East 14th St./ Mission Blvd. and Fremont Blvd. Multimodal Corridor Project: **SCOPING PHASE RECOMMENDATIONS REPORT**

Fall 2020

ALAMEDA
County Transportation Commission

East 14th St./ Mission Blvd. and Fremont Blvd. Multimodal Corridor Project: Scoping Phase Recommendations Report

Fall 2020

ALAMEDA County Transportation Commission

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Section 1

Introduction and Executive Summary

1.1 PROJECT CORRIDOR OVERVIEW

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

The E. 14th Street/Mission Boulevard and Fremont Boulevard Multimodal Corridor Project (Project) evaluated current conditions and future needs to develop goals and objectives that shaped the long-term vision for the Project Corridor. The long-term vision is a response to the future mobility needs of the Project Corridor's various communities and reflects the Project's goals of increasing use of alternate modes; addressing the range of mobility needs for those living and working in the Study Area; providing a safe and convenient environment for pedestrians, bicyclists, and transit users; and providing flexibility for future changes in transportation technology. To achieve this vision, specific short-, medium-, and long-term multimodal mobility improvements have been identified for implementation.

Figure 1 shows the Project Corridor and Study Area. The Project Corridor extents include the following:

- E. 14th St. and Mission Blvd. from Davis St. in San Leandro to Ohlone College (south of I-680)
- Decoto Rd. from Mission Blvd. to Fremont Blvd.
- Fremont Blvd. from Decoto Rd. to Washington Blvd. and the planned Irvington BART station
- Osgood Rd. and Warm Springs Blvd. from the planned Irvington BART station to SR 262 (south of Warm Springs BART)

The Study Area, for analysis purposes, is defined as the area within ½ mile of the Project Corridor.

Legend:

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

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

Figure 1
Project Corridor and Study Area

October 2020

1.2 PURPOSE OF THIS REPORT

This report presents the recommended improvements and next steps for the E. 14th St./Mission Blvd. and Fremont Blvd. Multimodal Corridor Project. The Project has utilized robust technical analysis and stakeholder engagment to identify a package of improvement projects intended to achieve the long-term multimodal vision for the corridor.

The next steps required to advance the recommended projects will occur through multiple project development processes. As such, this report also serves as guidance for subsquent Project phases by documenting the overall Project goals, the intended benefits of each improvement, and the key technical and stakeholder considerations that will shape the implementation process.

Section 1 (this section) includes the executive summary and provides an overview of the Project process, recommended improvements, and next steps. **Section 2** describes each element of the long-term concept and near- and mid-term improvements. **Section 3** presents key issues and next steps for advancing the recommended projects through project development.

1.3 EXECUTIVE SUMMARY

The recommendations presented in this report are the culmination of a technical analysis and stakeholder engagement process that began in December 2017. Key elements of this process were as follows:

- Baseline Conditions Analysis
- Project Goals
- Agency and Stakeholder Engagement
- Development and Evaluation of Alternatives
- Recommended Improvements and Areas for Further Refinement

A summary of each element is presented in the following subsections. A standalone executive summary brochure may be found **here** in electronic format.

1.3.1 Baseline Conditions Analysis

As a first step in identifying transportation needs for the Project Corridor and Study Area, a baseline conditions analysis was completed to present data and analysis for transportation circulation, travel market, land use, and infrastructure conditions. The Baseline Conditions Report documented key findings for existing and planned future conditions. The analysis utilized data assembled through field data collection, published plans and reports, and data sets provided by partner agencies. The findings of the Baseline

Conditions Report were used to identify issues and opportunities and develop long-term improvement concepts.

1.3.2 Project Goals

Project goals were developed based on the results of the baseline conditions analysis and input received through partner agency and community stakeholders.

The following Project goals served to guide the development and evaluation of multimodal improvements for the Study Area:

- Support planned long-term growth and economic development
- Address the range of mobility needs for those living and working in the Study Area
- Move people more efficiently within the corridor
- Increase use of alternate travel modes
- Improve connectivity between transportation modes
- Provide a safe and convenient environment for pedestrians, bicyclists, and transit users
- Provide flexibility for future changes in transportation technology

1.3.3 Stakeholder Engagement

Stakeholder outreach and engagement activities were held with partner agencies and community stakeholders through a combination of one-on-one, small group, large group, and online formats. These activities were essential for gathering input and feedback from those who live, work, and travel along the Project Corridor and for shaping the Project's recommendations.

Agency outreach and coordination occurred through the following forums:

- A **Technical Advisory Committee (TAC),** consisting of staff from local jurisdictions and transportation agencies along the Project Corridor.
- A **Policy Advisory Committee (PAC),** consisting of elected officials representing the local jurisdictions and transportation agencies along the Project Corridor.
- **One-on-one agency meetings** through the Project to understand local issues and priorities.

Community outreach activities for the Project included the following:

- **Online map survey:** The first phase of stakeholder outreach occurred from May to July 2018 and included an online map-based survey that allowed community members to identify transportation issues and needs along the Project Corridor. The comments provided by community members were used

to inform the technical analysis of existing conditions and to identify needed improvements for the Study Area.

- **Focus group meetings:** The second phase of stakeholder outreach occurred from January to March 2019 included focus group meetings with community stakeholders. The meetings were used to solicit input on the draft improvement concepts and identify additional project improvements to be incorporated. Seven focus group meetings were held, with the meetings representing a combination of geographic focus groups for specific cities plus topic-specific groups for transit riders, bicyclists, and pedestrians.
- **Open house workshops:** The third phase of stakeholder outreach occurred during October and November 2019 and included a series of in-person open house workshops combined with an interactive online workshop. The workshops were used to receive broad feedback on the draft long-range concept and recommended projects and to establish support for future project implementation. Five in-person open house meetings were held.

1.3.4 Development and Evaluation of Alternatives

Two long-term concepts were developed and analyzed to understand the multimodal benefits and potential tradeoffs associated with various levels of infrastructure investment. Both long-term concepts addressed the transportation goals for the Project Corridor and Study Area and included combinations of transit, bicycle, pedestrian, and auto improvement projects.

The long-term concepts were evaluated through three tiers of analysis:

- **Tier 1 Analysis:** This analysis was a high-level engineering feasibility assessment that focused on existing right of way widths and other physical constraints that could impact project improvement costs and implementation timeframes.
- **Tier 2 Analysis:** This analysis quantified demographic and accessibility benefits associated with the long-term concepts, in addition to community priorities and preferences.
- **Tier 3 Analysis:** This analysis quantified the long-term (year 2040) multimodal system performance of the proposed improvements.

1.3.5 Recommended Improvements

The recommended Project improvements are a package of long-term, near-term and mid-term projects that advance the goals for the Project Corridor to increase multimodal travel, improve the safety for all users, and support economic growth and planned development patterns.

The recommended long-term concept for the Project Corridor is comprised of the following:

- **Bus-Only Lanes/Bus Rapid Transit** - Bus-only lanes/Bus Rapid Transit is recommended as a long-term improvement from San Leandro BART to South Hayward BART. This project would extend AC Transit's Tempo, the East Bay Bus Rapid Transit system that opened in August 2020 between Downtown Oakland and San Leandro and terminates at the San Leandro BART station.
- **Rapid Bus** - Rapid Bus Service is recommended from South Hayward BART to Warm Springs BART. Rapid Bus may also be considered as an interim near-term improvement for the development of Bus Rapid Transit between San Leandro BART and South Hayward BART.
- **Mobility Hubs** - Mobility hubs for the Project are recommended at each of the BART stations in the Study Area, at the Centerville ACE/Capitol Corridor station, and at the Decoto Rd./Fremont Blvd. intersection. Mobility hubs are defined as centers where transit, shared mobility, walking, and biking come together to provide an integrated suite of mobility services and amenities.
- **Microtransit/Flex** - Long-term transit circulator services for the Study Area are envisioned as microtransit, or on-demand bus services with a flexible route and schedule. Services may be requested through online systems, apps, and/or phone.
- **East Bay Greenway Extension** - The East Bay Greenway is a planned bicycle and pedestrian path that will extend from Lake Merritt BART to South Hayward BART. The segment of the East Bay Greenway from San Leandro BART to South Hayward BART is within the Project Study Area.
  The East Bay Greenway Extension is recommended as part of this Project and would extend from South Hayward BART to Warm Springs BART.
- **On-Street Protected Bike Lanes** - On-street Class IV protected bike lanes are recommended throughout the Project Corridor.

In addition to these long-term concept elements, near-term and mid-term safety and operational improvements are recommended to address existing safety needs. These improvements also serve as building blocks to advance the long-term concept for the Project Corridor.

1.3.6 Areas for Further Refinement

This phase of the Project has identified the long-term vision for the Project Corridor to support anticipated growth and economic development. Near-term and mid-term improvements have also been identified to support the implementation of the long-term vision and address existing multimodal safety needs.

Specific details regarding how and when to implement the recommended improvements will be analyzed during subsequent phases of the Project and defined through project development and stakeholder engagement activities.

Section 2
Recommended Improvements

Section 2

Recommended Improvements

2.1 OVERVIEW

The recommended improvements for the Project Corridor and Study Area are a package of conventional and innovative transportation projects that address both immediate transportation needs and anticipated demands resulting from planned employment and residential growth. The recommended improvements advance the Project's goals to increase use of alternate modes; address the range of mobility needs for those living and working in the Study Area; provide a safe and convenient environment for pedestrians, bicyclists, and transit users; and provide flexibility for future changes in transportation technology.

The recommended improvements were developed through a series of technical analyses and stakeholder engagement activities, including: a baseline conditions analysis of existing and future conditions; the development of project goals; the development and analysis of two long-term improvement concepts; and ongoing coordination and engagement with partner agencies and community stakeholders. Supporting documentation for these analysis and stakeholder engagement activities may be found on the project website and in **Appendices A through F** of this report.

Figure 2 presents the recommended long-term concept for the Project Corridor, consisting of the following:

- Bus-only Lanes/ Bus Rapid Transit
- Rapid Bus
- Mobility Hubs
- Microtransit/Flex
- East Bay Greenway Extension
- Protected Bike Lane Network

The long-term concept represents a 20-year vision for the Project Corridor, although many elements are proposed to be implemented sooner. In addition to the improvement elements comprising the long-term concept, near-term and mid-term safety and operational improvements are identified to address existing

safety needs and to complete first steps in implementing the long-term vision. (Near-term improvements are defined as those that can be implemented in less than three years. Mid-term improvements are defined as those that can be implemented in three to seven years.) Similarly, near-term and mid-term multimodal signal technology improvements are identified to allow for more efficient multimodal traffic management and support the long-term implementation of connected vehicle technology. These technology improvements also serve as the backbone for many of the transit and safety improvement elements.

The implementation of the recommended projects will require multiple processes led by a combination of partner agencies and Alameda CTC. Section 3 of this report provides implementation considerations as projects are advanced through project development, environmental clearance, final design, and implementation.

The remainder of this section describes each component of the improvement recommendations.

FINAL
For illustrative purposes only

EAST BAY BRT

BUS-ONLY LANES

CLASS IV PROTECTED BIKE LANES

EAST BAY GREENWAY

BUS-ONLY LANES

EAST BAY GREENWAY

RAPID BUS SERVICE

CLASS IV PROTECTED BIKE LANES

EAST BAY GREENWAY EXTENSION

CLASS IV PROTECTED BIKE LANES

RAPID BUS SERVICE

FREMONT MICROTRANSIT/FLEX

See Inset A for full extent of corridor

Inset A

Mile
0 0.5 1 2

Legend:

- BART Station
- BART Above/Below Ground
- Capitol Corridor Stations
- ACE/Capitol Corridor Station
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial
- Water Bodies
- Parks/Open Space
- Bus-Only Lanes – limited stop service with bus-only lanes
- Rapid Bus – limited-stop service without bus-only lanes
- Off-Street Multiuse Trail
- On-Street Protected Bike Lanes
- Microtransit/Flex – on-demand bus service with flexible route and schedule
- New Class II buffered bike lanes
- Mobility Hub

Dotted lines indicate improvements that are existing or planned to be implemented separately from this project

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

Exhibit is for illustrative purposes only.

Figure 2
Recommended Long-Term Concept

June 2020

2.2 BUS-ONLY LANES/BUS RAPID TRANSIT

Within the Study Area, bus-only lanes/Bus Rapid Transit is recommended as a long-term improvement from San Leandro BART to South Hayward BART. This project would extend AC Transit's Tempo, the East Bay Bus Rapid Transit system that opened in August 2020 between Downtown Oakland and San Leandro and terminates at the San Leandro BART station.

