

SAN PABLO AVENUE CORRIDOR PROJECT

Phase 1 Executive Summary

August 2020



The San Pablo Avenue Corridor Project identifies short- and long-term improvements to address the increasing multimodal demands along the San Pablo Avenue Corridor.



Phase 1 of the project was led by Alameda County Transportation Commission (Alameda CTC), in partnership with Contra Costa Transportation Authority (CCTA) and West Contra Costa Transportation Advisory Committee (WCCTAC).

Project Purpose

The purpose of the San Pablo Avenue Corridor Project is to improve multimodal mobility, efficiency, and safety to sustainably meet current and future transportation needs and support a strong local economy and growth along the corridor while maintaining local contexts.

Project Need

The project will improve mobility, efficiency, and safety for all travelers and address the following key needs in the corridor.

Corridor Growth

Demand for travel in the San Pablo Avenue Corridor (“Corridor”) study area, between Downtown Oakland and Hilltop Drive in Richmond (Figure 1), is projected to increase as jurisdictions concentrate growth in designated Priority Development Areas (PDAs) (Figure 2), with higher-density, mixed-use developments recently completed and others under consideration. Improving mobility options for current and future residents will be important to enhance quality of life and manage future congestion within and near PDAs.

Auto Congestion

Today, autos travel at high speeds and move with relative ease through intersections on San Pablo Avenue compared to other urban arterials. However, growth projected for the corridor will put increasing demands on the street, and significant congestion is projected in the future, especially as San Pablo Avenue serves as a reliever route for I-80. Improving multimodal travel options along the corridor can mitigate against a more congested future.

Pedestrian and Bicycle Comfort

Segments of San Pablo Avenue serve as community “Main Streets”, creating the need for a pedestrian-oriented roadway. Although sidewalks are present on both sides of the roadway along most of the street, large gaps between protected crossings, ADA deficiencies, and the wide cross-section result in an uncomfortable pedestrian environment.

Figure 2: Priority Development Areas

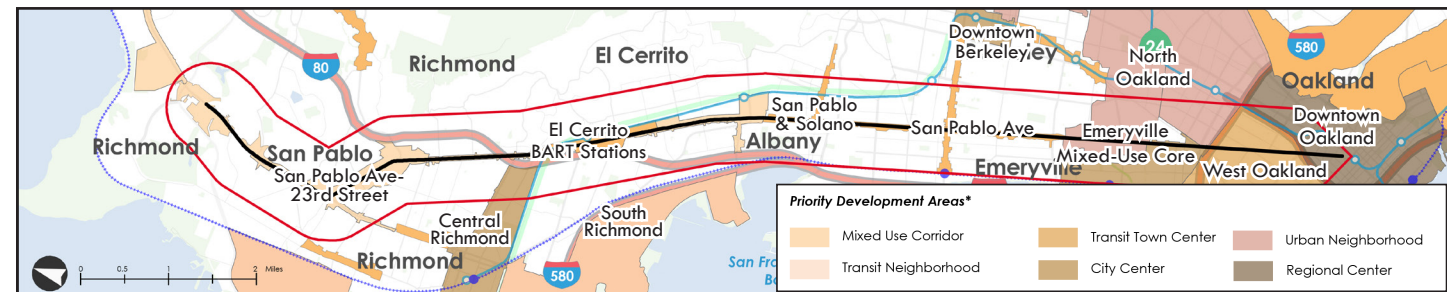


Figure 1: San Pablo Avenue Corridor Study Area



San Pablo Avenue is a direct route for bicyclists, and designated as a bike route by multiple cities; however, only small sections have designated roadway space for bicyclists. Accordingly, most of the study area is considered “high stress” for bicyclists as they mix with high-speed vehicles. In order to support multimodal travel and economic and community development, there is a need for improved pedestrian and bicycle facilities that increase safety and comfort for these users.

Transit Travel Time and Reliability

San Pablo Avenue is one of the busiest transit corridors in the AC Transit system with about 12,500 riders each day on the corridor (routes 72, 72M and 72R in 2018¹; route alignments are depicted in Figure 6 on pg. 5). However, buses run about 30 percent slower than autos during peak-hours and bus travel is less reliable than auto travel. Further, Rapid bus (72R) speeds on the corridor have been falling consistently in recent years; in 2019, the 72R averaged 10 miles per hour during peak hours. Due to high variability in bus travel time, in portions of the corridor, riders have to wait over 1.5 times longer than the schedule indicates before a bus arrives. There is a need for transit priority treatments to improve both bus travel time and reliability.

Safety

Bicyclist- and pedestrian-involved collisions are over-represented in the collision records along San Pablo Avenue relative to existing volumes (Figure 3). Most collisions along San Pablo Avenue occur in or near intersections (within 100 feet) (see High Injury Network shown in Figure 7 on pg. 5). Unsafe speed is a common collision factor between modes.

Project Goals

The goals for the San Pablo Avenue Corridor Project are high-level, value-based targets for improving multimodal mobility, efficiency, and safety along the corridor in sustainable ways. Each goal is tied to specific, measurable objectives that guided the development, evaluation, and refinement of improvement concepts for the study area.



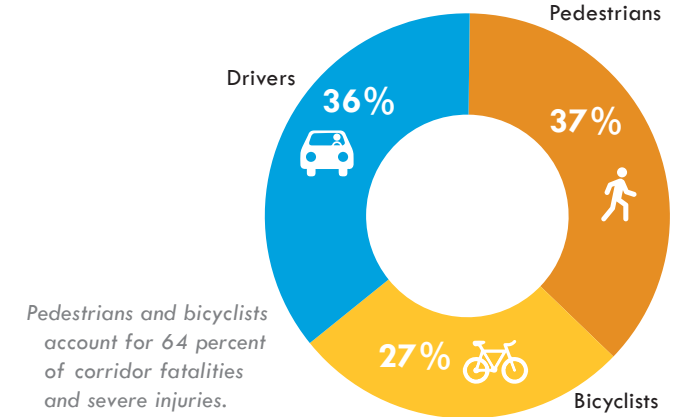
-  **Effectively and efficiently accommodate anticipated growth**
Improving corridor throughput is key to accommodating increasing travel demands. Due to constrained right-of-way, new capacity must be gained through multimodal operational improvements.
-  **Improve comfort and quality of trips for all users**
Improved facilities for all modes will expand travel options in the corridor. Success would be indicated by reductions in delay, conflicts, and levels of stress, as well as improved connectivity and reliability.

Figure 3: Share of Fatal and Severe Injury Collisions



This indicates a need for safety improvements focusing on intersections and intersection approaches to protect pedestrians and bicyclists as well as projects that reduce auto speeds.

-  **Enhance safety for all travel modes**
Improving safety is critical especially for vulnerable users. Multimodal safety improvements, especially at intersections, will make the corridor safer for travelers of all modes.
-  **Support economic development and adopted land use policies**
Expanding the range of viable transportation options and improving the pedestrian experience can support business districts and growth in designated PDAs in accordance with local land use policies.
-  **Provide equitable transportation and design solutions**
The corridor traverses many communities, each with diverse transportation needs. Investments should be equitably distributed along the corridor, with particular focus on benefits in Communities of Concern (COC)².

