



SAN PABLO AVENUE MULTIMODAL CORRIDOR STUDY PHASE 2

May 2022 WCCTAC Board Meeting
Evaluation Summary



CONTRA COSTA
transportation
authority

WCCTAC

Kimley»»Horn



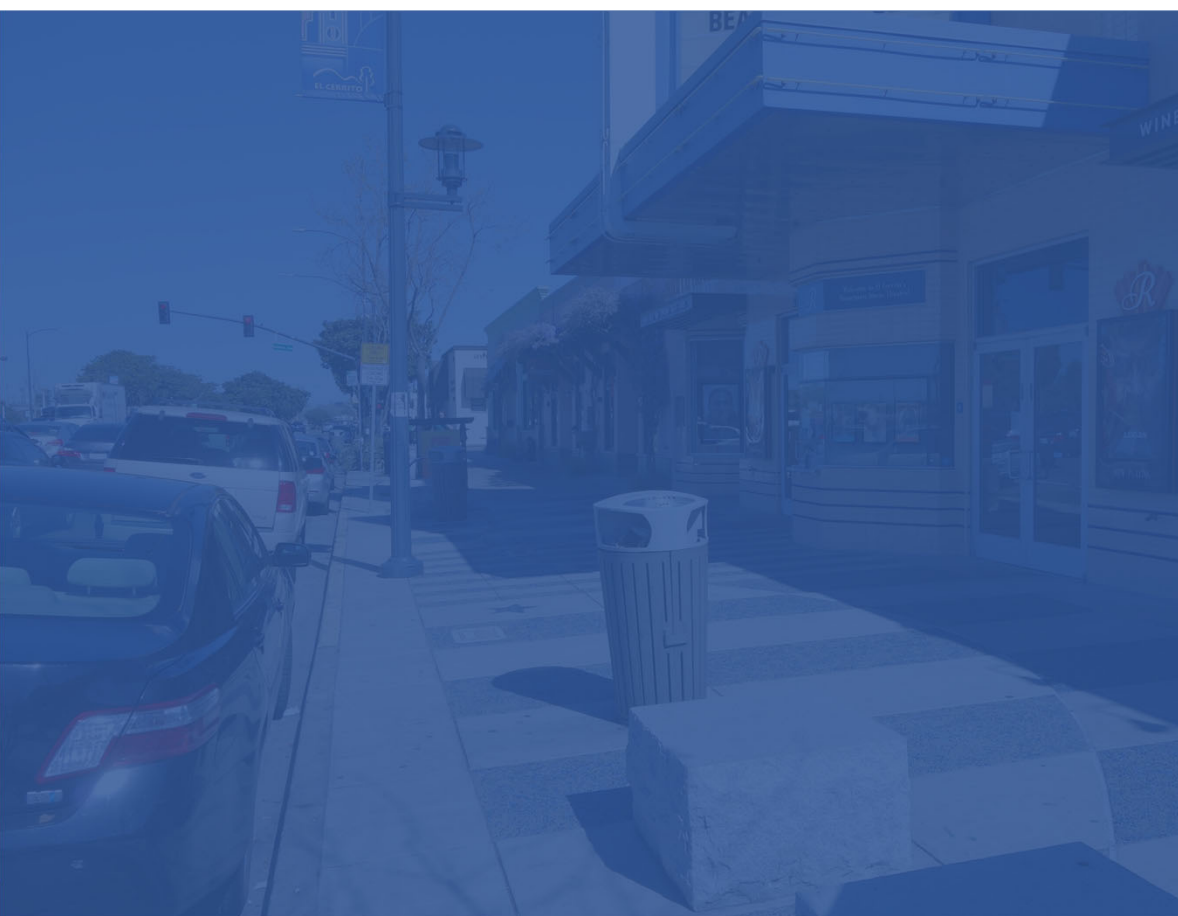


Agenda



1. Phase 2 Purpose and Process
2. Corridor Conditions Today
3. Project Need
4. Potential Solutions
5. Bus Lane Implications
6. Bicycle + Parking Options
7. Key Takeaways
8. Next Steps