Bus-only lanes are intended to maintain and improve bus travel times and reliability in areas with high bus ridership and slow bus speeds. Bus-only lanes/BRT are also intended to increase transit users' comfort and increase transit ridership.

Elements – As recommended, bus-only lanes/Bus Rapid Transit includes the following elements:

- Conversion of existing general purpose lanes to bus-only use
- Transit signal priority
- Off-board fare payment
- High-platform stations for level boarding
- High-quality station amenities
- New or improved pedestrian crosswalks or boarding islands
- Low emission vehicles
- Branded vehicles and stations

Alignment - Figure 3 shows the proposed alignment for bus-only lanes/Bus Rapid Transit. The alignment is as follows:

- San Leandro Blvd. from San Leandro BART south to E. 14th St.
- E. 14th St./Mission Blvd. from San Leandro Blvd. south to South Hayward BART

As recommended, Bus Rapid Transit also serves the BART stations along the corridor (San Leandro, Bay Fair, Hayward, and South Hayward), since a significant portion of bus riders in the Project Corridor (approximately 40 percent for existing conditions) use transit to access BART. This will require that buses leave the Project Corridor to serve BART stations most effectively and then return to the corridor.

Phasing – Rapid Bus (discussed in the next section) may be implemented as a first step toward bus-only lanes/Bus Rapid Transit. The proposed phasing for implementing bus-only lanes/Bus Rapid Transit and Rapid Bus is presented in Section 2.10.1, Transit Improvement Phasing.

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EAST BAY BRT

BUS-ONLY LANES

CLASS IV PROTECTED BIKE LANES

EAST BAY GREENWAY

BUS-ONLY LANES

EAST BAY GREENWAY

RAPID BUS SERVICE

CLASS IV PROTECTED BIKE LANES

EAST BAY GREENWAY EXTENSION

CLASS IV PROTECTED BIKE LANES

RAPID BUS SERVICE

FREMONT MICROTRANSIT/FLEX

See Inset A for full extent of corridor

Inset A

Fremont

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0 0.5 1 2

Legend:

- BART Station
- BART Above/Below Ground
- Capitol Corridor Stations
- ACE/Capitol Corridor Station
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial
- Water Bodies
- Parks/Open Space
- **Bus-Only Lanes – limited stop service with bus-only lanes**
- Rapid Bus – limited-stop service without bus-only lanes
- East Bay Greenway Extension
- On-Street Protected Bike Lanes
- Microtransit/Flex – on-demand bus service with flexible route and schedule
- New Class II buffered bike lanes
- Mobility Hub

Dotted lines indicate improvements that are existing or planned to be implemented separately from this project

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

Exhibit is for illustrative purposes only.

Figure 3
Recommended Bus-Only Lanes/ Bus Rapid Transit Alignment

June 2020

Project Elements to be Defined in Later Phases – Some elements of bus-only lanes/ Bus Rapid Transit have been identified through the current scoping phase but will be defined in subsequent project development activities. These elements include the following:

- **Lane configuration (i.e., median-running or side-running bus-only lanes)** – both median-running and side-running bus-only lanes were evaluated for feasibility within the existing right of way conditions. Additional traffic operations and bus operations analyses and stakeholder outreach are required to identify the appropriate configuration(s) for the Project Corridor.
- **Alignment through north Hayward (i.e., Mission Blvd. or Foothill Blvd.)** - The City of Hayward's Mission Blvd. Phase 3 project will add protected bike lanes and Complete Streets improvements to Mission Blvd. in north Hayward(from Rose St. to A St.). The long-term addition of bus-only lanes would require the removal of existing on-street parking. The removal of on-street parking was considered as part of the Mission Blvd. Phase 3 project but not supported by the community. As part of subsequent project development phases, an alternate alignment for bus-only lanes along Mattox Rd. and Foothill Blvd. will be evaluated before advancing improvements.
- **Use restrictions for lanes (e.g., vehicle types and time-of-day restrictions)** – Bus-only lanes may allow for use by vehicles other than public buses; examples include taxis, carpools/vanpools, Uber/Lyft, emergency vehicles, and private shuttles. Additionally, bus-only lanes may be enforced all day or during peak periods only. Use restrictions for the bus-only lanes were not addressed during the current phase but will be evaluated as part of subsequent project development activities.

Summary of Benefits and Tradeoffs – Based on analyses completed to date, bus-only lanes/Bus Rapid Transit provides the following benefits or tradeoffs for the Study Area:

- Bus-only lanes result in up to 3,000 additional daily bus riders for long-term Year 2040 conditions when compared to long-term conditions without a bus-only lane.
- Bus-only lanes result in a travel lane reduction for almost all sections of the Project Corridor between San Leandro BART and South Hayward BART. This leads to a reduction in vehicular traffic of up to 5,100 vehicles per day for Year 2040

conditions, the majority of which is offset by the increases in bus ridership.

- Bus-only lanes would result in a loss of on-street parking in Hayward and in areas of San Leandro where both bus-only lanes and Class IV protected bike lanes are proposed. However, on-street parking can be replaced through off-street parking lots, which would require additional local jurisdiction coordination on potential off-street parking sites. The locations, costs, and stakeholder considerations for potential off-street parking sites will be evaluated as part of subsequent project development activities.

Partner Agency Considerations – All partner agencies expressed support for bus-only lanes/Bus Rapid Transit as part of the Project's recommended long-term concept. Additional considerations include the following:

- Bus-only lanes are consistent with AC Transit's Major Corridors Study, which recommends Bus Rapid Transit south of San Leandro BART to Fremont BART, with a potential extension to Warm Springs BART.
- The City of San Leandro is supportive of bus-only lanes as a long-term recommendation. For the section of the Project Corridor between San Leandro BART and Bay Fair BART, both AC Transit and the City of San Leandro are supportive of including both bus-only lanes and Rapid Bus as transit alternatives to be carried into near-term project development. After the environmental phase, and informed by the performance of the AC Transit Tempo service to the north, one alternative will be selected and moved forward.
- Alameda County is supportive of bus-only lanes as a long-term improvement. Alameda County has near-term improvement projects for E. 14th St./Mission Blvd. Phase II (from 162nd Ave. to I-238) and E. 14th St./Mission Blvd. Phase III (I-238 to Hayward city boundary). Alameda County would like to ensure that these near-term projects can proceed as scheduled and are not disrupted.
- The City of Hayward has near-term improvements for Mission Blvd. Phase 3 (Alameda County boundary to A St.). The removal of on-street parking was considered as part of the project but was not well received by businesses along the corridor. The City of Hayward feels that additional discussion of the tradeoffs of bus-only lanes (i.e., loss of travel lanes and/or on-street parking) is needed before advancing improvements along this section of Mission Blvd. (In light of these issues, both Mission Blvd. and Foothill Blvd. between Mattox Rd. and A St. will be evaluated as alignment

alternatives during subsequent project development phases.)

Community Stakeholder Considerations – Community members expressed the following key themes and considerations:

- There is general community support for improvements that make bus travel faster.
- A large majority of online survey respondents stated they would be more likely to take the bus if bus-only lanes were in place.
- Stronger support for bus-only lanes was expressed at in-person workshops in Ashland/Cherryland and Fremont. (Note: While bus-only lanes are not recommended in Fremont, workshop participants included residents of other jurisdictions.)
- Mixed support for bus-only lanes was expressed at in-person workshops in Hayward and Union City. (Note: While bus-only lanes are not recommended in Union City, workshop participants included residents of other jurisdictions.)
- There was not significant feedback regarding bus-only lanes received through the in-person workshop in San Leandro.
- Community members stated that cleanliness, convenience, frequency, and reliability are all important factors for transit.
- Community members emphasized safety as a key concern for increased transit use, both on board transit vehicles and at transit stops.

Additional detail regarding community stakeholder considerations is provided in **Appendix A, Stakeholder Engagement Summary**.

2.3 RAPID BUS

Within the Study Area, Rapid Bus Service is recommended from South Hayward BART to Warm Springs BART. Rapid Bus may also be considered as an interim near-term improvement for the long-term development of Bus Rapid Transit between San Leandro BART and South Hayward BART.

Rapid Bus is intended to maintain and improve bus travel times for longer-distance trips by reducing delays at traffic signals and at bus stops. The travel time benefits and transit user amenities of Rapid Bus will make transit travel more attractive, resulting in increased transit ridership along the Project Corridor.

Elements – As recommended, Rapid Bus includes the following elements:

- Transit signal communications improvements to reduce bus delay at signals, including transit signal priority
- Physical infrastructure such as pedestrian access improvements and queue jumps
- Limited-stop service in addition to local service
- Low-floor buses
- Branding for buses and bus shelters to promote community awareness of service and infrastructure improvements

Alignment - Figure 4 shows the proposed alignment for Rapid Bus. For long-term conditions, the alignment is as follows:

- Mission Blvd. from South Hayward BART to Decoto Rd.
- Decoto Rd. from Mission Blvd. to Fremont Blvd.
- Fremont Blvd. from Decoto Rd. to Irvington BART (future)
- Osgood Rd./Warm Springs Blvd. from Irvington BART to Warm Springs BART

As recommended, the Rapid Bus service also serves the BART stations along the corridor (South Hayward, Union City, Fremont, Irvington, and Warm Springs), since a significant portion of bus riders in the Project Corridor (approximately 40 percent for existing conditions) use transit to access BART. This will require that buses leave and return to the Project Corridor.

FINAL
For illustrative purposes only

EAST BAY BRT

BUS-ONLY LANES

CLASS IV PROTECTED BIKE LANES

EAST BAY GREENWAY

BUS-ONLY LANES

EAST BAY GREENWAY

EAST BAY GREENWAY EXTENSION

RAPID BUS SERVICE

CLASS IV PROTECTED BIKE LANES

CLASS IV PROTECTED BIKE LANES

RAPID BUS SERVICE

FREMONT MICROTRANSIT/FLEX

Oakland
Alameda County
San Leandro
Lake Chabot Regional Park
Anthony Chabot Regional Park
Castro Valley BART
Ashland
Cherryland
Bay Fair BART
San Leandro BART
Hayward BART
Hayward Station
South Hayward BART
Garin Regional Park
Dry Creek Pioneer Regional Park
Union City
Fremont
San Lorenzo
Hayward
Tennyson Rd
Industrial Pkwy
Whipple Rd
Mission Blvd
Union City BART
Fremont BART
Quarry Lakes Regional Recreation Area
Fremont Centerville Station
Fremont Blvd
Decoto Rd
Thornton Ave
Mowry Ave
Stevenson
Auto Mall Pkwy
Irvington BART (future)
Warm Springs BART
San Mateo Bridge
To Dumbarton Bridge
Newark
E 14th St
Washington Ave
Hollywood Blvd
Lewelling Blvd
Jackson St
Osgood Rd
Mission Blvd
Fremont Blvd
Mowry Ave
Warm Springs Blvd
Inset A
See Inset A for full extent of corridor
Fremont

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Legend:

- BART Station
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- East Bay Greenway Extension
- On-Street Protected Bike Lanes
- Microtransit/Flex – on-demand bus service with flexible route and schedule
- New Class II buffered bike lanes
- Mobility Hub

Dotted lines indicate improvements that are existing or planned to be implemented separately from this project

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

Exhibit is for illustrative purposes only.

Figure 4
Recommended Rapid Bus Alignment

June 2020

Phasing – Between San Leandro BART and South Hayward BART, Rapid Bus may be implemented as a first step toward bus-only lanes/Bus Rapid Transit. The proposed phasing for implementing Rapid Bus and bus-only lanes/Bus Rapid Transit is presented in Section 2.10.1, Transit Improvement Phasing.

Project Elements to be Defined in Later Phases – Some elements of Rapid Bus have been identified through the current scoping phase but will be defined in subsequent project development activities. These elements include the following:

- **Transit signal communication infrastructure** – As recommended, Rapid Bus signal infrastructure will include bus signal priority; this will require signal communications infrastructure upgrades to allow buses to communicate with traffic signal controllers. Specific design parameters for these transit priority treatments will be defined in later phases through coordination with local jurisdictions, transit agencies, and Caltrans.
- **Rapid Bus service plans and stop locations** – As recommended, Rapid Bus service will have bus stops spaced approximately ½ mile apart or greater, similar to AC Transit's existing Rapid services. The location of bus stops will be developed as part of bus service planning and operational analysis to be completed in subsequent phases. Service plans will also dictate the number of buses needed and inform the design and placement of queue jumps.

Summary of Benefits and Tradeoffs – Based on analyses completed to date, Rapid Bus provides the following benefits or tradeoffs for the Study Area:

- Rapid Bus improvements result in higher long-term Year 2040 transit ridership when compared to Year 2040 baseline conditions.
- Rapid Bus improvements are not anticipated to result in a lane reduction or significant on-street parking loss.