¹ 2018 AC Transit Annual Ridership and Route Performance Report

² Defined by MTC’s Plan Bay Area 2040 Equity Analysis Report COC Framework (July 2017) at the census tract level

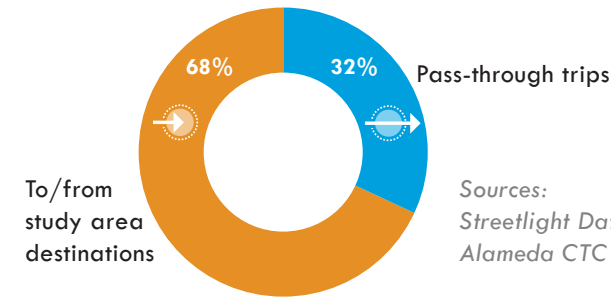
Corridor Overview

The Study Area covers 13.4 miles of San Pablo Avenue, spanning seven cities in Northern Alameda County and Western Contra Costa County. The Study Area extends one half-mile on both sides of San Pablo Avenue, excluding I-80. It connects tens of thousands of people every day between residential communities, employment centers, schools, centers of public life, and other activity hubs and is a central spine of travel for every mode.

Current Travel Patterns

Approximately 134,000 trips are made along the Corridor by car, bus, or BART during the morning peak-period. Over 30 percent of trips occur via transit, primarily BART, but also the AC Transit 72 series bus routes. Overall trip making is highest in the north end of the Corridor, while transit use is spread more evenly, concentrated in segments with BART access. Of the auto trips, 32 percent are passing through (no trip origin or destination within the study area), while 68 percent access the land uses within the study area (Figure 4).

Figure 4: Auto Trips in the Corridor



Sources:
Streetlight Data
Alameda CTC Model

Geometric Characteristics

San Pablo Avenue consistently has two travel lanes in each direction, with signalized intersections spaced every 0.2-mile (roughly 1,000 feet) on average. The curb-to-curb street width varies considerably throughout the corridor, but is consistently about 73 feet wide in Alameda County. The street does not widen at intersections, which makes them tightly constrained given the additional needs and conflicting movements that occur at these locations. Approximately 13 feet on each side of San Pablo Avenue are dedicated to sidewalks and landscaping, although a few segments have narrower sidewalks. Portions of the corridor have raised medians, some with mature street trees, while other portions have two-way left-turn lanes.

Parallel Transportation Network

San Pablo Avenue, I-80 and the BART Richmond Line (Red/Orange), serve as the transportation backbones of regional travel in northern Alameda County and western Contra Costa County (see Figure 5). In some segments, there is a grid-based local parallel street network providing alternative north-south travel routes, while in others, the streets network is irregular and San Pablo Avenue is the most direct north-south travel route. The Ohlone Greenway, West Street Greenway, Emeryville Greenway, and several well-utilized local bicycle boulevards also parallel some sections of San Pablo Avenue.

Figure 5: Major Parallel Facilities



Signalization

The I-80 Integrated Corridor Mobility (ICM) project installed advanced technology along San Pablo Avenue in 2016, including new controllers, signs, communication systems, and transit signal priority (TSP). Upgrades to corridor TSP technology and rules are currently underway.

Land Use

San Pablo Avenue is a vital commercial corridor with significant potential for mixed-use infill development. Currently, uses vary throughout the corridor, including single-family houses, medium-density residential buildings, schools, regional and neighborhood commercial districts, and strip commercial retail. With the PDA designation, much of the Corridor is zoned to support continued growth and more density.

Parking and Loading

On-street parking supply, management, and demand varies throughout the Corridor. On-street parking is available on most blocks and some cities have installed parking meters. Parking utilization is low to moderate, with most blocks less than 60 percent occupied. Although loading zones are designated throughout the corridor, truck loading was observed to primarily occur outside those loading zones, often via double parking directly outside the destination.

Figure 6: AC Transit 72 Series Bus Routes



Figure 7: High Injury Network for Collisions Involving Pedestrians, Bicyclists, and Automobiles (2009-2013)



Prior Studies and Plans

This project began with a review of regional, city, and corridor-level plans and technical studies relevant to the corridor to better understand corridor context and incorporate previous planning and policy objectives. Many of these plans provided recommendations for corridor improvements and capital projects that were incorporated into this project. Plans reviewed include:

- Alameda Countywide Transportation Plan
- Alameda Countywide Multimodal Arterial Plan
- Alameda Countywide Transit Plan and AC Transit Major Corridors Study
- Contra Costa Countywide Comprehensive Transportation Plan Update: West County Action Plan
- Caltrans Smart Mobility Plan Framework
- City of El Cerrito San Pablo Avenue Specific Plan
- City of Berkeley Bicycle Plan
- West Contra Costa High-Capacity Transit Study

Regional and jurisdictional plans consistently recognized the importance of San Pablo Avenue as a major transit corridor for regional and local travel; however, the specific proposed treatments for San Pablo Avenue varied.



Project Process

Phase 1 commenced in fall 2017 and concluded in summer 2019. Phase 1 identified and refined long-term concepts and alternatives for the San Pablo Avenue corridor through a multi-step, iterative process that combined technical analyses and corridor assessments with stakeholder engagement, to create multiple alternative visions for the corridor.

The project team first assessed existing conditions and identified Corridor needs. This assessment informed the development of the project purpose, goals, and overall evaluation framework. The project team then developed cross-section concepts and geography-specific alternatives to evaluate. Public engagement activities provided opportunities to solicit stakeholder feedback on proposed improvements, which guided alternatives refinement and helped establish the course for subsequent project activities (Figure 8).

The process was also informed by strategic input from Alameda CTC Commissioners and WCCTAC Board Members as well as technical input from the project's Technical Advisory Committee (TAC) and Caltrans District 4 staff.

