

San Pablo Avenue Multimodal Corridor Study Contra Costa County Phase 2 Summary



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SAN PABLO AVENUE MULTIMODAL CORRIDOR STUDY PHASE 2

Executive Summary
September 2022



WCCTAC

Kimley»Horn





Topics



1. Phase 1 Background
2. Phase 2 Purpose and Process
3. Corridor Conditions Today
4. Potential Improvements
5. Bicycle + Parking Options
6. Key Takeaways
7. Next Steps

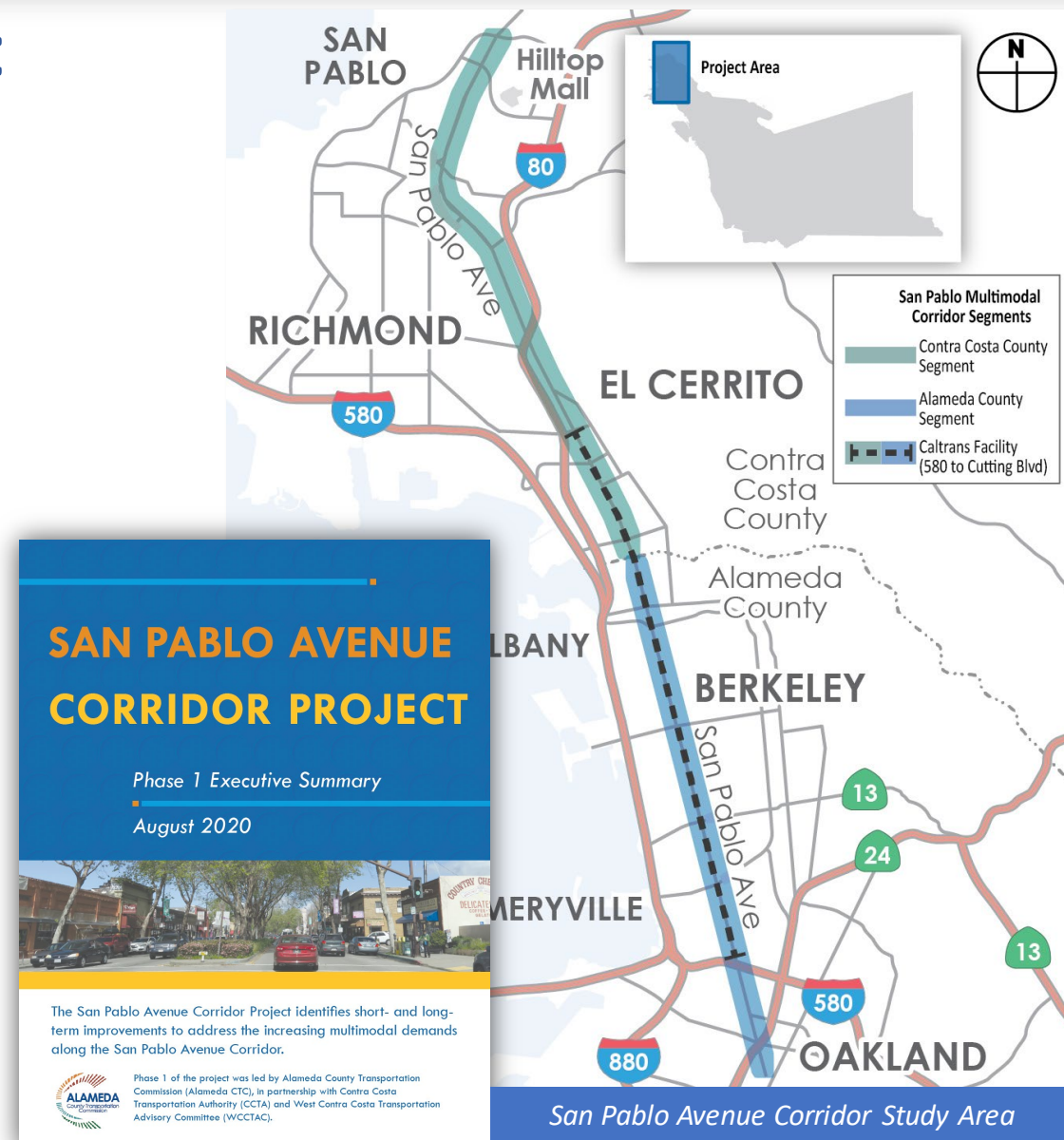
Previous Planning Efforts





San Pablo Avenue Corridor Project Phase 1 Summary

- Started in Fall 2017 and concluded in Fall 2019
- Effort led by Alameda CTC with financial support and involvement by WCCTAC and CCTA
- Study area extended between downtown Oakland and Hilltop Mall
- Project Efforts:
 - Assessed existing conditions
 - Identified corridor needs
 - Developed concepts for a typical roadway cross-section width
 - Evaluated alternative feasibility
 - Conducted public engagement activities, including surveys, focus groups, and open houses





Phase 1 Outreach in Contra Costa County

Round 1 (Fall 2017-Summer 2018)



- 515 map-based survey engagements (3 languages)



- Merchant loading survey



- Focus group meetings
 - Bus-riders and seniors & people with disabilities

Round 2 (Spring 2019)



- 597 online & 51 intercept surveys



- 3 Pop-up events



- Community meeting



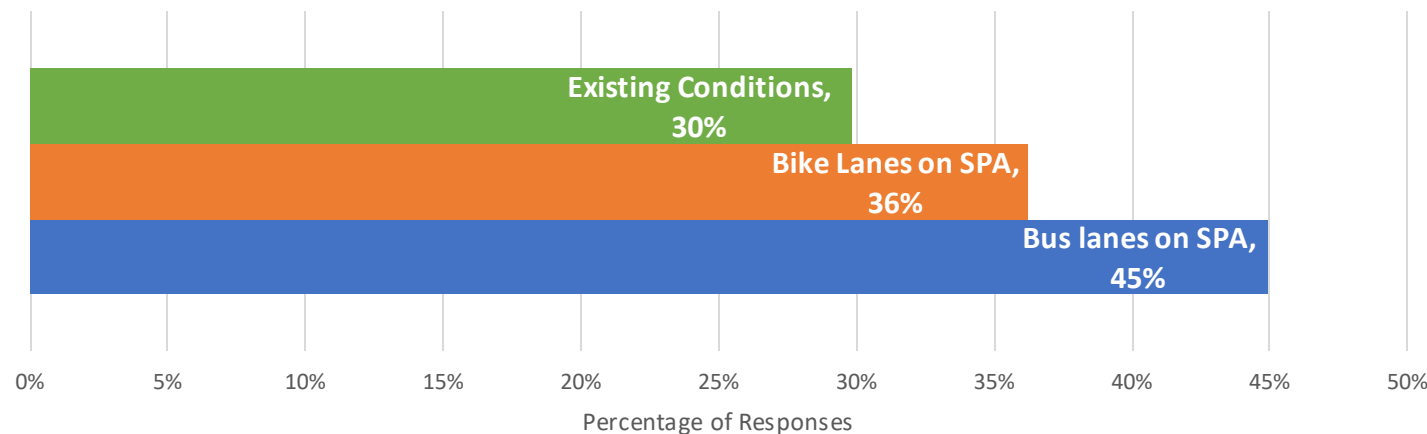
- Focus group meetings
 - Bus-riders, seniors & people with disabilities, bicyclists



What did we hear from the community in Phase 1?

- Safety improvements needed now; concerns over delaying them
- Concerns about effects on business access (loss of parking/loading, additional congestion)
- Reduction in number of lanes would reduce speeding and calm traffic
- Concerns about construction disruption to community and businesses

Contra Costa County Residents' Preferred Concept Includes:

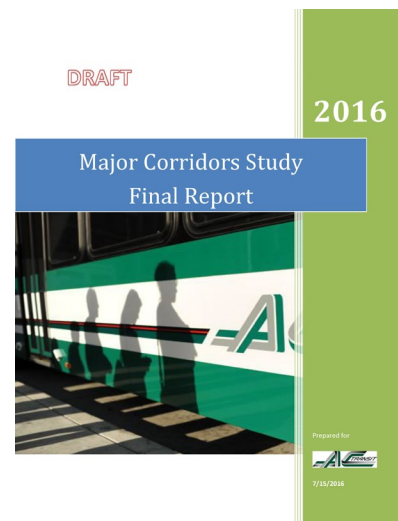


Note: Percentages do not add to 100% since one option included both bike and bus lanes

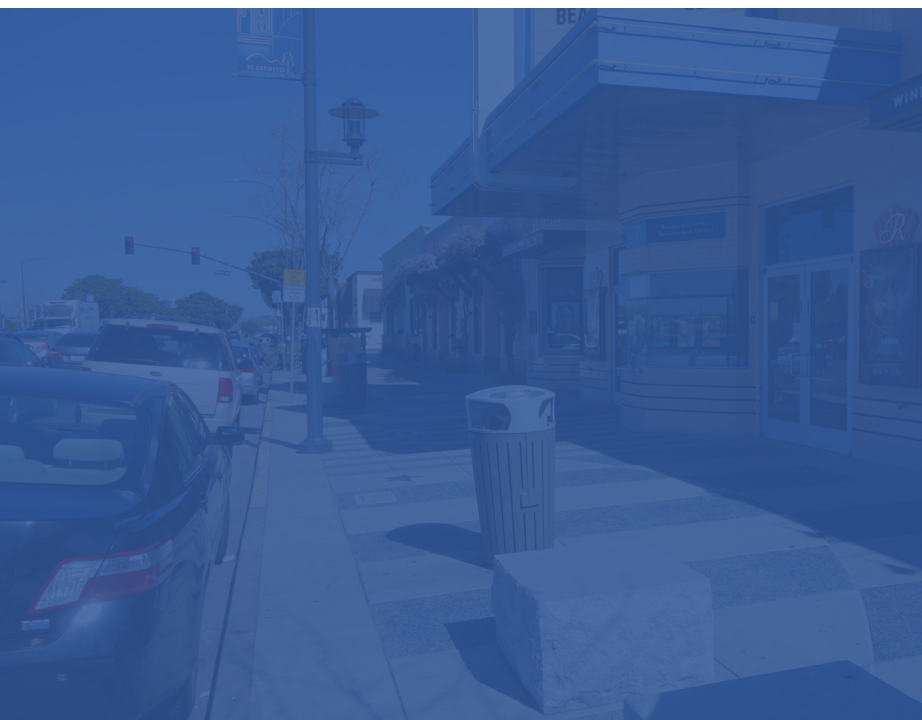


Previous study recommendations

- San Pablo Avenue identified for BRT in previous studies
 - Plan Bay Area 2050
 - AC Transit Major Corridors Study
 - WCCTAC High-Capacity Transit Study
- Bus lanes were most preferred solution in Contra Costa County from Phase 1 Outreach



Phase 2 Purpose & Process





Corridor Study Purpose

Improve multimodal mobility, efficiency, and safety to sustainably meet current and future transportation needs and help support strong growth along the corridor while still maintaining local contexts.