Partner Agency Considerations – All partner agencies expressed support for Rapid Bus as part of the Project's recommended long-term concept. Additional feedback and/or clarifications include the following:

- The City of Union City views Decoto Rd. as a transit priority corridor supportive of Rapid Bus service. Several related transit efforts are in progress along the Decoto Road

corridor, which will require coordination during subsequent project development activities.

- The Cities of Fremont and Union City are currently completing the Decoto Road Multimodal Corridor Study. This project is evaluating transit improvements along the corridor, which extends from Mission Blvd. to I-880.
- The City of Fremont is considering implementing a citywide transit signal priority system, consistent with Rapid Bus improvements.

Community Stakeholder Considerations – Community members expressed the following key themes and considerations:

- There is general community support for improvements that make bus travel faster.
- Community members stated that cleanliness, convenience, frequency, and reliability are all important factors for transit.
- Community members emphasized safety on public transit and at transit stops as a concern.

Additional detail regarding community stakeholder considerations is provided in **Appendix A, Stakeholder Engagement Summary**.

2.4 MOBILITY HUBS

Mobility hubs for the Project are defined as centers where transit, shared mobility, walking, and biking come together to offer more convenient first and last-mile non-auto connections to BART and other high-capacity transit services. Mobility hubs provide an integrated suite of mobility services and amenities and are enhanced by technology and traveler information improvements.

Elements – The Project's recommended mobility hub improvements fall into three categories: infrastructure, mobility services, and traveler information and data. **Table 1** summarizes potential mobility hub components by category.

Table 1: Potential Mobility Hub Components

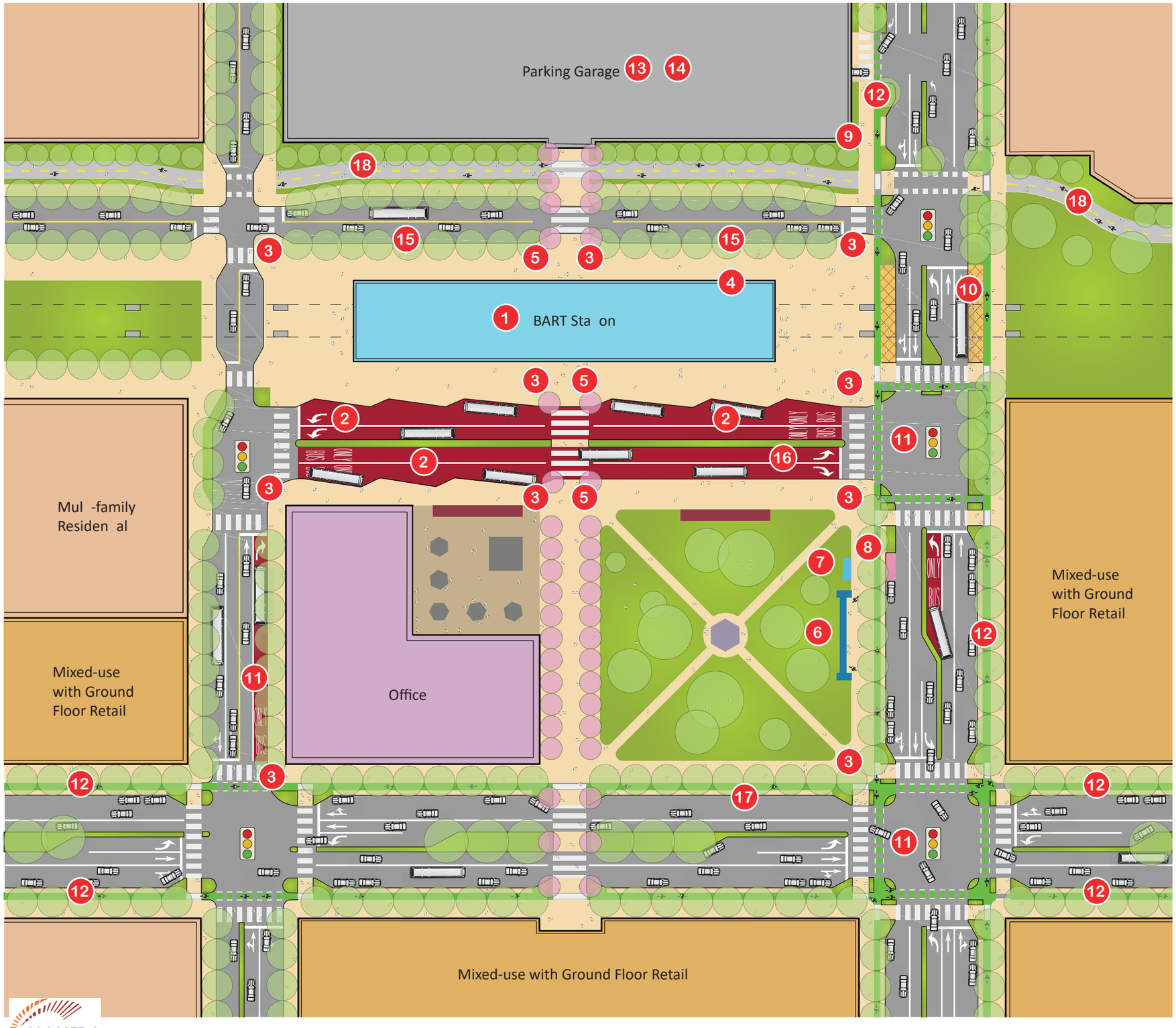
Infrastructure	Mobility Services	Traveler Information and Data
• Bike Station and bike lockers • Electric vehicle charging stations • E-bike charging stations • Bike and pedestrian facilities • Transit signal priority • Curbside improvements to accommodate mobility services	• Carshare services • Bikeshare services • Scooters • Electric mopeds • Microtransit • Private employer shuttles	• Real-time bus arrival data • Wayfinding signage • Real-time parking availability data • Real-time rideshare matching • Integrated online payment and reservation systems

Source: Kittelson & Associates, Inc., 2020

- **Infrastructure** - Potential mobility hub infrastructure improvements include projects at the transit station/stop as well as supportive facilities within a surrounding radius of ½ mile to one mile. At the station, infrastructure improvements focus on parking and storage facilities of bicycle and micromobility services, as well as space for passenger loading/unloading to support shuttle and shared ride services. Infrastructure improvements beyond the station include bicycle and pedestrian improvement projects to address safety, comfort, and convenient access to transit.
- **Mobility services** - Mobility services would serve the transit station and a one- to two-mile radius and may include carshare, bikeshare, scooters, electric mopeds, microtransit, and private employer shuttles. Supporting accommodations include parking spaces or docking stations for these services at the transit station. For the surrounding area, supporting facilities may include: curbside loading and unloading zones at key destinations; free parking for shared vehicles through a combination of on-street and off-street spaces, and additional bicycle racks and lockers.
- **Traveler information and data** - Traveler information and data components supplement the infrastructure and services by making them more attractive and easier to use. In particular, the traveler information and data components address seamless transfers between modes. Potential components include: real-time bus arrival data, wayfinding signage, real-time parking availability data, real-time rideshare matching, and integrated online payment and reservation systems (i.e., Mobility as a Service).

All three categories are currently present at each potential mobility hub location to varying degrees. The long-term goal of the Project is to expand the range and depth of each of these elements to facilitate increased multimodal travel to and from BART and to improve the multimodal user experience.

Figure 5 and **Figure 6** show conceptual plan-view and perspective renderings of a potential mobility hub. The components and site layouts for each potential mobility hub will be determined on a case-by-case basis through future analysis and project development.



LEGEND

1. Elevated Rail Transit Station
2. Bus Transfer Facility
3. Wayfinding Signage
4. Bike Station / Bike Lockers
5. Real-time Transit Information
6. Bikeshare
7. Scooter Share
8. Shared Electric Moped Parking
9. Real-time Parking Information*
10. Rapid Bus Station
11. Transit Signal Priority/ Bus-Only lanes
12. Class IV Bikeway
13. Carshare
14. Electric Vehicle Charging
15. On-demand Rideshare / Carpooling services
16. Microtransit
17. Private Buses
18. Multi-use Trail

***Real-time parking information also available through an app**

ALAMEDA County Transportation Commission

Figure 5
Example Mobility Hub Site Plan

LEGEND

1. Elevated Rail Transit Station
2. Bus Transfer Facility
3. Wayfinding Signage
4. Bike Station / Bike Lockers
5. Real-time Transit Information
6. Bikeshare
7. Scooter share
8. Shared Electric Moped Parking
9. Real-time Parking Information*
10. Rapid Bus Station
11. Transit Signal Priority/ Bus-Only lanes
12. Class IV Bikeway

***Real-time parking information also available through an app**

ALAMEDA County Transportation Commission

Figure 6
Example Mobility Hub Rendering

April 2020

Locations - **Figure 7** shows the recommended locations for Mobility hubs. Mobility hubs are included in the recommended long-term concept at ten locations, as follows:

- San Leandro BART
- Bay Fair BART
- Hayward BART
- South Hayward BART
- Union City BART
- Decoto Rd./Fremont Blvd. Intersection
- Fremont BART
- Centerville ACE/Capitol Corridor Station
- Irvington BART (planned)
- Warm Springs BART

Phasing – A mobility hub pilot is proposed as a near-term project to achieve near-term benefits to multimodal access and BART ridership while informing the implementation process for other mobility hub locations. The results of the pilot would serve as a model for future improvements along the Project Corridor.

FINAL
For illustrative purposes only

EAST BAY BRT

BUS-ONLY LANES

CLASS IV PROTECTED BIKE LANES

EAST BAY GREENWAY

BUS-ONLY LANES

EAST BAY GREENWAY

RAPID BUS SERVICE

CLASS IV PROTECTED BIKE LANES

EAST BAY GREENWAY EXTENSION

CLASS IV PROTECTED BIKE LANES

RAPID BUS SERVICE

FREMONT MICROTRANSIT/FLEX

See Inset A for full extent of corridor

Inset A

Oakland
Alameda County
San Leandro
Lake Chabot Regional Park
Anthony Chabot Regional Park
Castro Valley BART
Ashland
Cherryland
Bay Fair BART
San Leandro BART
Hayward BART
Hayward Station
South Hayward BART
Garin Regional Park
Dry Creek Pioneer Regional Park
Union City
Fremont
Union City BART
Quarry Lakes Regional Recreation Area
Fremont BART
Fremont Centerville Station
Irvington BART (future)
Warm Springs BART
San Lorenzo
Tennyson Rd
Industrial Pkwy
Whipple Rd
Mission Blvd
Fremont Blvd
Decoto Rd
Thornton Ave
Auto Mall Pkwy
San Mateo Bridge
To Dumbarton Bridge
Newark
E 14th St
Lewelling Blvd
Jackson St
Washington Ave
Osgood Rd
Warm Springs Blvd

Mile
0 0.5 1 2

Legend:

- BART Station
- BART Above/Below Ground
- Capitol Corridor Stations
- ACE/Capitol Corridor Station
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial
- Water Bodies
- Parks/Open Space
- Bus-Only Lanes – limited stop service with bus-only lanes
- Rapid Bus – limited-stop service without bus-only lanes
- Off-Street Multiuse Trail
- On-Street Protected Bike Lanes
- Microtransit/Flex – on-demand bus service with flexible route and schedule
- New Class II buffered bike lanes
- **Mobility Hub**

Dotted lines indicate improvements that are existing or planned to be implemented separately from this project

ALAMEDA County Transportation Commission

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

Exhibit is for illustrative purposes only.

Figure 7
Recommended Mobility Hub Locations

June 2020

Project Elements to be Defined in Later Phases – While mobility hub locations and potential improvements have been identified, other project elements will be defined through subsequent project development activities, building upon the scoping phase efforts to date. These elements include the following:

- **Infrastructure elements by location** - Specific infrastructure projects that support the Study Area mobility hubs have been identified through plans completed by BART (station area gap studies completed for the San Leandro, Hayward, South Hayward, and Union City stations) and by local agencies (specific plans and active transportation plans). The mobility hub improvements for the Project will build upon these planned projects and programs. Additional coordination with partner agencies and community stakeholders is needed to define the recommended list of mobility hub projects by location, in particular for mobility services and traveler information data. This coordination should occur on a location-by-location basis as each mobility hub is advanced for implementation.
- **Mobility hub pilot project** - A mobility hub pilot project is proposed to achieve near-term benefits to multimodal access and BART ridership while serving as a model for implementation at other locations in the Study Area. Coordination between all partner agencies will be required to determine locations, improvements, and an implementation approach.

