's priorities. Engagement efforts for this phase included a project website launch, an online map-based survey, and pop-up events.

Phase II, conducted from September 2018 through March 2019, solicited community input regarding recommended projects. Engagement efforts included three community walkabout events.

Phase III was conducted from April through November 2019 and sought community feedback on initial project recommendations, including the draft bicycle and pedestrian networks. Feedback was collected through pop-up events and an online map-based survey.

Hayward residents cited a lack of crosswalks and curb ramps, a lack of street lighting, unsafe conditions at intersections, and cars parking in bike lanes as key priorities. Pedestrian safety was identified as a primary concern, especially along downtown corridors and on Jackson Street. Additionally, survey participants cited improved pedestrian access to BART, downtown Hayward, and Amtrak as key concerns.

San Leandro Bicycle and Pedestrian Plan, 2018

San Leandro's Bicycle and Pedestrian Advisory Committee (BPAC) supported the development of the San Leandro Bicycle and Pedestrian Plan over the course of four BPAC meetings. Two of these meetings were combined with public open houses, allowing both BPAC members and the public to interact with project consultants and provide comments and feedback.

An online survey was conducted to gather additional public feedback. Almost 1,100 responses were recorded. Additional feedback was collected through the City's Virtual City Hall and from comments received on Nextdoor.

Most of the input received from the public focused on a need for additional bike lanes and greater separation from traffic, concerns about the quantity and speed of traffic (especially on narrow streets), and concerns about poor sidewalk quality and pedestrian crosswalks. Residents reported feeling unsafe walking at night and expressed concerns about crime.

6.3 Project-Specific Engagement

E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project (East Bay Greenway)

The East Bay Greenway project is a key component of the overall E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project. Engagement activities for the East Bay Greenway included two TAC meetings, an online survey, online workshops, and in-person focus groups and open house events. Outreach efforts also included a project Facebook page to disseminate project information and event invitations.

Focus groups were held between January and March 2019 and were attended by a total of 48 community members. Geographical focus groups were held for San Leandro, Ashland/Cherryland, and Hayward/Union City. Engagement efforts also included two additional focus groups targeting bicyclists and transit riders, respectively. Finally, a community workshop was held by the City of Fremont where members of the project team presented information and spoke with community members.

An online survey was conducted between May 22 and July 15, 2019. The survey used a map-based online platform that allowed users to identify barriers to multimodal access and active transportation.

Outreach efforts identified faster bus service and improved bicycle facilities as key priorities. Residents of Hayward and Ashland/Cherryland identified a preference for Class IV protected bike lanes over Class II. There was strong support for implementation of the East Bay Greenway, although maintenance, landscaping, and safety (especially at intersections on busy streets) were identified as areas of concern.

East Bay Greenway Multimodal Project (Phase 1)

Alameda CTC approved a near-term project implementation in December 2021 focusing on arterial improvements for an all ages and abilities facility for pedestrians, cyclists, and transit users. The Project incorporates near-term implementation strategies developed as part of Alameda CTC's East 14th Street/Mission Blvd/Fremont Boulevard Multimodal Project. The Project also evaluates placemaking elements and economic development elements.

Beginning in February 2022 Alameda CTC staff has been actively involved in public outreach and engagement efforts along the project area, with a focus on equity priority communities. The ongoing engagement efforts include popup events, focus groups, one-on-one business surveys, and a residential mailer with an online survey. The initial efforts focused on Hayward and San Leandro. At the time of writing this document, there are pop-up events scheduled in Oakland and San Leandro along with an online survey. The one-on-one business outreach took place during the first two weeks of September 2022 and focused on receiving feedback on how businesses use street parking and their loading/unloading needs. The focus group outreach included transit riders, cyclists and pedestrians, and minority-owned business associations.

6.4 Central Alameda County CMCP Engagement Process

Stakeholder Engagement

Technical Advisory Committee (TAC)

A technical advisory committee was formed for the CACCMCP and was composed of the following agencies and jurisdictions:

- Caltrans
- Metropolitan Transportation Commission (MTC)
- City of Oakland
- City of San Leandro
- City of Hayward
- Alameda County
- Bay Area Rapid Transit
- AC Transit
- East Bay Regional Park District (EBPRD)
- Hayward Area Recreation and Park District (HARD)
- Rails-to-Trails Conservancy

TAC *Meeting* #1

The first TAC meeting was held on April 12, 2022, and included presentations on funding, project overview, purpose and schedule, and stakeholder and community engagement. TAC members discussed options for youth outreach, multilingual translation/interpretation, and CBO identification.

TAC Meeting #2

The second TAC meeting was held on June 2, 2022, and included project schedule updates and presentations on the community outreach strategy, the boundaries of the study area, and draft goals and objectives.

TAC Meeting #3

The third and last TAC meeting was held on August 29, 2022, and included presentations on the community outreach events, performance and needs assessment, and draft project evaluation methodology. TAC members provided feedback on the draft project evaluation methodology during and following the meeting.

Public Engagement Summary

Public engagement for the CACCMCP was conducted in summer 2022. Outreach included a series of in-person and online community meetings and an interactive online map survey.

Community Events

Between July 19 and August 3, 2022, the project team hosted five outreach events targeting areas of Central Alameda County, including in-person community-based organization (CBO) meetings, online events, and a pop-up event. The project team adopted an equitable approach and reached out to historically impacted and marginalized groups through these events which included disabled, unhoused, and youth on probation. Community members were invited to provide feedback during the meetings as well as encouraged to submit feedback on the interactive online map.

Online focus groups included an interactive Zoom poll to collect feedback and drive conversation, while in-person events were supported by posterboards that allowed community members to rank the improvements and facilities that were the most important to them.

Table 6-2: Summary of Community Events

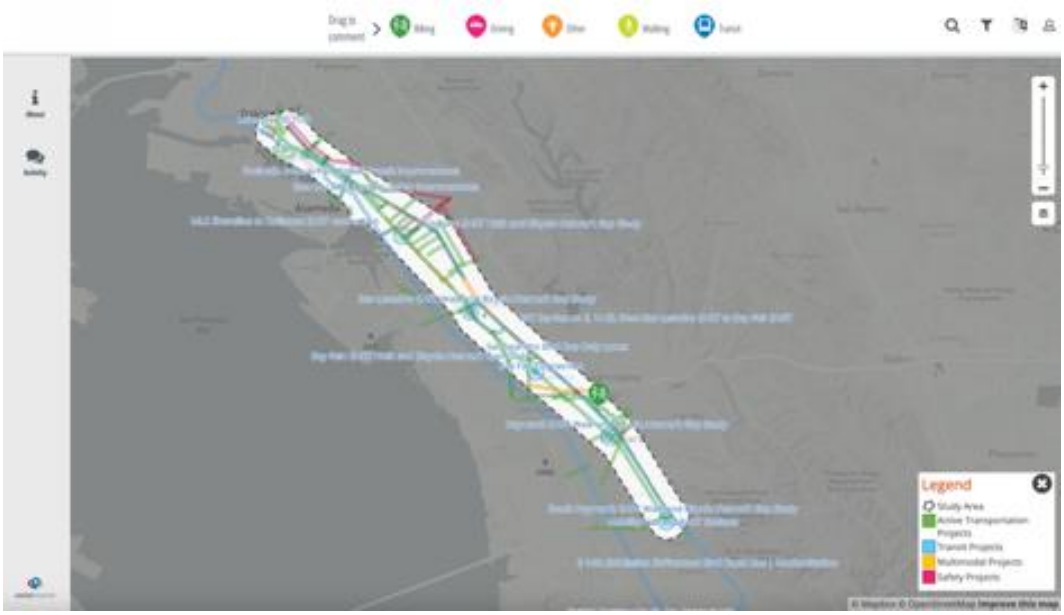
Date	Community / CBOs	Location	# Attended
7/19/22	Unincorporated County Areas • Cherryland Community Association	Online (Zoom)	50
7/19/22	Hayward • Bay Area Community Services (BACS)	BACS Hedco Center, Hayward	18
7/27/22	San Leandro • Building Opportunities for Self-Sufficiency	Fairmont Campus Navigation Center, San Leandro	14
8/02/22	Unincorporated County areas • Eden Ashland • Cherryland Food • Basic Needs	Online (Zoom)	27
8/03/22	Oakland • Black Cultural Zone[1]	Liberation Park, Oakland (Pop-up event)	28

Note: [1]Not a formal partnership

Interactive Online Map Survey

The interactive online map survey (**Figure 6-1**) was developed using the Social Pinpoint platform and utilized GeoJSON shapefiles to represent each project. Projects were categorized as Active Transportation, Transit, Multimodal, or Safety. Upon opening the map page, users were shown a welcome message containing project background information and detailed instructions for how to use the map.

Figure 6-1: Interactive Map Tool



The interactive map survey allowed users to view and learn about projects included in the study area. Users were able to drag and drop a pin to submit location-based comments or feedback. Location-based comments were categorized as either walking, biking, driving, transit, or "other." (**Figure 6-2**). Users were also able to submit project-specific comments. Individual projects, location-based comments, and project-specific comments could be "like/disliked" by other users (**Figure 6-3**). The interactive map survey was active from July 15 to September 2, 2022 and received 128 unique comments from users, summarized in **Table 6-3.**

Figure 6-2: Pin-Drop Method

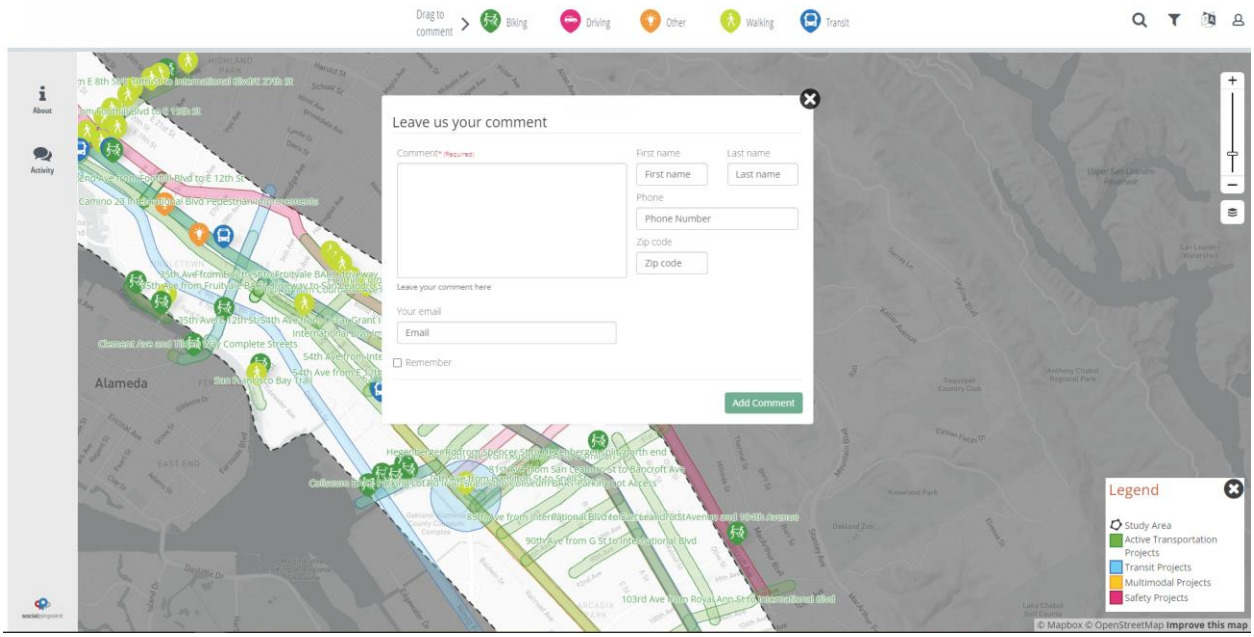
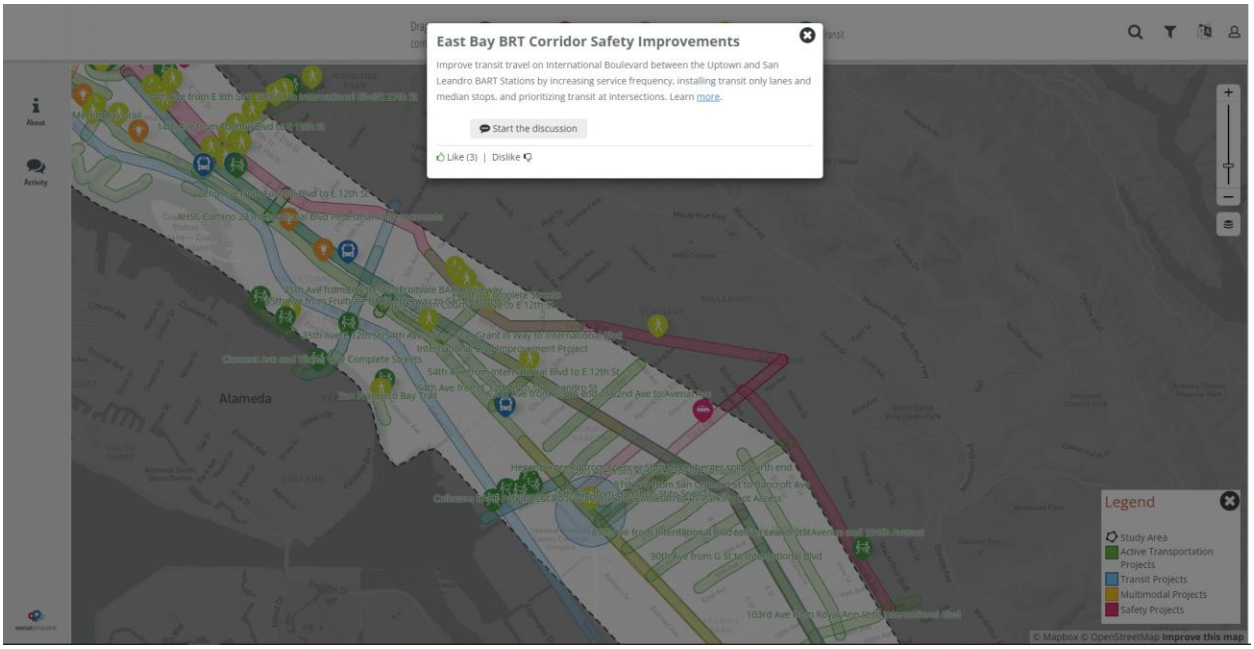


Figure 6-3: Discussion Forum and Like/Dislike Buttons



The Foothill Blvd Corridor Improvements Project received the most engagement, followed by the East Bay Greenway. Strong enthusiasm was shown for the East Bay Greenway and San Lorenzo Creekway Trail projects—particularly from Cherryland residents, who cited a lack of sidewalks and bike lanes around Mission Boulevard..