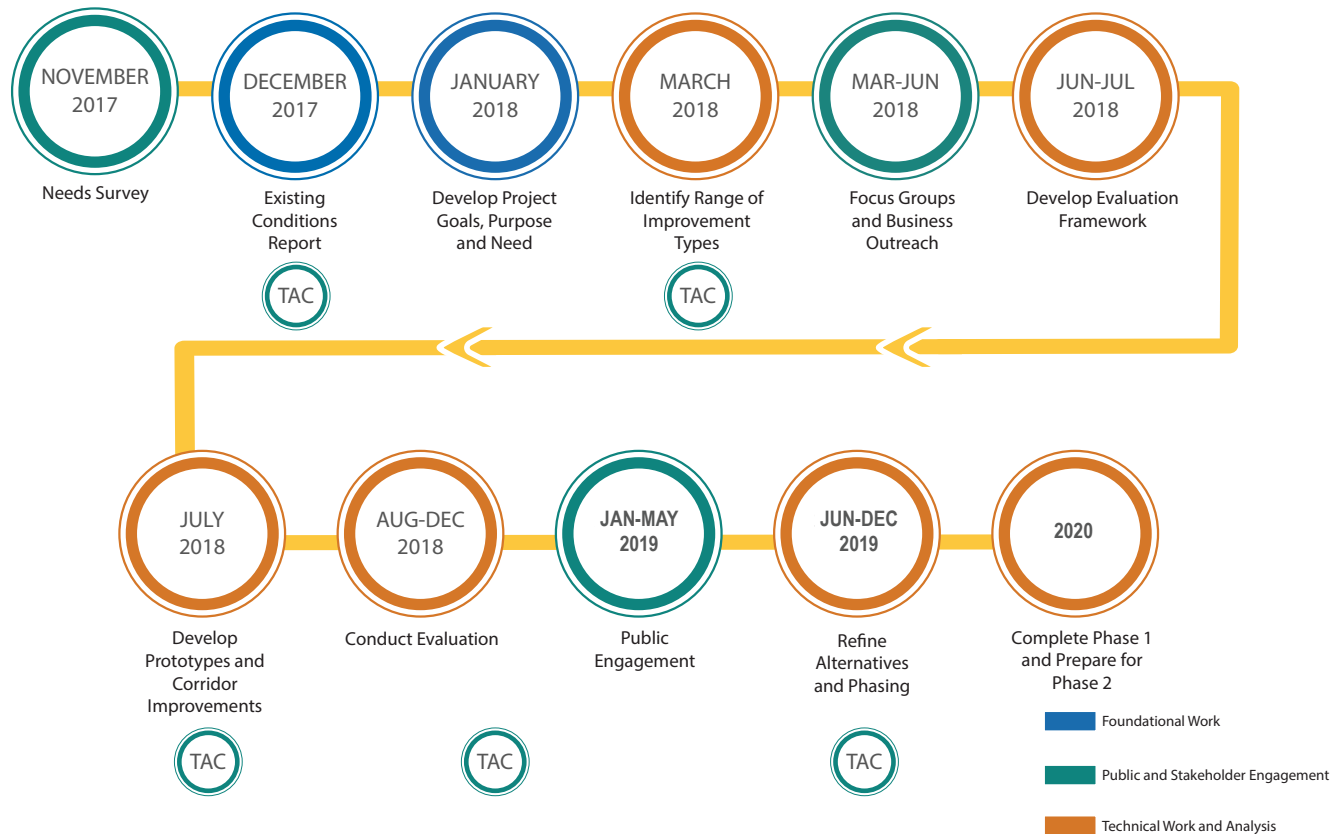


Project Focus Group Meeting, March 2018

The TAC consisted of representatives from the following agencies:

- Alameda County Transportation Commission (Alameda CTC)
- Caltrans
- AC Transit
- Contra Costa Transportation Authority (CCTA)
- West Contra Costa Transportation Advisory Committee (WCCTAC)
- Cities of Oakland, Emeryville, Berkeley, Albany, Richmond, El Cerrito, and San Pablo

Figure 8: Project Process



Outreach and Engagement

Extensive engagement was undertaken to solicit views from a variety of different Corridor travelers.

Engagement Activities

- A map-based online survey that collected information about hotspots needing improvement along the Corridor
- An online survey to understand business access needs distributed to merchants throughout the Corridor
- An online survey to get feedback on priorities that elicited more than 2,000 responses; distributed at events, workshops, via email, and on social media
- A shorter intercept survey, conducted at busy locations along San Pablo Avenue that also sought feedback about priorities
- Pop-up outreach at neighborhood events, at which people could view illustrated concepts and provide feedback
- Community workshops where participants were asked to provide input about priorities and visions for the corridor
- Focus Group meetings with key stakeholders where participants completed reference matrices and staff took detailed notes to record qualitative feedback



Albany Community Workshop, April 2019

Round 2 Public Outreach Participation by Type

Approximately 3,900 individuals participated in Round 2 public outreach



Stakeholders

A substantial effort was made to reach out to key stakeholder groups that have specific needs or represent traditionally disadvantaged groups throughout the Corridor. These included:

- Merchants who own businesses on San Pablo Avenue
- Transit riders
- Seniors and people with disabilities
- Bicyclists



Example outreach materials

Concept Development

Concepts were developed and analyzed that represent a range of configurations for San Pablo Avenue to balance transit, bicycle, pedestrian, and auto needs. Prototypes representing different configurations for the roadway were developed for the 73-foot width that is dominant in much of the Alameda County section. Some segments of San Pablo Avenue are either wider or narrower and thus would include additional or reduced facilities. Illustrations of the four concepts that were selected for full evaluation in Phase 1 are shown in Figures 9-12 (see below for additional concepts considered but not advanced)³.

Treatments to improve pedestrian safety and comfort are common to all concepts and not fully depicted in the illustrations. They include:

- Lighting and streetscape enhancements
- Curb ramp and accessibility improvements
- Bus stop upgrades
- Improved crosswalks and intersection markings

Concepts Considered But Not Advanced

During the course of concept development and evaluation, a number of potential treatments for San Pablo Avenue were fully considered but ultimately eliminated from further consideration, including:

- **2-Way Cycle Track (side- or median-running):** Deemed infeasible due to significant conflicts with vehicular turning movements, challenging intersection operations, and frequent driveway crossings.
- **Reversible or Non-Reversible Single Bus Lane:** Both options deemed infeasible due to operational concerns and high service frequency.
- **Pedestrian Overcrossing:** Deemed infeasible because of cost considerations and required right-of-way to provide ramps and landings.
- **23rd Street as Alternative to San Pablo Avenue:** Bus Rapid Transit (BRT) on 23rd Street has been previously analyzed as an alternative to San Pablo Avenue. Deemed infeasible because 23rd Street does not support additional transit-supportive density and would only provide an alternative in the northern portion of the corridor.
- **Lane Reduction with Cycletrack:** Deemed infeasible due to detrimental impact on bus performance as buses would have to operate in a single mixed-flow lane with other traffic.