Summary of Benefits and Tradeoffs – Based on analyses completed to date, mobility hubs provide the following benefits or tradeoffs for the Study Area:

- For long-term Year 2040 conditions, mobility hub improvements are forecast to increase BART ridership at all stations.
- For long-term Year 2040 conditions, mobility hub improvements are forecast to increase the share of non-auto trips to access BART stations.

Partner Agency Considerations– All partner agencies expressed support for mobility hubs as part of the Project's recommended long-term concept. Additional considerations include the following:

- The City of Fremont has implemented a bikeshare program around the Fremont and Warm Springs BART stations, supporting these locations as mobility hubs. Additionally, employers around the Warm Springs BART stations are considering forming a Transportation Management

Association to provide last-mile connections to/from the station for employees.

- The Cities of Fremont and Union City support a future mobility hub as proposed at the intersection of Fremont Blvd. and Decoto Rd., to serve as a transfer point between Dumbarton Corridor transit services and high-capacity transit services planned for Fremont Blvd.
- BART has completed station area gap studies for the San Leandro, Hayward, South Hayward, and Union City stations. The improvements identified are consistent with mobility hub improvements to facilitate non-auto access.

Community Stakeholder Considerations – Community members expressed the following key themes and considerations:

- There is strong support for the mobility hub concept supporting BART and transit use.
- Community members identified the importance of e-bike charging stations as an additional improvement to be included.

Additional detail regarding community stakeholder considerations is provided in **Appendix A**, **Stakeholder Engagement Summary**.

2.5 MICROTRANSIT/FLEX

Long-term transit circulator services for the Study Area are envisioned as microtransit, or on-demand bus services with a flexible route and schedule. Services may be requested through online systems, apps, and/or phone. Transit circulators within the Study Area are intended to serve shorter-distance trips within a given area and provide first- and last-mile connectivity to rail transit stations.

AC Transit operates a form of microtransit service (Flex) as an alternative to local fixed routes in low-density and low-demand areas. Current Flex services are in Newark and Castro Valley. Flex routes are a form of microtransit, in that they operate with a flexible route and schedule.

Elements – As recommended, microtransit/Flex includes the following elements:

- Small shuttles or vans
- Flexible route and schedule
- On-demand service

Locations - **Figure 8** shows the recommended locations for microtransit/Flex. Microtransit/Flex is recommended within Fremont and may be included as part of the mobility hub improvements described in the prior section.

Phasing – Microtransit/Flex in Fremont is recommended for long-term implementation. The timing of potential microtransit services for mobility hubs will be determined as part of the implementation plan to be developed for each location.

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EAST BAY BRT

BUS-ONLY LANES

CLASS IV PROTECTED BIKE LANES

EAST BAY GREENWAY

BUS-ONLY LANES

EAST BAY GREENWAY

RAPID BUS SERVICE

CLASS IV PROTECTED BIKE LANES

EAST BAY GREENWAY EXTENSION

CLASS IV PROTECTED BIKE LANES

RAPID BUS SERVICE

FREMONT MICROTRANSIT/FLEX

See Inset A for full extent of corridor

Inset A

Fremont

Oakland
San Leandro
Alameda County
Lake Chabot Regional Park
Anthony Chabot Regional Park
Castro Valley BART
Ashland
Cherryland
Bay Fair BART
San Leandro BART
Hayward BART
Hayward Station
South Hayward BART
Alameda County
Hayward
Union City
Garin Regional Park
Dry Creek Pioneer Regional Park
Fremont
Union City BART
Quarry Lakes Regional Recreation Area
Fremont BART
Fremont Centerville Station
Irvington BART (future)
Warm Springs BART
San Leandro
San Lorenzo
Hayward
Union City
Fremont
Newark
San Mateo Bridge
To Dumbarton Bridge
Tennyson Rd
Industrial Pkwy
Whipple Rd
Mission Blvd
Fremont Blvd
Decoto Rd
Thornton Ave
Auto Mall Pkwy
Lewelling Blvd
Jackson St
Osgood Rd
Warm Springs Blvd

Mile
0 0.5 1 2

Legend:

- BART Station
- BART Above/Below Ground
- Capitol Corridor Stations
- ACE/Capitol Corridor Station
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial
- Water Bodies
- Parks/Open Space
- Bus-Only Lanes – limited stop service with bus-only lanes
- Rapid Bus – limited-stop service without bus-only lanes
- Off-Street Multiuse Trail
- On-Street Protected Bike Lanes
- **Microtransit/Flex – on-demand bus service with flexible route and schedule**
- New Class II buffered bike lanes
- Mobility Hub

Dotted lines indicate improvements that are existing or planned to be implemented separately from this project

ALAMEDA County Transportation Commission

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

Exhibit is for illustrative purposes only.

Figure 8
Recommended Microtransit/Flex Locations

June 2020

Project Elements to be Defined in Later Phases – Some elements of microtransit/Flex have been identified through the current scoping phase but will need to be defined in subsequent project development activities. These elements include the following:

- **Service plan** – Additional analyses and stakeholder coordination are required to define the service plan for microtransit/Flex, including the service area boundaries and route structure.
- **Lead agency** – Additional agency coordination is required to define the lead agency or agencies for administering microtransit/Flex services.
- **Outreach –** Extensive community outreach is needed to ensure public awareness of microtransit services and increase its potential for success.

Summary of Benefits and Tradeoffs – Based on analyses completed to date, microtransit/Flex provides the following benefits or tradeoffs for the Study Area:

- Microtransit is projected to increase both transit ridership and non-auto access to transit for long-term conditions, assuming robust service levels.

Partner Agency Considerations – All partner agencies expressed support for microtransit/Flex as part of the Project's recommended long-term concept. Additional considerations include the following:

- AC Transit currently operates Flex service outside of the Study Area in Newark and Castro Valley but does not plan to implement Flex service in Fremont in the near term.

Community Stakeholder Considerations – There were no comments received from community members on this improvement category.

Additional detail regarding community stakeholder considerations is provided in **Appendix A, Stakeholder Engagement Summary**.

2.6 EAST BAY GREENWAY EXTENSION

The East Bay Greenway is a planned bicycle and pedestrian path that will extend from Lake Merritt BART to South Hayward BART. The segment of the East Bay Greenway from San Leandro BART to South Hayward BART is within the Project Study Area.

The East Bay Greenway Extension is recommended as part of this Project and would extend from South Hayward BART to Warm Springs BART. The East Bay Greenway Extension is intended to increase bicycling activity for longer-distance trips, improve non-auto access to BART, and provide additional safety and comfort for pedestrians and bicyclists.

Elements – As recommended, the East Bay Greenway Extension includes a combination of off-street and on-street alignments:

- Class I off-street multiuse paths are recommended where feasible. Class I facilities provide a completely separated facility designed for the exclusive use of bicyclists and pedestrians with crossing points minimized.
- On-street Class IV protected bike lanes are recommended where off-street alignments are not feasible. Class IV bike lanes provide physical separation between bicyclists and moving traffic.

Alignment - Figure 9 shows the proposed alignment for the East Bay Greenway Extension.

- Between South Hayward BART and Decoto Rd., the alignment follows Mission Blvd., building upon the near-term Class IV bikeway improvements under construction as part of Hayward's Mission Blvd. Phase 2 project.
- From Decoto Rd west and south to the existing Quarry Lakes Trail, the alignment follows Decoto Rd. and Alvarado Niles Road. An alignment along Mission Blvd. and Quarry Lakes Parkway will be evaluated as an alternative during the environmental phase of the East Bay Greenway Extension project. Completion of bikeway improvements would occur in the long term.

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EAST BAY BRT

BUS-ONLY LANES

CLASS IV PROTECTED BIKE LANES

EAST BAY GREENWAY

BUS-ONLY LANES

EAST BAY GREENWAY EXTENSION

RAPID BUS SERVICE

CLASS IV PROTECTED BIKE LANES

CLASS IV PROTECTED BIKE LANES

RAPID BUS SERVICE

FREMONT MICROTRANSIT/FLEX

See Inset A for full extent of corridor

Inset A

Oakland
Alameda
San Leandro
Alameda County
Lake Chabot Regional Park
Anthony Chabot Regional Park
Castro Valley BART
Ashland
Cherryland
Bay Fair BART
San Leandro BART
Hayward BART
Hayward Station
South Hayward BART
Hayward
Union City
Alameda County
Garin Regional Park
Dry Creek Pioneer Regional Park
Union City
Fremont
Alameda County
San Leandro
San Lorenzo
Hayward
Tennyson Rd
Industrial Pkwy
Whipple Rd
Mission Blvd
Fremont BART
Quarry Lakes Regional Recreation Area
Fremont Centerville Station
Fremont Blvd
Decoto Rd
Thornton Ave
Mowry Ave
Stevenson Blvd
Auto Mall Pkwy
Hayward
Union City
Fremont
San Mateo Bridge
Fremont
Newark
To Dumbarton Bridge
Newark
Fremont
Osgood Rd
Mission Blvd
Fremont Blvd
Warm Springs BART
Fremont

Mile
0 0.5 1 2

Legend:

- BART Station
- BART Above/Below Ground
- Capitol Corridor Stations
- ACE/Capitol Corridor Station
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial
- Water Bodies
- Parks/Open Space
- Bus-Only Lanes – limited stop service with bus-only lanes
- Rapid Bus – limited-stop service without bus-only lanes
- **East Bay Greenway Extension**
- On-Street Protected Bike Lanes
- Microtransit/Flex – on-demand bus service with flexible route and schedule
- New Class II buffered bike lanes
- Mobility Hub
- Dotted lines indicate improvements that are existing or planned to be implemented separately from this project

ALAMEDA County Transportation Commission

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

Exhibit is for illustrative purposes only.

Figure 9
Recommended East Bay Greenway Extension Alignment

June 2020

- Between Alvarado Niles Rd. and Fremont BART, the alignment follows a combination of existing trails within the Quarry Lakes Recreation Area, the BART corridor, and local streets. The existing trails within the Quarry Lakes Recreation Area can be used in the near term. However, the alignment option in this section includes a new bridge crossing of Alameda Creek and requires further analysis and environmental clearance to be defined.
- Between Fremont BART and Irvington BART, portions of the alignment exist around Lake Elizabeth and to the south of the lake.
- Between Irvington BART and Warm Springs BART, the alignment follows Osgood Rd. and Warm Springs Blvd.

Phasing – While the overall East Bay Greenway Extension is recommended as a long-term improvement, several segments may be completed in the near term through projects that are underway. Other portions of the East Bay Greenway Extension require additional analysis and environmental clearance and are identified as long-term segments. The proposed phasing for implementing the East Bay Greenway Extension is presented in Section 2.10.2, Bikeway Improvement Phasing.

Project Elements to be Defined in Later Phases – Some elements of the East Bay Greenway Extension have been identified through the current scoping phase but will be defined in subsequent project development activities. These elements include the following:

- **Alignment in Union City** – In Union City, an alignment along Mission Blvd. and the planned Quarry Lakes Parkway will be evaluated as an alternative during the environmental phase of the East Bay Greenway Extension project.
- **Alignment between Alameda Creek and Fremont BART** – The recommended alignment requires a new bridge crossing Alameda Creek and adjacent Union Pacific rail lines, plus a new trail facility from the bridge crossing to Fremont BART. While the City of Fremont has identified multiple potential locations for the bridge crossing and trail facility, these alignments have not yet been studied.

Summary of Benefits and Tradeoffs – Based on analyses completed to date, the East Bay Greenway Extension provides the following benefits or tradeoffs for the Study Area:

- The long-term (Year 2040) demand for bicycle travel is projected to more than double throughout the corridor compared to existing conditions.

Partner Agency Considerations – All partner agencies expressed support for the East Bay Greenway Extension as part of the Project's recommended long-term concept. Additional considerations include the following:

- Use of the BART corridor between Industrial Pkwy. and Whipple Rd. is not feasible for the East Bay Greenway Extension due to the Hayward Maintenance Yard and associated rail activity.
- The City of Union City is currently advancing the Quarry Lakes Parkway project, which will include a multiuse trail next to the roadway.
- The City of Fremont has recently completed a citywide trails strategy; implementation of any improvements will be closely coordinated with the East Bay Greenway Extension through Fremont.
- The City of Fremont Bicycle Plan shows a trail continuing from the East Bay Greenway Extension terminus at Warm Springs BART and connecting to the Bay Trail and Santa Clara County. Portions of this trail are under design or recently constructed.

Community Stakeholder Considerations – Community members expressed the following key themes and considerations:

- There is strong support for completing the East Bay Greenway Extension.
- Some community members raised concerns about safety where the multiuse trail would cross high-traffic streets.
- Community members stated that maintenance, planting/landscaping, and safety should be prioritized as the project is implemented.