Table 6-3 summarizes input received via the interactive map, focusing on 10 projects (or project areas) that received the most engagement. The interactive map observed a total of 66 unique visitors and received a total of 107 comments. A map and spreadsheet containing all user-submitted comments is provided in **Appendix 6-1.**

Table 6-3: Summary of Interactive Map Engagement

Project / Project Area	# of Comments	Themes
Foothill Blvd Corridor Improvements (Phase 1)	18	• Desire for bidirectional protected bike lanes • Concerns about wide vehicle lanes and unsafe crosswalks
East Bay Greenway Urban Trail (Phase 2)	13	• Overall strong support for project • "Urgently needed [...] In Cherryland, this is an underused area that would be wonderful if transformed into a greenway" • Support for access to/from affordable housing
San Francisco Bay Trail	10	• Strong support for project, with concerns about project funding and delivery time • "There are some very nice spots to walk along the Oakland Estuary […] Would be great to be able to

Project / Project Area	# of Comments	Themes
		safely and comfortably walk and bike along this entire waterfront."
14th Ave. from E 8th St./E 19th St. to International Blvd./E 27th St.	9	• Concerns about vehicle speeds and pedestrian/bicyclist safety
East Bay BRT Corridor Safety Improvements	9	• Desire for physical separation of bus lanes • Dangerous crosswalks with vehicles not abiding by stoplights
Lake Merritt Bikeway Improvement Project	9	• Dangerous intersections and unsafe pedestrian crossings • Desire for protected bike lanes
San Lorenzo Creekway Trail	8	• Support for project, concerns about sidewalk quality in Cherryland
MLK Shoreline to Coliseum BART connection	7	• Strong preference for Class IV protected bike lanes
Fruitvale Avenue Park Street Transit Improvements	7	• Support for Class IV bike lanes • Concerns about vehicles speeding and running red lights • "Fruitvale from the High St. bridge to the BART station is bad. It's dangerous, it's unattractive, it's scary. Only [thing] worse is biking through the tunnel. "
Clement Ave. and Tilden Way Complete Streets	5	• Support for Class IV bike lanes • Bicyclist safety as a top priority • Concerns about speeding vehicles around slip lanes

Feedback by Region

The following is a summary of needs and gaps identified through online and in-person outreach conducted for the CACCMCP, organized by region.

Oakland

Pedestrian/Bicyclist Feedback

- Unsafe crosswalks due to speeding and long distances
- Desire for more bike lanes and greater separation from drivers
- Reckless behavior from drivers was cited as a major concern. For example, car sideshows and drivers doing donuts on residential streets

Pop-up event in Oakland
Photo Credit: Dhawal Kataria

Specific Project Feedback

- East Bay Greenway: Participants recognized an urgent need for the EBGW but expressed concerns about the amount of time it would take to complete the project.
- 73rd Ave. and Hegenberger Road Improvements: Desire for lane reduction along 73rd Avenue

San Leandro

Pedestrian/Bicyclist Feedback

- Many participants cited a life-threatening experience as a pedestrian.
- Close proximity and lack of separation between bike and car lanes
- Dangers from driver blind spots on right turns
- Specific concerns:
    - Bayfair Mall and Fairmont Drive were cited as especially unsafe roadways for bicyclists.

In-person event in San Leandro
Photo Credit: Iris Osorio-Villatoro

Transit Feedback

- Concerns about transit accessibility for the unhoused and the disabled
- Desire for expanded service hours
- Prohibitively expensive fares
- Lack of First Mile, Last Mile options

Specific Project Feedback

- East Bay Greenway: Participants liked the idea of EBGW connecting "tiny homes" to public service areas such as hospitals. Concerns were expressed about the project's impact on the unhoused.

Unincorporated Areas (Ashland and Cherryland)

Pedestrian/Bicyclist Feedback

- More bike-ped facilities, wider sidewalks, pavement improvements, and safety were a high priority.
- Specific concerns:
    - Lack of walking paths on East 14th Street
    - Lack of street lighting, specifically around schools such as Colonial Acres Elementary and Edendale Middle School
    - Concern about safety at crossings near San Lorenzo High School
    - Concern about safety and lighting on sidewalks around Edendale Middle School
    - Streets along Grove Way near Mission Boulevard lack sidewalks and bike lanes. Children use this path to and from school and often walk on the road.
    - Desire for a bridge and bike lane going over El Paso and Grand
    - Concern about vehicles parking in bike lanes in North Ashland

Transit Feedback

- Desire for free shuttles to BART

Specific Project Feedback

- East Bay Greenway: Participants supported the EBGW.

Hayward

Pedestrian/Bicyclist Feedback

- Lack of bike lanes leading makes bicyclists feel unsafe
- Pedestrian traffic signals change too quickly.
- Specific concerns:
    - Concerns about safety while crossing streets around City Hall
    - Concerns about safety on the corner of Jackson and Grand Street
    - Pedestrians feel unsafe walking around the Mission Foothill loop.
    - Difficulty placing bikes on and off bike racks on AC Transit buses

> *"They need to extend the pedestrian phase of the traffic light because when you are halfway on the street, it changes, and cars are already honking at you."*
>
> — Edited comment from Community member from Bay Area Community Services.

Transit Feedback

- Desire for AC Transit E Line to be extended to Hayward and Fremont
- Desire for phone charging and restroom facilities by bus stations
- Positive response to AC Transit bus schedules

Other Concerns

- Creating streets that are friendlier for the unhoused communities and prevents displacement.

Summary of Feedback

From extensive public outreach and engagement conducted throughout the Central Alameda County corridor study area, the following core themes can be identified:

- Across all outreach and engagement efforts, improved facilities and increased safety for bicyclists and pedestrians were core themes, especially in Alameda County's unincorporated areas.
- Support for the East Bay Greenway Project and support for San Lorenzo Creekway Trail were remarkably high, although concerns were expressed about the EBGW's project delivery time and potential impacts to the unhoused.
- Increased access to transit and expanded service hours were also identified as key concerns in San Leandro and Hayward.
- Expressed the desire for creating streets that are friendlier for the unhoused communities by providing basic facilities such as restrooms and phone charging stations.

Input collected from the CACCMCP is broadly consistent with priorities and needs identified through the regional and local plans described above. The efforts also promoted transparency and allowed members of the community to understand more about Alameda CTC and Caltrans. The projects and priorities informed the project evaluation methodology, further explained in Chapter 7.

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7. Summary of Strategies

This section summarizes the summary of projects within the CACCMCP study area along with information about their selection.

7.1 Developing the Project List

The CACCMCP project list was developed with the help of the planning documents listed in Chapter 2. Projects were also added from the Caltrans State Highway Operations and Protection Program (SHOPP)[16] and local Capital Improvement Programs.[17] A total of 92 projects were compiled and categorized for evaluation using the evaluation framework presented in Chapter 2. Partner agencies and community members were requested to submit their feedback on the list of projects, as covered in Chapter 6.

7.2 Project List

This section presents CACCMCP projects grouped into four major categories:

1. Active Transportation
2. Safety
3. Transit
4. Multimodal

Projects were grouped based on the overriding transportation focus of the project, although there are commonalities between active transportation, safety, and transit access projects. In cases where the implementing agency clearly defined a project within a particular group, that categorization was maintained in the list. For example, BART Walk, and Bicycle Network Gap Studies are placed under the Transit category as that is how BART chooses to define them.

Projects are listed in separate tables along with detailed descriptions and information about their respective construction timelines. Projects are grouped into near-term and long-term implementation time frames based on the following criteria:

- Shovel ready: Project can be ready for construction by December 2025
- Short-term: Project can be ready for construction within the next 10 years
- Long-term: Project will be ready for construction after 10 years

A number of projects that are in early stages of development are included here but do not yet have cost estimates or final cost descriptions.

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[16] Caltrans, SHOPP and Minor Program, https://dot.ca.gov/programs/financial-programming/state-highway-operation-protection-program-shopp-minor-program-shopp.

[17] City of Oakland, Capital Improvement Program, https://www.oaklandca.gov/topics/capital-improvement-program.
City of San Leandro, Capital Improvement Program, https://www.sanleandro.org/276/Capital-Improvement-Program-CIP
City of Hayward, Capital Improvement Program, https://www.hayward-ca.gov/your-government/documents/capital-improvement-program.

Active Transportation

The active transportation projects include projects that increase the safety and comfort of cyclists, pedestrians, and those using mobility assistive devices, boosting the likelihood that vehicular trips will be replaced with active transportation alternatives.

All trips fundamentally begin and end as pedestrian trips. Infrastructure for those who walk or use assistive mobility devices is critical for providing local connections within the CACCMCP study area and provide regional access to high-quality transit. Projects such as "Fruitvale Alive!"[18] will help increase the safety and comfort of pedestrians by closing unnecessary slip lanes, installing new curb bulb-outs, planting new landscaping and greenery, installing new pedestrian lighting, and upgrading sidewalks to the latest ADA standards. Fruitvale Alive will help connect pedestrians to the Bay Trail and to local businesses along the corridor. This project, and projects similar to this, will help create a network of trails and on-street pedestrian facilities that together provide a viable alternative to the car.

Providing greater opportunities for cycling within the study area will help reduce VMT, reduce congestion, and build community. Compared to walking, cycling substantially increases the distance that can be reached within a 10-minute trip (**Figure 5-39** through **Figure 5-42**). BART Stations within the CACCMCP study area can be reached by a 10-minute bike ride from nearly anywhere within the corridor, which also means the businesses and destinations that exist in between the 10-minute bike ride. The East Bay Greenway Multimodal (EBGWMM) project (Phase 1)[19] will create a separated bike lane along East 14th Street and Mission Boulevard, connecting riders to the BART Stations in the CACCMCP study area and acting as a spine to the bike network. Larger projects like the EBGW, and the smaller bike projects that connect to it, will help provide a network of safe and comfortable facilities that cyclists of all ages and abilities will be able to utilize throughout the corridor.

Table 7-1 includes the list of active transportation projects as well as their implementation timeframes. Active transportation project locations are shown in **Figure 7-1** through **Figure 7-4** by their project number. A total of 70 active transportation projects have been evaluated; this includes 22.9 miles of Class I trails, 2.7 miles of Class II bike lanes, 6.2 miles of bike boulevards, and 25 miles of Class IV separated bike lanes. In addition, there are over 20.8 miles of pedestrian improvements, including 4.7 miles of Complete Streets projects which consider the safety of all road users. Finally, there are a total of 10 intersection improvement projects to ensure safe pedestrian crossings.

[18] City of Oakland, Fruitvale Alive, https://www.oaklandca.gov/projects/fruitvale-alive.

[19] Alameda CTC, East Bay Greenway Multimodal project, https://www.alamedactc.org/programs-projects/bicycle-and-pedestrian/eastbaygreenway/.

Table 7-1: CACCMCP Active Transportation Projects

Project ID	Project Name	Project Description	Implementation Term	Cost Estimates ('000)	Implementing Agency
A1	10th Street Improvement Project	10th Street between Webster St and the 10th Street bridge is slated for repaving. Additionally, OakDOT received a Safe Routes to School (SRTS) grant to make sidewalk and pedestrian safety improvements around Lincoln Recreation Center and Lincoln Elementary.	Short-term	$416	OakDOT
A2	Lake Merritt Bikeway Improvement Project	Extend the existing two-way protected cycle track around Lake Merritt from Madison Street southward and over the estuary bridge to International Blvd. Add a one-way protected bike lane in Eastbound direction on Lake Merritt Boulevard between Lakeside Drive and 1st Avenue. Additional improvement includes protected intersections and signal improvements.	Short-term	$1,870	OakDOT
A3	East Bay Greenway Multimodal (Phase 1)	Improvements for construction within 3-5 years, including: one-way cycle tracks along East 12th Street, a Class I pathway along San Leandro Street, one-way separated bike lanes along San Leandro Blvd and East 14th Street, and Mission Boulevard, and pedestrian amenities.	Shovel ready	$174,250	Alameda CTC
A4	East Bay Greenway Urban Trail (Phase 2)	East Bay Greenway Phase 2 - will continue to work with the Union Pacific Railroad to implement a Rails-to-Trail or Rails-with-Trail facility in a 10+ year horizon. The project will connect the seven BART station between Lake Merritt to South Hayward that will generally follow the BART rail line.	Long-term	$501,100	Alameda CTC
A5	Lake Merritt Bay Trail	Improve the safety and comfort of cyclists and pedestrian along the Lake Merritt Channel by closing trail gaps between San Francisco Bay Trail and Lake Merritt Channel Trails by adding an off-street Class I bike path.	Long-term	TBD	OakDOT
A6	San Francisco Bay Trail	Improve the safety and comfort of cyclists and pedestrian along the San Francisco Bay by closing trail gaps at multiple locations by adding an off-street Class I bike path.	Long-term	TBD	EBRPD, OakDOT