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

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

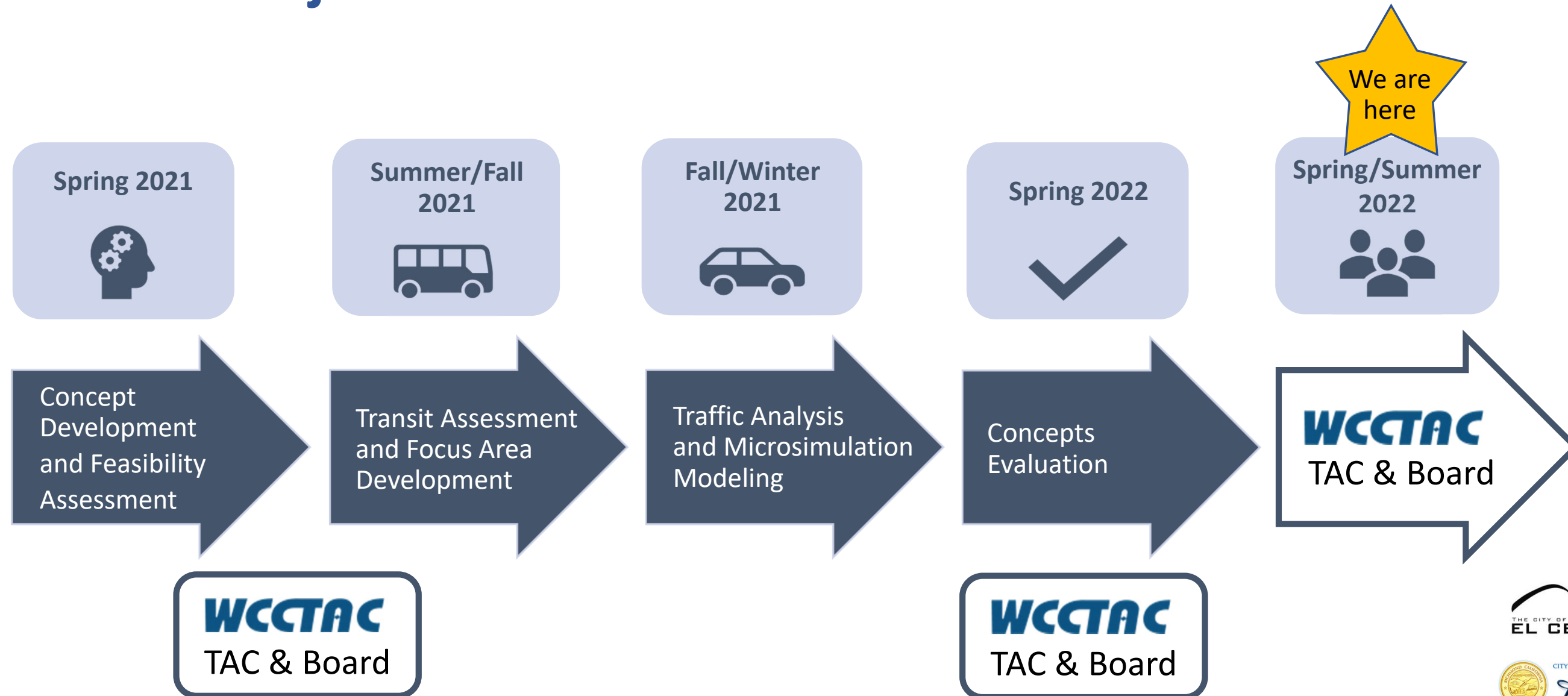
Desired Study Outcome:

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

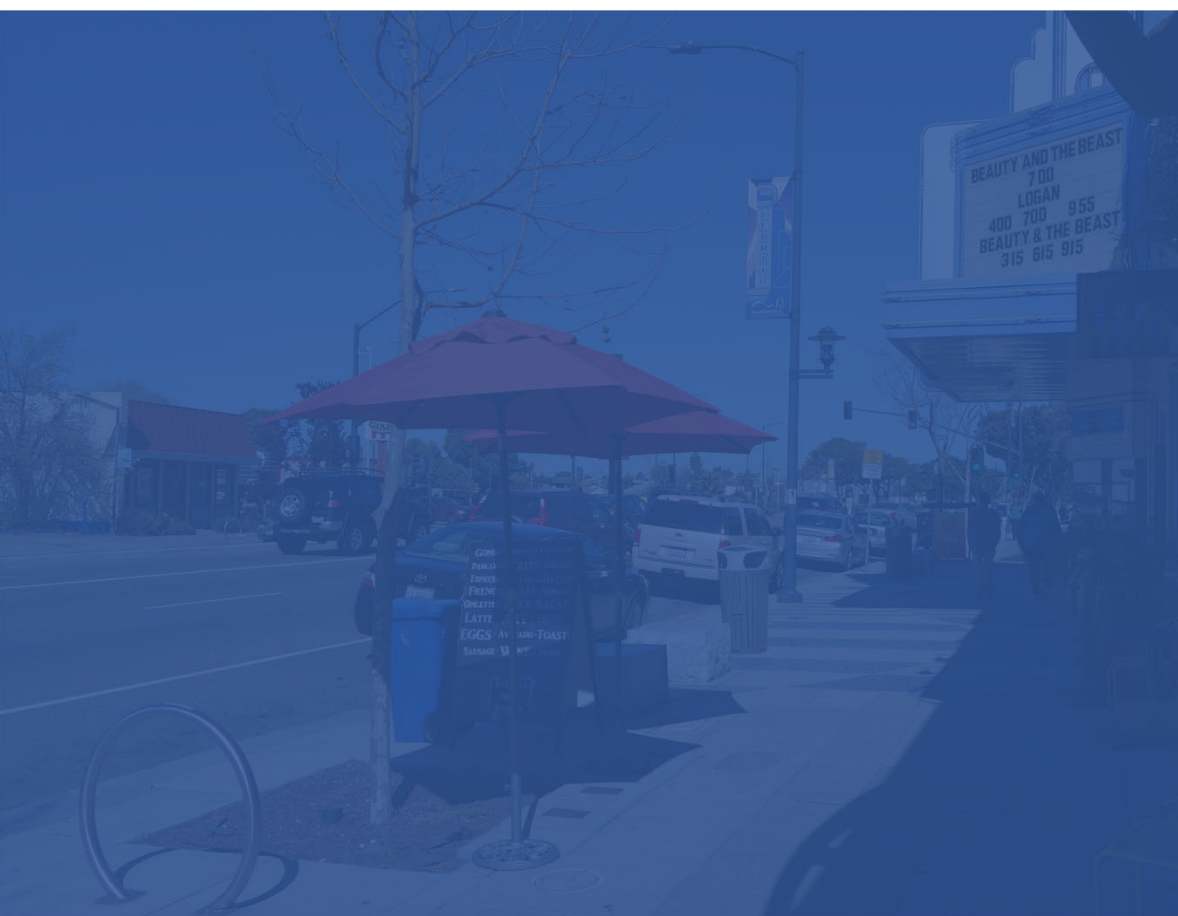




Phase 2 Project Process



Corridor Conditions Today



Conditions on the corridor today



Overlapping Local and Rapid Bus service provides bus service every 7 minutes south of Macdonald



Bike lanes only in some segments in the City of San Pablo and newly 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



Corridor curb-to-curb width varies significantly



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
- Recent/planned developments reducing amount of surface parking on corridor and with lower parking requirements
 - Assume greater use of alternative modes





Trip-making on the corridor today

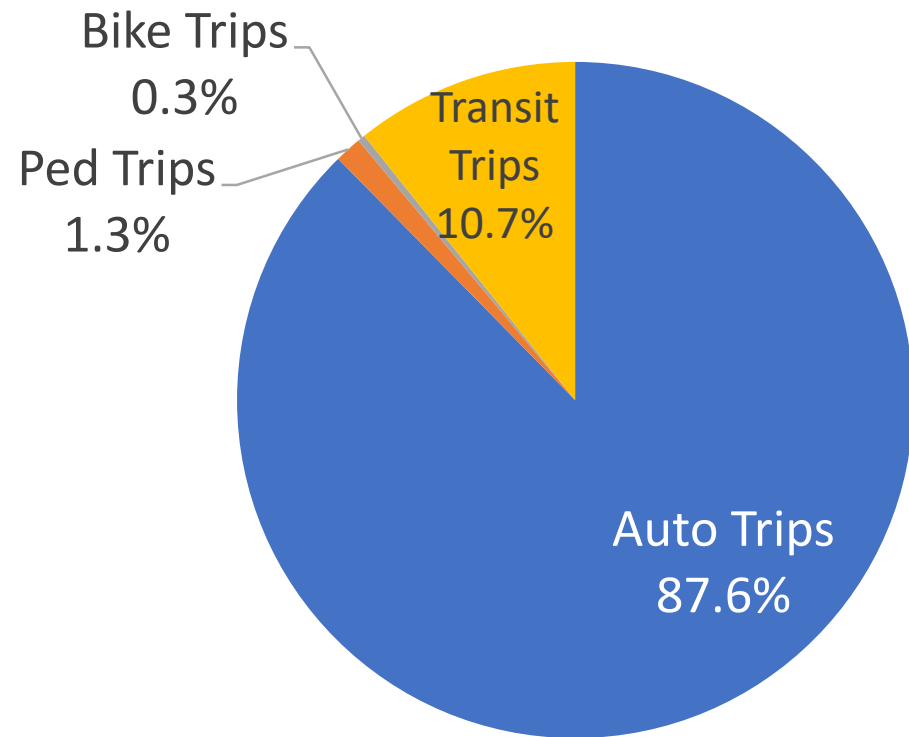
- Used as an alternative to I-80 for longer-distance trips
 - 1/3 of auto trips are just passing through
 - Most frequent pass-through area: El Cerrito-Richmond border to Road 20
- Data indicates potential for auto to bus mode shift
- 1,200 to 1,500 cars per direction in peak hour in most segments
 - Somewhat higher than in Alameda County (which peaks at around 1,300)