Additional detail regarding community stakeholder considerations is provided in **Appendix A, Stakeholder Engagement Summary**.

2.7 ON-STREET PROTECTED BIKE LANES

On-street Class IV protected bike lanes are recommended as part of the Project's long-term concept.

On-street protected bike lanes are intended to improve regional connectivity by bike; to facilitate bicycle travel for shorter-distance trips; and to improve the safety and comfort of bicyclists.

Elements – As recommended, on-street protected bike lanes include the following elements:

- Physical separation from moving traffic in the form of raised landscape strips, flex posts, or on-street parking.
- Signalized intersection treatments to reduce conflicts between bicyclists and vehicular traffic.
- "Daylighting" around driveways and intersections to remove on-street parking in locations with limited visibility.

Alignment - Figure 10 shows the recommended alignment for on-street protected bike lanes. Class IV on-street protected bike lanes are recommended along all portions of the corridor, except for the following:

- Along E. 14th St. in San Leandro, Class IV bike lanes are not recommended from Davis St. to the E. 14th St./Bancroft Ave./ Hesperian Blvd. intersection due to the narrow right-of way through downtown San Leandro. Instead, Class IV bike lanes are recommended along the parallel section of Bancroft Ave. from Davis St. to the E. 14th St./Bancroft Ave./Hesperian Blvd. intersection.

FINAL
For illustrative purposes only

EAST BAY BRT

BUS-ONLY LANES

CLASS IV PROTECTED BIKE LANES

EAST BAY GREENWAY

BUS-ONLY LANES

EAST BAY GREENWAY

RAPID BUS SERVICE

CLASS IV PROTECTED BIKE LANES

EAST BAY GREENWAY EXTENSION

CLASS IV PROTECTED BIKE LANES

RAPID BUS SERVICE

FREMONT MICROTRANSIT/FLEX

See Inset A for full extent of corridor

Inset A

Mile
0 0.5 1 2

Legend:

- BART Station
- BART Above/Below Ground
- Capitol Corridor Stations
- ACE/Capitol Corridor Station
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial
- Water Bodies
- Parks/Open Space
- Bus-Only Lanes – limited stop service with bus-only lanes
- Rapid Bus – limited-stop service without bus-only lanes
- Off-Street Multiuse Trail
- **On-Street Protected Bike Lanes**
- Microtransit/Flex – on-demand bus service with flexible route and schedule
- New Class II buffered bike lanes
- Mobility Hub

Dotted lines indicate improvements that are existing or planned to be implemented separately from this project

ALAMEDA County Transportation Commission

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

Exhibit is for illustrative purposes only.

Figure 10
Recommended On-Street Protected Bike Lane Locations

June 2020

Phasing – For some portions of the Project Corridor, on-street protected bike lanes are identified as near-term improvements as part of projects currently underway. For other portions of the Project Corridor, Class II buffered bike lanes may be implemented in the near term as a first step toward protected bike lanes in the long term. The proposed phasing for implementing on-street protected bike lanes is presented in Section 2.10.2, Bikeway Improvement Phasing.

Project Elements to be Defined in Later Phases – Some elements of the on-street protected bike lanes have been identified through the current scoping phase but will be defined in subsequent efforts. These elements include the following:

- **Type of physical separation** – The physical separation between bicycle lanes and moving traffic may be implemented using raised landscape strips, on-street parking, or flex posts. The type of physical separation used will vary based on the corridor context and time horizon (for example, flex posts may be used for near-term quick-build projects).
- **Intersection treatments** – Protected bike lanes require special consideration of bicycle/vehicle conflict points at intersections, in particular for bicyclists or vehicles making turns. As part of subsequent efforts, intersection treatments (e.g., protected intersections or bicycle signal phases) will be identified for affected locations.

Summary of Benefits and Tradeoffs – Based on analyses completed to date, on-street protected bike lanes provide the following benefits or tradeoffs for the Study Area:

- Overall, the demand for bicycle travel throughout the Project Corridor is projected to more than double for long-term (Year 2040) conditions compared to existing conditions. This increase in demand is projected for long-term baseline conditions, regardless of the type of bicycle facilities present.
- National research has shown that the installation of bicycle lanes reduces applicable bike crashes by an average of 35 percent. Increasing the width of existing bicycle lanes along arterials has also been shown to reduce applicable bike crashes.

Partner Agency Considerations– All partner agencies expressed support for on-street protected bike lanes as part of the Project's recommended long-term concept. Additional considerations include the following:

- The City of San Leandro supports Class IV bike lanes along Bancroft Ave. parallel to the corridor. The City of San Leandro is also prioritizing use of the East Bay Greenway (parallel to the Project Corridor) for north-south bicycle trips.
- Alameda County is including Class IV protected bike lanes as part of near-term corridor improvement projects (E. 14th/ Mission Phases II and III). However, a gap in bike lanes would remain for the portion of E. 14th St. between the San Leandro boundary and 162nd Ave.
- The City of Hayward is including Class IV protected bike lanes as part of near-term corridor improvement projects (Mission Blvd. Phases 2 and 3).
- The Cities of Fremont and Union City are completing the Decoto Rd. Complete Streets Project, which will evaluate bikeway improvements in conjunction with transit priority treatments.
- The City of Fremont is evaluating road diet options for Fremont Blvd. through Centerville.
- AC Transit supports having both higher-order bike and bus facilities along the corridor. The design of these facilities will be closely coordinated during project development activities.
- Class IV protected bike lanes along the Project Corridor are recommended as part of Caltrans' District 4 Bike Plan.

Community Stakeholder Considerations– Community members expressed the following key themes and considerations:

- Community members in San Leandro expressed support for Class IV on-street protected bike lanes and Class II buffered bike lanes.
- Community members in Hayward and Union City expressed support for both Class IV protected bike lanes and Class II buffered bike lanes, with a slight preference for Class IV protected bike lanes.
- Community members in Ashland/Cherryland and Fremont expressed strong support for Class IV protected bike lanes.
- For Fremont Blvd. through Centerville, community members emphasized the constrainted right of way and the importance of community engagement as part of the City of Fremont's ongoing projects.

- Additional detail regarding community stakeholder considerations is provided in **Appendix A, Stakeholder Engagement Summary**.

2.8 SAFETY AND OPERATIONAL IMPROVEMENTS

In addition to the long-term concept elements presented in **Figure 2** and discussed in the prior sections, specific near-term and mid-term safety and operational improvements have been identified to address existing safety needs. [1]

These improvements focus on individual intersections or short segments and serve as building blocks to advance the long-term concept elements. For example, pedestrian crossing improvements may support the implementation of Rapid Bus, and bicycle signal improvements may support the implementation of Class IV protected bike lanes.

Elements – The recommended safety and operational improvements fall into four categories:

- **Transit Circulation and Access** – Examples of near-term and mid-term transit improvements include shelters and benches, wayfinding signage, and pedestrian lighting around bus stops.
- **Vehicular Traffic Circulation** – Examples of near-term and mid-term traffic circulation and traffic signal technology improvements include traffic signal retiming, speed feedback signs, and traffic signal equipment upgrades. Traffic signal technology improvements are discussed in more detail in the following section.
- **Bicycle Network Connectivity, Safety, and Comfort** – Examples of near-term and mid-term bicycle improvements include bicycle parking at key destinations, bike detection at traffic signals, and lane restriping for new or wider bike lanes.
- **Pedestrian Connectivity, Safety, and Comfort** – Examples of near-term and mid-term pedestrian improvements include new or improved crosswalks, ADA-compliant curb ramps, pedestrian signals, median refuge islands, and intersection bulbouts.

[1] Near-term improvements are defined as those that can be implemented in less than three (3) years without right-of-way acquisition or environmental clearance documentation. Mid-term improvements can be implemented in three (3) to seven (7) years without right-of-way acquisition but require environmental clearance documentation or detailed design.

The complete list of recommended safety and operational projects is included as **Appendix B** to this report.

Locations – The near-term and mid-term safety and operational improvements are located throughout the Project Corridor; the locations for individual projects are listed in **Appendix B**.

Project Elements to be Defined in Later Phases – Some elements of the safety and operational improvements have been identified through the current scoping phase but will be defined in subsequent efforts. These elements include the following:

- **Final design** – The recommended improvements are at varying stages of design ; some projects have design concepts that have been developed by local or regional partner agencies, while others require additional engineering evaluation.

Summary of Benefits and Tradeoffs — The Caltrans Local Roadway Safety Manual (2018) and the FHWA Crash Modification Factors Clearinghouse (2019) document crash reduction factors (CRFs) to estimate the expected percentage reduction in crashes after implementing an improvement or countermeasure on a road or intersection.

Table 2 summarizes CRFs for pedestrian and bicycle safety improvements applicable to the Project Corridor. The CRFs are from the Caltrans Local Roadway Safety Manual (2018) and the FHWA Crash Modification Factors Clearinghouse (2019). As a package of near-term and mid-term improvements is developed, these factors will be used to identify applicable treatments based on observed crash types.

Table 2: Summary of Crash Reduction by Improvement Type

Safety Countermeasure/Improvement	Crash Reduction Factor
Install sidewalk (where none exists)	80%
Add leading pedestrian interval at traffic signals	60%
Install pedestrian hybrid beacon	55%
Add pedestrian refuge island	45%
Add intersection lighting	40%
Install rectangular rapid flashing beacon	35%
Add curb extensions	35%
Add bike lanes/buffer bike lanes	35%
Install ped crossing at uncontrolled locations	25% to 35%
Reduce lane width	20%
Reduce lane width	20%
Install bike box	15%
Intersection crossing markings for bicyclists	10%
Prohibit right turn on red	3%
Create protected intersection	Data not available
Install bike signal	Data not available

Sources: Caltrans Local Roadway Safety Manual (2018), FHWA Crash Modification Factors Clearinghouse

Partner Agency Considerations– All partner agencies expressed support for near-term and mid-term safety and operational improvements in support of the Project's recommended long-term concept. The list of improvement projects was developed in close coordination with the partner agencies and reflects recent and ongoing plans; local priorities; and near-term implementation opportunities.

Community Stakeholder Considerations – Community members expressed the following key themes and considerations:

- Community members stated pedestrian safety as a priority for improvement projects, both for walking-only trips and for walking to and from transit.
- Community members expressed general support for safety and operational improvements, with the highest levels of support for the following:

- Crosswalk improvements, including accommodations for the visually impaired
- Signalized intersection improvements
- Bike lane restriping
- Sidewalk gap closures
- Pedestrian-scale lighting
- Streetscape improvements

Additional detail regarding community stakeholder considerations is provided in **Appendix A, Stakeholder Engagement Summary**.

2.9 ADVANCED MULTIMODAL SIGNAL TECHNOLOGY IMPROVEMENTS

Mutimodal signal technology improvements are recommended throughout the Project Corridor to allow for more efficient multimodal traffic management and traffic flow. It is important that signal technology improvements be coordinated across the Project Corridor jurisdictions to maximize their effectiveness. Traffic signal infrastructure improvements are also required for implementing several of the improvements described in earlier sections; examples include transit signal priority for Rapid Bus and intersection video detection to address pedestrian and bicyclist safety.

Elements – The recommended traffic signal technology improvements include the following:

- **Advanced traffic controllers and advanced traffic management systems**– Advanced traffic controllers are designed for anticipated future transportation environments and allow data to be aggregated and processed from real-time detection systems, traffic signals, transit vehicles, dynamic message signs, freight, and freeway systems. Advanced traffic management systems allow local agency transportation staff to operate and control traffic signals and related infrastructure from a remote location.
- **Signal communications systems** – Signal communications systems consist of infrastructure that is required for data sharing and communication between signals. For the Project Corridor, fiber optic cables are the preferred method for establishing communication systems. Other methods may be used for interim improvements when fiber optic cables are not feasible in the near term.
- **Pedestrian detection systems** - Passive or automated pedestrian sensors do not require pedestrians to push a button to activate the crosswalk signal. Passive detection systems can also be used to monitor pedestrians traversing a

crosswalk and provide better conditions for those with mobility limitations (for example, longer clearance times). Passive pedestrian detection is recommended in areas with high pedestrian activity and in areas where pedestrians are likely to require additional crossing time, such as near schools and senior centers. Video-based pedestrian detection is recommended for the Project Corridor due to its flexibility in configuring detection zones or areas.