Project ID	Project Name	Project Description	Implementation Term	Cost Estimates ('000)	Implementing Agency
A7	International Blvd Pedestrian Lighting and Sidewalk Improvement Project	City of Oakland has received $9.9 million dollars in Clean California funds and $1.5 million dollars in Affordable Housing and Sustainable Communities (AHSC) grant funds for The International Boulevard Pedestrian Lighting and Sidewalk Improvement Project.	Long-term	$10,400	OakDOT, AC Transit
A8	14th Ave from Foothill Blvd to E 19th St	Improve the safety and comfort of cyclists on 14th Avenue from Foothill Boulevard to East 19th Street by lane reduction from 4 to 2 lanes and adding a painted Class II bike lane.	Shovel ready	$45	OakDOT
A9	14th Ave from E 8th St/E 19th St to International Blvd/E 27th St	Improve the safety and comfort of cyclists on 14th Avenue from East 8th Street to International Boulevard and on 14th Avenue from East 19th Street to East 27th Street by lane reduction from 4 to 2 lanes and adding a painted Class II bike lane. Additionally, the project will extend sidewalks and install multiple RRFBs for pedestrian safety.	Shovel ready	$6,000	OakDOT
A10	22nd Ave from Foothill Blvd to E 12th St	Improve the safety and comfort of cyclists on 22nd Avenue from Foothill Boulevard to East 12th Street by adding a painted Class II bike lane.	Shovel ready	$36	OakDOT
A11	AHSC Camino 23 International Blvd Pedestrian Improvements	Pedestrian improvements, including sidewalk repair, street lighting, and crosswalk improvements, along International Blvd between 11th Ave and 38th Ave	Short-term	$2,000	OakDOT
A12	Fruitvale Alive Project	Improve the safety and comfort of pedestrians and cyclists on Fruitvale Avenue between Alameda Avenue and East 16th Street by widening sidewalks to install a bike lane at sidewalk level, slowing traffic with bulb-outs, repairing pavement, upgrading lighting, and enhancing crosswalks.	Shovel ready	$4,134	OakDOT
A13	Clement Ave and Tilden Way Complete Streets	Reuse the abandoned railroad right-of-way along the eastern terminus of Clement Ave and Tilden Way to extend the Cross Alameda Trail between Broadway and the Miller-Sweeney/Fruitvale Rail Bridges, while considering ways to improve truck and bus routes.	Shovel ready	$12,442	ACPWA

Project ID	Project Name	Project Description	Implementation Term	Cost Estimates ('000)	Implementing Agency
A14	East 12th Street Bikeway Project: Fruitvale-Melrose Gap Closure	The project proposes: • A neighborhood bike route along 54th Avenue between International Boulevard and E 12th Street where the street is too narrow for bike lanes • A neighborhood bike route along E 12th Street between 54th Avenue and 44th Avenue where the street is too narrow for bike lanes • Protected bike lanes along E 12th Street between 44th Avenue and 40th Avenue to accommodate bi-directional bike travel along the one-way stretch of E 12th Street Buffered bike lanes along E 12th Street between 35th Avenue and 40th Avenue to minimize on-street parking removal and disruptions to school pick-up and drop-off	Shovel ready	TBD	OakDOT
A15	High St from Courtland Ave to E 12th St	Improve the safety and comfort of cyclists on High Street from Courtland Avenue to East 12th Street by adding a painted Class II bike lane.	Short-term	$155	OakDOT
A16	Foothill Complete Streets	Engage the various communities along Foothill Blvd (a high injury corridor) to plan for capital improvements to address safety concerns and promote active mobility options on this corridor.	Short-term	TBD	OakDOT
A17	54th Ave from E 12th St to San Leandro St	Improve the safety and comfort of cyclists on 54th Avenue from East 12th Street to San Leandro Street by adding signage to designate a Class III bike route.	Shovel ready	$66	OakDOT
A18	54th Ave from International Blvd to E 12th St	Improve the safety and comfort of cyclists on 54th Avenue from International Boulevard to East 12th Street by adding signage to designate a Class III bike route.	Shovel ready	$110	OakDOT
A19	62nd Ave from South end of 62nd Ave to Avenal Ave	Improve the safety and comfort of cyclists on 62nd Avenue from Tevis Street to Avenal Avenue by adding signage to designate a Class III bike route.	Shovel ready	$462	OakDOT
A20	66th Ave from Oakport St to San Leandro St (MLK Shoreline to Coliseum BART connection)	Improve the safety and comfort of cyclists along 66th Avenue from Oakport Street to San Leandro Street by adding an off-street Class I bike path. Additionally, the project includes new AC Transit stops at 66th Avenue and Oakport Street	Long-term	$22,000	OakDOT

Project ID	Project Name	Project Description	Implementation Term	Cost Estimates ('000)	Implementing Agency
A21	Coliseum BART Parking Lot Rd from Snell St to Coliseum BART Parking Lot Access	Improve the safety and comfort of cyclists on Coliseum BART Parking Lot Road from Snell Street to Coliseum BART Parking Lot Access by adding a protected Class IV bike lane	Short-term	$50	OakDOT
A22	Hegenberger Rd from International Boulevard to San Leandro Street	Improve the safety and comfort of cyclists on Hegenberger Road from International Boulevard to Hawley Street by adding a protected Class IV bike lane	Long-term	TBD	OakDOT
A23	75th Ave from International Blvd to Rusdale Ave	Improve the safety and comfort of cyclists on 75th Avenue from International Boulevard to Rusdale Avenue by adding signage to designate a Class III bike route.	Shovel ready	$87	OakDOT
A24	75th Ave from Hamilton St to Snell St	Improve the safety and comfort of cyclists on 75th Avenue from Hamilton Street to Snell Street by adding signage to designate a Class III bike route.	Shovel ready	$193	OakDOT
A25	75th Ave from Rusdale Ave to Hamilton St	Improve the safety and comfort of cyclists on 75th Avenue from Rusdale Avenue to Hamilton Street by adding signage to designate a Class III bike route	Shovel ready	$66	OakDOT
A26	81st Ave from San Leandro St to Bancroft Ave	This project is a part of the East Oakland Neighborhood Bike Routes that will provide safer and calmer neighborhood streets designed to prioritize people walking and biking to local destinations.	Short-term	$4,325	OakDOT
A27	85th Ave from International Blvd to San Leandro St	This project is a part of the East Oakland Neighborhood Bike Routes that will provide safer and calmer neighborhood streets designed to prioritize people walking and biking to local destinations.	Short-term	$4,325	OakDOT
A28	90th Ave from G St to International Blvd	Improve the safety and comfort of cyclists on 90th Avenue from G Street to International Boulevard by adding signage to designate a Class III bike route.	Shovel ready	$264	OakDOT
A29	Plymouth Street between 79th Avenue and 104th Avenue	Oakland is repaving 1.5 miles of Plymouth St from 79th Ave to 104th Ave in Fall 2019 with concrete work in Spring 2020. Plymouth St's proximity to schools and residences makes it a priority for paving and transportation safety improvements. Improvement	Shovel ready	$792	OakDOT

Project ID	Project Name	Project Description	Implementation Term	Cost Estimates ('000)	Implementing Agency
A30	103rd Ave from Royal Ann St to International Blvd	Improve the safety and comfort of cyclists on 103rd Avenue from Royal Ann Street to International Boulevard by adding signage to designate a Class III bike route.	Shovel ready	$137	OakDOT
A31	105th Ave from Pippin St to International Blvd - buffered	Improve the safety and comfort of cyclists on 105th Avenue from Pippin Street to International Boulevard by adding signage to designate a Class III bike route.	Shovel ready	$92	OakDOT
A32	San Leandro Boulevard between Creekside Plaza and Park Street	Improve the safety and comfort of cyclists on San Leandro Boulevard from Creekside Plaza to Park Street by adding a painted Class II bike lane.	Shovel ready	TBD	City of San Leandro
A33	San Leandro Creek Trail	Multi-use Trail along San Leandro Creek	Short-term	$6,400	Alameda County Flood Control
A34	Dan Niemi Way Creek Trail	Narrow Dan Niemi Way and construct a multipurpose trail along the bank of San Leandro Creek, consistent with the San Leandro Creek Trail Master Plan and in coordination with future development on the triangular block of E. 14th St, Hays St and Davis St.	Short-term	$2,000	City of San Leandro
A35	East 14th Street between Chumalia Street and Estudillo Avenue	Improve the safety and comfort of cyclists on East 14th Street from Chumalia Street to Estudillo Avenue by adding a painted Class II bike lane.	Shovel ready	$11	City of San Leandro
A36	East 14th Street/Davis Street Intersection Improvements	Intersection Improvements	Shovel ready	TBD	City of San Leandro
A37	San Leandro Airport Access Rd - Davis St Corridor Improvement - Class IV	Improve the safety and comfort of cyclists on HWY 61 from Airport Access Road to Davis Street by adding a protected Class IV bike lane.	Short-term	$1,500	City of San Leandro
A38	Williams Street/ Washington Avenue Intersection Improvements	Intersection Improvements	Shovel ready	TBD	City of San Leandro

Project ID	Project Name	Project Description	Implementation Term	Cost Estimates ('000)	Implementing Agency
A39	E. 14th Street Streetscape Improvements	Recommended changes to E. 14th St in San Leandro south of Maud Ave/ Thornton St include a new center median, lane reconfiguration, new crosswalk locations, design guidelines for new development, and streetscape improvements.	Short-term	$4,000	City of San Leandro
A40	San Leandro Boulevard/Williams Street Intersection Improvements	Intersection Improvements	Short-term	TBD	City of San Leandro
A41	Davis Street/Orchard Avenue Intersection Improvements	Intersection Improvements	Short-term	TBD	City of San Leandro
A42	Davis Street/San Leandro Boulevard Intersection Improvements	Intersection Improvements	Short-term	TBD	City of San Leandro
A43	San Leandro Boulevard/East 14th Street Intersection Improvements	Intersection Improvements	Short-term	TBD	City of San Leandro
A44	San Leandro Boulevard/Washington Avenue Intersection Improvements	Intersection Improvements	Short-term	TBD	City of San Leandro
A45	Davis St Bike Lanes Orchard to SLB	Remove and replace medians and restripe Davis St from Orchard to San Leandro Blvd to add bicycle lanes in both directions as described in the San Leandro BART Pedestrian and Bicycle Improvement Study.	Shovel ready	$800	City of San Leandro
A46	Washington Avenue Streetscape Improvements	Improve the safety and comfort of pedestrians Washington Avenue in San Leandro by adding a landscaped center street median to slow traffic and provide pedestrian refuges at intersections. Learn more.	Short-term	$1,000	City of San Leandro

Project ID	Project Name	Project Description	Implementation Term	Cost Estimates ('000)	Implementing Agency
A47	Washington Avenue/ Halcyon Drive & Floresta Boulevard crosswalks	Intersection Improvements	Short-term	$40	City of San Leandro
A48	Washington Avenue between Caliente Drive and 143rd Avenue	Improve the safety and comfort of cyclists on Washington Avenue from Caliente Drive to 143rd Avenue by adding a protected Class IV bike lane.	Short-term	$237	City of San Leandro
A49	Hesperian Boulevard/ 150th Avenue Intersection Improvements	Intersection Improvements	Shovel ready	$100	City of San Leandro
A50	Hesperian Boulevard between Lewelling Boulevard and East 14th Street	The Hesperian Boulevard Study Corridor will construct Class IV protected bike lane and connect to the existing Class III bike route in San Lorenzo. This route is also included on the Alameda Countywide bicycle network.	Short-term	$617	City of San Leandro
A51	Hesperian Boulevard/ Halycon Drive/Fairmont Drive Intersection Improvements	Intersection Improvements	Shovel ready	TBD	A54
A52	Fairmont Drive Road Diet & Class IV Bicycle Lanes	Restripe Fairmont Drive from Hesperian Boulevard to E. 14th Street to change the roadway from three lanes to two lanes in each direction, allow for installation of bicycle lanes protected by concrete medians interspaced with delineators.	Shovel ready	TBD	City of San Leandro
A53	E. 14th Street Class IV protected bike lanes	Class IV protected bike lanes: E. 14th Street from Hesperian Boulevard to South Hayward BART station	Short-term	$1,589	City of Hayward
A54	East Lewelling Boulevard Complete Streets (Phase 2)	Close sidewalk gaps, install Class IV bikeways, ADA Ramps, enhance crosswalks, and bulb-outs along East Lewelling Blvd between Meekland Avenue and Langton Way in the Ashland Community, Unincorporated Alameda County	Shovel ready	$15,000	ACPWA

Project ID	Project Name	Project Description	Implementation Term	Cost Estimates ('000)	Implementing Agency
A55	San Lorenzo Creekway Trail	Improve the safety and comfort of cyclists along the San Lorenzo Creek between the San Francisco Bay Trail and Don Castro Regional Park by adding an off-street Class I bike path.	Short-term	$33,000	HARD, ACPWA
A56	Mission Boulevard	Improve the safety and comfort of cyclists on Mission Boulevard by adding a separated Class IV bike lane.	Short-term	$4,040	City of Hayward
A57	C St between BART and Mission Blvd	Increase the safety and comfort of cyclists on C Street between the Hayward BART Station and Mission Boulevard by adding a combination of painted Class II and separated Class IV bike lanes.	Shovel ready	TBD	City of Hayward
A58	Main Street Complete Street	Main St from Mc Keever to D St: Reduce roadway from 4 to 2 lanes, construct bike lanes, widen sidewalks and add complete street elements	Short-term	$5,000	City of Hayward
A59	A Street	Improve the safety and comfort of cyclists on A Street by adding a separated Class IV bike lane.	Long-term	$1,459	City of Hayward
A60	Jackson Street	Improve the safety and comfort of cyclists on Jackson Street by adding a separated Class IV bike lane.	Long-term	TBD	City of Hayward
A61	Mission Blvd single lane reduction and two-way cycle track	Improve the safety and comfort of cyclists on Mission Boulevard from A Street to D Street by adding a protected Class IV bike lane and removing a vehicular lane.	Short-term	TBD	City of Hayward
A62	Downtown Hayward PDA Multimodal Complete Streets	Improve safety and transit quality through multimodal corridors	Short-term	TBD	City of Hayward
A63	Tennyson Rd. Corridor PDA Complete Streets	Improve safety and transit quality through multimodal corridors	Short-term	TBD	City of Hayward
A64	Tennyson Road	Improve the safety and comfort of cyclists on Tennyson Road by adding a separated Class IV bike lane.	Short-term	TBD	City of Hayward
A65	Winton Ave Complete Street	On Winton Ave from Hesperian Blvd to Santa Clara St: Rehabilitate pavement, upgrade curb ramps and streetlights; On Winton Ave just east of Santa Clara St: Landscape median	Shovel ready	$604	City of Hayward

Project ID	Project Name	Project Description	Implementation Term	Cost Estimates ('000)	Implementing Agency
A66	Fruitvale: BART Walk and Bicycle Network Gap Study	The Study identifies conceptual active access improvements on City/County and BART property.	Short-term	TBD	OakDOT; BART
A67	Coliseum: BART Walk and Bicycle Network Gap Study	The Study identifies conceptual active access improvements on City/County and BART property.	Short-term	TBD	OakDOT; BART
A68	San Leandro: BART Walk and Bicycle Network Gap Study	The Study identifies conceptual active access improvements on City/County and BART property.	Short-term	TBD	City of San Leandro; BART
A69	Hayward: BART Walk and Bicycle Network Gap Study	The Study identifies conceptual active access improvements on City/County and BART property.	Short-term	TBD	City of Hayward; BART
A70	South Hayward: BART Walk and Bicycle Network Gap Study	The Study identifies conceptual active access improvements on City/County and BART property.	Short-term	TBD	City of Hayward; BART

Safety

Regardless of age, ability, or transportation mode, everyone should be able to move through space comfortably and safely. A common theme expressed by the public during outreach was the need for improved safety in the study area—especially for pedestrians and cyclists. The following projects aim to provide safety for all road users using a variety of treatments such as reducing vehicular speeds by adding speed bumps or medians, upgrading or installing high visibility crosswalks, and improving lighting, among others.