Figure 9: Concept A
Bus & Bike Lanes on San Pablo

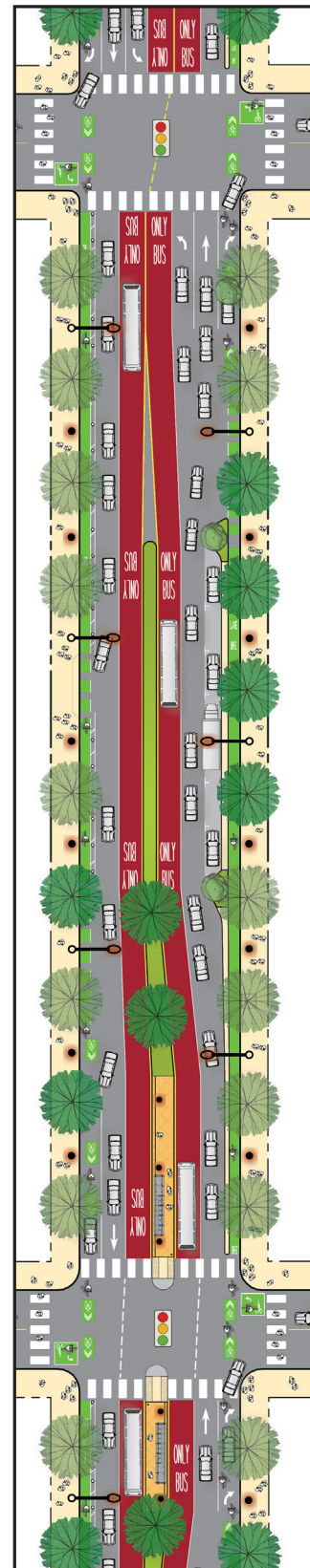


Figure 10: Concept B
Bus Lanes on San Pablo & Parallel Bike Facility

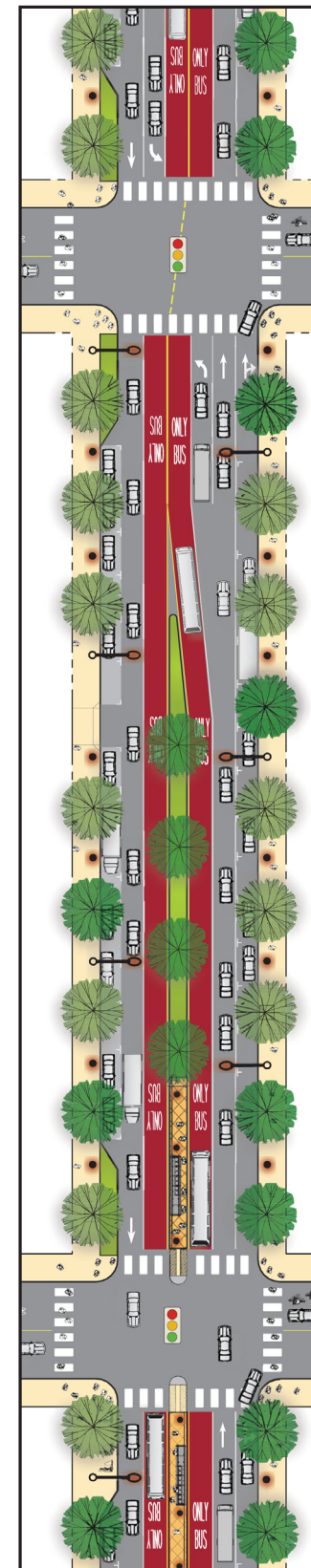


Figure 11: Concept C
Spot Bus Improvements & Bike Lanes on San Pablo

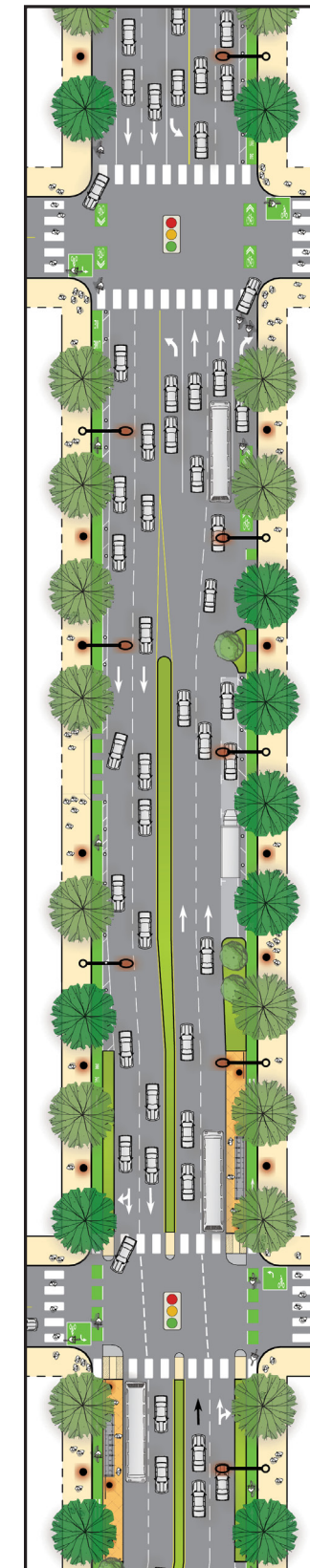
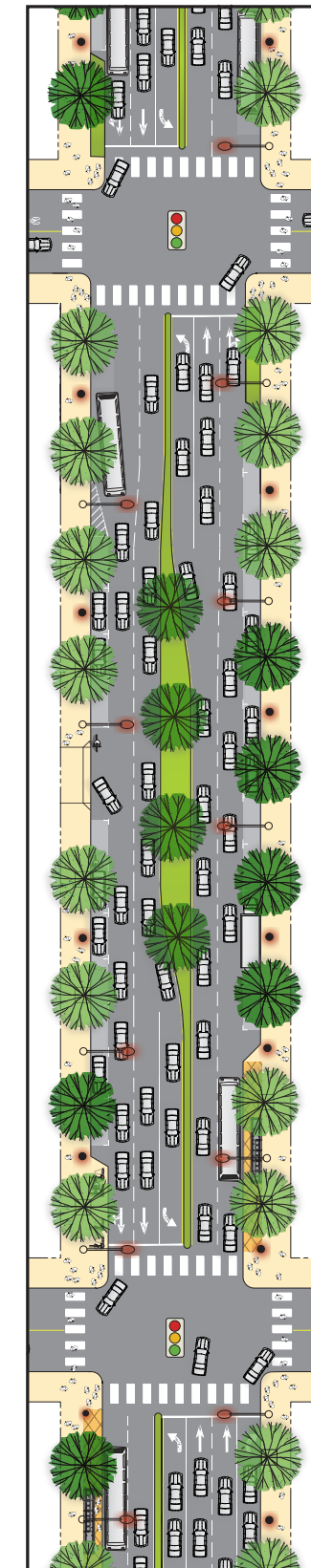


Figure 12: Concept D
Spot Bus Improvements & Parallel Bike Facility



LEGEND

- PROPERTY LINE
- BUSLANE
- TREE
- ⬢ TRAFFIC SIGNAL
- ⬢ ROADWAY LIGHT FIXTURE
- ⬢ PEDESTRIAN-SCALE LIGHT FIXTURE
- ⬢ SOFT HIT POST
- ➡ BIKE LANE
- MEDIAN/LANDSCAPING/ GREEN INFRASTRUCTURE*
- TRANSIT PLATFORM
- SIDEWALK
- *WHERE APPLICABLE

Figures 9 through 12 illustrate the roadway configuration at intersections with and without bus stations.

³ Concept D not included in public survey but most similar to existing conditions.

Parallel Bike Options

Due to many competing demands on the limited right-of-way on San Pablo Avenue and its importance as a bus route, some concepts were developed which utilize parallel routes for bike facilities.

In general, parallel streets have the potential for more comfortable riding conditions due to much lower auto volumes and speeds. Portions of the Corridor already have parallel facilities, including the Ohlone Greenway and 9th Street Bicycle Boulevard in Berkeley, while the street network in other portions of the Corridor is less supportive of parallel facilities. Additional bicycle improvements are needed throughout the Corridor to make parallel facilities more desirable.