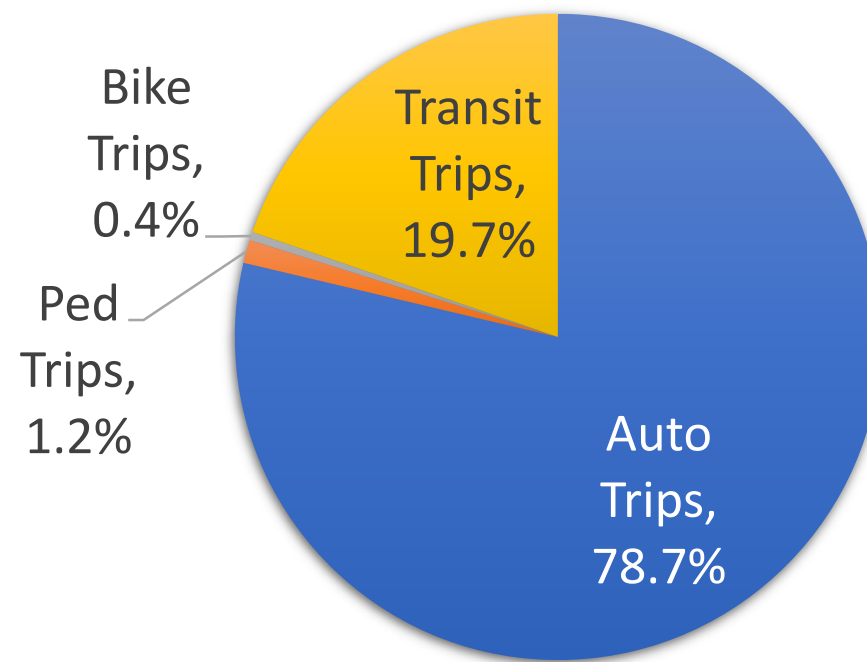


Mode split on the corridor today

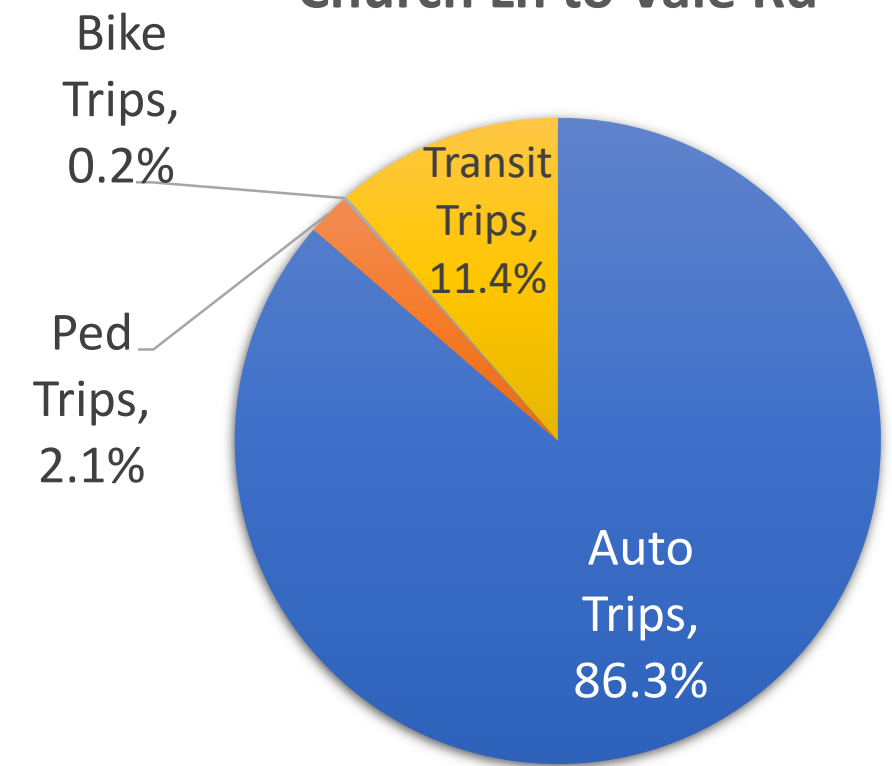
Central Ave to Lincoln Ave



Cutting Blvd to Macdonald Ave



Church Ln to Vale Rd