Table 7-2 includes the list of safety projects as well as implementation timeframes. Safety project locations are shown in **Figure 7-1** through **Figure 7-4** by their project number. A total of eight safety projects have been included for evaluation.

Table 7-2: CACCMCP Safety Projects

Project ID	Project Name	Project Description	Implementation Term	Cost Estimates ('000)	Implementing Agency
S1	Foothill Blvd Corridor Improvements (Phase 1)	Safety improvements along Foothill Blvd between Harrington and Cole Streets, including bulb-outs; pedestrian median refuge islands; crosswalk enhancements; rectangular rapid flashing beacons; speed cushions; signage; and refreshed roadway striping.	Shovel ready	$15,000	OakDOT, AC Transit
S2	East Oakland Lighting Study	International Blvd and Bancroft Ave	Short-term	TBD	OakDOT
S3	International Boulevard BRT crossing safety improvement	Improve the safety and comfort for pedestrians on International Boulevard from Seminary Avenue to the southern border of the City of Oakland by adding crosswalk safety improvements.	Short-term	TBD	OakDOT
S4	69th Avenue Safety Improvements	Improve the safety and comfort of pedestrians, cyclists, and drivers on 69th Avenue between International and San Leandro Boulevards by paving the roadway, reducing vehicle speeds using speed humps, and adding high visibility crosswalks.	Shovel ready	TBD	OakDOT
S5	73rd Avenue/ Hegenberger Rd Improvements	Improve the safety and comfort of transit users, pedestrians, and cyclists on 73rd Ave / Hegenberger Road to connect both the Eastmont Transit Center and the Coliseum BART Station by improving connections to the BRT on International Boulevard.	Shovel ready	$20,000	OakDOT

Project ID	Project Name	Project Description	Implementation Term	Cost Estimates ('000)	Implementing Agency
S6	E. 14th Street and Ashland Avenue Intersection	Re-align the east leg of the intersection so that Ashland Avenue connects to E. 14th Street at a 90-degree angle.	Shovel ready	TBD	ACPWA
S7	Mission Boulevard and E. Lewelling Boulevard	Eliminate the large channelized right-turn from southbound Mission to westbound Lewelling. To the extent feasible re-align the east leg of the Mission/Lewelling intersection so that Lewelling connects to Mission at a 90-degree angle.	Short-term	TBD	ACPWA
S8	D Street Traffic Calming & Implementation	In response to concerns expressed by the community, staff will soon be developing a feasibility study to identify opportunities to improve pedestrian and bike safety, as well as reduce excessive vehicle speeds, along the D Street corridor.	Short-term	TBD	City of Hayward

Transit

Transit, when it is convenient, frequent, reliable, and safe, can provide a realistic alternative to car trips. The recommended projects in **Table 7-3** vary substantially in scope, but with a goal to increase transit's competitiveness compared to the car. The following projects help improve the reliability of transit by installing new bus-only lanes, increasing its convenience by adding a new rail station to the Capitol Corridor service, and increasing its safety by providing enhanced bike and pedestrian connections to stations.

Table 7-3: CACCMCP Transit Projects

Project ID	Project Name	Project Description	Implementation Term	Cost Estimates ('000)	Implementing Agency
T1	Capitol Corridor South Bay Connect Rail	Relocate Capitol Corridor service between Oakland Coliseum and Newark from the Niles Subdivision to the Coast Subdivision, including one new rail station, one new in-line intermodal bus facility, and enhanced park-and-ride facilities.	Long-term	$305,000	Capitol Corridor Joint Powers Authority
T2	Fruitvale Avenue/Park Street Transit Improvements	An Enhanced Bus strategy is proposed for 2020 for the Fruitvale Ave/Park Street corridor, with upgrades being made to those improvements by 2040 to keep pace with changing technologies.	Short-term	$61,000	OakDOT
T3	Mobility Hubs at BART Stations	Mobility Hub at San Leandro, Bay Fair, Hayward and South Hayward BART stations	Long-term	$200,000	City of San Leandro, and Hayward; BART
T4	San Leandro BART to South Hayward BART Bus Only Lanes	Bus-only lanes: San Leandro Blvd. from San Leandro BART south to E. 14th St. and E. 14th St./Mission Blvd. from San Leandro Blvd. south to South Hayward BART	Long-term	$350,000	AC Transit
T5	E 14th St/Mission St/Fremont Blvd Rapid Bus Modernization	New limited stop rapid bus service along E 14th St/Mission Blvd/Fremont Blvd between the San Leandro and Warm Springs BART stations, include transit priority signal and queue jump lanes	Long-term	$330,000	AC Transit
T6	Bay Fair Connection	BART: At and near Bay Fair Station: Modify station and approaches to add one or more additional tracks and one or more passenger platforms for improved train service and operational flexibility	Long-term	$23,400	BART

Multimodal

While projects have been grouped and listed based on their primary mode, many projects provide benefits to a combination of cyclists, pedestrians, drivers, and/or transit riders. The following projects benefit one or more modes of transportation. For instance, repaving of streets benefits both auto users as well as buses that traverse the same corridor. Paving can also benefit cyclists riding along on-street facilities.

Table 7-4 includes the list of multimodal projects, as well as their implementation timeframes. Multimodal project locations are shown in **Figure 7-1**through **Figure 7-4** by their project number.

Table 7-4: CACCMCP Multimodal Projects

Project ID	Project Name	Project Description	Implementation Term	Cost Estimates ('000)	Implementing Agency
M1	Oak Street and Madison Street - Conversion of One-way traffic to two-way traffic	Conversion of one-way traffic to two-way traffic. Additionally, sidewalk widening to add to the pedestrian realm.	Long-term	$0	OakDOT
M2	SHOPP Mobility - TMS	SR 185 between Post Miles 3.205 - 10.519 E2 FY 23020 26/27	Shovel ready	$15	Caltrans
M3	SHOPP Mobility - ADA	SR 185 between Post Miles 3.205 - 5.0 E2 FY 20459 29/30	Shovel ready	$7	Caltrans
M4	San Leandro Street repaving along railroad tracks	Seminary Ave to South City Limit Repaving	Shovel ready	TBD	OakDOT
M5	SHOPP Pavement	SR 185 between Post Miles 3.205 - 5.7 E2 FY 13654 21/22	Shovel ready	$22	Caltrans
M6	SHOPP Mobility - ADA	SR 185 between Post Miles 9.08 - 10.1 E2 FY 16381 21/22	Shovel ready	$6	Caltrans
M7	SHOPP Pavement	SR 238 between Post Miles 13.96 - 16.7 E2 FY 23035 26/27	Short-term	$15	Caltrans
M8	Mission Blvd and Foothill Blvd 2-way conversion	Converting Foothill and Mission Boulevards to two-way streets and reconstructing the intersection at Foothill Boulevard, Mission Boulevard and D Street to support two-way movements.	Long-term	$4,591	City of Hayward

Figure 7-1: CACCMCP Projects (1 of 4)

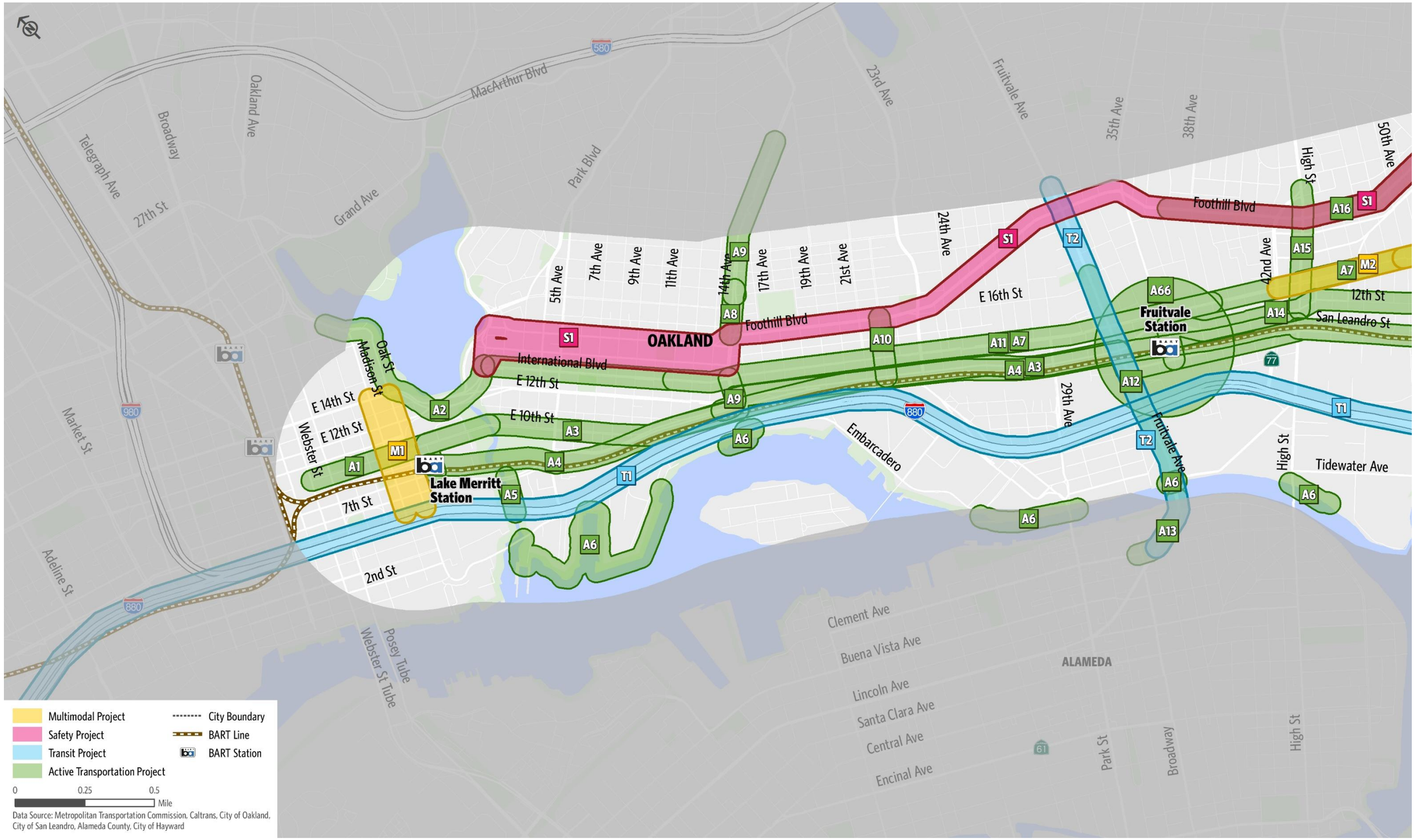
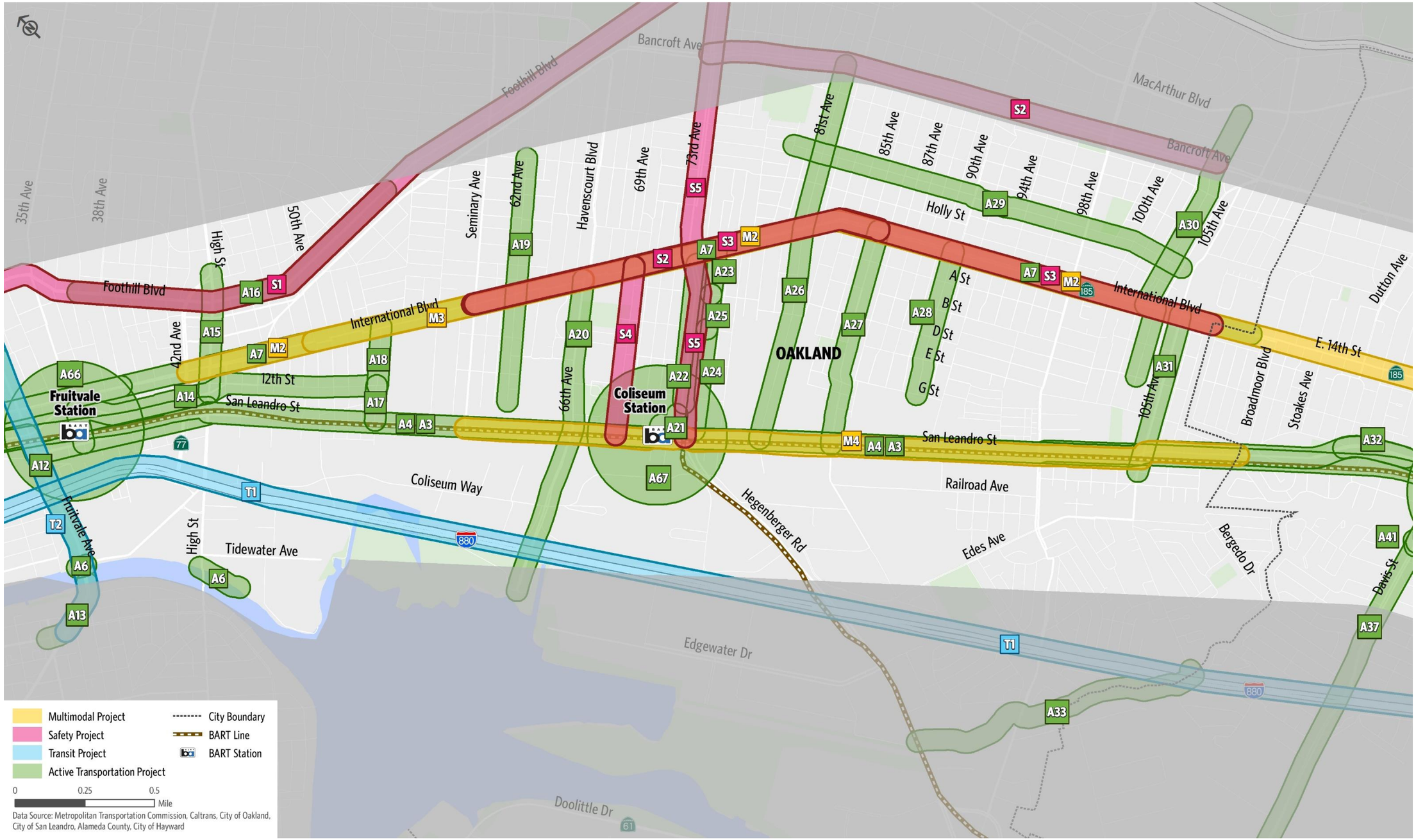