Goals



Effectively and efficiently accommodate anticipated **growth**



Improve **comfort and quality** of trips for all users



Enhance **safety** for all travel modes



Support **economic development** and adopted **land use policies**



Promote **equitable** transportation and design solutions



Phase 2 Project Process

Study Need:

Complete a Contra Costa County-focused **technical analysis** to address questions raised by public and WCCTAC board during Phase 1

Process:



Identify concept alternatives for specific locations



Assess feasibility and implications on connectivity



Quantitatively evaluate transit and auto performance



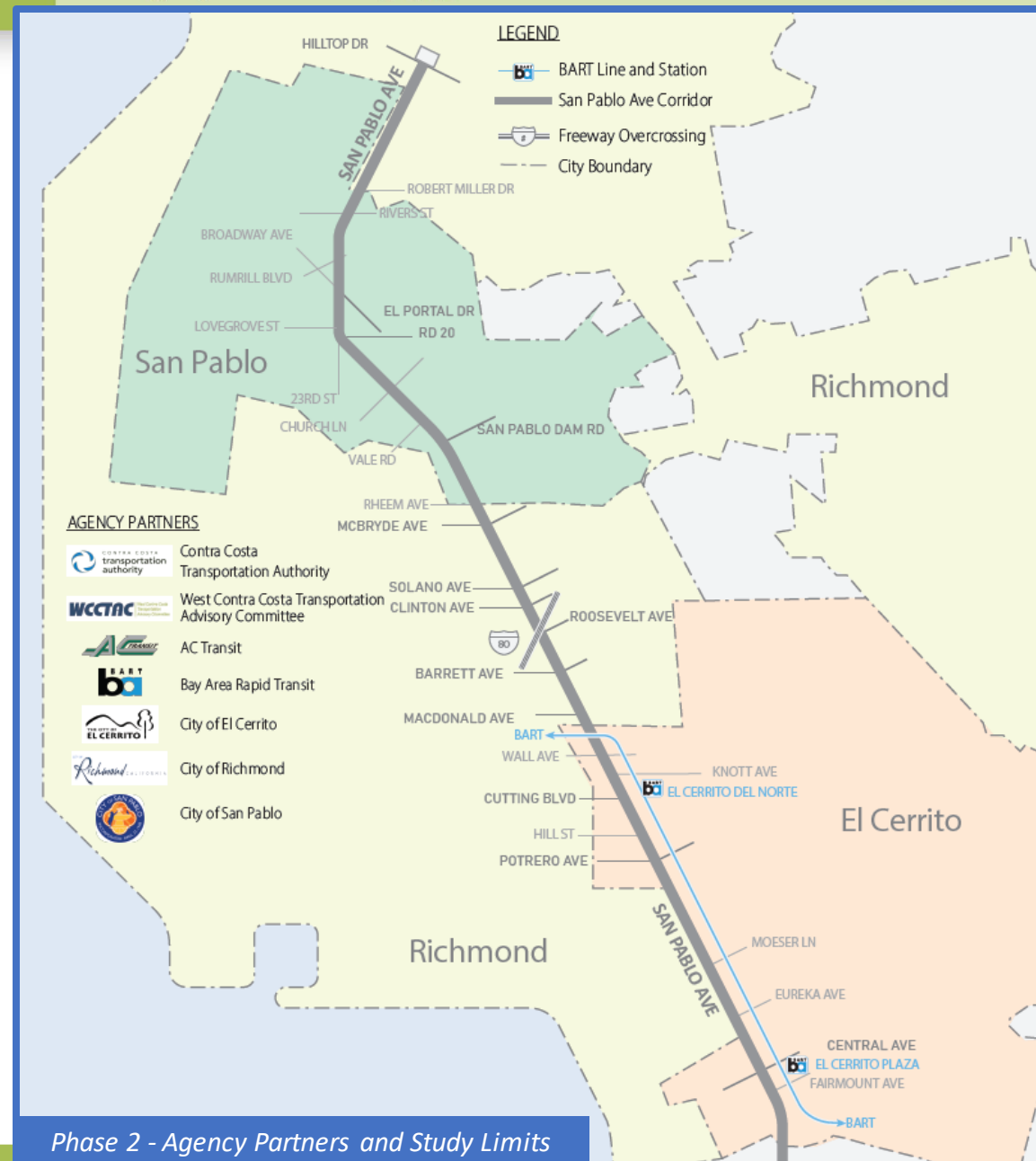
Consider outreach feedback received in Phase 1



Summarize evaluation findings

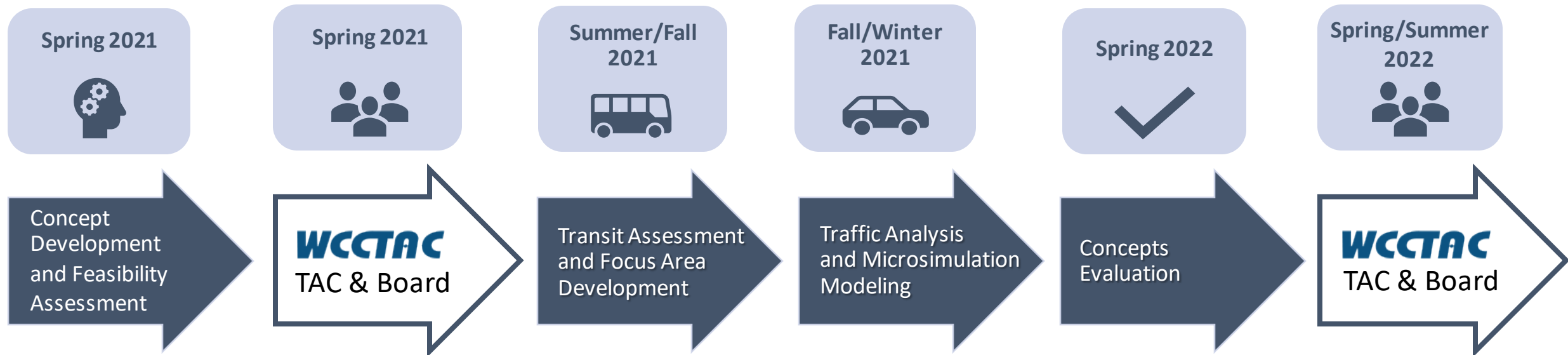
Desired Study Outcome:

Identify **viable alternatives** that can be advanced in **future project phases** and that can be **referenced** in ongoing and future projects on the corridor

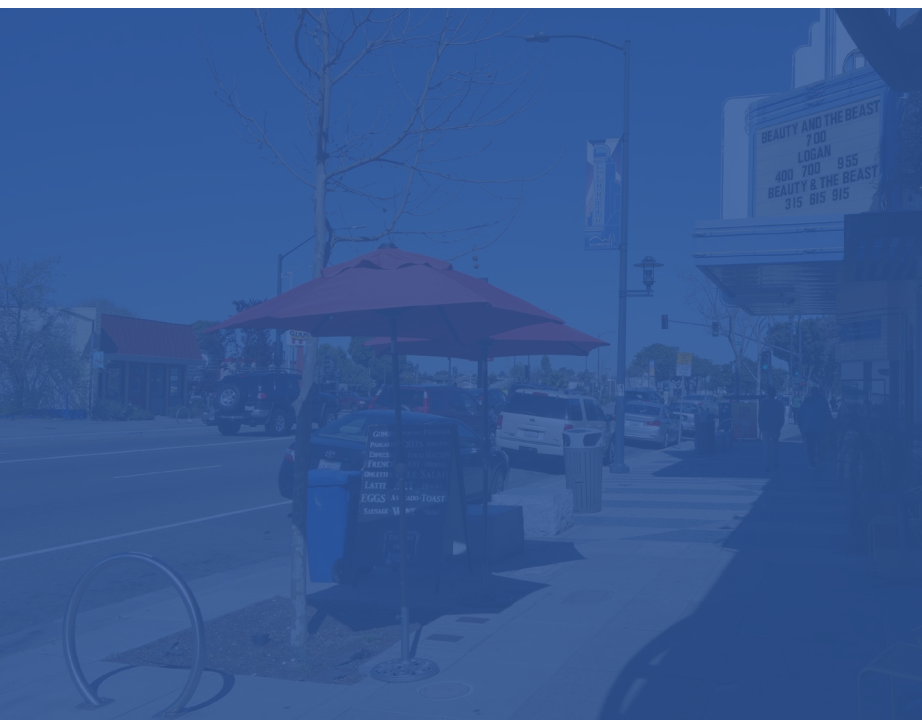




Phase 2 Project Process



Corridor Conditions Today



Conditions on the corridor today



Overlapping Local and Rapid Bus service provides bus service every 7 minutes south of Macdonald. Rapid service extends to Contra Costa College.



Bike lanes only in some segments in the City of San Pablo, far northern segment in Richmond near Hilltop Mall, and very short new segment constructed in El Cerrito (approx. 20% of corridor)



Long gaps between pedestrian crossings and many uncontrolled crossings (e.g., multiple 0.4 mile gaps in protected crossings in El Cerrito)



Sidewalks are continuous, but narrow and not well buffered from traffic in some locations



Used as an alternative to I-80 for longer-distance trips; 1/3 of trips on San Pablo Ave are just passing through



Parking on the corridor today

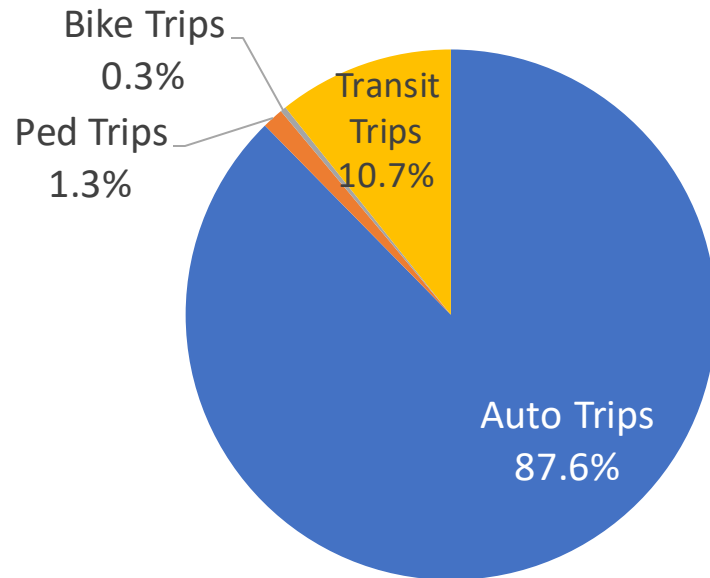
- On-street parking on both sides of San Pablo Avenue on most blocks
- Many commercial properties have off-street parking
- Pre-pandemic parking occupancy was low (<60% on most blocks)
 - Area around El Cerrito Plaza BART Station had highest utilization