To provide an alternative route to San Pablo Avenue that is comfortable and easily navigable for bicyclists would require elements such as:

- Striping, such as marked bicycle lanes potentially including buffers, or sharrow
- Traffic calming measures, such as traffic circles, traffic diverters, and speed humps
- Lane reductions where four lanes exist
- Improved visibility, including lighting and signals
- Wayfinding signage along and to/from San Pablo Avenue and parallel facilities (Figure 15)
- Comfortable connections between San Pablo Avenue and parallel routes

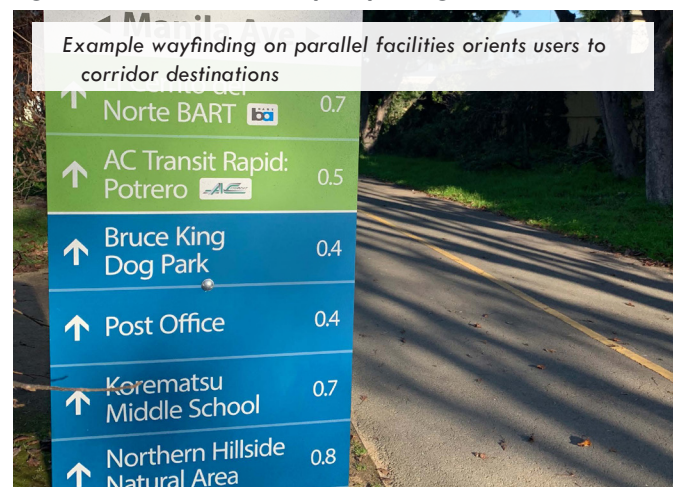
Figure 13: Shafter Avenue Bicycle Sharrows & Roundabout, Oakland



Figure 14: Scott Street Bicycle Facility, San Francisco



Figure 15: Ohlone Greenway Wayfinding, El Cerrito



Parallel and Connecting Bike Network

In Concepts B and D, bicycle connections would be created through a connected parallel network in lieu of bicycle facilities on San Pablo Avenue. For the bulk of the corridor, notably between Emeryville and Richmond, direct and desirable bicycle facilities may be provided on parallel routes. In some cases, parallel routes provide better access to destinations, such as to restaurant and retail uses on 4th Street in Berkeley. Relying on a parallel bike route would require comfortable connections to and from destinations on San Pablo Avenue.

As proposed, the parallel bike corridor would leverage the Ohlone and Emeryville Greenways to the east and west of San Pablo Avenue, respectively. Other corridor segments would include facilities on local streets as identified in Figures 16 to 18.

Options for parallel routes are somewhat limited in the southernmost and northernmost portions of the corridor due to an irregular street grid (especially in southern Oakland and City of San Pablo segments).

Figure 16: Parallel Bike Route Options - San Pablo/Richmond

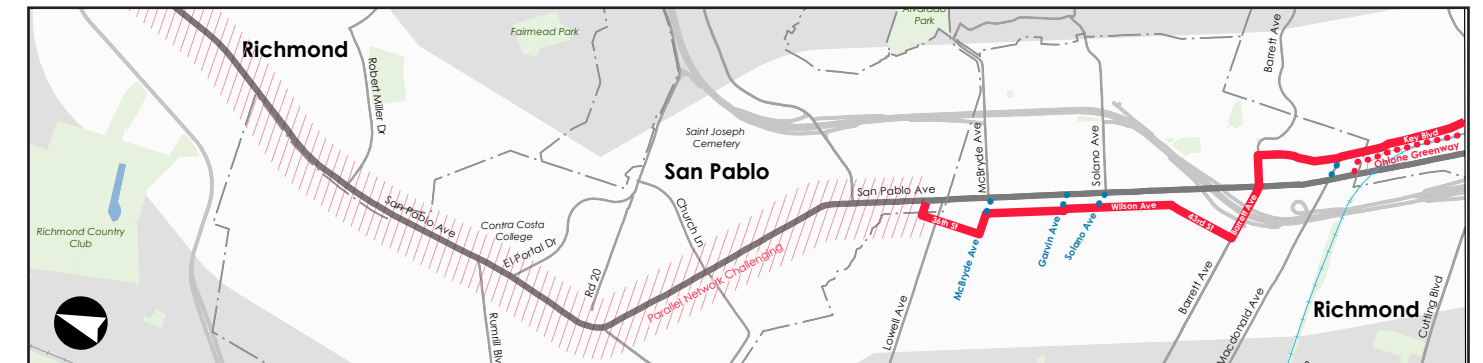


Figure 17: Parallel Bike Route Options - El Cerrito/Albany/Berkeley

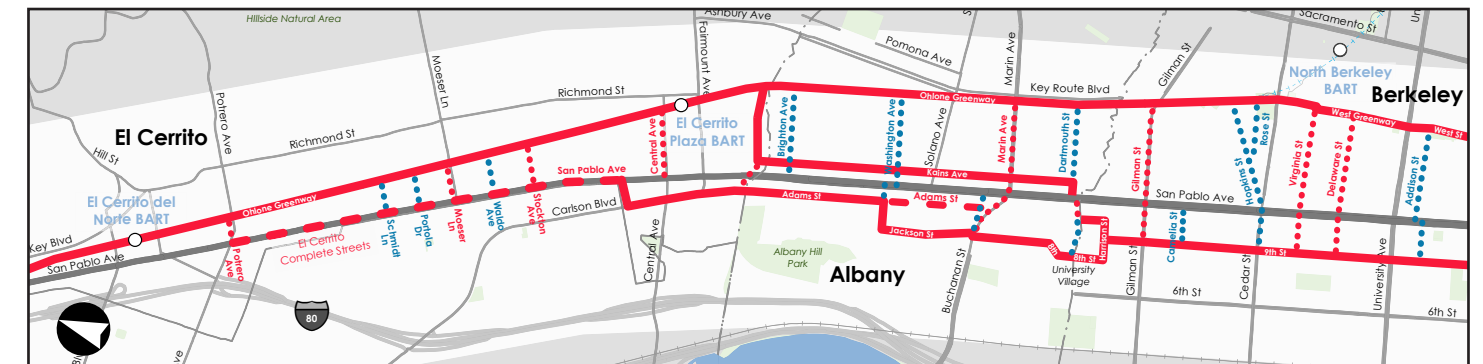
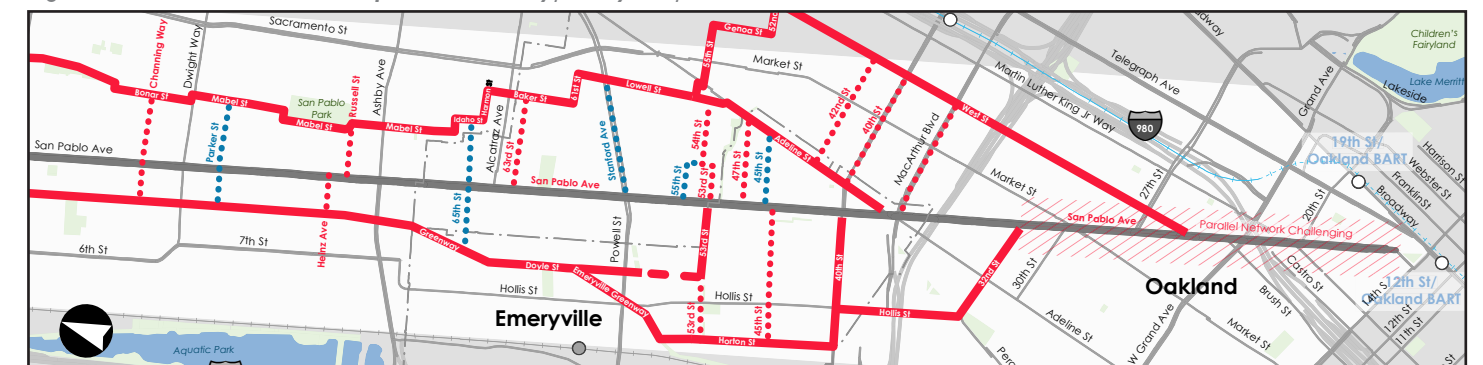