Figure 7-2: CACCMCP Projects (2 of 4)



Multimodal Project
Safety Project
Transit Project
Active Transportation Project
City Boundary
BART Line
BART Station

0 0.25 0.5 Mile

Data Source: Metropolitan Transportation Commission, Caltrans, City of Oakland, City of San Leandro, Alameda County, City of Hayward

Figure 7-3: CACCMCP Projects (3 of 4)

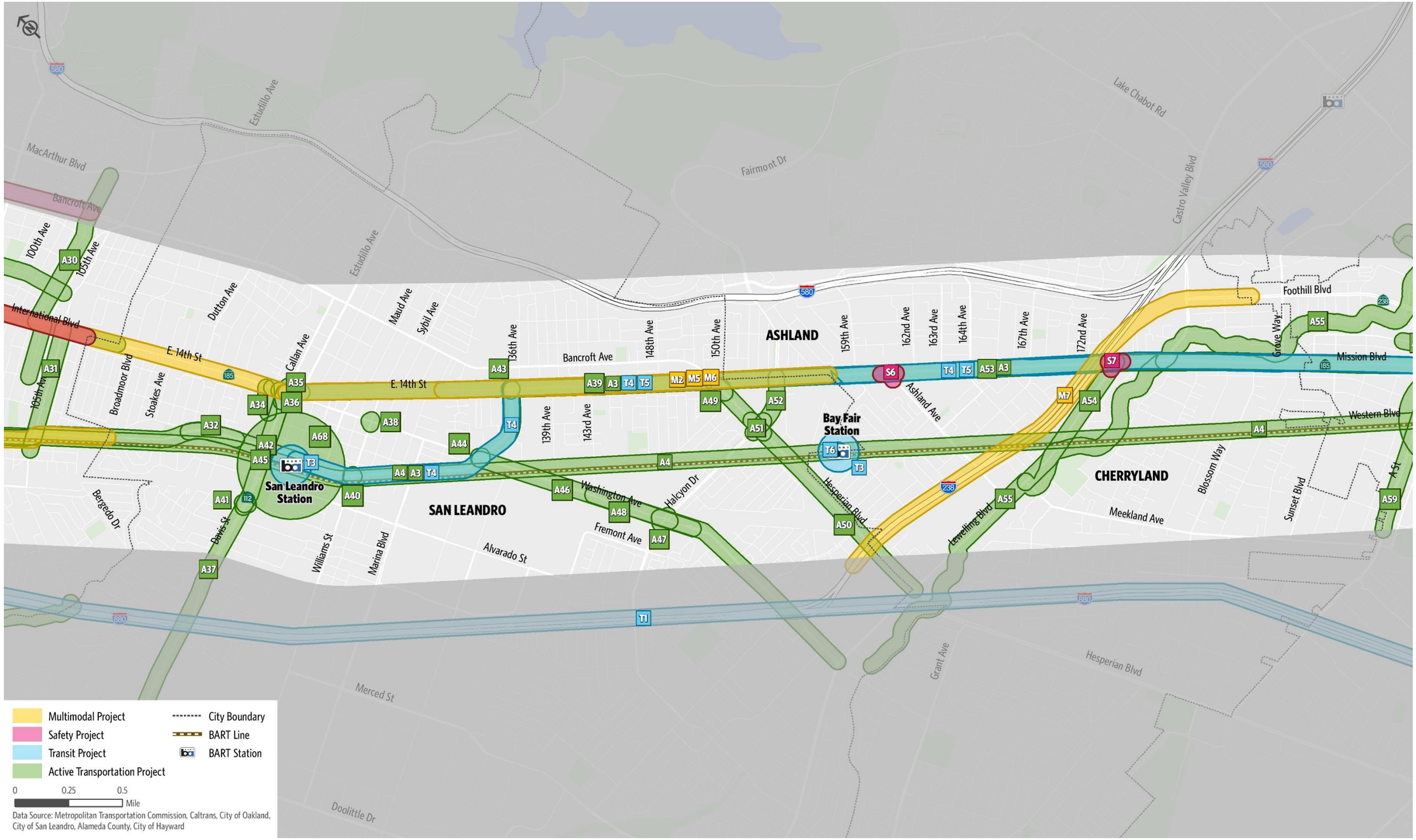


Figure 7-4: CACCMCP Projects (4 of 4)

7.3 Project Evaluation Methodology

Project evaluation was conducted for each project based on the evaluation framework developed in Chapter 2. To evaluate the projects, a qualitative evaluation of LOW, MEDIUM, or HIGH is assigned to a project based on its alignment with plan goals and objectives.

Projects are not assigned an overall score, nor are they prioritized or ranked. Due to the differences in assumptions and evaluation methodologies, a numerical comparison between project types would not yield meaningful conclusions. Instead, the evaluation results mainly demonstrate how projects would likely advance the Corridor Goals. Ratings were developed in consultation with TAC members.

Safety Evaluation

The goal of the safety evaluation is to indicate which projects increase the safety for all transportation users—especially for the most vulnerable road users.

Class I bicycle facilities, or multi-use pathways, provide substantial safety for active transportation modes as they provide dedicated space for these modes eliminating conflicts with motorized vehicles.

Class IV, or separated bike lanes, are on-street facilities that provide a physical separation for cyclists from other modes when space is not available to create a dedicated path. Class IV bike lanes also offer pedestrians safety benefits as they can provide an additional buffer space between the sidewalk and car travel lanes. Installation of Class IV bike lanes can require the narrowing of existing roadways or removal of travel lanes which results in reducing the distance needed for pedestrians to cross at intersections or crosswalks. Some Class IV installation may require road narrowing or lane removal which also slows vehicular speeds, providing additional safety to all road users.

For these reasons, both Class I bike paths and Class IV separated bike lanes are considered high-quality safety projects. Projects that include high-quality safety projects and are part of the existing High Injury Network (HIN) (**Figure 5-5** through **Figure 5-8**) are scored as "HIGH." Projects that increase the comfort and safety for pedestrians and cyclists but are not on the HIN receive a score of "MEDIUM." All other projects are assigned a "LOW" score. The safety evaluation methodology is summarized in **Table 7-5** and project scoring is listed in **Table 7-11.**

Forty-six projects received a "HIGH" score, 30 received a "MEDIUM" score while 16 projects received a "LOW" score. Most projects that received a "LOW" score were transit or multimodal projects that did not include pedestrian or cyclist amenities that would directly increase the safety of those groups.

Table 7-5: Safety Evaluation Methodology

Goals	Objectives	Project Evaluation Methodology
1. Provide a safe and convenient transportation system for all users.	1.1 Reduce severe and fatal injury collisions 1.2 Reduce non-motorized collisions 1.3 Provide high-quality active transportation options	• **High score** for safety projects on HIN or new Class I/IV bike facility • **Medium score** for all other active transportation projects • **Low score** for all non-active transportation projects

Equity Evaluation

Two criteria were considered when evaluating a project's ability to meet equity goals. The overall score is determined based on whether a project is in either a Disadvantaged Community (DAC) or in an Equity Priority Community (EPC). As discussed in detail in Chapters 3 and 5, DAC and EPC are different measures that intend to identify populations that have experienced disproportionate systemic hardship. EPC is defined strictly using socioeconomic indicators. DAC considers socio-economic factors and disproportionate levels of pollution and poor health outcomes, among other factors. Both DACs and EPCs are fully defined in Chapter 3 and can be seen in **Figure 3-15** through **Figure 3-18**.

For scoring, if a project boundary intersects with both a DAC and EPC area, it is assigned a "HIGH" equity score. If the project intersects with either a DAC area or an EPC area, it is scored as "MEDIUM." If the project does not serve either a DAC or EPC area, it is given a "LOW" equity score. The equity evaluation methodology is summarized in **Table 7-6** and project scoring is listed in **Table 7-11.**

Each project evaluated was either in a DAC or EPC which is why no project received a "LOW" score. Fifty-seven projects were in both a DAC or EPC and received a "HIGH" score, while thirty-five projects were in either a DAC or EPC and received a "MEDIUM" score.

Table 7-6: Equity Evaluation Methodology

Goals	Objectives	Project Evaluation Methodology
2. Address the mobility needs by providing accessible, affordable, and equitable transportation network.	2.1 increased number of multimodal options in the corridor and reduce gaps 2.2 Improve connections in Equity Priority Communities 2.3 Provide affordable alternatives to driving alone	• **High score** if the project is in both a DAC and EPC • **Medium score** if the project is in either a DAC or EPC • **Low score** if the project is outside of a DAC and EPC

Travel Reliability Evaluation

Travel reliability is evaluated as the ability of a project to improve corridor efficiency by improving on-time performance of transit or reduce the buffer time drivers must add to ensure on-time arrival at their destinations. One method to increase reliability for drivers is to reduce the amount of congestion within the corridor by shifting car trips to alternative modes. Projects that include transit improvements received a travel reliability score of "HIGH," while high-quality active transportation that promotes mode shift (such as Class I bike paths and Class IV separated bikeways) or promotes pedestrian trails were assigned a "MEDIUM" score. Projects that did not meet either of these criteria received a "LOW" travel reliability score.

The reliability evaluation methodology is summarized in **Table 7-7** and project scoring is listed in **Table 7-11.** All transit projects and in total 12 projects received a "HIGH" score. All 19 projects that received a "MEDIUM" score were awarded to active transportation projects, while the 61 remaining projects received a "LOW" score.

Table 7-7: Travel Reliability Evaluation

Goals	Objectives	Project Evaluation Methodology
3. Enhance travel reliability and improve corridor efficiency.	3.1 Reduce recurring delays 3.2 Improve transit reliability 3.3 Increase travel time reliability	• **High score** for transit improvement projects • **Medium score** for traffic operations projects OR projects that provide a high-quality modal alternative • **Low score** for all other projects

Land Use Planning Evaluation

Land use plays an integral role in shifting travel behavior and supporting higher adoption rates for alternative forms of transportation. Dense, mixed-use development patterns promote walkability and reduce the number of trips that require a car. Transit-rich Priority Development Areas (PDAs) are defined as locations within a half-mile of high-quality transportation and have been designated as locations for increased housing and mixed-use infill that promotes car-free and car-light lifestyles.[20] PDAs within the CACCMCP study area are shown in **Figure 3-11** through **Figure 3-14**. Projects within a PDA received a "HIGH" land use score. Projects that provide access to a PDA but are not within it received a "MEDIUM" score. Due to the CACCMCP study area location, most projects received a "HIGH" score.

Land use methodology is summarized in **Table 7-8** and project scoring is listed in **Table 7-11.** Sixty-nine projects are either in or partially within a PDA and received a "HIGH" score. Seventeen projects were outside of the boundaries, did not connect to a PDA, and were thus assigned a "LOW" score. Six projects received a "MEDIUM" score for providing access to nearby PDAs.

Table 7-8: Land Use Evaluation Criteria

Goals	Objectives	Project Evaluation Methodology
4. Support efficient land use planning that	4.1 Promote multimodal travel that supports efficient land	• **High score** for local multimodal, active transportation, and transit projects in PDAs

[20] https://abag.ca.gov/our-work/land-use/pda-priority-development-areas

encourages active lifestyle.	use 4.2 Increase of Mixed-Use Transit-Oriented Development	• **Medium score** for local multimodal, active transportation, and transit projects providing access to PDAs • **Low score** for all other projects

Public Health and Environment Evaluation

The intent of the public health and environmental evaluation is to determine which projects have the highest ability to reduce VMT and GHG emissions. Projects that promote the greatest modal shift from driving to alternative forms of transportation reduce VMT, and thus have the largest potential impact in reducing GHG emissions. While the shift to electric vehicles will play a critical role in reducing GHG emissions, electric vehicles still produce significant PM 2.5 emissions through brake and tire wear; therefore, it is important to reduce driving overall. In addition, walking and biking provide health benefits by introducing moderate exercise into daily routines. Active transportation and transit use also build a sense of trust and community which can improve health outcomes, while daily auto commuting may increase stress and can reduce life expectancy. Projects that improve transit, biking, or pedestrian amenities scored "HIGH" under the public health and environmental score. Projects that reduced emissions through the minimization of vehicular delay received a "MEDIUM" evaluations score. All other projects received a "LOW" score.

The health and environment evaluation methodology is summarized in **Table 7-9** and project scoring is listed in **Table 7-11.** Eighty-nine percent of all projects evaluated received a "HIGH" score. These projects were related to transit and active transportation as they would contribute directly to the reduction of VMT and GHG emissions. Nine projects received a "LOW" score. Most of these are multimodal projects that focus on vehicular benefits. Only one project, which is designed to reduce car congestion through traffic management systems, received a "MEDIUM" score in this evaluation.