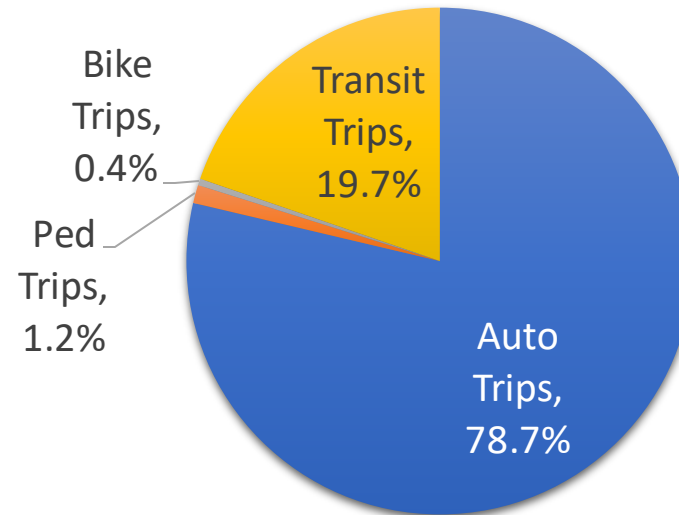


Mode split on the corridor today

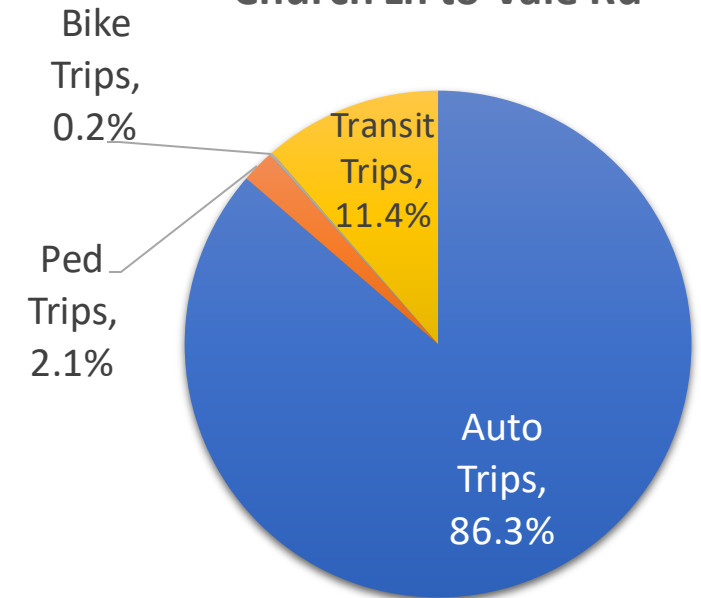
Central Ave to Lincoln Ave



Cutting Blvd to Macdonald Ave



Church Ln to Vale Rd



Note: Transit trips include trips on 72 series routes only and do not include BART or other bus routes
Represents pre-Covid conditions

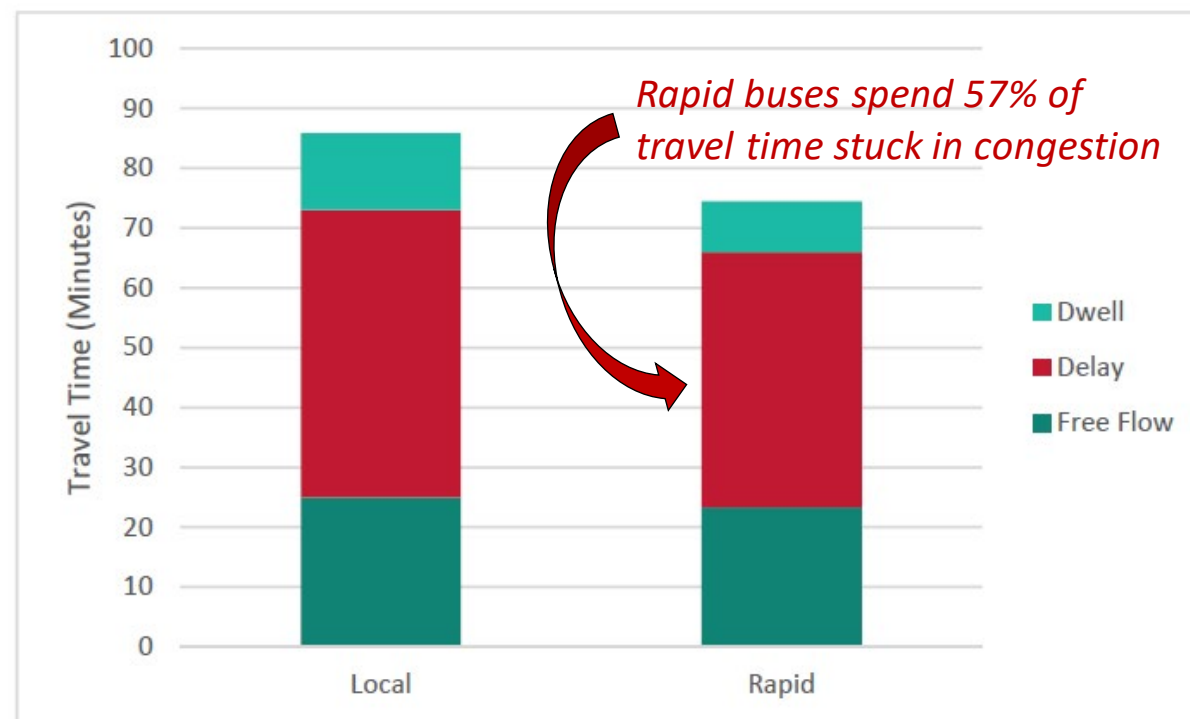
Source: Kimley-Horn



Transit on the corridor today

- Well-utilized today
 - 12,500 daily bus riders (approx. half in Contra Costa County)
 - More riders on 72-series routes than any other AC Transit route (14% of the entire system ridership)
- Bus speeds are about 30% slower than auto speeds and speeds for both have consistently been degrading
- Improving transit in this corridor is an equitable solution
 - 77% of 72-series passengers are non-white
 - 61% of 72-series passengers make less than \$50,000 per year

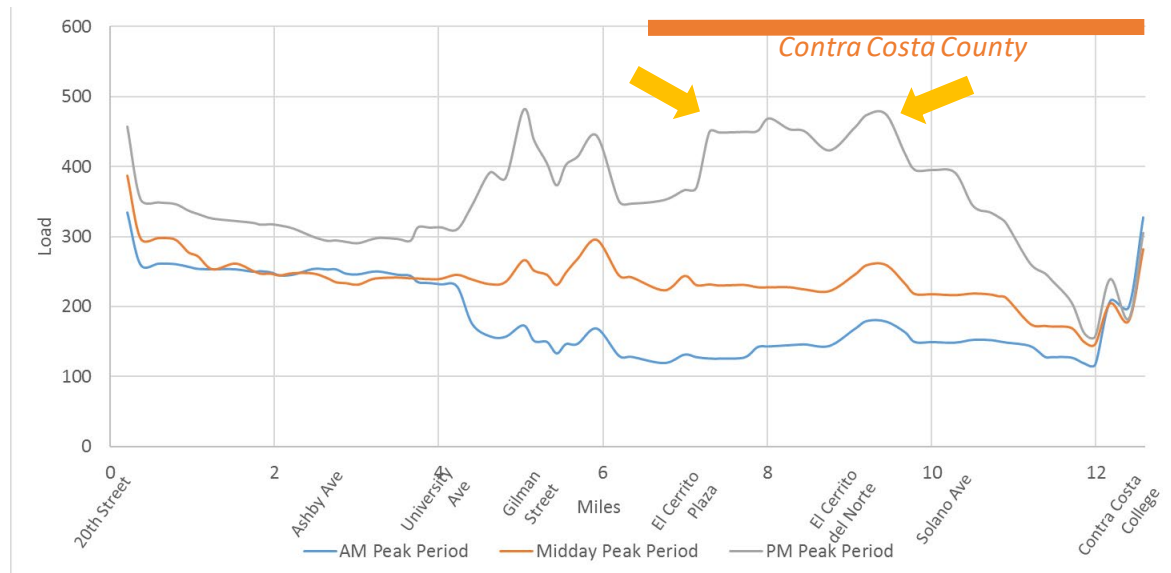
PM Peak Period Northbound Bus Travel Time