- **Bicycle detection systems** - Bicycle detection allows traffic signals to provide longer green times so that bicyclists can clear an intersection. Video Image Detection System (VIDS) has become the preferred technology for bicycle detection at signalized intersections, as it provides better detection capabilities than in-ground inductive loops, particularly for lightweight bicycles.
- **Next gen traffic operations and management** - Next-gen traffic operations and management technologies use historical and real-time data sets to improve the performance of the transportation network. Adaptive Traffic Signal Control and Automated Traffic Signal Performance Measures (ATSPM) are two technologies that are recommended for the Project Corridor. Adaptive Traffic Signal Control enables traffic signals to adjust signal timing to accommodate real-time variances in traffic demand. Automated Traffic Signal Performance Measures (ATSPM) systems are software applications that process and analyze high-resolution traffic data to report performance metrics for an individual traffic signal, corridor, and/or across the traffic signal network.
- **Connected vehicle technology** - Connected vehicle technology will enable cars, trucks, buses, and other vehicles to communicate with each other, with roadway infrastructure (for example, traffic signals), and with other road users (for example, pedestrians and bicyclists with compatible smartphones). Connected vehicle technology consists of two components: on-board equipment and Roadside Units. On-board equipment is integrated into vehicles (including passenger vehicles, heavy vehicles and transit vehicles) and provides access to data. Roadside Units provide wireless communication between vehicles, existing traffic infrastructure, and other mobile devices.

Data Needed to Inform Later Phases – While initial recommendations for traffic signal technology have been developed for the Project Corridor, specific improvement locations and phasing have not been developed, as additional data and agency coordination are required. Subsequent project

development efforts will address these needs and will include data collection for the following:

- **Existing signal controllers** - A thorough inventory of the existing controller cabinets should be conducted during the project development phase to identify specific improvements that are needed. For most of the signal controller cabinets along the Project Corridor, advanced traffic controllers would require minor or no modifications, as advanced traffic controllers are available for multiple cabinet types. However, some older cabinets may require replacement to accommodate new controllers and other traffic signal equipment.
- **Existing Advanced Traffic Management Systems** - For the existing Advanced Traffic Management Systems along the Project Corridor, the following should be evaluated to determine their level of functionality:
    - The potential capabilities of center-to-center integration to support joint operations and data sharing
    - The age and version of the existing system to identify upgrades or replacements required to provide the desired functionality (e.g., adaptive traffic signal control, transit signal priority module)
- **Existing communication networks** – Existing communication networks in the Study Area should be evaluated to determine the appropriate technology recommendations. Wireless and hardwired solutions depend on the size of existing fiber cables, connection points of existing systems, agency preferences, and existing field conditions.
- **Planned signal equipment upgrades** – Portions of the Project Corridor in Alameda County, Hayward, and Fremont have Complete Streets projects that will start within the next few years. These projects provide opportunities to implement traffic signal technology upgrades, including fiber-based communication.

Summary of Benefits and Tradeoffs — As mentioned earlier, traffic signal technology improvements represent a required first step for many of the other improvement categories described in this section. As a result, there is a wide range of anticipated benefits, including travel time savings for motorists and transit users; crash reduction for pedestrians and bicyclists; and increased person trip throughput.

Partner Agency Considerations – All partner agencies expressed support for traffic signal technology improvements to advance the Project's recommended long-term concept and near-term improvements. Additional considerations include the following:

- The next phase of the Metropolitan Transportation Commission (MTC) I-880 Integrated Corridor Mobility (ICM) Project will include the City of San Leandro and will provide coordination opportunities for this Project's subsequent project development activites.
- The District 4 SHOPP (State Highway Operation and Protection Program) through 2024/25 includes traffic safety projects for pedestrian signal improvements along E. 14th St. in San Leandro.
- Several corridor projects are underway along the Decoto Rd. portion of the Project Corridor, including the Dumbarton Forward and IDEA Grant projects. These projects will provide traffic signal improvements such as adaptive signal upgrades and transit signal priority.

Community Stakeholder Considerations– Community members expressed the following key themes and considerations:

- There is support for signal timing and other technology improvements.
- There is significant interest in providing more speed and traffic enforcement along the Project Corridor.
- There is interest in using technology to make pedestrians safer at intersections.

Additional detail regarding community stakeholder considerations is provided in **Appendix A, Stakeholder Engagement Summary**.

2.10 IMPROVEMENT PHASING

A phased implementation approach is recommended for the transit-related and bicycle-related Project improvements presented in prior sections. The phasing reflects discussions between Alameda CTC and the partner agencies and allows for near-term project implementation to address existing needs. The phased implementation approach also provides time for more complex projects that require more extensive project development activities and allows the near-term projects to serve as building blocks for implementing the more complex improvements.

2.10.1 Transit Improvement Phasing

Figure 11 shows the proposed implementation phasing for the Project's transit-related improvements. Additional detail regarding the implementation phasing for bus-only lanes/Bus Rapid Transit and Rapid Bus is provided in **Table 3.**

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1 San Leandro BART to Bay Fair BART
Rapid Bus improvements in near term
Bus-only lanes in long-term

2 Bay Fair BART to Hayward BART
Rapid Bus improvements in near term
Bus-only lanes in long term

3A/3B Mattox Rd. to Hayward BART (either Mission Blvd. or Foothill Blvd. alignment)
Rapid Bus improvements in near term
Bus-only lanes in long term

4 Hayward BART to South Hayward BART
Rapid Bus improvements in near term
Bus-only lanes in long term

5 South Hayward BART to Union City BART
Rapid Bus improvements in near term

6 Union City BART to Irvington BART
Rapid Bus improvements in near term

7 Irvington BART to Warm Springs BART
Rapid Bus improvements in near term

8 Fremont Microtransit/Flex
Microtransit/Flex in long term

Mobility Hubs
Improvements at all locations in near-term and mid-term

Inset A

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Legend:
- BART Station
- BART Above/Below Ground
- Capitol Corridor Stations
- ACE/Capitol Corridor Station
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial
- Water Bodies
- Parks/Open Space
- Microtransit/Flex – on-demand bus service with flexible route and schedule
- Mobility Hub
- Near-term (0-3 years) and mid-term (4-7 years) improvements pending funding availability
- Long-term (more than 7 years) improvements pending funding availability

ALAMEDA County Transportation Commission

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

Exhibit is for illustrative purposes only.

Figure 11
Recommended Concept
Transit Improvement Phasing

June 2020

Table 3: Summary of Recommended Transit Improvement Phasing

Segment (refer to Figure)	Recommended Phasing (1)	Phasing Considerations
1. San Leandro BART to Bay Fair BART	Both bus-only lanes and Rapid Bus to be advanced as near-term alternatives through project development Bus-only lanes in long-term	Evaluate performance of AC Transit Tempo before extending bus-only lane
2. Bay Fair BART to Hayward BART	Rapid Bus improvements in near term Bus-only lanes in long term	Bus-only lanes to be implemented for this segment after San Leandro BART to Bay Fair BART segment completed
3A/3B. Mattox Rd. to Hayward BART (either Mission Blvd. or Foothill Blvd. alignment)	Rapid Bus improvements in near term Bus-only lanes in long term	Bus-only lanes to be implemented for this segment after San Leandro BART to Bay Fair BART segment completed On-street parking along Mission Blvd. identified as key community issue by the City of Hayward. Foothill Blvd. identified as an alternate alignment for evaluation during project development phase.
4. Hayward BART to South Hayward BART	Rapid Bus improvements in near term Bus-only lanes in long term	Bus-only lanes to be implemented for this segment after San Leandro BART to Bay Fair BART segment completed
5. South Hayward BART to Union City BART	Rapid Bus improvements in near term	Adaptive signal improvements completed by City of Hayward
6. Union City BART to Irvington BART	Rapid Bus improvements in near term	Improvements to be coordinated with corridor projects for Decoto Rd. and Fremont Blvd.

Table 3, continued

Segment (refer to Figure)	Recommended Phasing (1)	Phasing Considerations
7. Irvington BART to Warm Springs BART	Rapid Bus improvements in near term	Improvements to be coordinated with City of Fremont signal improvements
8. Fremont Microtransit/Flex	Microtransit/Flex in long term	Additional community engagement is required
9. Mobility Hubs	Improvements in near-term and mid-term	Near-term pilot project to be defined

(1) Signal priority improvements are recommended in the near term for all Rapid Bus and bus-only lane/Bus Rapid Transit segments.

2.10.2 Bikeway Improvement Phasing

Figure 12 presents the recommended phasing for the ultimate long-term completion of the on-street protected bike lanes and the East Bay Greenway Extension. The phasing is also summarized in **Table 4** for on-street bike lanes and **Table 5** for off-street multiuse trails. The recommended phasing was developed based on current and upcoming near-term projects; additional coordination needs (community engagement or environmental clearance), and existing safety problem areas that are part of the Countywide High-Injury Network for bicyclists.

FINAL
For illustrative purposes only

OFF-STREET MULTIUSE TRAILS

- **A. East Bay Greenway - Lake Merritt BART to South Hayward BART**
  Class I trail, mid term
- **B. Dumbarton/Quarry Lakes Trail - Mission Blvd. to Fremont Blvd.**
  Class I trail, long term
- **C. Quarry Lakes Trail – Alvarado Niles Rd. to Alameda Creek Trail**
  Class I trail, existing
- **D. Alameda Creek Trail - Decoto Rd. to Mission Blvd.**
  Class I trail, existing
- **E. Alameda Creek Bridge**
  New bike/ped bridge, long term
- **F. East Bay Greenway - Alameda Creek Bridge to Fremont BART**
  Class I trail, long term – further feasibility assessment required
- **G. East Bay Greenway - Fremont BART to Central Park**
  Class I trail, near term
- **H. East Bay Greenway - Central Park to Irvington BART**
  Class I trail, existing

ON-STREET BIKE LANES

1. **Bancroft Ave. - Davis St to E. 14th St.**
   Class IV bike lanes, near term
2. **E. 14th St. - San Leandro Blvd. to Bancroft Ave./Hesperian Blvd.**
   Class II buffered bike lanes, near term
3. **E. 14th St. - Bancroft Ave./Hesperian Blvd. to 162nd Ave.**
   Class II buffered bike lanes, near term
   Class IV bike lanes, long term
4. **E. 14th St. - 162nd Ave. to I-238**
   (Alameda County E.14th/Mission Phase II project limits)
   Class IV bike lanes on east side, near term
   Class II buffered bike lanes on west side, near term
   Class IV bike lanes on west side, long term
5. **Mission Blvd. - I-238 to Rose Ave.**
   (Alameda County E.14th/Mission Phase III project limits)
   Class IV bike lanes, near term
6. **Rose St. to A St.**
   (includes Hayward Mission Blvd. Phase 3 project)
   Class IV bike lanes, near term
7. **Mission Blvd. - A St. to Industrial Pkwy.**
   Class II buffered bike lanes, near term
   Class IV bike lanes, long term
8. **Mission Blvd. - Industrial Pkwy. to Union City boundary**
   (Hayward Mission Blvd. Phase 2 project limits)
   Class IV bike lanes, near term
9. **Mission Blvd. - Union City boundary to Decoto Rd.**
   Class IV bike lanes, near term
10. **Mission Blvd - Decoto Rd. to Ohlone College**
    Class IV bike lanes, long term
11. **Decoto Rd – Mission Blvd. to Fremont boundary**
    Class II buffered bike lanes, near term
    Class IV bike lanes, long term
12. **Alvarado Niles Rd. - Decoto Rd. to Quarry Lakes Trail**
    Class IV bike lanes, long term
13. **Decoto Rd – Fremont boundary to Fremont Blvd.**
    Class IV bike lanes, near term
14. **Fremont Blvd - Decoto Rd. to Washington Blvd., excluding Centerville**
    Class IV bike lanes, near term
15. **Fremont Blvd. - Centerville (Alder Ave. to Eggers Dr.)**
    Evaluate feasibility for Class IV bike lanes pending community outreach
16. **Washington Blvd. - Fremont Blvd. to Osgood Rd.**
    Class IV bike lanes, near term
17. **Osgood Rd. - Washington Blvd. to SR 262**
    Class IV bike lanes, mid-term

Inset A

See Inset A for full extent of corridor

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Legend:

- BART Station
- BART Above/Below Ground
- Capitol Corridor Stations
- ACE/Capitol Corridor Station
- Freight Rail and Capitol Corridor Tracks
- Jurisdiction Boundary
- Freeway/Arterial
- Water Bodies
- Parks/Open Space
- Existing or planned Class I trail (completed through separate project)
- New Class I trail
- New Class IV protected bike lanes
- New Class II buffered bike lanes
- East Bay Greenway Extension Alignment
- Alignment to be evaluated as alternative during environmental phase for the East Bay Greenway extension

Near-term (0-3 years) and mid-term (4-7 years) improvements pending funding availability

Long-term (more than 7 years) improvements pending funding availability

ALAMEDA County Transportation Commission

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

Exhibit is for illustrative purposes only.