Table 7-9: Public Health and Environmental Evaluation Criteria

Goals	Objectives	Project Evaluation Methodology
5. Provide a transportation system that improves health and environment	5.1 Reduce Vehicle Miles Traveled (VMT) 5.2 Reduce GHG Emissions	• **High score** for multimodal, active transportation, transit, or environmental projects. • **Medium score** for all other roadway projects that reduce delay (emissions) • **Low score** for all other projects

Community Revitalization Evaluation

The community revitalization evaluation is intended to score projects based on their level of support from communities as well as how much they would contribute to place making. As part of the community outreach efforts, an interactive map was developed using the Social Pinpoint platform, further explained in Chapter 6. This map allowed members of the community to review location and description of projects and leave comments as desired. Projects that received significant positive engagement (received five or more supportive comments) were assigned a

"HIGH" community revitalization score. A major theme in both online and in-person feedback was the need for more safety—particularly for pedestrians. Projects that provide safety elements for pedestrians or placemaking (such as paseos or streetscape improvements) were ranked as "MEDIUM" for community revitalization. All other projects received a "LOW" score.

The community revitalization evaluation methodology is summarized in **Table 7-10** and project scoring is listed in **Table 7-11**. A nearly even number of projects received a "LOW" and "MEDIUM" count: 42 and 41 respectively. Only nine projects received a "HIGH" score as it is awarded only to projects that received multiple positive comments through public engagement platforms, while "MEDIUM" scores tried to account for the safety concerns for pedestrians expressed throughout multiple engagement forums.

Table 7-10: Community Revitalization Evaluation Criteria

Goals	Objectives	Project Evaluation Methodology
6. Consider multimodal network as a tool for community revitalization and economic growth.	6.1 Support placemaking and existing communities	• **High score** for project types that received significant support during engagement • **Medium score** for project types that received moderate support during engagement OR projects with placemaking or pedestrian safety elements • **Low score** for all other projects

Project Evaluation Results

The following combined evaluation is intended to determine whether projects should be included in the CACCMCP project list. The evaluation also indicates how much an individual project would contribute to the safety, public health and environment, or travel reliability of the CACCMCP. This evaluation also considers whether projects support existing land uses or would contribute to community revitalization and increase equity. Each criterion is scored as "HIGH" "MEDIUM" or "LOW" based on the evaluation criteria listed in **Table 7-5** through **Table 7-10** for each evaluation category with the results listed below in **Table 7-11**.

Every project listed within the CACCMCP has received a score of "MEDIUM" for at least one evaluation category, indicating that each project evaluated is recommended for the final CACCMCP project list. It is worth emphasizing that the scores listed in **Table 7-11** are not intended to provide any recommendation for project prioritization or ranking. Due to the differences in assumptions and evaluation methodology, a comparison between project types would not yield a meaningful conclusion. Instead, the evaluation results mainly demonstrate how projects would likely advance the Corridor Goals. Ratings were developed in consultation with TAC members.

Table 7-11: Evaluation Results

#	Project Name	Project Description	Implementing Agency	Safety	Equity	Travel Reliability	Land Use	Public Health and Environmental	Community Revitalization
A1	10th Street Improvement Project	10th Street between Webster St and the 10th Street bridge is slated for repaving. Additionally, Oakland Department of Transportation (OakDOT) received a Safe Routes to School (SRTS) grant to make sidewalk and pedestrian safety improvements around Lincoln Recreation Center and Lincoln Elementary.	OakDOT	MEDIUM	HIGH	LOW	HIGH	HIGH	MEDIUM
A2	Lake Merritt Bikeway Improvement Project	Extend the existing two-way protected cycle track around Lake Merritt from Madison Street southward and over the estuary bridge to International Blvd. Add a one-way protected bike lane in Eastbound direction on Lake Merritt Boulevard between Lakeside Drive and 1st Avenue. Additional improvement includes protected intersections and signal improvements.	OakDOT	HIGH	HIGH	MEDIUM	HIGH	HIGH	HIGH
A3	East Bay Greenway Multimodal (Phase 1)	Improvements for construction within 3-5 years, including: one-way cycle tracks along East 12th Street, a Class I pathway along San Leandro Street, one-way separated bike lanes along San Leandro Blvd and East 14th Street, and Mission Boulevard, and pedestrian amenities. Additionally, transit improvements such as in-lane stops and transit signal priority (TSP).	Alameda CTC	HIGH	HIGH	MEDIUM	HIGH	HIGH	MEDIUM
A4	East Bay Greenway Urban Trail (Phase 2)	East Bay Greenway Phase 2 - Rails-to-Trail or Rails-with-Trail facility in a 10+ year horizon pending collaboration with Union Pacific Railroad for necessary right of way. The project will connect the seven BART station between Lake Merritt to South Hayward that will generally follow the BART rail line.	Alameda CTC	HIGH	HIGH	LOW	HIGH	HIGH	HIGH
A5	Lake Merritt Bay Trail	Improve the safety and comfort of cyclists and pedestrian along the Lake Merritt Channel by closing trail gaps between San Francisco Bay Trail and Lake Merritt Channel Trails by adding an off-street Class I bike path.	OakDOT	HIGH	HIGH	LOW	HIGH	HIGH	MEDIUM

#	Project Name	Project Description	Implementing Agency	Safety	Equity	Travel Reliability	Land Use	Public Health and Environmental	Community Revitalization
A6	San Francisco Bay Trail	Improve the safety and comfort of cyclists and pedestrian along the San Francisco Bay by closing trail gaps at multiple locations by adding an off-street Class I bike path.	EBRPD, OakDOT	HIGH	HIGH	LOW	HIGH	HIGH	HIGH
A7	International Blvd Pedestrian Lighting and Sidewalk Improvement Project	City of Oakland has received $9.9 million dollars in Clean California funds and $1.5 million dollars in Affordable Housing and Sustainable Communities (AHSC) grant funds for The International Boulevard Pedestrian Lighting and Sidewalk Improvement Project.	OakDOT, AC Transit	HIGH	HIGH	LOW	HIGH	HIGH	MEDIUM
A8	14th Ave from Foothill Blvd to E 19th St	Improve the safety and comfort of cyclists on 14th Avenue from Foothill Boulevard to East 19th Street by lane reduction from 4 to 2 lanes and adding a painted Class II bike lane.	OakDOT	MEDIUM	HIGH	LOW	HIGH	HIGH	HIGH
A9	14th Ave from E 8th St/E 19th St to International Blvd/E 27th St	Improve the safety and comfort of cyclists on 14th Avenue from East 8th Street to International Boulevard and on 14th Avenue from East 19th Street to East 27th Street by lane reduction from 4 to 2 lanes and adding a painted Class II bike lane. Additionally, the project will extend sidewalks and install multiple RRFBs for pedestrian safety.	OakDOT	MEDIUM	HIGH	LOW	HIGH	HIGH	HIGH
A10	22nd Ave from Foothill Blvd to E 12th St	Improve the safety and comfort of cyclists on 22nd Avenue from Foothill Boulevard to East 12th Street by adding a painted Class II bike lane.	OakDOT	MEDIUM	HIGH	LOW	HIGH	HIGH	MEDIUM
A11	AHSC Camino 23 International Blvd Pedestrian Improvements	Pedestrian improvements, including sidewalk repair, street lighting, and crosswalk improvements, along International Blvd between 11th Ave and 38th Ave	OakDOT	HIGH	HIGH	LOW	HIGH	HIGH	MEDIUM
A12	Fruitvale Alive Project	Improve the safety and comfort of pedestrians and cyclists on Fruitvale Avenue between Alameda Avenue and East 16th Street by widening sidewalks to install a bike lane at sidewalk level, slowing traffic with bulb-outs, repairing pavement, upgrading lighting, and enhancing crosswalks.	OakDOT	HIGH	HIGH	LOW	HIGH	HIGH	MEDIUM

#	Project Name	Project Description	Implementing Agency	Safety	Equity	Travel Reliability	Land Use	Public Health and Environmental	Community Revitalization
A13	Clement Ave and Tilden Way Complete Streets	Reuse the abandoned railroad right-of-way along the eastern terminus of Clement Ave and Tilden Way to extend the Cross Alameda Trail between Broadway and the Miller-Sweeney/Fruitvale Rail Bridges, while considering ways to improve truck and bus routes.	ACPWA	MEDIUM	HIGH	MEDIUM	HIGH	HIGH	HIGH
A14	East 12th Street Bikeway Project: Fruitvale-Melrose Gap Closure	The project proposes: · A neighborhood bike route along 54th Avenue between International Boulevard and E 12th Street where the street is too narrow for bike lanes · A neighborhood bike route along E 12th Street between 54th Avenue and 44th Avenue where the street is too narrow for bike lanes · Protected bike lanes along E 12th Street between 44th Avenue and 40th Avenue to accommodate bi-directional bike travel along the one-way stretch of E 12th Street · Buffered bike lanes along E 12th Street between 35th Avenue and 40th Avenue to minimize on-street parking removal and disruptions to school pick-up and drop-off	OakDOT	HIGH	HIGH	MEDIUM	HIGH	HIGH	LOW
A15	High St from Courtland Ave to E 12th St	Improve the safety and comfort of cyclists on High Street from Courtland Avenue to East 12th Street by adding a painted Class II bike lane.	OakDOT	HIGH	HIGH	LOW	HIGH	HIGH	LOW
A16	Foothill Complete Streets	Engage the various communities along Foothill Blvd (a high injury corridor) to plan for capital improvements to address safety concerns and promote active mobility options on this corridor.	OakDOT	HIGH	HIGH	LOW	HIGH	HIGH	MEDIUM
A17	54th Ave from E 12th St to San Leandro St	Improve the safety and comfort of cyclists on 54th Avenue from East 12th Street to San Leandro Street by adding signage to designate a Class III bike route.	OakDOT	MEDIUM	HIGH	LOW	HIGH	HIGH	LOW
A18	54th Ave from International Blvd to E 12th St	Improve the safety and comfort of cyclists on 54th Avenue from International Boulevard to East 12th Street by adding signage to designate a Class III bike route.	OakDOT	MEDIUM	HIGH	LOW	HIGH	HIGH	LOW

#	Project Name	Project Description	Implementing Agency	Safety	Equity	Travel Reliability	Land Use	Public Health and Environmental	Community Revitalization
A19	62nd Ave from South end of 62nd Ave to Avenal Ave	Improve the safety and comfort of cyclists on 62nd Avenue from Tevis Street to Avenal Avenue by adding signage to designate a Class III bike route.	OakDOT	MEDIUM	HIGH	LOW	HIGH	HIGH	LOW
A20	66th Ave from Oakport St to San Leandro St (MLK Shoreline to Coliseum BART connection)	Improve the safety and comfort of cyclists along 66th Avenue from Oakport Street to San Leandro Street by adding an off-street Class I bike path. Additionally, the project includes new AC Transit stops at 66th Avenue and Oakport Street	OakDOT	HIGH	HIGH	LOW	HIGH	HIGH	LOW
A21	Coliseum BART Parking Lot Rd from Snell St to Coliseum BART Parking Lot Access	Improve the safety and comfort of cyclists on Coliseum BART Parking Lot Road from Snell Street to Coliseum BART Parking Lot Access by adding a protected Class IV bike lane	OakDOT	HIGH	HIGH	MEDIUM	HIGH	HIGH	LOW
A22	Hegenberger Rd from International Boulevard to San Leandro Street	Improve the safety and comfort of cyclists on Hegenberger Road from International Boulevard to Hawley Street by adding a protected Class IV bike lane	OakDOT	HIGH	HIGH	MEDIUM	HIGH	HIGH	LOW
A23	75th Ave from International Blvd to Rusdale Ave	Improve the safety and comfort of cyclists on 75th Avenue from International Boulevard to Rusdale Avenue by adding signage to designate a Class III bike route.	OakDOT	MEDIUM	HIGH	LOW	HIGH	HIGH	LOW
A24	75th Ave from Hamilton St to Snell St	Improve the safety and comfort of cyclists on 75th Avenue from Hamilton Street to Snell Street by adding signage to designate a Class III bike route.	OakDOT	MEDIUM	HIGH	LOW	HIGH	HIGH	LOW
A25	75th Ave from Rusdale Ave to Hamilton St	Improve the safety and comfort of cyclists on 75th Avenue from Rusdale Avenue to Hamilton Street by adding signage to designate a Class III bike route	OakDOT	MEDIUM	HIGH	LOW	HIGH	HIGH	LOW

#	Project Name	Project Description	Implementing Agency	Safety	Equity	Travel Reliability	Land Use	Public Health and Environmental	Community Revitalization
A26	81st Ave from San Leandro St to Bancroft Ave	This project is a part of the East Oakland Neighborhood Bike Routes that will provide safer and calmer neighborhood streets designed to prioritize people walking and biking to local destinations.	OakDOT	MEDIUM	HIGH	LOW	HIGH	HIGH	MEDIUM
A27	85th Ave from International Blvd to San Leandro St	This project is a part of the East Oakland Neighborhood Bike Routes that will provide safer and calmer neighborhood streets designed to prioritize people walking and biking to local destinations.	OakDOT	MEDIUM	HIGH	LOW	HIGH	HIGH	MEDIUM
A28	90th Ave from G St to International Blvd	Improve the safety and comfort of cyclists on 90th Avenue from G Street to International Boulevard by adding signage to designate a Class III bike route.	OakDOT	MEDIUM	HIGH	LOW	HIGH	HIGH	LOW
A29	Plymouth Street between 79th Avenue and 104th Avenue	Oakland is repaving 1.5 miles of Plymouth St from 79th Ave to 104th Ave in Fall 2019 with concrete work in Spring 2020. Plymouth St's proximity to schools and residences makes it a priority for paving and transportation safety improvements. Improvement	OakDOT	MEDIUM	MEDIUM	LOW	HIGH	HIGH	MEDIUM
A30	103rd Ave from Royal Ann St to International Blvd	Improve the safety and comfort of cyclists on 103rd Avenue from Royal Ann Street to International Boulevard by adding signage to designate a Class III bike route.	OakDOT	MEDIUM	HIGH	LOW	HIGH	HIGH	LOW
A31	105th Ave from Pippin St to International Blvd - buffered	Improve the safety and comfort of cyclists on 105th Avenue from Pippin Street to International Boulevard by adding signage to designate a Class III bike route.	OakDOT	MEDIUM	HIGH	LOW	HIGH	HIGH	LOW
A32	San Leandro Boulevard between Creekside Plaza and Park Street	Improve the safety and comfort of cyclists on San Leandro Boulevard from Creekside Plaza to Park Street by adding a painted Class II bike lane.	City of San Leandro	HIGH	MEDIUM	LOW	MEDIUM	HIGH	LOW
A33	San Leandro Creek Trail	Multi-use Trail along San Leandro Creek	Alameda County Flood Control	HIGH	HIGH	MEDIUM	MEDIUM	HIGH	MEDIUM