Figure 18: Parallel Bike Route Options - Berkeley/Emeryville/Oakland



Evaluation Summary

The project team performed a full evaluation of Concepts A, B and C, including a range of criteria that reflected the project goals.⁴ The results of the analysis, also summarized in Figure 19, are as follows:

- **Transit Ridership and Mode Split:** Concepts A and B would result in increased transit ridership and a higher transit mode split.
- **Transit Travel Time:** Due to increased auto congestion, baseline bus travel times are expected to be 40-80 percent slower by 2040 than they are today.
- **Automobile Flow:** Most of San Pablo Avenue is expected to operate near or above capacity in peak directions in future baseline conditions. Concepts that convert an existing mixed-flow lane on San Pablo Avenue to either a bus or bike lane would increase auto congestion on San Pablo Avenue. Trip diversion is anticipated to primarily occur to I-80, with some diversion to a handful of local streets.
- **Bicycle Safety and Comfort:** Due to the limited right-of-way especially at intersections, as well as high traffic volumes, high speeds, frequent turning movements, and frequent driveways, it was determined that a truly low-stress bicycle facility which is comfortable for riders of all ages and abilities is not possible on San Pablo Avenue without major impacts to other modes, including the bus. Parallel facilities offer the best opportunity for providing a continuous low-stress bicycle facility.
- **Safety at Intersections on San Pablo Avenue:** A universal set of safety improvements is included in each concept. Concepts that retain on-street parking provide the greatest opportunity for bulb-outs at intersections to shorten pedestrian crossing distances, and improve safety by slowing traffic. Concepts that reduce the number of mixed-flow travel lanes from 2 to 1 also calm traffic and provide a safety benefit.
- **Economic Development:** The impact on businesses is nuanced and includes significant trade-offs. All concepts include general improvements to the public realm, along with the re-purposing of some curb space from parking/loading to other uses. The amount of parking/loading space loss varies considerably by alternative with Concept A reducing spaces the most and Concept B retaining the most spaces.
- **Impact on Equity:** All concepts perform similarly for level of investment and commute impacts for Communities of Concern. Concept B provides the most opportunity for curbside loading and accessibility for vulnerable travelers.

Figure 19: Evaluation Summary

	CONCEPT A Bus and Bike Lanes on San Pablo Ave	CONCEPT B Bus and Managed Lane on San Pablo Ave; Bike facility on parallel street	CONCEPT C Bike Lanes on San Pablo Ave
	• Less potential for speeding	• Less potential for speeding	• More potential for speeding
	• Faster and more reliable transit service • More transit riders • 72 Local and 72 Rapid combined into one service with 1/3-mile spacing • Transit stations off-set from major intersections	• Faster and more reliable transit service • More transit riders • 72 Local and 72 Rapid combined into one service with 1/3-mile spacing • Transit stations off-set from major intersections	• 72 Local and 72 Rapid services remain • Slower and less reliable bus service
	• Bikes travel adjacent to sidewalk • Very limited opportunities to shorten crossing distance	• Most opportunities to shorten pedestrian crossing distance and create pedestrian refuges	• Some opportunities to shorten pedestrian crossing distance and create pedestrian refuges
	• Safer for bicyclists, but <u>not</u> low-stress environment	• Parallel streets create low-stress comfortable facility • Less safe for those who may continue to ride on San Pablo Ave	• Safer for bicyclists, but <u>not</u> low-stress environment
	• Significant reduction of loading and parking spaces	• Least reduction of loading and parking spaces	• Some reduction of loading and parking spaces
	• Potential for additional delay at intersections • Some traffic diverted to I-80 and other streets	• Managed lane is a new traffic pattern • Potential for additional delay at intersections • Some traffic diverted to I-80 and other streets	• Least impact on future delay and congestion

⁴ Concept D was not included in the evaluation as it was added after community input was received

Outreach Survey Findings

An outreach survey gathered input from respondents in each city. Respondents included residents, business owners, shoppers, commuters, and other corridor users. Preferences for the future of San Pablo Avenue varied between these different project stakeholders. Survey respondents' preferences between bus lanes, bike lanes, and the existing condition on San Pablo Avenue are shown in Figure 20. Support for concepts with bus lanes (Concepts A and B) and bike lanes (Concepts A and C) are summed.

Overall Results

- Overall, no concept received a majority support. The concepts most preferred by survey respondents were A (29 percent) and B (28 percent), both of which featured a dedicated bus lane. Concept A proposes a bike lane on the Corridor, while Concept B proposes a parallel bike facility.

Concept Preferences by City

- Respondents in the southern portion of the Corridor (Emeryville and Oakland) most strongly supported change in the corridor, with preferences for retaining existing conditions under 10 percent.
- Support for retaining existing conditions increased moving further north up the corridor; however, the majority of respondents preferred either bus or bike enhancements to doing nothing in every jurisdiction.
- Support for removing a mixed-flow travel lane and providing a dedicated transit lane was consistently high with support from at least 40 percent support in every jurisdiction and over 50 percent in Berkeley, Emeryville, and Oakland.
- Support for dedicated bike facilities along San Pablo Avenue lagged behind support for dedicated bus facilities in all seven corridor jurisdictions.