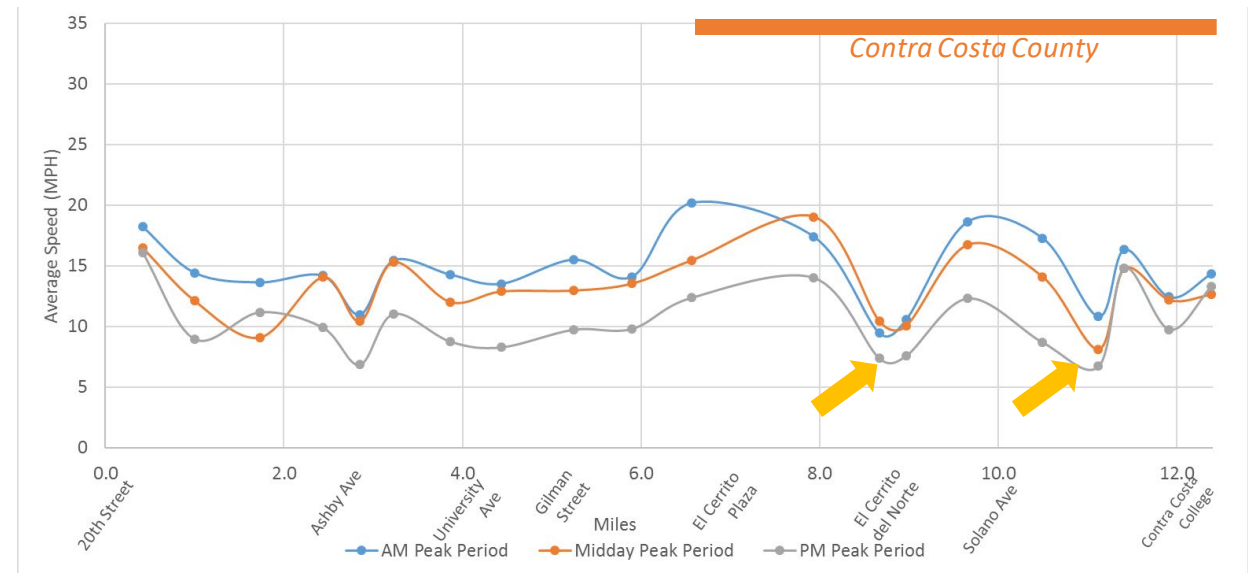


Where Transit is Most Utilized and Most Impacted by Traffic

Northbound Total Average Load by Weekday Peak Period

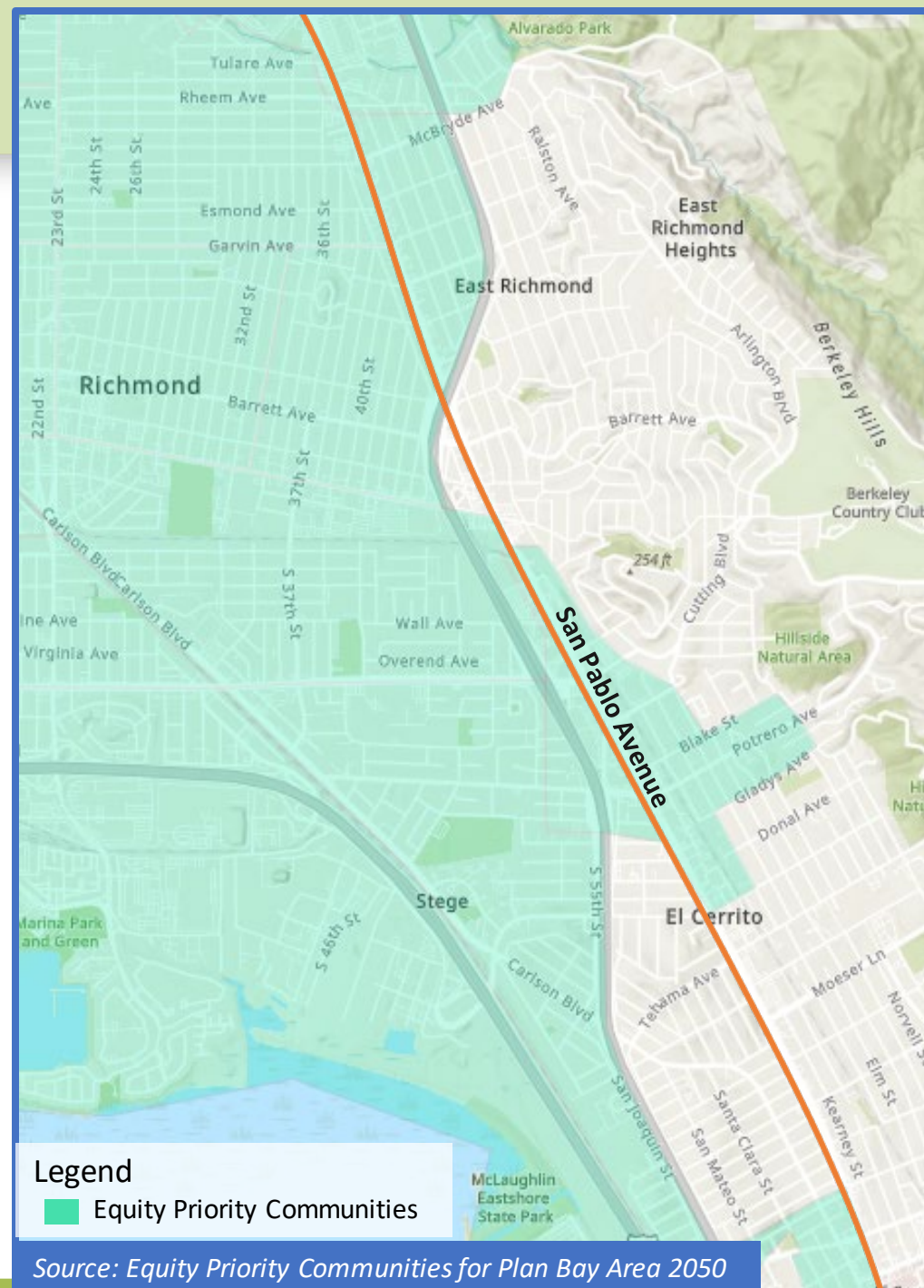


Northbound Average Weekday Travel Speed – Line 72R



What will happen to mobility if no changes to San Pablo Avenue are made?

- 69% increase in PM traffic delay by 2035
- 12 minutes of additional Route 72R travel time
- Continued safety issues
 - 225 collisions resulting in injury or fatality between 2015 and 2019 within study area¹
 - 73 pedestrian or cyclist fatalities or injuries
- Walking and biking will remain difficult
 - Discontinuous bicycle facilities
 - Challenges crossing San Pablo Avenue and side-streets
- Equity Priority Communities will be most impacted
 - 93% of study area within ¼ mile of an equity priority community
 - More difficult/time-consuming to access jobs and recreation



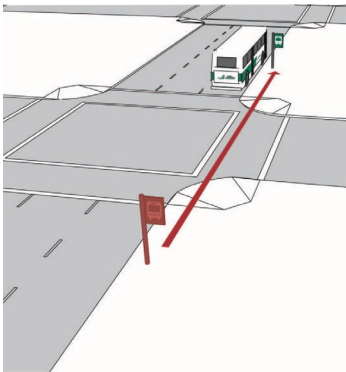
Potential Improvements





What are the options to improve transit?

Stop Relocation



Level Boarding



Image Source: AC Transit

Stop Consolidation

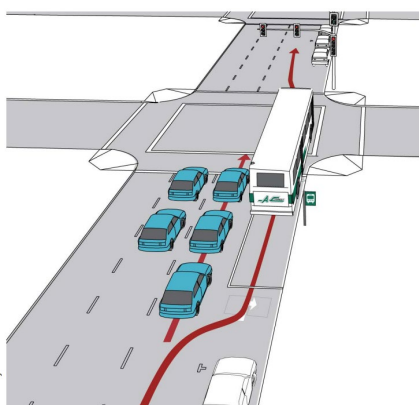
BEFORE



AFTER



Queue Jumps



In-Lane Stops



Transit Signal Priority



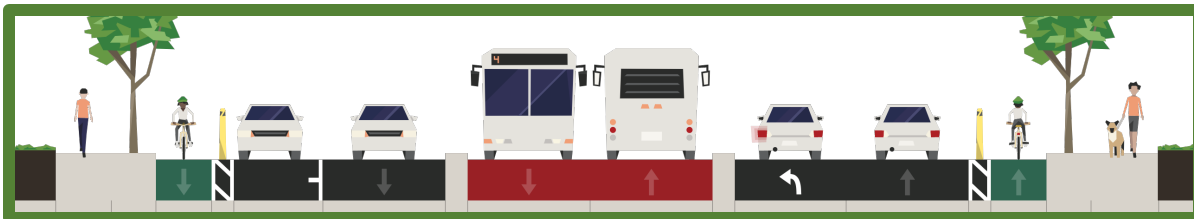


How could a BRT be configured in this corridor?

Center-Running Bus Lanes



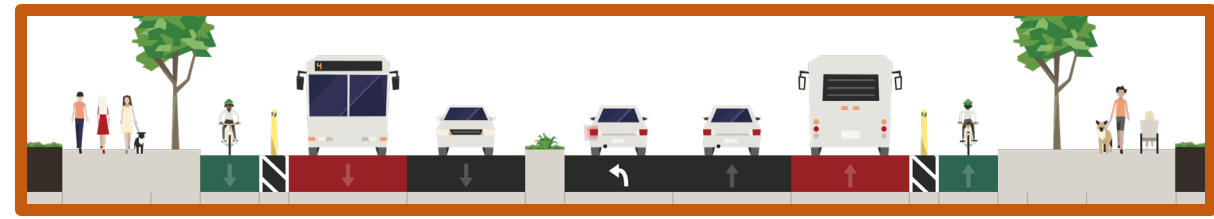
Image Source: SFMTA



Side-Running Bus Lanes



Image Source: Kimley-Horn





What are the benefits of BRT?



Improved travel time (30% to 45%) and **reliability** (>60%) for buses can allow for more frequent service for same cost



Increased ridership (30%+) and mode shift from auto to transit, reducing greenhouse gas emissions and enhancing mobility, particularly for equity priority communities



Improved **passenger waiting areas**



Energizes level of **economic activity**

What are the challenges of BRT?



Significant cost to rebuild street



Street reconstruction **temporarily affects access to businesses**



Removal of one through lane reduces capacity for auto vehicles and **may increase diversion**



Stops are placed further apart in order to improve travel speed and reliability for users, which may result in a **longer walk to transit**



How could a center-running BRT be configured in this corridor?

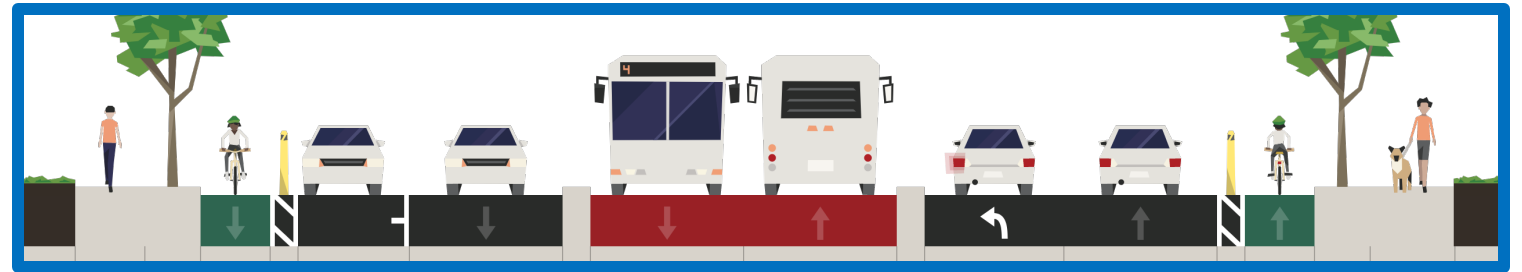
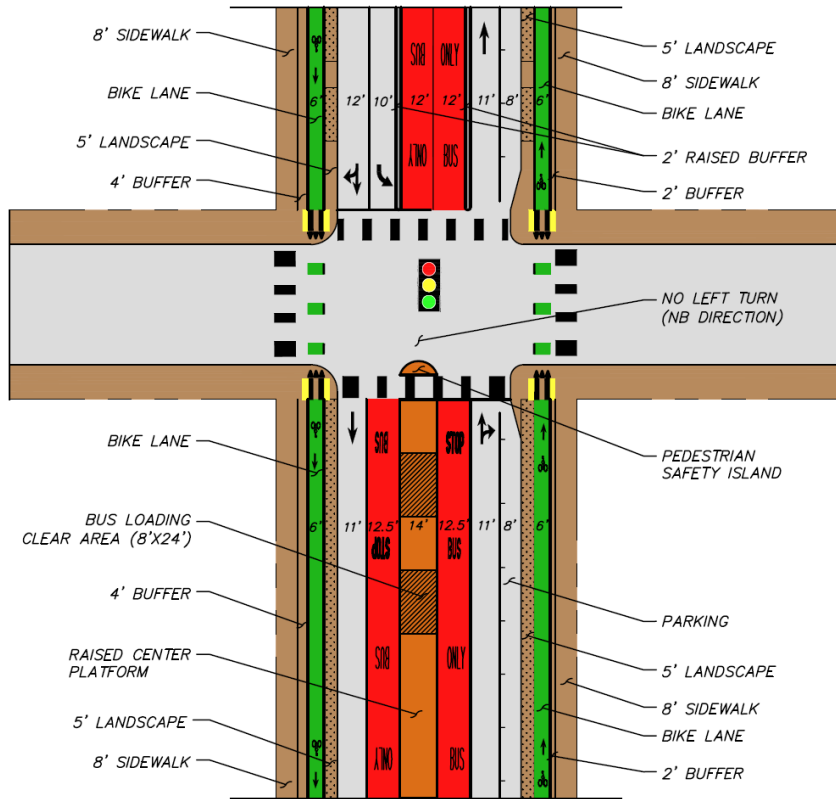


Image Source: Google



Image Source: Kimley-Horn



How could a **side-running BRT** be configured in this corridor?