Figure 12
Recommended Concept
Bike Improvement Phasing

June 2020

Table 4: Summary of Recommended Phasing: On-Street Bike Lanes

Segment (refer to Figure)	Recommended Phasing	Phasing Considerations
1. Bancroft Ave. - Davis St to E. 14th St.	Class IV bike lanes, near term	Gap closure as an alternate alignment to E. 14th St. (Segment 1 above)
2. E. 14th St. – Davis St. to San Leandro Blvd.	Class II buffered bike lanes, long-term	Community engagrement regarding on-street parking impacts
2. E. 14th St. - San Leandro Blvd. to Bancroft Ave./Hesperian Blvd.	Class II buffered bike lanes, near term	Gap closure High-Injury Network segment
3. E. 14th St. - Bancroft Ave./Hesperian Blvd. to 162nd Ave.	Class II buffered bike lanes, near term Class IV bike lanes, long term	Gap closure
4. E. 14th St. - 162nd Ave. to I-238	Class IV bike lanes on east side, near term Class II buffered bike lanes on west side, near term Class IV bike lanes on west side, long term	Alameda County E.14th/Mission Phase II project to be completed near-term
5. Mission Blvd. - I-238 to Rose Ave.	Class IV bike lanes, near term	Alameda County E.14th/Mission Phase III project to be completed near-term
6. Mission Blvd. Rose Ave. to A St.	Class IV bike lanes, near term	Hayward Mission Blvd. Phase 3 project to be completed near-term
7. Mission Blvd. - A St. to Industrial Pkwy.	Class II buffered bike lanes, near term Class IV bike lanes, long term	Gap closure

Table 4, continued

Segment (refer to Figure)	Recommended Phasing	Phasing Considerations
8. Mission Blvd. - Industrial Pkwy. to Union City boundary	Class IV bike lanes, near term	Hayward Mission Blvd. Phase 2 project under construction
9. Mission Blvd. - Union City boundary to Decoto Rd.	Class IV bike lanes, near term	Gap closure On-street segment of East Bay Greenway Extension
10. Mission Blvd - Decoto Rd. to Ohlone College	Class IV bike lanes, long term	Class II bike lanes currently exist
11. Decoto Rd - Mission Blvd. to Fremont Blvd.	Class II buffered bike lanes, near term Explore Class IV bike lanes as potential long-term improvement	Class II bike lanes currently exist Potential on-street alignment for East Bay Greenway Extension
12. Alvarado Niles Rd. - Decoto Rd. to Quarry Lakes Trail	Class IV bike lanes, long term	On-street alignment for East Bay Greenway Extension
13. Fremont Blvd - Decoto Rd. to Washington Blvd., excluding Centerville	Class IV bike lanes, near term	Initial feasibility planning already completed by City of Fremont
14. Fremont Blvd. - Centerville (Alder Ave. to Eggers Dr.)	Evaluate feasibility for Class IV bike lanes pending community outreach	Additional community outreach recommended by City of Fremont
15. Washington Blvd. - Fremont Blvd. to Osgood Rd.	Class IV bike lanes, near term	Initial feasibility planning already completed by City of Fremont
16. Osgood Rd./ Warm Springs Blvd. - Washington Blvd. to SR 262	Class IV bike lanes, mid-term	Class II bike lanes currently exist. City of Fremont considers this segment as a mid-term priority. Portion from Washington Blvd. to Warm Springs BART is part of East Bay Greenway Extension alignment

Table 5: Summary of Recommended Phasing - Off-Street Bike Lanes

Segment (refer to Figure)	Phasing	Phasing Considerations
A. East Bay Greenway - Lake Merritt BART to South Hayward BART	Class I trail, mid term	Project development underway as separate effort from this Project
B. Dumbarton/ Quarry Lakes Trail - Mission Blvd. to Fremont Blvd.	Class I trail, long term	Additional project development and environmental clearance required
C. Quarry Lakes Trail – Alvarado Niles Rd. to Alameda Creek Trail	Existing Class I trail	Existing trail segment to be used as part of East Bay Greenway Extension
D. Alameda Creek Trail - Decoto Rd. to Mission Blvd.	Existing Class I trail	Existing trail within Study Area
E. Alameda Creek Bridge	New bike/ped bridge, long term	Multiple bridge crossing options. Engineering feasibility and environmental clearance needed
F. East Bay Greenway - Alameda Creek Bridge to Fremont BART	Class I trail, long term	Engineering feasibility and environmental clearance needed. Additional community engagement needed to identify preferred alignment.
G. East Bay Greenway - Fremont BART to Central Park	Class I trail, near term	Feasibility analysis already completed by City of Fremont
H. East Bay Greenway – Central Park to Irvington BART	Existing Class I trail	Existing trail segment to be used as part of East Bay Greenway Extension

2.11 PLANNING-LEVEL COST ESTIMATES

Capital costs for implementing the recommended improvements are estimated to be approximately $620 to $750 million in 2020 dollars as summarized in **Table 6**. Cost estimates exclude any operating and maintenance costs as well as funding already identified for projects that are underway.

Table 6: Summary of Planning-Level Capital Costs

Improvement	Capital Cost (year 2020, millions)
Bus-Only Lanes/Bus Rapid Transit - San Leandro BART to South Hayward BART	$270 to $350
Rapid Bus - South Hayward BART to Warm Springs BART	$22
Mobility Hubs	$50
Microtransit/Flex	$8
East Bay Greenway Extension - South Hayward BART to Warm Springs BART	$220 to $270
On-street Protected Bike Lanes	$25
Near-Term Safety and Operational Improvements	$26
Advanced Multimodal Signal Technology	Costs included as part of projects listed above
Total	**$620 to $750 million**

For Microtransit/Flex, only capital costs for vehicles are included. Costs for advanced multimodal signal technology improvements are incorporated within the cost estimates for individual transit, bikeway, and safety components, as the signal infrastructure improvements are required to implement those projects. Costs for Rapid Bus and Bus Only lanes include purchase of vehicles.

Section 3
Implementation Considerations

Section 3

Implementation Considerations

The implementation of the recommended projects presented in the prior section will occur through multiple processes led by a combination of partner agencies and Alameda CTC. Given this complexity, this section provides implementation considerations as projects are advanced through project development, environmental clearance, final design, and implementation. The remainder of this section covers the following:

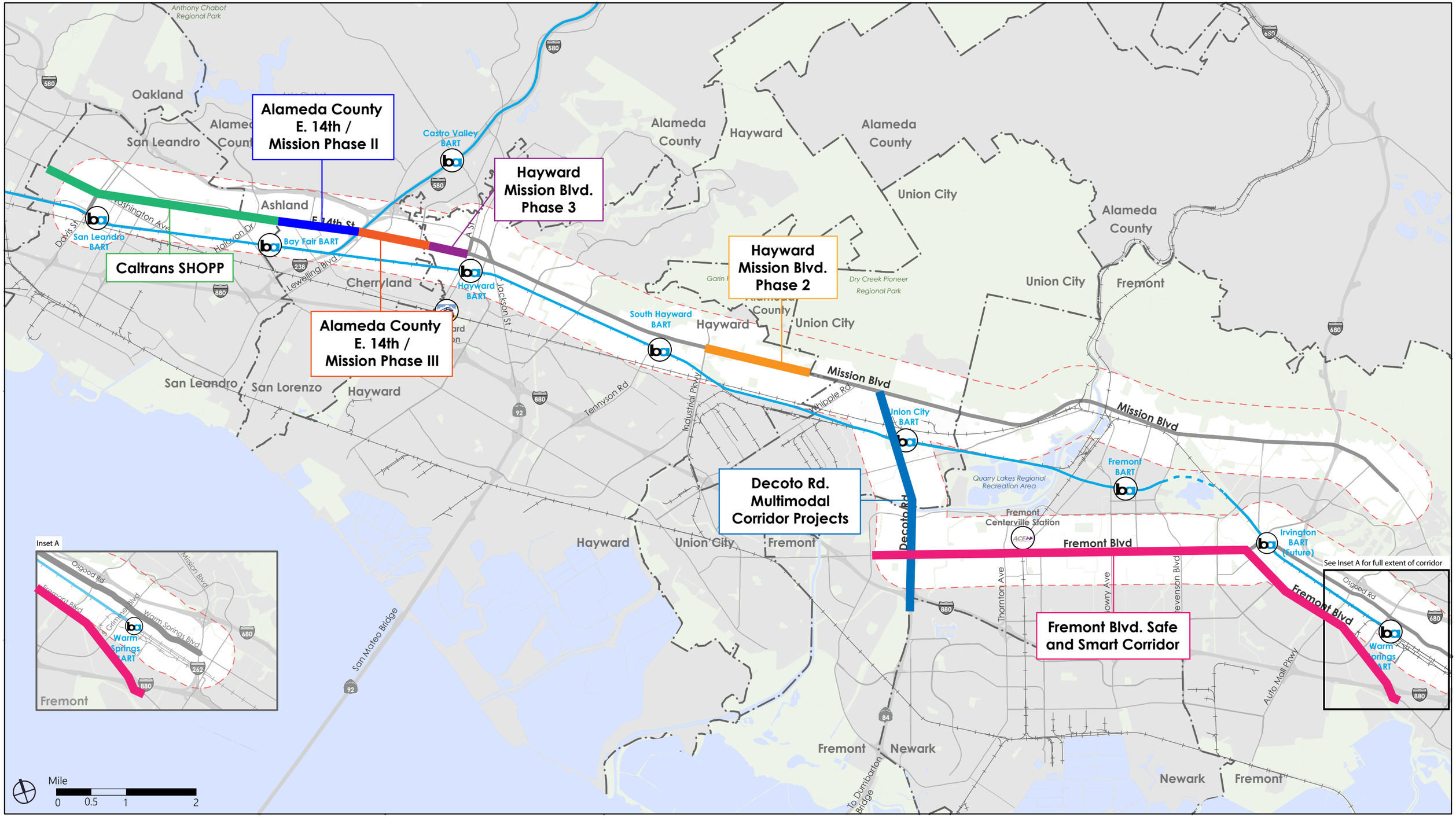
- Current and upcoming corridor projects
- Multimodal design guidance
- Additional technical implementation guidance
- Project development next steps

3.1 CURRENT AND UPCOMING CORRIDOR PROJECTS

Several corridor improvement projects along the Project Corridor are underway and are being led by partner agencies. These projects provide coordination opportunities for implementing improvements in the near term. Key projects are listed below and on the following page. **Figure 13** shows the locations of the key projects. Additional partner agency implementation considerations are included in Section 2 as part of the partner agency considerations for discussion of improvement recommendations in Section 2.

Caltrans State Highway Operation and Protection Program (SHOPP) - The Caltrans District 4 SHOPP includes pavement rehabilitation and several spot intersection improvements within San Leandro; these improvements consist primarily of crosswalk striping, curb ramps, and pedestrian push buttons. For these improvements, it is assumed that Caltrans would be responsible for construction.

East 14th St./Mission Blvd. Phase II Project - In Alameda County, the E. 14th Phase II corridor project (from 162nd Ave. south to I-238) is slated for construction beginning in 2020. This portion of the corridor is excluded from the scope of near-term safety and operational improvements so that Alameda County's programmed project can continue as scheduled. Alameda County's corridor project already incorporates safety and operational improvements similar to those proposed for other areas of the Project Corridor.



Legend:

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

ALAMEDA County Transportation Commission

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

Figure 13
Current and Upcoming Corridor Improvement Projects

December 2020

East 14th St./Mission Blvd. Phase III Project - Alameda County's E. 14th/Mission Phase III corridor project (from I-238 south to Rose St./City of Hayward Boundary) is currently under design but is not fully funded for construction. Coordination between this Project and the Alameda County effort is important to allow for safety-related improvement recommendations to be integrated into the corridor project. Alameda County's corridor project incorporates safety and operational improvements similar to those proposed for other areas of the Project Corridor.

Mission Blvd. Phase 3 Project - The City of Hayward's Mission Blvd. Phase 3 project (from Rose St./Alameda County Boundary south to A St./Hayward Loop) is also slated for construction beginning in 2021. This portion of the corridor is excluded from the scope of near-term safety and operational improvements so that Hayward's programmed project can continue as scheduled. Hayward's corridor project incorporates safety and operational improvements similar to those proposed for other areas of the Project Corridor.

Mission Blvd. Phase 2 Project - The City of Hayward's Mission Blvd. Phase 2 project (from Industrial Pkwy. to Blanche St./Union City Boundary) is currently under construction. This project will add on-street protected bike lanes to the corridor and will also incorporate adaptive signal upgrades.