#	Project Name	Project Description	Implementing Agency	Safety	Equity	Travel Reliability	Land Use	Public Health and Environmental	Community Revitalization
A34	Dan Niemi Way Creek Trail	Narrow Dan Niemi Way and construct a multipurpose trail along the bank of San Leandro Creek, consistent with the San Leandro Creek Trail Master Plan and in coordination with future development on the triangular block of E. 14th St, Hays St and Davis St.	City of San Leandro	HIGH	MEDIUM	MEDIUM	HIGH	HIGH	MEDIUM
A35	East 14th Street between Chumalia Street and Estudillo Avenue	Improve the safety and comfort of cyclists on East 14th Street from Chumalia Street to Estudillo Avenue by adding a painted Class II bike lane.	City of San Leandro	HIGH	MEDIUM	LOW	HIGH	HIGH	LOW
A36	East 14th Street/Davis Street Intersection Improvements	Intersection Improvements	City of San Leandro	HIGH	MEDIUM	LOW	HIGH	HIGH	LOW
A37	San Leandro Airport Access Rd - Davis St Corridor Improvement - Class IV	Improve the safety and comfort of cyclists on HWY 61 from Airport Access Road to Davis Street by adding a protected Class IV bike lane.	City of San Leandro	HIGH	HIGH	MEDIUM	HIGH	HIGH	LOW
A38	Williams Street/Washington Avenue Intersection Improvements	Intersection Improvements	City of San Leandro	MEDIUM	MEDIUM	LOW	HIGH	HIGH	LOW
A39	E. 14th Street Streetscape Improvements	Recommended changes to E. 14th St in San Leandro south of Maud Ave/ Thornton St include a new center median, lane reconfiguration, new crosswalk locations, design guidelines for new development, and streetscape improvements.	City of San Leandro	HIGH	MEDIUM	LOW	HIGH	HIGH	MEDIUM

#	Project Name	Project Description	Implementing Agency	Safety	Equity	Travel Reliability	Land Use	Public Health and Environmental	Community Revitalization
A40	San Leandro Boulevard/Williams Street Intersection Improvements	Intersection Improvements	City of San Leandro	MEDIUM	MEDIUM	LOW	HIGH	HIGH	LOW
A41	Davis Street/Orchard Avenue Intersection Improvements	Intersection Improvements	City of San Leandro	MEDIUM	HIGH	LOW	HIGH	HIGH	LOW
A42	Davis Street/San Leandro Boulevard Intersection Improvements	Intersection Improvements	City of San Leandro	HIGH	MEDIUM	LOW	HIGH	HIGH	LOW
A43	San Leandro Boulevard/East 14th Street Intersection Improvements	Intersection Improvements	City of San Leandro	HIGH	MEDIUM	LOW	HIGH	HIGH	LOW
A44	San Leandro Boulevard/Washington Avenue Intersection Improvements	Intersection Improvements	City of San Leandro	MEDIUM	MEDIUM	LOW	MEDIUM	HIGH	MEDIUM
A45	Davis St Bike Lanes Orchard to SLB	Remove and replace medians and restripe Davis St from Orchard to San Leandro Blvd to add bicycle lanes in both directions as described in the San Leandro BART Pedestrian and Bicycle Improvement Study.	City of San Leandro	MEDIUM	HIGH	LOW	HIGH	HIGH	LOW

#	Project Name	Project Description	Implementing Agency	Safety	Equity	Travel Reliability	Land Use	Public Health and Environmental	Community Revitalization
A46	Washington Avenue Streetscape Improvements	Improve the safety and comfort of pedestrians Washington Avenue in San Leandro by adding a landscaped center street median to slow traffic and provide pedestrian refuges at intersections. Learn more.	City of San Leandro	MEDIUM	HIGH	LOW	MEDIUM	HIGH	MEDIUM
A47	Washington Avenue/Halcyon Drive & Floresta Boulevard crosswalks	Intersection Improvements	City of San Leandro	MEDIUM	HIGH	LOW	MEDIUM	HIGH	MEDIUM
A48	Washington Avenue between Caliente Drive and 143rd Avenue	Improve the safety and comfort of cyclists on Washington Avenue from Caliente Drive to 143rd Avenue by adding a protected Class IV bike lane.	City of San Leandro	HIGH	HIGH	MEDIUM	MEDIUM	HIGH	LOW
A49	Hesperian Boulevard/150th Avenue Intersection Improvements	Intersection Improvements	City of San Leandro	MEDIUM	MEDIUM	LOW	HIGH	HIGH	MEDIUM
A50	Hesperian Boulevard between Lewelling Boulevard and East 14th Street	The Hesperian Boulevard Study Corridor will construct Class IV protected bike lane and connect to the existing Class III bike route in San Lorenzo. This route is also included on the Alameda Countywide bicycle network.	City of San Leandro	HIGH	HIGH	HIGH	HIGH	HIGH	LOW
A51	Hesperian Boulevard/Halycon Drive/Fairmont Drive Intersection Improvements	Intersection Improvements	City of San Leandro	MEDIUM	MEDIUM	LOW	HIGH	HIGH	MEDIUM

#	Project Name	Project Description	Implementing Agency	Safety	Equity	Travel Reliability	Land Use	Public Health and Environmental	Community Revitalization
A52	Fairmont Drive Road Diet & Class IV Bicycle Lanes	Restripe Fairmont Drive from Hesperian Boulevard to E. 14th Street to change the roadway from three lanes to two lanes in each direction, allow for installation of bicycle lanes protected by concrete medians interspaced with delineators.	City of San Leandro	HIGH	MEDIUM	LOW	HIGH	HIGH	LOW
A53	E. 14th Street Class IV protected bike lanes	Class IV protected bike lanes: E. 14th Street from Hesperian Boulevard to South Hayward BART station	City of Hayward	HIGH	MEDIUM	MEDIUM	HIGH	HIGH	LOW
A54	East Lewelling Boulevard Complete Streets (Phase 2)	Close sidewalk gaps, install Class IV bikeways, ADA Ramps, enhance crosswalks, and bulb-outs along East Lewelling Blvd between Meekland Avenue and Langton Way in the Ashland Community, Unincorporated Alameda County	ACPWA	HIGH	MEDIUM	MEDIUM	HIGH	HIGH	MEDIUM
A55	San Lorenzo Creekway Trail	Improve the safety and comfort of cyclists along the San Lorenzo Creek between the San Francisco Bay Trail and Don Castro Regional Park by adding an off-street Class I bike path.	HARD, ACPWA	HIGH	MEDIUM	MEDIUM	HIGH	HIGH	MEDIUM
A56	Mission Boulevard	Improve the safety and comfort of cyclists on Mission Boulevard by adding a separated Class IV bike lane.	City of Hayward	HIGH	MEDIUM	MEDIUM	HIGH	HIGH	HIGH
A57	C St between BART and Mission Blvd	Increase the safety and comfort of cyclists on C Street between the Hayward BART Station and Mission Boulevard by adding a combination of painted Class II and separated Class IV bike lanes.	City of Hayward	HIGH	MEDIUM	MEDIUM	HIGH	HIGH	MEDIUM
A58	Main Street Complete Street	Main St from Mc Keever to D St: Reduce roadway from 4 to 2 lanes, construct bike lanes, widen sidewalks and add complete street elements	City of Hayward	MEDIUM	MEDIUM	LOW	HIGH	HIGH	MEDIUM
A59	A Street	Improve the safety and comfort of cyclists on A Street by adding a separated Class IV bike lane.	City of Hayward	HIGH	MEDIUM	MEDIUM	HIGH	HIGH	LOW
A60	Jackson Street	Improve the safety and comfort of cyclists on Jackson Street by adding a separated Class IV bike lane.	City of Hayward	HIGH	MEDIUM	MEDIUM	HIGH	HIGH	LOW
A61	Mission Blvd single lane reduction and two-way cycle track	Improve the safety and comfort of cyclists on Mission Boulevard from A Street to D Street by adding a protected Class IV bike lane and removing a vehicular lane.	City of Hayward	HIGH	MEDIUM	MEDIUM	HIGH	HIGH	LOW

#	Project Name	Project Description	Implementing Agency	Safety	Equity	Travel Reliability	Land Use	Public Health and Environmental	Community Revitalization
A62	Downtown Hayward PDA Multimodal Complete Streets	Improve safety and transit quality through multimodal corridors	City of Hayward	HIGH	MEDIUM	LOW	HIGH	HIGH	MEDIUM
A63	Tennyson Rd. Corridor PDA Complete Streets	Improve safety and transit quality through multimodal corridors	City of Hayward	HIGH	HIGH	LOW	HIGH	HIGH	MEDIUM
A64	Tennyson Road	Improve the safety and comfort of cyclists on Tennyson Road by adding a separated Class IV bike lane.	City of Hayward	HIGH	HIGH	MEDIUM	HIGH	HIGH	LOW
A65	Winton Ave Complete Street	On Winton Ave from Hesperian Blvd to Santa Clara St: Rehabilitate pavement, upgrade curb ramps and streetlights; On Winton Ave just east of Santa Clara St: Landscape median	City of Hayward	HIGH	HIGH	LOW	LOW	HIGH	MEDIUM
A66	Fruitvale: BART Walk and Bicycle Network Gap Study	The Study identifies conceptual active access improvements on City/County and BART property.	OakDOT; BART	MEDIUM	HIGH	HIGH	HIGH	HIGH	MEDIUM
A67	Coliseum: BART Walk and Bicycle Network Gap Study	The Study identifies conceptual active access improvements on City/County and BART property.	OakDOT; BART	MEDIUM	HIGH	HIGH	HIGH	HIGH	MEDIUM
A68	San Leandro: BART Walk and Bicycle Network Gap Study	The Study identifies conceptual active access improvements on City/County and BART property.	City of San Leandro; BART	LOW	HIGH	HIGH	HIGH	HIGH	MEDIUM
A69	Hayward: BART Walk and Bicycle Network Gap Study	The Study identifies conceptual active access improvements on City/County and BART property.	City of Hayward; BART	LOW	MEDIUM	HIGH	HIGH	HIGH	MEDIUM

#	Project Name	Project Description	Implementing Agency	Safety	Equity	Travel Reliability	Land Use	Public Health and Environmental	Community Revitalization
A70	South Hayward: BART Walk and Bicycle Network Gap Study	The Study identifies conceptual active access improvements on City/County and BART property.	City of Hayward; BART	LOW	MEDIUM	HIGH	HIGH	HIGH	MEDIUM
S1	Foothill Blvd Corridor Improvements (Phase 1)	Safety improvements along Foothill Blvd between Harrington and Cole Streets, including bulb-outs; pedestrian median refuge islands; crosswalk enhancements; rectangular rapid flashing beacons; speed cushions; signage; and refreshed roadway striping.	OakDOT, AC Transit	HIGH	HIGH	LOW	LOW	HIGH	HIGH
S2	East Oakland Lighting Study	International Blvd and Bancroft Ave	OakDOT	HIGH	HIGH	LOW	LOW	HIGH	MEDIUM
S3	International Boulevard BRT crossing safety improvement	Improve the safety and comfort for pedestrians on International Boulevard from Seminary Avenue to the southern border of the City of Oakland by adding crosswalk safety improvements.	OakDOT	HIGH	HIGH	LOW	LOW	HIGH	MEDIUM
S4	69th Avenue Safety Improvements	Improve the safety and comfort of pedestrians, cyclists, and drivers on 69th Avenue between International and San Leandro Boulevards by paving the roadway, reducing vehicle speeds using speed humps, and adding high visibility crosswalks.	OakDOT	HIGH	HIGH	LOW	LOW	HIGH	MEDIUM
S5	73rd Avenue/ Hegenberger Rd Improvements	Improve the safety and comfort of transit users, pedestrians, and cyclists on 73rd Ave / Hegenberger Road to connect both the Eastmont Transit Center and the Coliseum BART Station by improving connections to the BRT on International Boulevard.	OakDOT	HIGH	HIGH	LOW	LOW	HIGH	MEDIUM
S6	E. 14th Street and Ashland Avenue Intersection	Re-align the east leg of the intersection so that Ashland Avenue connects to E. 14th Street at a 90-degree angle.	ACPWA	HIGH	MEDIUM	LOW	LOW	LOW	MEDIUM
S7	Mission Boulevard and E. Lewelling Boulevard	Eliminate the large channelized right-turn from southbound Mission to westbound Lewelling. To the extent feasible re-align the east leg of the Mission/Lewelling intersection so that Lewelling connects to Mission at a 90-degree angle.	ACPWA	HIGH	MEDIUM	LOW	LOW	LOW	MEDIUM

#	Project Name	Project Description	Implementing Agency	Safety	Equity	Travel Reliability	Land Use	Public Health and Environmental	Community Revitalization
S8	D Street Traffic Calming & Implementation	In response to concerns expressed by the community, staff will soon be developing a feasibility study to identify opportunities to improve pedestrian and bike safety, as well as reduce excessive vehicle speeds, along the D Street corridor.	City of Hayward	HIGH	MEDIUM	LOW	LOW	HIGH	MEDIUM
T1	Capitol Corridor South Bay Connect Rail	Relocate Capitol Corridor service between Oakland Coliseum and Newark from the Niles Subdivision to the Coast Subdivision, including one new rail station, one new in-line intermodal bus facility, and enhanced park-and-ride facilities.	Capitol Corridor Joint Powers Authority	LOW	HIGH	HIGH	HIGH	HIGH	LOW
T2	Fruitvale Avenue/Park Street Transit Improvements	An Enhanced Bus strategy is proposed for 2020 for the Fruitvale Ave/Park Street corridor, with upgrades being made to those improvements by 2040 to keep pace with changing technologies.	OakDOT	LOW	HIGH	HIGH	HIGH	HIGH	HIGH
T3	Mobility Hubs at BART Stations	Mobility Hub at San Leandro, Bay Fair, Hayward and South Hayward BART stations	City of San Leandro, and Hayward; BART	LOW	MEDIUM	HIGH	HIGH	HIGH	MEDIUM
T4	San Leandro BART to South Hayward BART Bus Only Lanes	Bus-only lanes: San Leandro Blvd. from San Leandro BART south to E. 14th St. and E. 14th St./Mission Blvd. from San Leandro Blvd. south to South Hayward BART	AC Transit	LOW	MEDIUM	HIGH	HIGH	HIGH	LOW
T5	E. 14th St/Mission Blvd Rapid Bus | Modernization	New limited stop rapid bus service along E. 14th St/Mission Blvd between the San Leandro and South Hayward BART stations, include transit priority signals and queue jump lanes.	AC Transit	LOW	HIGH	HIGH	HIGH	HIGH	LOW
T6	Bay Fair Connection	BART: At and near Bay Fair Station: Modify station and approaches to add one or more additional tracks and one or more passenger platforms for improved train service and operational flexibility	BART	LOW	MEDIUM	HIGH	HIGH	HIGH	LOW