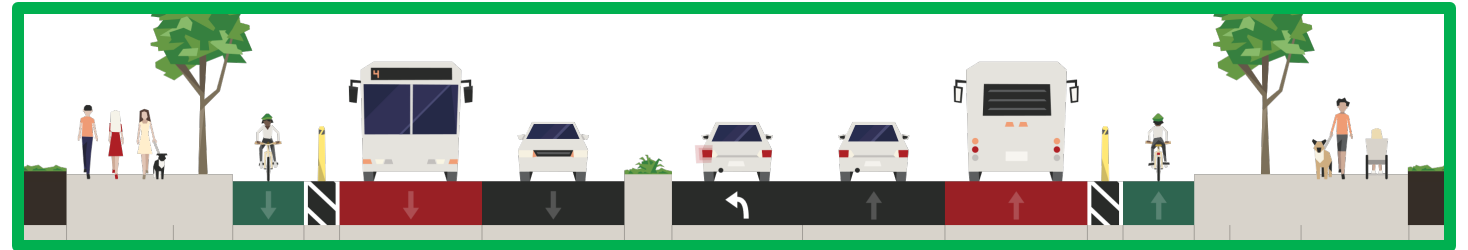
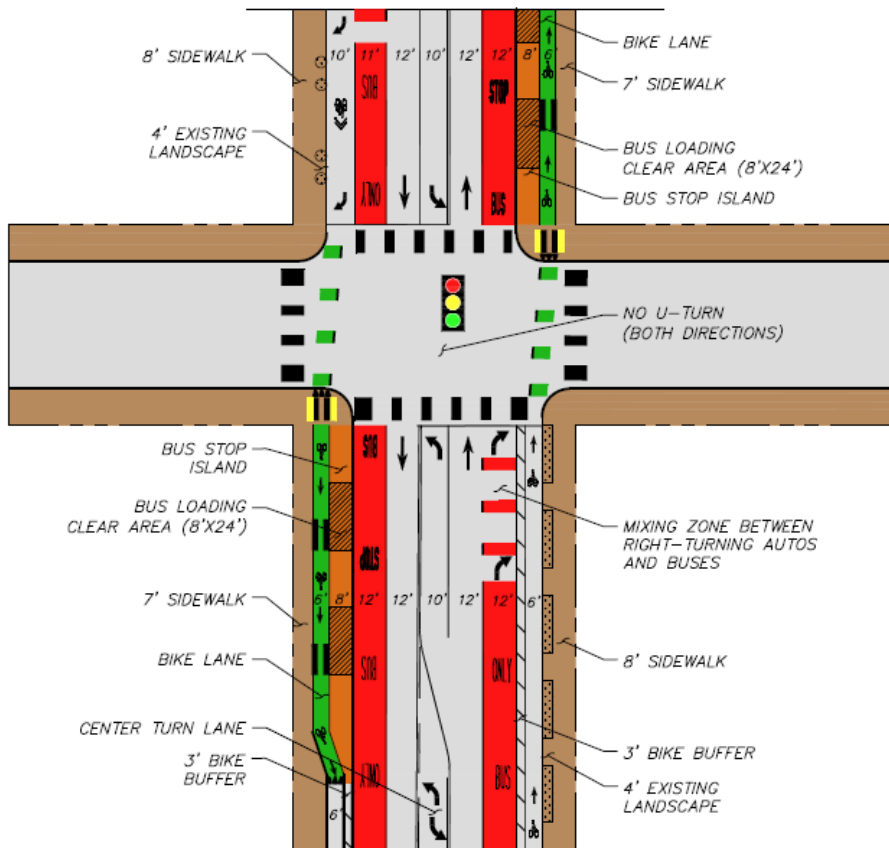


Image Source: Greater Greater Washington



Image Source: Kimley-Horn



Benefits Specific to Center-Running BRT



Removes conflicts between the bus lane and turning vehicle, parked cars, and bicyclist



Maximizes transit speed and reliability benefits (approximately 10% faster than side-running)



Emphasizes permanence of transit solution

Challenges Specific to Center-Running BRT



Community access is affected by elimination of auto left-turns at unsignalized intersections and at stations



Eliminates existing medians, including street trees



May be difficult to be used by non-BRT bus routes operating on corridor

Benefits Specific to Side-Running BRT



Allows for more flexibility in use of bus lane by non-BRT routes



Less costly to construct bus lane due to reduced median and signal impacts



Easier to implement in phases with a shorter construction duration due to less infrastructure required

Challenges Specific to Side-Running BRT



Increased likelihood of illegal double-parking in the bus lane, affecting bus travel time



Stations may be more constrained due to sharing space with pedestrians or an adjacent bicycle facility (if provided)



Does not allow for a time-managed auto/parking lane in El Cerrito



Can you mix and match transit lane configurations across segments/cities?

- Each occurrence where the bus shifts between side-running and center-running or passes through mixed-flow segments, a travel time penalty is incurred
- However, different configurations are acceptable
 - TEMPO BRT is a combination of **side-running**, **center-running**, and mixed-flow
- Recommend minimum 1- to 2- mile segments with continuous configuration
 - BART stations are logical transition points as the BRT would likely deviate into the station



Image Source: Google

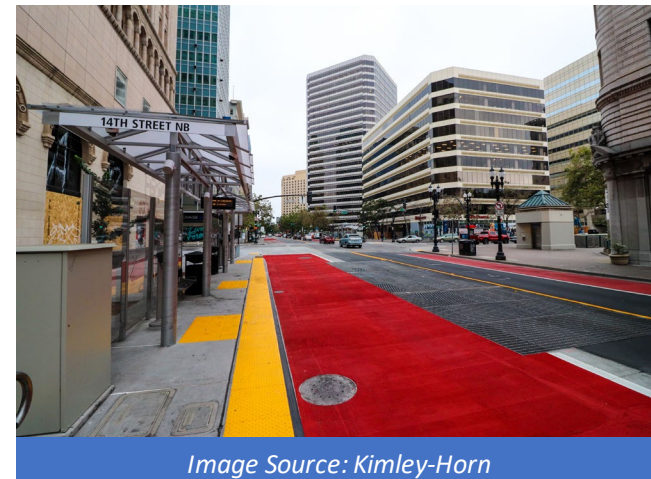


Image Source: Kimley-Horn



What are the implications of converting a traffic lane to transit?

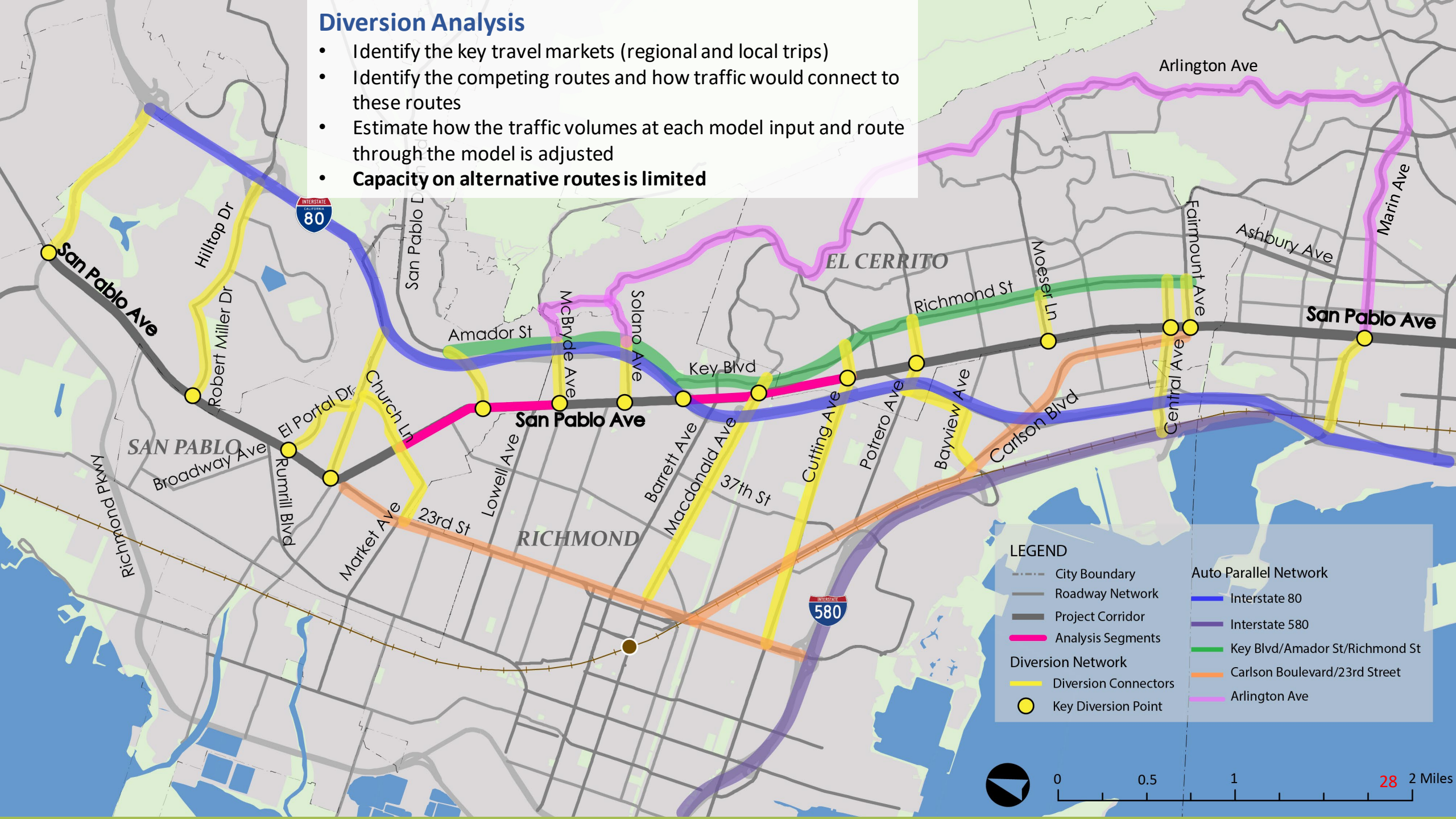
- Additional traffic congestion on San Pablo Avenue ➡ Some drivers will change their mode, route, or time of day with **center-running** and **side-running** BRT
- **Center-running BRT**: localized diversion due to left-turn restrictions

Metric	Center-Running	Side-Running
Auto Diversion	30%-35%	25%-30%

- If all diverted auto traffic went to I-80, would increase peak hour volumes on I-80 by about 4%
- Local traffic may divert to local streets; however, local diversion routes will experience diversion even with no changes to San Pablo Avenue and may not support significant additional diversion
- Opportunity for traffic calming on diversion streets

Diversion Analysis

- Identify the key travel markets (regional and local trips)
- Identify the competing routes and how traffic would connect to these routes
- Estimate how the traffic volumes at each model input and route through the model is adjusted
- **Capacity on alternative routes is limited**





How does a bus lane affect bus and auto travel time?