Decoto Rd. Corridor Transit Improvements – AC Transit is working with the Cities of Union City and Fremont to implement transit infrastructure improvements along the Decoto Road corridor. These improvements are being implemented through a combination of efforts, including Dumbarton Forward, AC Transit's IDEA Grant, and the Decoto Road Corridor Study being led by the two cities.

Fremont Blvd. Safe and Smart Corridor - In Fremont, AC Transit is partnering with a private firm to implement NextGen TSP (transit signal priority) with a center-to-center communication (cloud-based TSP) on Fremont Blvd. This existing effort can be leveraged to implement NextGen TSP in areas of the corridor between San Leandro and Hayward. As such, advanced signal technologies to allow for cloud-based TSP will be included as part of the project delivery.

3.2 MULTIMODAL DESIGN GUIDANCE

As the recommended Project improvements are advanced for implementation, it is important that they are designed with elements consistent with the multimodal goals of the Project and the intended benefits of individual improvements.

Design concepts illustrating the recommended long-term concept for the Project Corridor are shown in **Appendix C, Design Guidance**

Resources. These exhibits show how improvements for multiple modes (transit, bicycle, and pedestrian) are to be integrated within the existing corridor context and right of way widths.

The long-term design concept exhibits are conceptual in nature and do not represent final design drawings or construction plans. Engineering studies, environmental clearance, and stakeholder engagement are required during subsequent project development phases.

The following documents provide design guidance for the elements included within the long-term concepts:

Alameda CTC Central County Complete Streets Design Guidelines, May 2017

The Alameda CTC Central County Complete Streets Design Guidelines were developed in 2017 as part of a Complete Streets technical assistance project for the jurisdictions of San Leandro, Hayward, and unincorporated Alameda County. The guidelines were developed in close coordination with public works and planning staffs from the three jurisdictions, with a goal of helping the jurisdictions' staffs understand how to implement Complete Streets projects for various street types, modal priorities, and land use contexts. To aid in the day-to-day use of the Design Guidelines, complete streets checklists were developed for capital projects and land development projects to identify opportunities to integrate multimodal design elements. Since then, the Central County Complete Streets Design Guidelines have been shared as a countywide technical resource for local jurisdictions within Alameda County.

AC Transit Multimodal Corridor Design Guidelines, April 2018

The AC Transit Multimodal Corridor Guidelines were developed to provide clear design standards for a range of typical roadway conditions to help ensure efficient transit operations, accommodate the needs of bicyclists, and facilitate safe access to and from bus stops for AC Transit passengers. The document offers guidance on design elements of bus stops adjacent to bicycle infrastructure. The guide is intended to help create a more predictable, safe, and uniform experience for bus patrons, drivers, bicyclists, and pedestrians as they travel through the jurisdictions that comprise the Alameda-Contra Costa Transit District.

National Association of City Transportation Officials (NACTO) Transit Street Design Guide, 2016

The NACTO Transit Street Design Guide is a national guidance document focused on the development of transit facilities on city streets, and the design and engineering of city streets to prioritize transit, improve transit service quality, and support other goals related to transit. The guide has been developed based on other

design guidance, as well as city case studies, best practices in urban environments, research and evaluation of existing designs, and professional consensus. These sources, as well as the specific designs and elements included in the guide, are based on North American street design practice.

NACTO Don't Give Up at the Intersection: Designing All Ages and Abilities Bicycle Crossings, May 2019

Don't Give Up at the Intersection expands the NACTO Urban Bikeway Design Guide (2011), adding detailed guidance on intersection design treatments that reduce vehicle-bike and vehicle-pedestrian conflicts.

Appendix C, Design Guidance Resources, summarizes the available design guidance for each the key design elements included as part of the Project's recommended improvements and reflected in the design concept exhibits.

3.3 ADDITIONAL TECHNICAL IMPLEMENTATION GUIDANCE

The following improvements presented in Section 2 are proposed for near-term and mid-term implementation:

- Transit signal technology
- Advanced multimodal signal technology
- Mobility hubs

As next steps for project development are developed, the following will inform the implementation of near-term projects:

3.3.1 Transit Signal Technology

Transit signal improvements are included as part of the Bus-Only Lanes and Rapid Bus project recommendations. Transit signal improvements are also included in the package of mobility hub improvements to reduce bus travel times to and from BART stations. The Project recommendations incorporate the following transit signal technology elements:

- **Transit signal progression** - retiming traffic signals to match bus operating speeds
- **Traditional transit signal priority** – infrastructure at signalized intersections to allow transit vehicles to communicate with traffic signals
- **Queue jumps** - bypass lanes at intersections that allow transit vehicles to skip vehicle queues)
- **NextGen transit signal priority technology** – centralized, cloud-based transit signal priority controlled through a single system (versus at individual intersections)

Key coordination needs during project development are as follows:

- Signal retiming for transit progression may be completed as part of larger corridor improvement projects (e.g., E. 14th/Mission Phase II, Fremont Blvd. Safe and Smart Corridor) or through standalone projects. Coordination with these ongoing projects should occur during the project development phase.
- The City of Fremont plans to implement a cloud-based TSP pilot project as part of its Fremont Blvd. Safe and Smart Corridor Project. Coordination should occur during the project development phase to allow the lessons learned from the pilot project to be applied to the remainder of the Project Corridor.
- AC Transit anticipates establishing a Central Management System (CMS) that would be used to manage TSP infrastructure across multiple jurisdictions. The CMS would be coordinated through local jurisdictions' Traffic Management Centers where they have been established; therefore, interagency coordination is critical.
- Additional coordination is necessary regarding the status of centralized communications for Caltrans-maintained signals along the corridor. Specific coordination issues include 1) whether communications capabilities exist; and 2) whether communications systems are integrated with other non-Caltrans signals in the same local jurisdiction

Appendix D, Transit Signal Technology Implementation Guidance, provides additional detail regarding implementation considerations.

3.3.2 Advanced Multimodal Signal Technology

Traffic signal system improvements are included as part of the near-term recommendations to improve traffic signal progression along corridor and to improve the safety of pedestrians and bicyclists. Traffic signal system improvements are also included as part of the long-term recommendations for infrastructure to support connected vehicle technologies.

The Project recommendations incorporate the following traffic signal technology elements:

- **Advanced traffic controllers and advanced traffic management systems (ATMS)** – allow for centralized monitoring and control of traffic signal systems
- **Signal communications systems** – fiber or wireless data sharing and communication between intersections/signals
- **Pedestrian detection systems** – passive or automated detection at intersections and crosswalks
- **Bicycle detection systems** – video detection systems for bicyclists waiting at signalized intersections
- **Next gen traffic operations and management** – real-time, adaptive traffic signal control

- **Connected vehicle technology** – infrastructure to allow vehicles to communicate with roadway infrastructure (e.g., traffic signals), other vehicles, and individuals (through smartphones)

Key data collection and inventory needs for project development are as follows:

- **Inventory of existing signal controllers** - A thorough review of the existing controller cabinets should be conducted during the project development phase to identify specific improvements that are needed. For most of the signal controller cabinets along the Project Corridor, advanced traffic controllers (ATCs) would require minor or no modifications; this is because ATCs are available for multiple cabinet types. However, some older cabinets may need to be replaced to accommodate new controllers and other traffic signal equipment as desired.
- **Functionality and capabilities for existing ATMSs** - For the existing ATMSs along the Project Corridor, the following should be evaluated to determine their level of functionality:
    - The potential capabilities of center-to-center integration to support joint operations and data sharing
    - The age and version of the existing ATMS to identify upgrades/replacement required to provide desired corridor functionality (i.e., adaptive traffic signal control, TSP module, etc.)
- **Existing communication network architecture** – Existing communication networks should be evaluated to determine the appropriate technology recommendations. Wireless and hardwired solutions depend on the size of existing fiber cables, connection points of existing systems, agency preferences, and existing field conditions.
- **Signal equipment upgrades planned for concurrent corridor infrastructure projects**– Portions of the Project Corridor in Alameda County and Hayward have Complete Streets projects that will start within the next few years. These projects provide opportunities to implement traffic signal technology upgrades, including fiber-based communication.

Appendix E, Traffic Signal Technology Implementation Guidance, provides additional detail regarding implementation considerations.

3.3.3 Mobility Hubs

Mobility hubs for the Project are defined as centers where transit, shared mobility, walking, and biking come together to provide an integrated suite of mobility services, amenities, and technologies. Mobility hubs are recommended as part of the overall vision for the Project to establish a high-quality transit corridor with robust, seamless connections between modes.

As stated earlier, mobility hub improvements include a combination of infrastructure, mobility services, and traveler information and data. Key implementation considerations for mobility hubs relate to agency roles and partnerships, as discussed below.

Agency roles and partnerships – The implementation of mobility hub improvements will require the cooperation and participation of Alameda CTC, local jurisdictions, public transit providers such as BART and AC Transit, and private mobility service providers.

While Alameda CTC implements and delivers infrastructure projects, the agency does not fund ongoing transportation operations or maintenance. Services such as bikeshare, scooters, and employee shuttles will be operated by private entities. Given this complexity, agency partnerships will be critical in defining next steps for a mobility hub pilot and long-term implementation of mobility hub improvements.

Appendix F, Mobility Hub Implementation Guidance, provides additional detail regarding implementation considerations.

3.4 PROJECT DEVELOPMENT NEXT STEPS

For each improvement category, project development and delivery activities are required to obtain environmental clearance, complete design, and ultimately construct the projects. Next steps for project development will be in coordination with local jurisdictions and with Caltrans District 4 in accordance with their prescribed processes. However, the required process depends on several factors, including the construction cost, funding source, and roadway jurisdiction:

- **Roadway jurisdiction:** The project corridor is split between Caltrans jurisdiction and local agency jurisdiction. Specifically, portions of the corridor under Caltrans jurisdiction are E. 14th St. in San Leandro, Mission Blvd. in Union City, and Mission Blvd. in Fremont. The remaining portions of the project corridor along E. 14th St., Mission Blvd. Decoto Rd., Fremont Blvd., and Warm Springs Blvd. are under local jurisdiction.
- **Construction cost:** The required activities for project development vary based on a given project's capital costs. Locally funded projects with a construction cost under $1 million would require only a Caltrans encroachment permit. Locally funded projects with a construction cost of $1 – 3

million would require a Permit Engineering Evaluation Report (PEER). Larger projects with a construction cost over $3 million would require Caltrans' standard process (Project Initiation Document; Project Approval & Environmental Document; and Plans, Specifications & Estimates).

- **Funding source:** The encroachment permit and PEER processes are project delivery options for locally funded projects. Projects that are state or federally funded require Caltrans' standard process.

Based on the required Caltrans process, the required project development timeframe from project initiation to the beginning of construction will vary; this has implications for the delivery of near-term improvements. An encroachment permit requires 3 to 6 months following the completion of design. A typical PEER process lasts 1 to 2 years and Caltrans' standard process (PID, PA&ED, and PS&E and ROW) can require 45 to 90 months before construction begins.

Based on these considerations and the number of projects, a phased project development approach is proposed as shown in **Figure 14**. This allows for simpler, lower-cost near-term projects to be advanced and constructed sooner. The first phase of project development will allow less complex projects to be advanced to address immediate needs and serve as building blocks for more complex improvements that require a longer timeline for project delivery. The recommended project development approach is as follows:

Project development over two years (Fall 2020 – Fall 2022)

- Safety and operational improvements (including traffic signal infrastructure)
- Rapid Bus infrastructure
- Mobility hub pilot
- Advanced multimodal signal technology pilot

Project development beginning after two years (Fall 2022 – Fall 2029)

- Bus-only lanes
- Mobility hubs (remaining locations)
- East Bay Greenway Extension
- Advanced multimodal signal technology (remaining locations)

PROJECT GOALS

- Improved safety
- Intermodal connectivity
- Mode shift and increased non-auto travel
- Support for planned growth
- Flexibility for future technologies

RECOMMENDED IMPROVEMENTS

- Safety/Ops
- Rapid Bus
- Mobility Hubs
- Bus-Only Lanes
- On-Street Protected (Class IV) Bike Lanes
- East Bay Greenway (EBGW) Extension

IMPLEMENTATION CONSIDERATIONS

- Caltrans vs. Local right of way
- Local corridor projects
- Caltrans SHOPP
- BART Station Area Gap Study
- Funding sources
- Environmental clearance requirements

TIMEFRAME FOR NEXT STEPS

BEGINNING IN FALL 2020

- Safety/Ops
- Rapid Bus
- Mobility Hub Pilot
- Class IV Bike Lanes

BEGINNING IN 2022

- Bus-Only Lanes
- Mobility Hubs
- EBGW Extension

ALAMEDA County Transportation Commission

Figure 14
Implementation Plan Summary