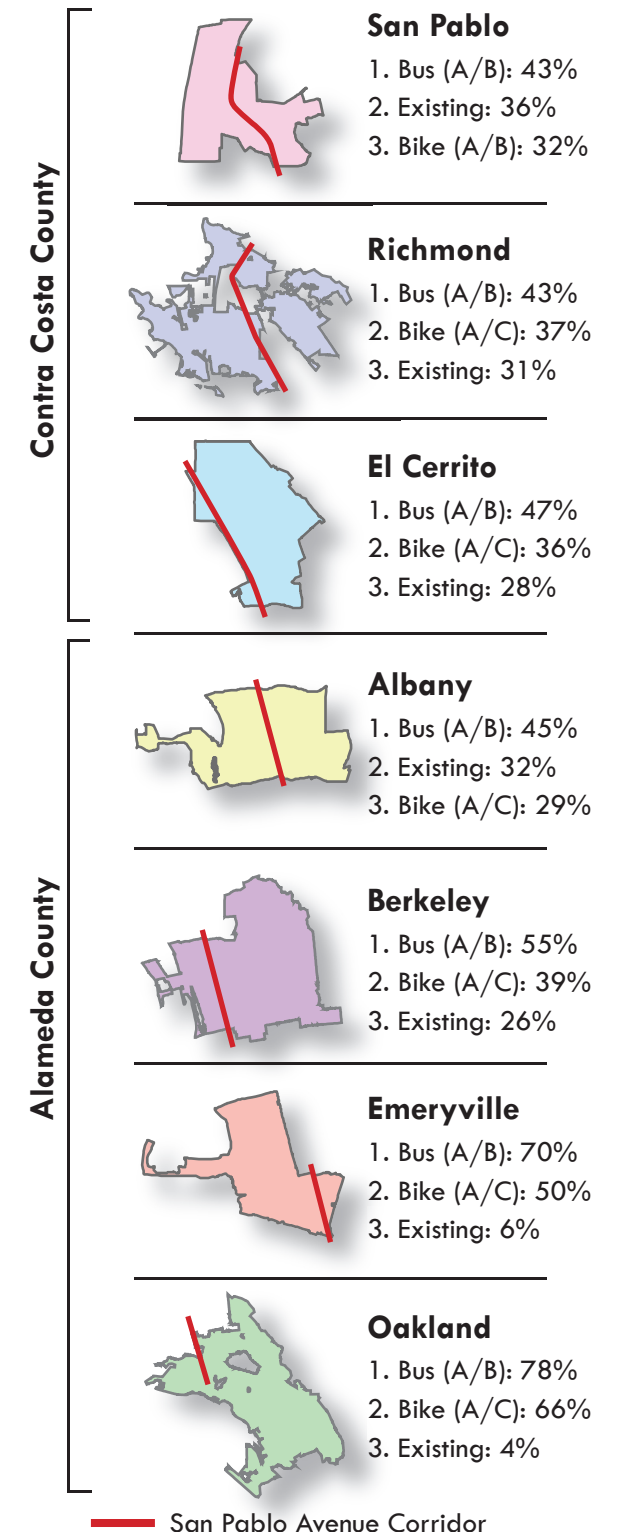
Types of User

- A plurality (46 percent) of business owners preferred San Pablo Avenue as it is today. No other group preferred existing conditions by more than 25 percent.
- Residents, commuters, and shoppers had similar preferences, with Concepts A and B receiving between 27-33 percent and Concept C at between 15-17 percent.

Modes of Travel

- Existing conditions were preferred at the greatest rate by those who drive, at 26 percent.
- Those who commute by bicycle preferred the concept with both bus and bike lanes, but a greater number selected a concept with a bus lane (Concepts A and B) than a concept with a bike lane (Concepts A and C).

Figure 20: Respondents' Preferred Concepts by Jurisdiction



San Pablo Avenue Corridor

Recommendations for Subsequent Project Efforts, Alameda County

Public and stakeholder engagement showed strong support for transit prioritization throughout Alameda County and strong support for bicycle facilities on San Pablo Avenue in the southern portion of the County, where bike volumes are highest and parallel facilities are limited. Based on the outreach and evaluation results, the range of concepts recommended for consideration in the next project phase was narrowed to two concepts in the Oakland/Emeryville segment—Concepts A and B—and three in the Berkeley/Albany segment—Concepts A, B, and D. Concept C has been eliminated from further consideration due to low popularity and poor technical evaluation results. The graphic below highlights key Phase 1 findings that informed selection of Concepts to advance. Additional stakeholder engagement and engineering are needed in the next project phase to select a single preferred alternative and move into project implementation.

Given the importance of improving pedestrian safety in the Corridor, Phase 1 also identified a series of lower-cost improvements that do not preclude implementation of any of the long-term Concepts still under consideration. These are described on page 16.

Berkeley-Albany Segment

- Highest bus ridership in Alameda County segment
- Significant challenges with bus reliability
- Direct and proximate parallel bike facilities are available
- Mixed outreach results with support for bus lanes and bike lanes, but also significant concerns raised by stakeholders over loss of on-street parking/loading and travel lane

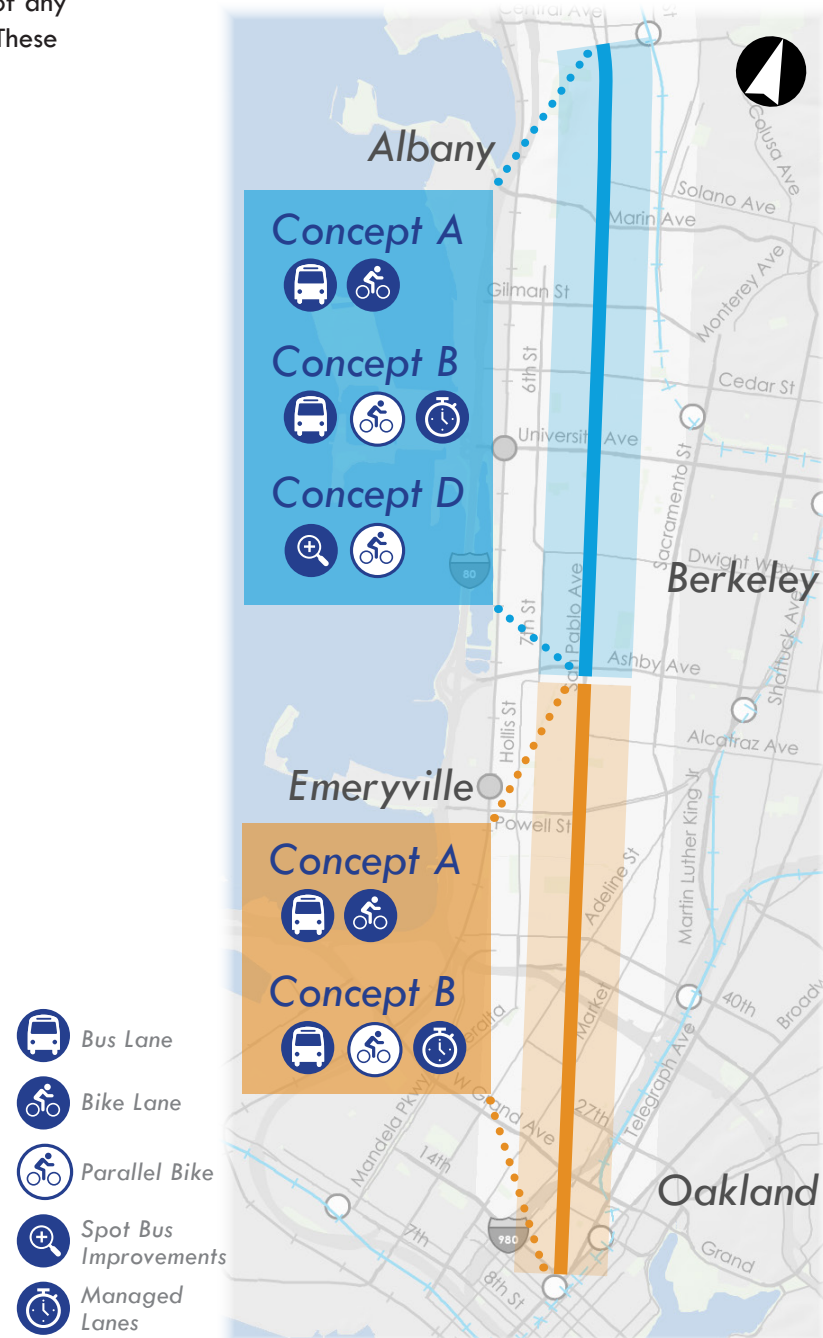
➔ Advance Concepts A, B, and D

Oakland-Emeryville Segment

- Notably lower auto volumes, lessening impact of auto lane reduction
- Higher bicycle volumes on San Pablo Avenue than in any other segment
- Challenging network for parallel bike facilities, particularly south of Market Street
- Overwhelming support from community for modifying existing conditions with vast majority supporting bus lanes and strong support for bike lanes
- Strong community support for safety improvements and traffic calming

➔ Advance Concepts A and B

Figure 21: Alameda County Concepts to Advance by Segment



Recommendations for Subsequent Project Efforts, Contra Costa County

Additional location-specific design development and evaluation are needed to advance concepts in Contra Costa County due to: (1) greater variability in geometric and operational characteristics of the corridor; (2) different mode splits and travel needs; and (3) varying attitudes toward preferred improvements.