- By only implementing transit signal priority projects, bus remains **slower** than auto in peak direction and peak period
- With dedicated bus lanes, bus becomes **faster** than auto in peak direction and peak period, even accounting for stops

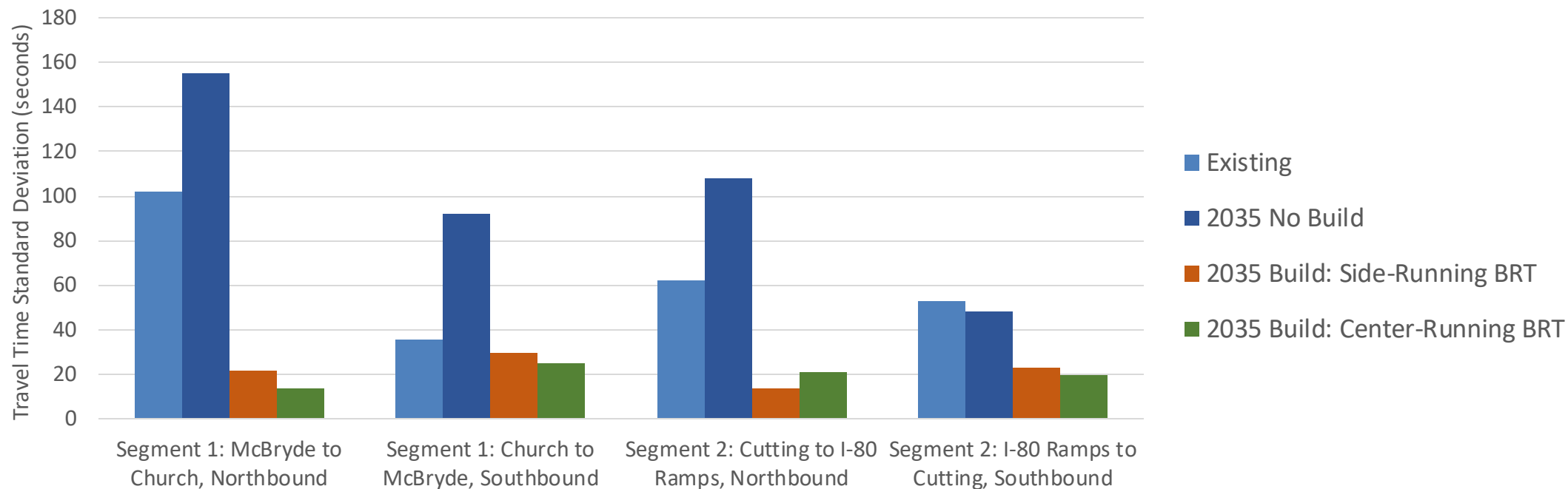
Metric	Center-Running	Side-Running
Change in <u>bus</u> travel times (peak direction)	↓ 30%-45%	↓ 25%-40%
Change in <u>auto</u> travel times	↑ 0%-45%	↑ 0%-35%
Bus speed relative to auto	Bus is 25%-55% faster than auto	Bus is 15%-40% faster than auto

Source: Kimley-Horn

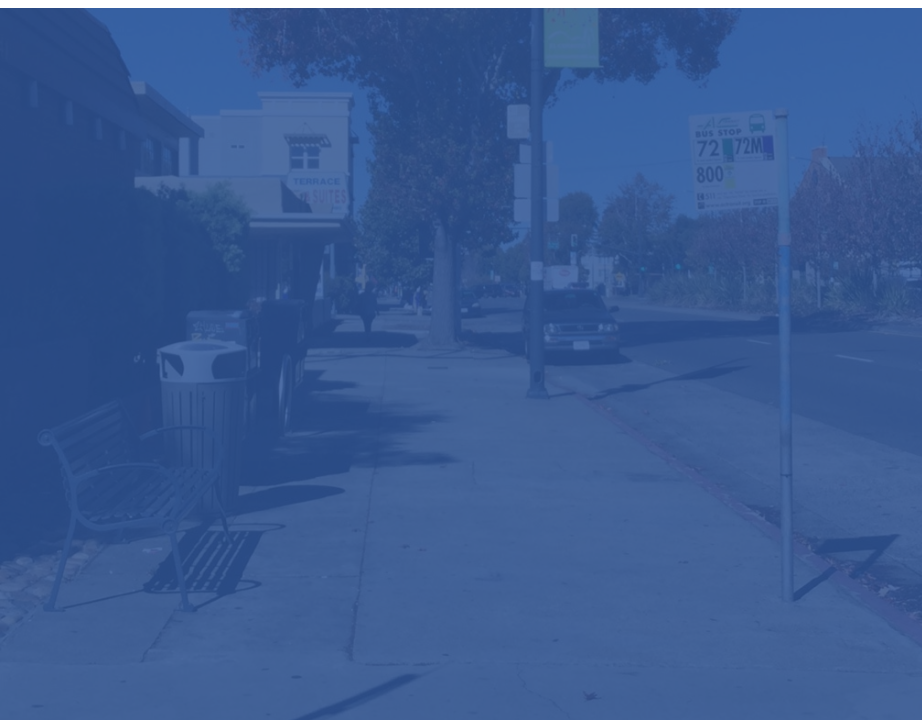


Transit ridership and reliability findings

- Bus travel time variability improves by over 50%-80% with both center and side-running options ➡ Buses arrive more consistently and waits are shorter
- 30%-35% increase in ridership typical with high-quality BRT
 - Travel demand model in project Phase 1 projected a 35%-45% ridership increase with BRT



Bicycle + Parking Options





What are the options to improve walking conditions?

- Widen sidewalks
- Provide landscape buffers
- Provide bulbouts to shorten crosswalks
- Install high-visibility crosswalks
- Upgrade curb ramps to meet ADA standards
- Install pedestrian lighting, particularly at crossings and bus stops
- Improve sidewalk conditions
- Add new crossings
- Improve safety of crossings with signalization (pedestrian hybrid beacons) and rapid rectangular flashing beacons

Pedestrian Lighting

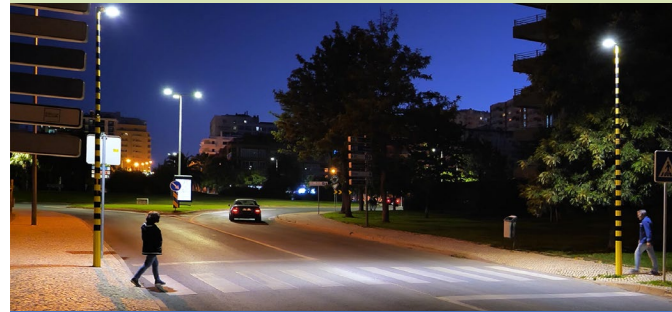


Image Source: Schreder

Signalization



Image Source: Carmanah

Widen sidewalks and provide landscape buffers



Image Source: NACTO

Shortened crosswalks

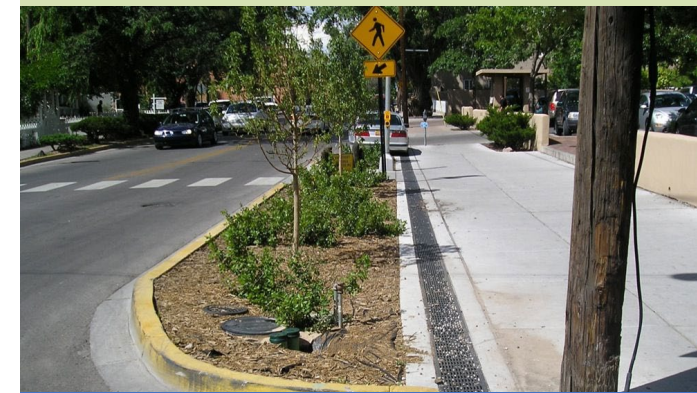


Image Source: NACTO



What are the options to improve biking conditions?

- New protected bicycle lanes (cycle tracks)
- Improved bicycle crossing markings
- New signalized bicycle crossings (pedestrian hybrid beacons or signals)
- Protected intersection treatments
- Transit islands to avoid bus-bike conflicts at bus stops

New signalized bicycle crossings



Image Source: Google

Protected intersection treatments



Image Source: City of San Luis Obispo

New & protected bike facilities and crossings



Image Source: CATSIP



What options are feasible for bicycle facilities?

Class II Bike Lane



Image Source: City of Temple City

Buffered Class II
Bike Lane



Image Source: Clairemont Times

Protected Class IV Cycle Track



Image Source: NACTO

Shared Bus and Bike Lane

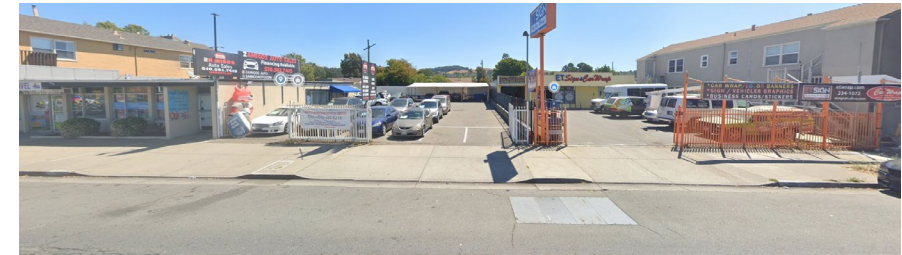


Image Source: NACTO



Can a low-stress bicycle facility be provided on San Pablo Avenue?

- Significant number of driveways and intersections will require crossing bicycle facility
- Right-turn lanes will be needed at major intersections
 - Will require bicycle facility to be shared with autos, buses, or narrow pedestrian facility
- Projected to remain at Level of Stress 4 for cyclists (high level of stress)
- Lower stress options may be available on parallel streets south of McBryde Avenue



Images Source: Google



What are the options for a lower-stress parallel bikeway?



See Lower Left

Source: San Pablo Avenue Phase 1 Evaluation Report

Legend

- Parallel Bikeway
- Proposed/Existing Bike Facilities on San Pablo Ave
- - - City Boundary