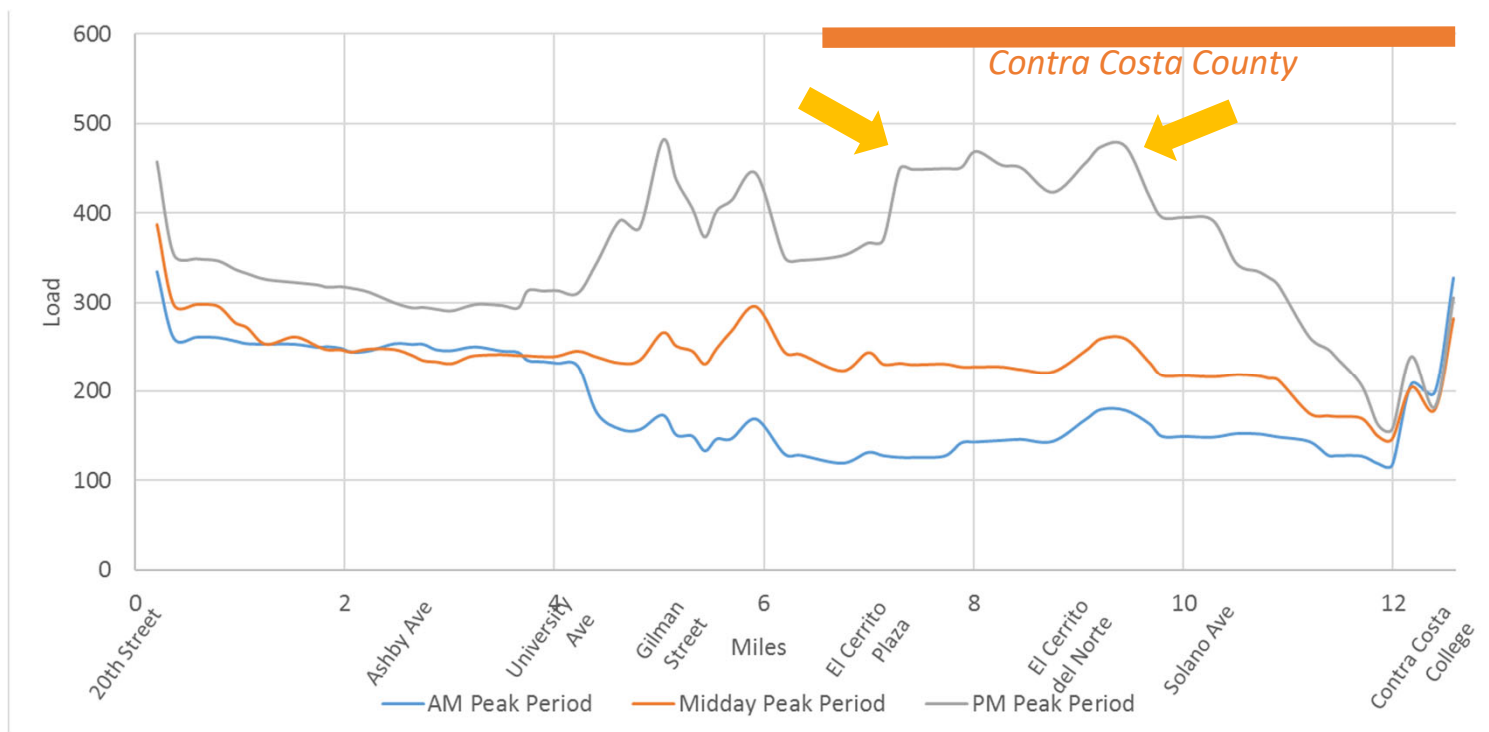
Note: Transit trips include trips on 72 series routes only and do not include BART or other bus routes
Represents pre-Covid conditions

Source: Kimley-Horn and Associates, Inc.