San Pablo-Richmond Segment

- Segments of the corridor have or are planned to have Class II bike lanes
- Limited opportunities for parallel bike facilities
- Auto volumes among the highest in the corridor
- There was no clear consensus amongst survey respondents. While a bus lane was slightly preferred of the concepts presented, sentiment for retaining existing conditions was highest in this portion of the corridor.

➔ Additional Study

The roadway width narrows in portions of this segment. Further engineering analysis is needed to determine location-specific concept options and further traffic analysis is needed to assess circulation impacts and diversion associated with lane reduction.

El Cerrito-Richmond Segment

- Very high transit ridership around BART stations despite progressively deteriorating transit travel time and reliability due to increasing congestion
- Represents a transition between different development patterns and roadway character
- El Cerrito Specific Plan has concurrently proposed roadway reconfigurations including a bike lane
- Majority of survey respondents supported modifying existing conditions, but lack of consensus on preferred configuration

➔ Additional Study

Widest curb-to-curb portion of the Corridor, allowing for inclusion of additional facilities. Further engineering analysis is needed to determine location-specific concept options. Additional analysis needed to determine how to best connect transit corridor and BART stations.

Figure 22: Contra Costa County Corridor Segments



Very Near-Term Improvements

Major modifications to San Pablo Avenue will take several years to advance to implementation, including several intermediate steps: develop stakeholder consensus through robust additional outreach, complete design in coordination with local jurisdictions and Caltrans, obtain full environmental clearance, and finally, undertake construction. However, the project team identified several lower-cost improvements that can be implemented in the short-term to quickly improve safety and comfort, while the longer-term vision is being refined. These improvements can be implemented in five years and do not preclude future corridor plans. Treatments include:

- Curb extensions and Americans with Disabilities Act-compliant curb ramps and sidewalks
- Treatments at unsignalized crossings to enhance pedestrian visibility and comfort: Rapid-Rectangular Flashing Beacons, high visibility crosswalks, and/or median refuge islands
- Wayfinding signage
- Treatments at signalized intersections to enhance pedestrian priority: adaptive pedestrian signals, countdown heads, and/or leading pedestrian intervals
- Modification of larger intersections to channelize auto movements and reduce vehicle speeds
- Bike crossing improvements and targeted bus stop enhancements

Near-Term Alternatives

Based on local support, the project team further explored opportunities to advance a more transformative near-term project in the Cities of Oakland and Emeryville, where interest in bus and bike treatments is highest. Four alternatives were developed, all variations on Concepts A and B, as depicted below:

Alt 1 - Side-running bus and bike lane

Convert mixed-flow lane to side-running bus lane and remove parking to provide protected or buffered bike lane midblock.

Alt 3 - Center-running bus and parking

Convert mixed-flow lane to center-running bus lane; key benefit for bus is avoidance of right-turning vehicles and parking maneuvers.

Alt 2 - Side-running bus and parking

Convert mixed-flow lane to side-running bus lane with limited parking removal. Easiest, least-costly option.

Alt 4 - Center-running bus and bike lane

Convert mixed-flow lane to center-running bus lane and remove parking. Restrict turns at unsignalized intersections. Most expensive and challenging.

Items for Further Analysis or Refinement

Corridor-wide Considerations

There are multiple corridor-wide considerations that require further examination as part of Phase 2 efforts. These include:

Center-Running vs. Side-Running Dedicated Transit Lane

What are the implications of center- vs. side-running bus lanes for ease of construction, construction impact, construction cost, phasing, and bus network connectivity?

Transit Service Approach

Does the extent of transit improvements on San Pablo Avenue warrant merging Local (72/72M) and Rapid (72R) routes into a single BRT service, which would improve transit reliability and efficiency, but increase distance between stops?

Queue Jump Locations

If dedicated bus lanes are not provided throughout the corridor (e.g. Concept D), what are the specific locations where bus queue jump lanes would be both beneficial and geometrically feasible?

Emergency Vehicle Operations in Exclusive Transit Lanes

What is the potential for emergency vehicle use of transit lanes to improve emergency response times?

Managed Lane Configuration/Operation

Is operating a managed lane (e.g. Concept B) feasible, especially enforcement by using city resources? What configuration would optimally balance parking, throughput, and pedestrian safety needs?

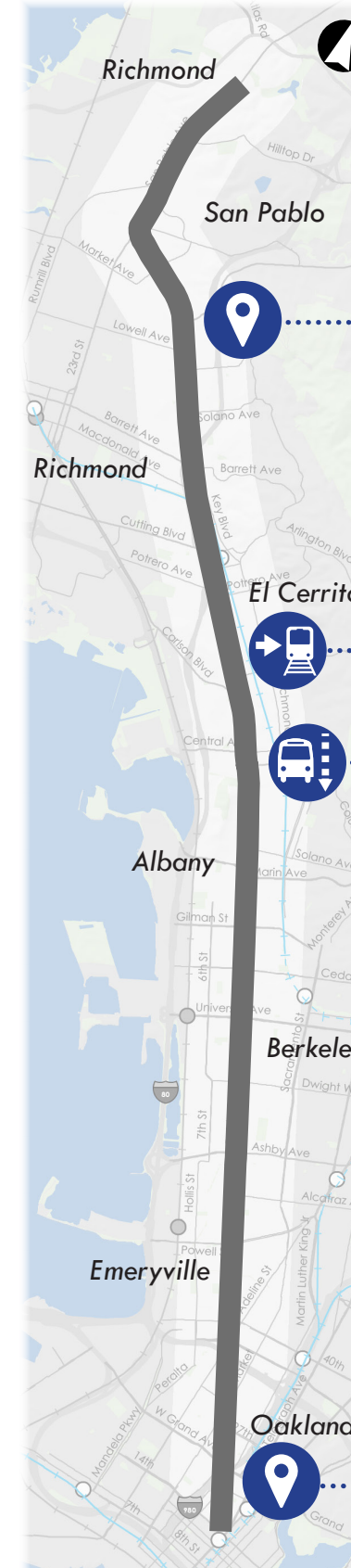


Figure 23: Project Development Considerations

Location-specific Considerations

Outstanding location-specific items include:

Northern Terminus

What is the optimal northern terminus for the hybrid BRT that balances riders' desire to limit transfers and have more reliable service, while managing operating costs.

BART Connection

How would a hybrid BRT service integrate with the two BART stations in El Cerrito, and balance both travel time and transit network connectivity?

Line 72M Operations

What southern terminus of Line 72M achieves the best balance between transit rider experience and the most efficient use of operational resources?

Downtown Oakland Terminus

What is the optimal southern terminus in Downtown Oakland considering operational costs, network connectivity, and bus layover placement?

NEXT STEPS

VERY NEAR-TERM SAFETY IMPROVEMENTS

- Advance through design and environmental clearance
- Strong partnership with local jurisdictions through implementation

NEAR-TERM IMPROVEMENTS

- Progress development of alternatives and perform additional analysis to assess benefits & trade-offs
- Explore infrastructure pilot opportunities where there is local support
- Advance improvements through design and environmental clearance

LONG-TERM VISION

- Evaluate effectiveness of near-term improvements
- Continue to develop, evaluate, and refine long-term corridor-wide concepts, including improvements for parallel routes
- Advance alternatives to preliminary engineering and environmental clearance

ANTICIPATED TIMELINE