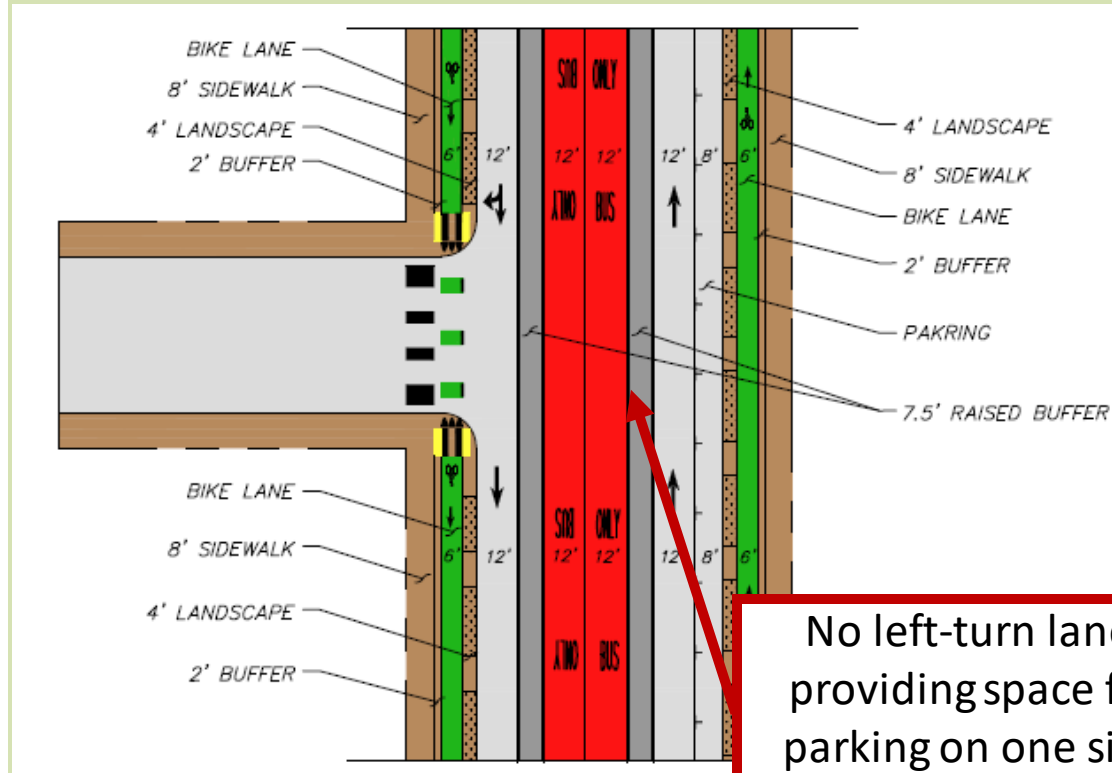


See Upper Right



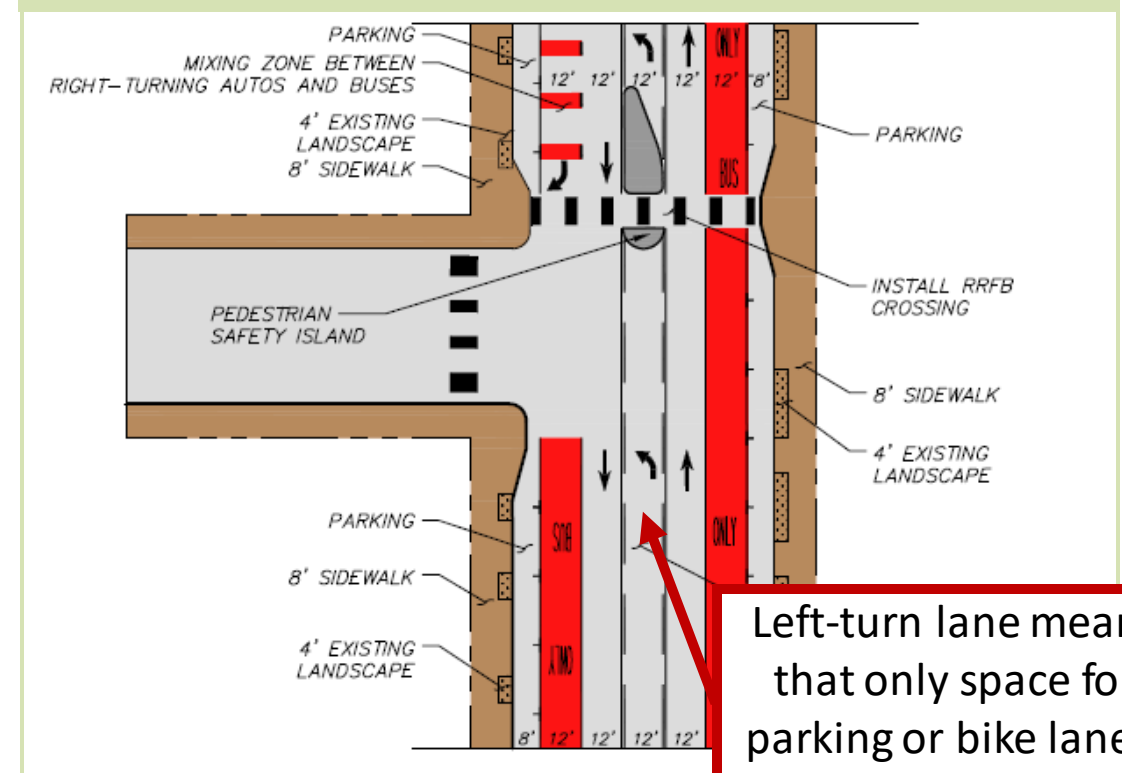
How does center-running BRT vs side-running BRT transit compare for bikes?

Center-Running BRT



No left-turn lane, providing space for parking on one side and bike lanes

Side-Running BRT (with parking)



Left-turn lane means that only space for parking or bike lanes, not both



Parking and Bike Options

Center-Running

- Options range from:
 - **Parking Prioritized:** Preserve most parking on both sides of the street where it exists today with some bike facilities on San Pablo and/or bike connectivity via a parallel route
 - **Bicycle Prioritized:** Provide a Class IIB/Class IV bike facility throughout, with parking on at least one side of the street in most areas. Bicycle facility, improved but remains higher-stress

Side-Running

- Options range from:
 - **Parking Prioritized:** Preserve most parking on both sides of the street where it exists today with bike connectivity via a parallel route and/or shared with the bus lane
 - **Bicycle Prioritized:** Provide a Class IV bike facility throughout, with most parking removed. Bicycle facility, improved but remains higher-stress

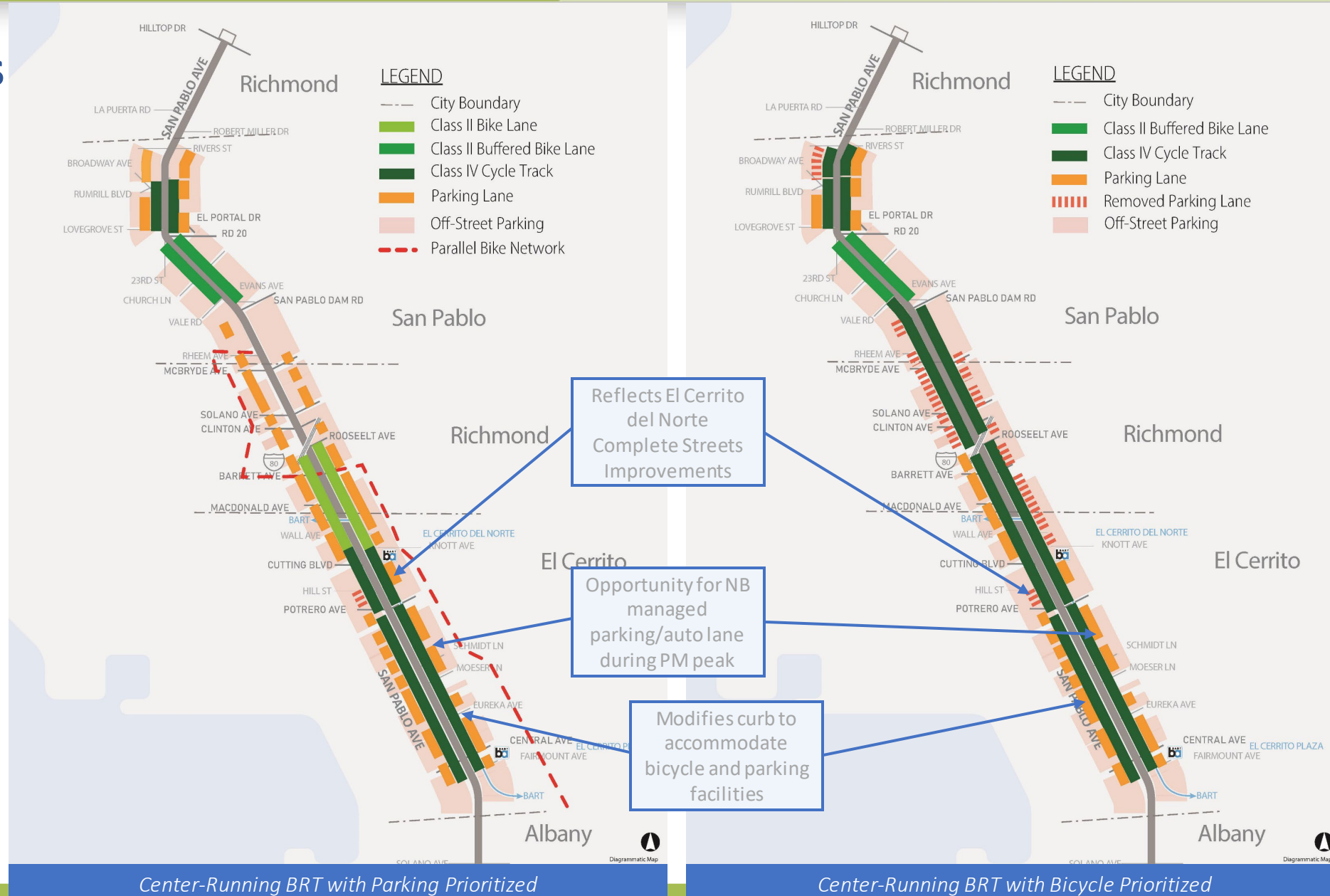
See maps depicting range of options for parking and bicycle provision on San Pablo Avenue in Council Memo



Parking/Bike Options

Center-Running

- Options range from:
 - Parking Prioritized:** Preserve parking on both sides of the street where it exists today with some bike facilities on San Pablo and/or bike connectivity via a parallel route
 - Bicycle Prioritized:** Provide a Class IIB/Class IV bike facility throughout, with parking on at least one side of the street in most areas