#	Project Name	Project Description	Implementing Agency	Safety	Equity	Travel Reliability	Land Use	Public Health and Environmental	Community Revitalization
M1	Oak Street and Madison Street - Conversion of One-way traffic to two-way traffic	Conversion of one-way traffic to two-way traffic. Additionally, sidewalk widening to add to the pedestrian realm.	OakDOT	MEDIUM	HIGH	LOW	LOW	LOW	MEDIUM
M2	SHOPP Mobility - TMS	SR 185 (East 14th Street/ International Blvd) between Post Miles 3.205 - 10.519 FY 26/27 (SHOPP ID 23020)	Caltrans	LOW	HIGH	LOW	LOW	MEDIUM	LOW
M3	SHOPP Mobility - ADA	SR 185 (International Blvd) between Post Miles 3.205 - 5.0 FY 29/30 (SHOPP ID 20459)	Caltrans	LOW	HIGH	LOW	LOW	LOW	LOW
M4	San Leandro Street repaving along railroad tracks	Seminary Ave to South City Limit Repaving	OakDOT	LOW	HIGH	LOW	LOW	LOW	LOW
M5	SHOPP Pavement	SR 185 (East 14th Street/ International Blvd) between Post Miles 3.205 -5.7 FY 21/22 (SHOPP ID 13654)	Caltrans	LOW	MEDIUM	LOW	LOW	LOW	LOW
M6	SHOPP Mobility - ADA	SR 185 (East 14th Street/ International Blvd) between Post Miles 9.08 - 10.1 FY 21/22 (SHOPP ID 16381)	Caltrans	LOW	MEDIUM	LOW	LOW	LOW	LOW
M7	SHOPP Pavement	SR 238 between Post Miles 13.96 - 16.7 FY 26/27 (SHOPP ID 23035)	Caltrans	LOW	HIGH	LOW	LOW	LOW	LOW
M8	Mission Blvd and Foothill Blvd - St. 2-way conversion	Converting Foothill and Mission Boulevards to two-way streets and reconstructing the intersection at Foothill Boulevard, Mission Boulevard and D Street to support two-way movements.	City of Hayward	LOW	MEDIUM	LOW	LOW	LOW	MEDIUM

Source: Kittelson and Associates, Inc.

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7.4 Project Implementation Benefits

It is expected that when all 92 projects in the CACCMCP list are implemented, they would impact the transportation choices of those living within the study area and across the region. The following analysis incorporates the performance metrics from Chapter 5 and from the SCCP as listed in the CTC SB1 Technical Performance Measurement Methodology Guidebook to understand how implementation of the CACCMCP will impact the region.

Changes in Mobility Performance

The following mobility performance metrics were evaluated to understand how implementing the projects listed in the CACCMCP would impact vehicular driving experience including average vehicle speeds, vehicle hours traveled, and the number of person hours traveled.

Average Vehicle Speed

Average auto speeds are provided in **Table 7-12** for conditions where no CACCMCP projects are implemented and for conditions when every CACCMCP project is implemented. If every project is built, minor increases of average auto speeds (0.1 percent) are projected for both the Oakland and San Leandro Subareas and no change in auto speed is projected in the Unincorporated Subarea. An average auto speed reduction of 4.4 percent is projected for the Hayward Subarea. The net total change in average auto speed for the entire study area would be a 0.9 percent decrease. However, the CACCMCP projects, if implemented, would contribute to a 0.3 percent increase of average vehicular speeds in Alameda County. This is likely due to mode shifts induced by CACCMCP projects which would benefit road congestion and speeds in areas outside the CACCMCP study area.

Table 7-12: Projected Average Speed with CACCMCP Project List Implemented

Study Area	2040 No Project	2040 CACCMCP Project List	Change
Oakland Subarea	35.2	35.3	0.1%
San Leandro Subarea	36.5	36.5	0.1%
Unincorporated Subarea	42.4	42.4	0.0%
Hayward Subarea	29.7	28.4	-4.4%
Subtotal CACCMCP Study Area	***34.9***	***34.6***	***-0.9%***
Total Alameda County	*31.1*	*31.2*	*0.3%*
Total Bay Area	30.1	30.2	0.4%

Source: Kittelson and Associates, Inc.

Vehicle Hours of Delay

Vehicle hours of delay (VHD) is the measure of time vehicles spend in congestion relative to uncongested travel and is shown in **Table 7-13**. Implementation of the CACCMCP project list would reduce the number of vehicle hours delayed by 0.8 percent in both the Oakland and San Leandro Subareas. In contrast, VHD would increase in the Unincorporated Subarea by 0.9 percent and in the Hayward Subarea by 17.4 percent. While converting from one-way to two-way streets adversely impacts vehicle speeds, it encourages more walking, bicycling, and transit use. Slower travel speeds, landscaping, and wider sidewalks will make walking feel safer and create a better pedestrian experience. A well-connected bikeway network will help cyclists safely, directly, and comfortably navigate the Downtown Hayward.

In total, the CACCMCP study area is forecast to have an increase of 4.7 percent in VHD. However, the CACCMCP projects are projected to reduce average VHD by 0.9 percent in Alameda County. This indicates that the projects would have additional congestion relief benefits outside the immediate CACCMCP study area.

Table 7-13: Projected Vehicle Hours of Delay with CACCMCP Project List Implemented

Study Area	2040 No Project	2040 CACCMCP Project List	Change
Oakland Subarea	27,828	27,593	-0.8%
San Leandro Subarea	12,166	12,071	-0.8%
Unincorporated Subarea	6,000	6,052	0.9%
Hayward Subarea	19,339	22,696	17.4%
Subtotal CACCMCP Study Area	***65,333***	***68,413***	***4.7%***
Total Alameda County	*581,062*	*575,617*	*-0.9%*
Total Bay Area	2,166,707	2,138,806	-1.3%

Source: Kittelson and Associates, Inc.

Person Hours of Travel Time Delayed

Another measure of congestion is centered on the human experience—the number of hours spent by people in their cars. The average vehicle occupancy for Alameda County vehicle trips is estimated at 1.4 persons per vehicle—thus the amount of total time spent by people can be estimated by multiplying VHD by this factor. This performance metric is required for SCCP nomination as per the SB 1 Technical Performance Measurement Methodology Guidebook.[21] **Table 7-14** shows the total number of person hours of travel time if no project is implemented versus if all 92 CACCMCP projects are constructed.

[21] California Transportation Commission, SB 1 Technical Performance Measurement Guidebook, 2022, https://catc.ca.gov/-/media/ctc-media/documents/ctc-workshops/2022/sb-1/performance-measurement-guidebook-final-draft.pdf.

Table 7-14: Projected Person Hours of Travel Time Delayed with CACMCP Project List Implemented

Study Area	2040 No Project	2040 CACCMCP Project List	Change
Oakland Subarea	38,959	38,630	-0.8%
San Leandro Subarea	17,032	16,899	-0.8%
Unincorporated Subarea	8,400	8,473	0.9%
Hayward Subarea	27,075	31,774	21.9%
Subtotal CACCMCP Study Area	91,466	95,778	***5.1%***
Total Alameda County	*813,487*	*805,864*	*-1.0%*
Total Bay Area	3,033,390	2,994,328	-1.3%

Source: Kittelson and Associates, Inc.

Induced Demand

The proposed projects do not include any capacity-increasing transportation infrastructure improvements that would result in induced demand. Only Project M8 is designed to reduce car congestion through Traffic Management Systems (TMS). TMS are a broad class of technology assets on the highway system dedicated to improving operational efficiency and user interactions that FHWA defines TMS as complex, integrated amalgamations of hardware, technologies, and processes for performing an array of functions, including data acquisition, command and control, computing, and communications.[22] TMS assets help reduce traveler delay, enhance safety, improve communication, and collect data on traffic behavior. These assets are an integral part of the SHS, performing critical functions that keep people, vehicles and goods moving.

Changes in Sustainability Performance

If the CACCMCP project list is implemented, it will impact how many miles people choose to drive, the amount of delay they experience, and therefore, the total pollution that drivers emit. The following Sustainability Performance metrics are revisited from Chapter 5 to compare how building the projects in the CACCMCP list will impact the sustainability of the corridor.

Vehicle Miles Traveled

As considered in Chapter 5, VMT is calculated by summing the number of vehicles on each road segment multiplied by the segment distance regardless of direction. It is directly related to GHG emissions and other types of pollutants. VMT is a critical measure of sustainability performance and is shown in **Table 7-15**. If all 92 projects in the CACCMCP list were implemented, the entire CACCMCP study area would have a reduction of 0.9 percent in VMT. All the projects would reduce VMT by 95,132 VMT per day. With the Hayward Subarea is projected to have the greatest VMT reduction of 1.7 percent. If implemented, CACCMCP projects would have impacts

[22] California Transportation Asset Management Plan, https://catc.ca.gov/-/media/ctc-media/documents/032118-final-adpoted-tamp-a11y.pdf.

across the region contributing to a VMT reduction of 0.5 percent across Alameda County and a 0.3 percent total reduction in the nine-county Bay Area.

Table 7-15: Projected Vehicle Miles Traveled (VMT) with CACCMCP Project List Implementation

Study Area	2040 No Project	2040 CACCMCP Project List	Change
Oakland Subarea	5,062,499	5,026,088	-0.7%
San Leandro Subarea	2,102,105	2,089,099	-0.6%
Unincorporated Subarea	1,400,301	1,390,603	-0.7%
Hayward Subarea	2,131,348	2,095,329	-1.7%
Subtotal CACCMCP Study Area	***10,696,251***	***10,601,119***	***-0.9%***
Total Alameda County	*58,285,996*	*58,006,910*	*-0.5%*
Total Bay Area	217,598,345	216,885,927	-0.3%

Source: Kittelson and Associates, Inc.

A critical measure of sustainability is the air quality that results from the pollutants and greenhouse gases emitted from our transportation systems. VMT and emissions are closely related, and it is assumed that reductions in the amount of nitrogen dioxide (NOx), sulfur oxides (SOx), particulate matter 2.5 (PM 2.5), and carbon dioxide (CO2) would be proportional to the reductions in VMT for each Subarea.

Vehicle Hours Traveled

Another sustainability measure discussed in Chapter 5 was Vehicle Hours Traveled (VHT). VHT is the sum of the total number of hours traveled by each vehicle within a given area and can be an indicator of increasing traffic congestion as shown in **Table 7-16**. If every project in the CACCMCP were implemented, there would be a small increase (110 hours) in VHT in the CACCMCP study area. While the Oakland, San Leandro, and Unincorporated Subareas would have a reduction in VHT, it is projected that Hayward would see an increase of 3.0 percent in VHT. CACCMCP project implementation would result in regional reductions in VHT including a 0.8 percent reduction in Alameda County and 0.7 percent reduction in the Bay Area.

Table 7-16: Projected Vehicle Hours of Travel (VHT) with CACCMCP Project List Implementation

Study Area	2040 No Project	2040 CACCMCP Project List	Change
Oakland Subarea	143,715	142,488	-0.9%
San Leandro Subarea	57,669	57,230	-0.8%
Unincorporated Subarea	33,052	32,821	-0.7%
Hayward Subarea	71,659	73,666	3.0%
Subtotal CMCP Study Area	***306,096***	***306,206***	***0.0%***
Total Alameda County	*1,875,642*	*1,861,454*	*-0.8%*
Total Bay Area	7,225,628	7,174,897	-0.7%

Source: Kittelson and Associates, Inc.

Mode Shift

The personal choice of travel depends upon several factors, some particular to individuals and others are external environmental factors that are related to infrastructure and external conditions. Among the individual factors are the distance traveled, total travel time, affordability, and physical ability. The environmental factors include the variety of transportation modes available in the community, the type of spatial development patterns and the condition of multimodal infrastructure. The recommended projects in CACCMCP focus on the provision infrastructure improvements to promote active transportation and transit.

Table 7-17 shows that with the implementation of the CACCMCP project list, there will be a 7 percent increase in bicycling trips and a 2.5 percent increase in walking trips. Transit trips are expected to increase by 1.5 percent. The drive-alone and carpool trips which impact production of VMT the most, are expected to see a 2.4 percent decrease in overall trips. Of those, drive-alone trips will only observe a slight decrease in the trips by 0.3 percent.

Table 7-17: Projected Mode Shift with CACCMCP Project List Implementation

Mode	2040 No Project		2040 CACCMCP Project List		Change
	Trips	Percent	Trips	Percent	Trips
Drive Alone	1,048,955	42.0%	1,045,620	42.5%	-0.3%
Shared Ride 2	462,298	18.5%	461,025	18.8%	-0.3%
Shared Ride 3+	446,319	17.9%	404,571	16.5%	-9.4%
Transit - Walk Access	149,195	6.0%	152,742	6.2%	2.4%
Transit - Drive Access	48,725	2.0%	48,156	2.0%	-1.2%
Bike	49,531	2.0%	52,983	2.2%	7.0%
Walk	293,169	11.7%	293,481	11.9%	0.1%

Source: Kittelson and Associates, Inc.

Implementation

The CACCMCP offers a roadmap to achieving its goals, but more work is necessary to make this plan a reality. The CACCMCP is a financially unconstrained document, meaning that recommendations are not tied to revenues. The identification of funding sources to implement this plan will be critical to ensuring its implementation. Most funding for the improvements recommended in this plan is likely to come from federal, state, and regional grant programs. These grant programs are often competitive and will require agencies to compete for funding. To help identify the eligible competitive grants, common federal, state, and regional grant funding programs have been summarized in **Appendix 7-1**.

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