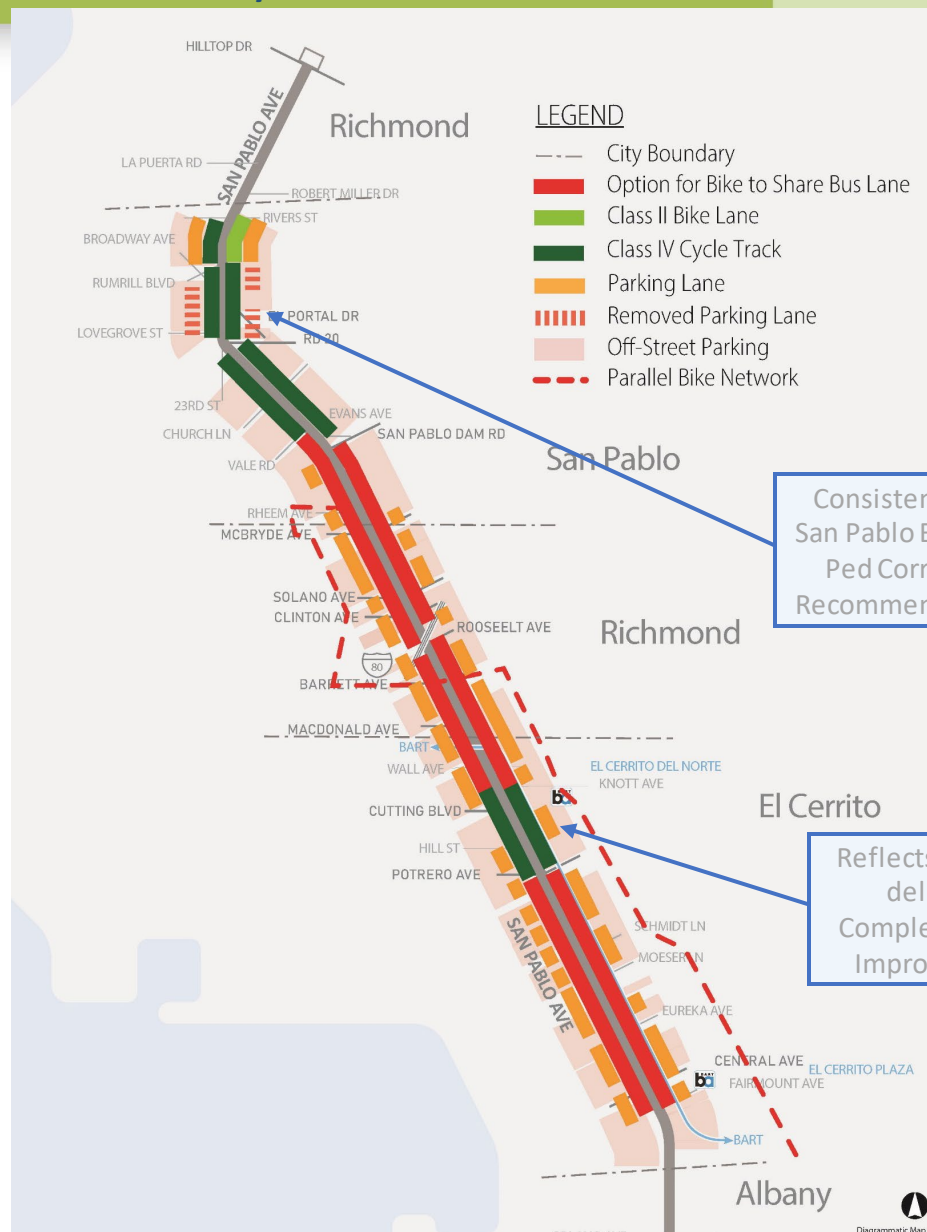




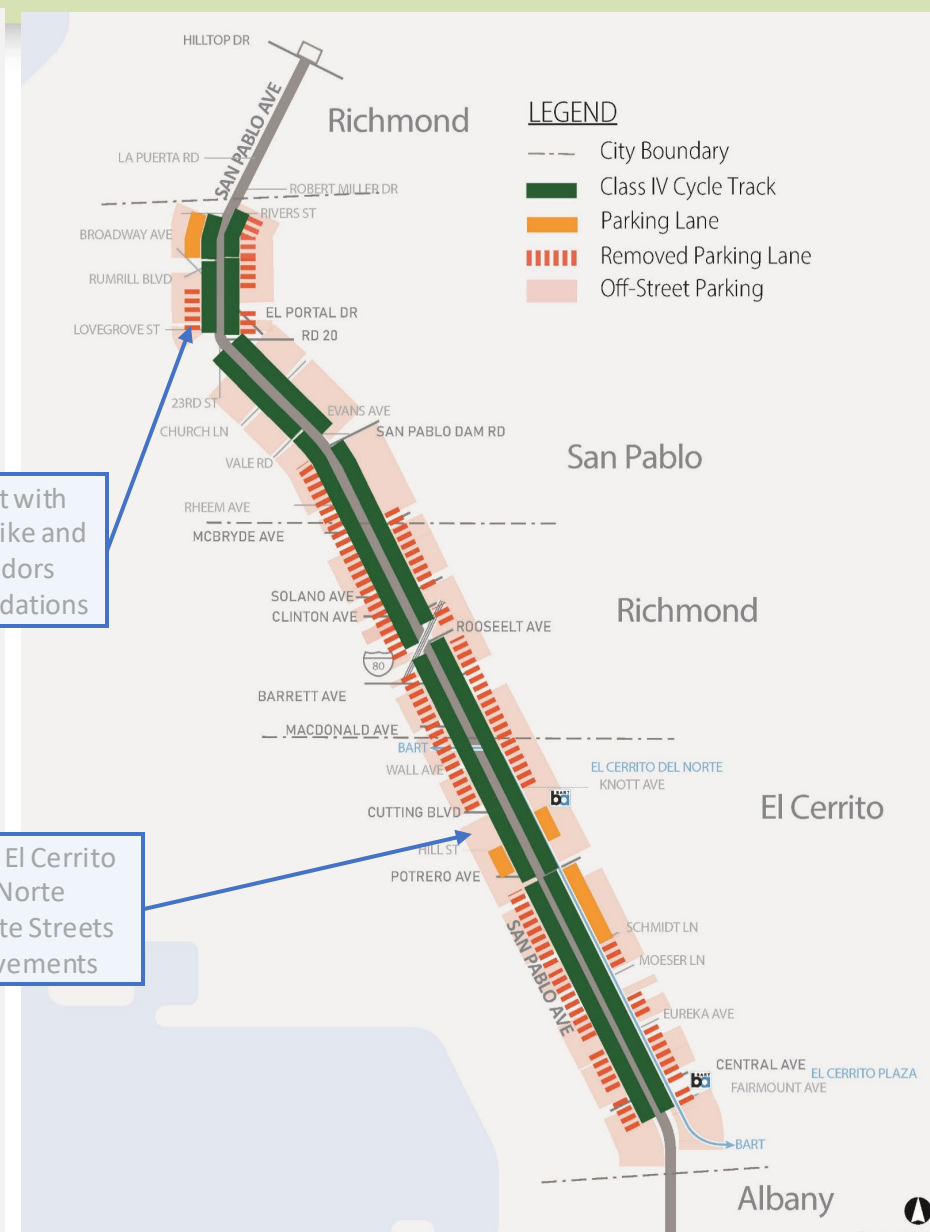
Parking/Bike Options

Side-Running

- Options range from:
 - Parking Prioritized:**
Preserve parking on both sides of the street where it exists today with bike connectivity via a parallel route and/or shared with the bus lane
 - Bicycle Prioritized:**
Provide a Class IV bike facility throughout, with most parking removed



Side-Running BRT with Parking Prioritized



Side-Running with Bicycle Prioritized

Key Takeaways





Comparison of Transit Solutions

- ☒ Better than existing
☐ No change
☒ Worse than existing

Metric	No-Build	Center-Running		Side-Running	
		Maximize Bicycle	Maximize Parking	Maximize Bicycle	Maximize Parking
Transit Performance	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Auto Performance	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
Pedestrian Safety	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
Bicycle Connectivity & Comfort	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Parking and Loading	<input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Community and Business Access	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Ease of Implementation	<input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Cost per Mile	<input type="checkbox"/>	\$\$\$\$	\$-\$\$\$	\$-\$\$\$	\$-\$\$



Key Takeaways



Without improvements, congestion will significantly increase (69% increase in delays), impacting mobility options



Center-running bus lanes provide 30%-45% transit travel time savings and would be approximately 10% faster than **side-running**



Side-running bus lanes avoid some of the implementation challenges of **center-running** and can be easily used by all bus routes in the corridor



Center-running bus lanes provide greatest opportunity for both parking and bike lanes throughout the corridor. **Side-running** allows for either/or in most segments



A low-stress bike facility cannot be provided but parallel route options are limited in the northern portion



On-street parking is currently plentiful and redundant, but new, more dense development will change the role of on-street parking

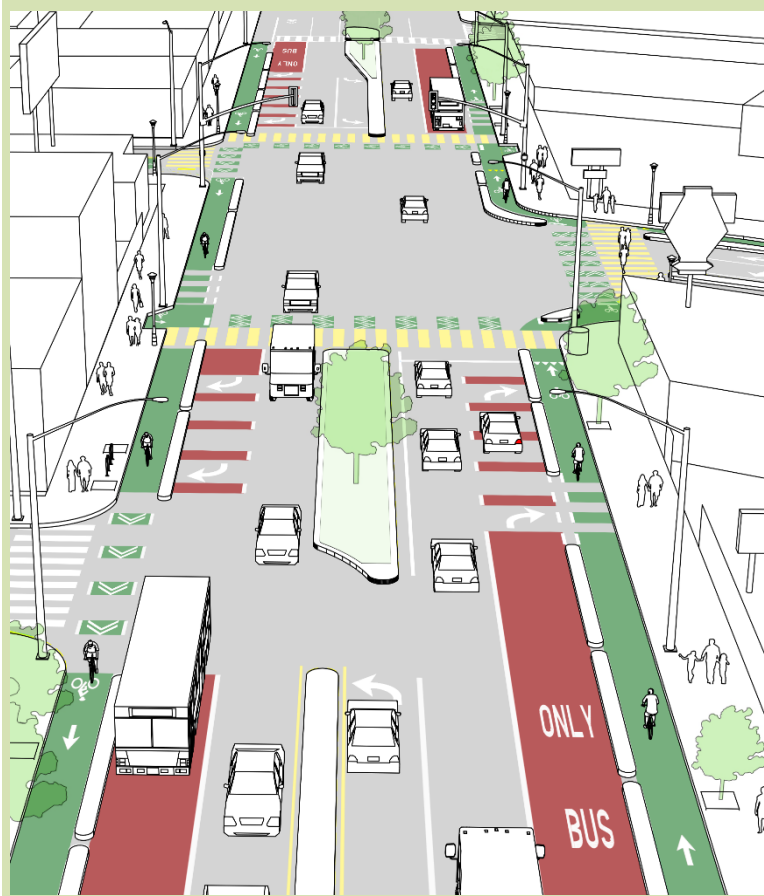


There is community support for improvements in the corridor, but no consensus thus far on the type of improvements



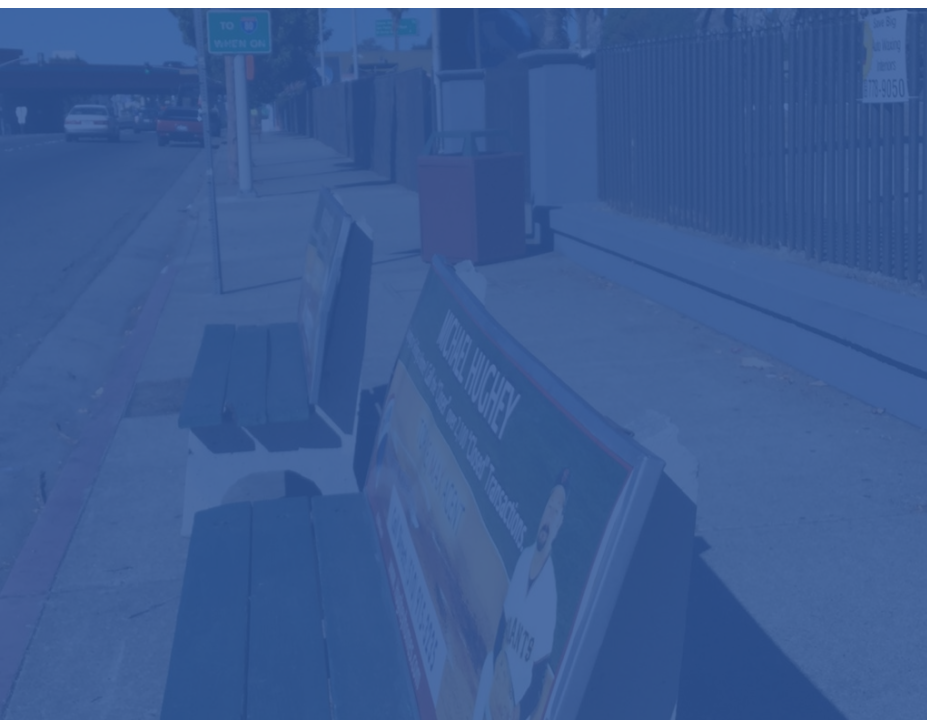
How does this relate to what's happening in Alameda County?

Near-Term Design Concept



- Safety Enhancements Throughout Corridor
 - Focused on pedestrian safety and accessibility and bicycle crossings
 - Bus bulbs provide additional space at bus stops and to allow in-lane stopping for transit
- Oakland, Emeryville, and South Berkeley Demonstration Project
 - Convert auto lane to bus lane
 - Convert parking lane to protected bike lane
 - Parking and loading moved to side streets in most locations
 - Protected intersections and other bicycle treatments
 - Evaluation phase after project implementation
- Continue planning efforts in Berkeley and Albany
 - In the meantime, provide bike improvements on parallel network

Next Steps





What are some options on what to do next?

Less



More

1. Do not advance corridor-wide improvements
2. Implement safety enhancements, such as pedestrian crossing improvements and ADA upgrades
3. Advance a near-term project, similar to Alameda County
 - Safety enhancements
 - Side-running bus lanes
4. Advance a Long-Term Project
 - Safety enhancements
 - Center- or side-running bus lanes
 - Bicycle and/or parking improvements

Next Steps

- ☐ Engagement
- ☐ Concept Design
- ☐ Funding Plan

Additional variant: Identify a phasing strategy and focus initial efforts on a first phase segment