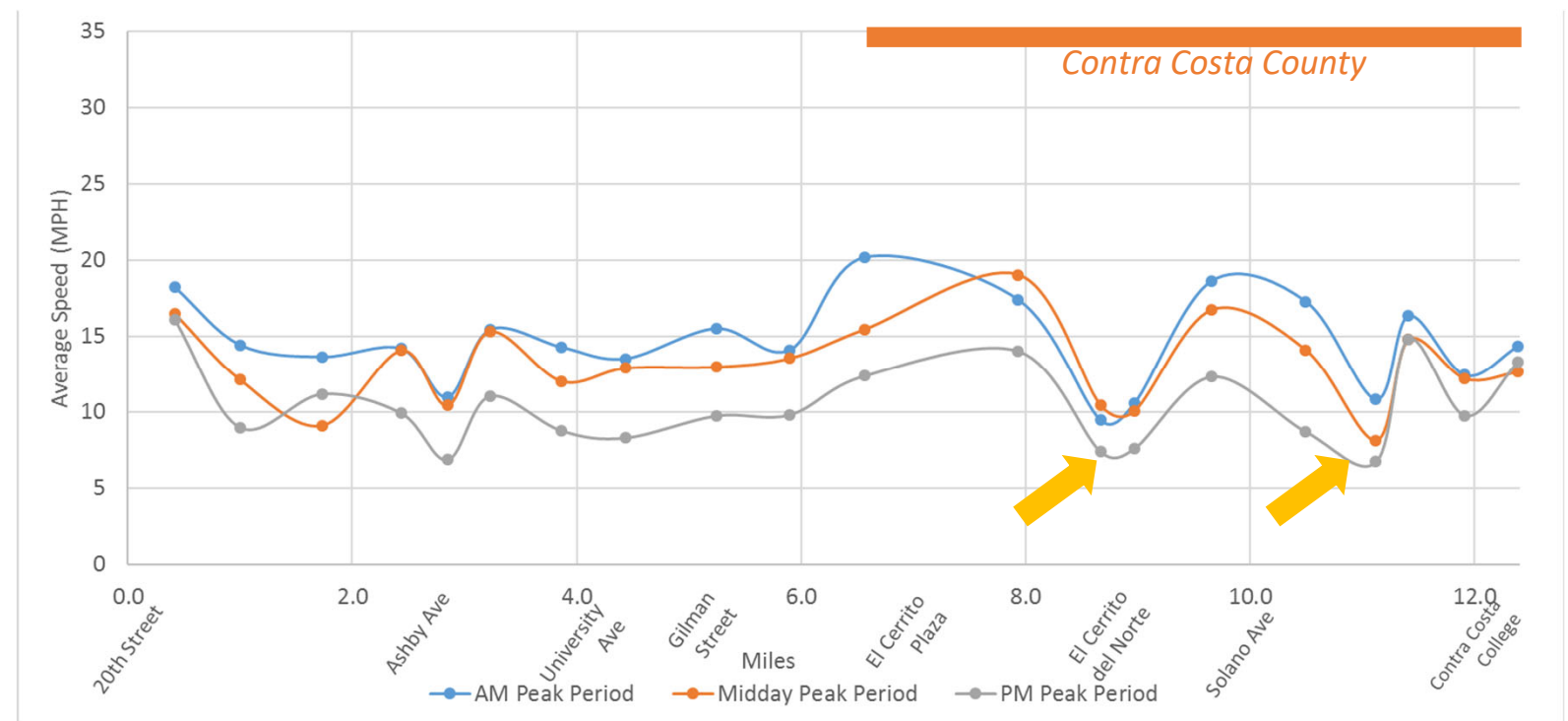


Where transit improvements are most needed

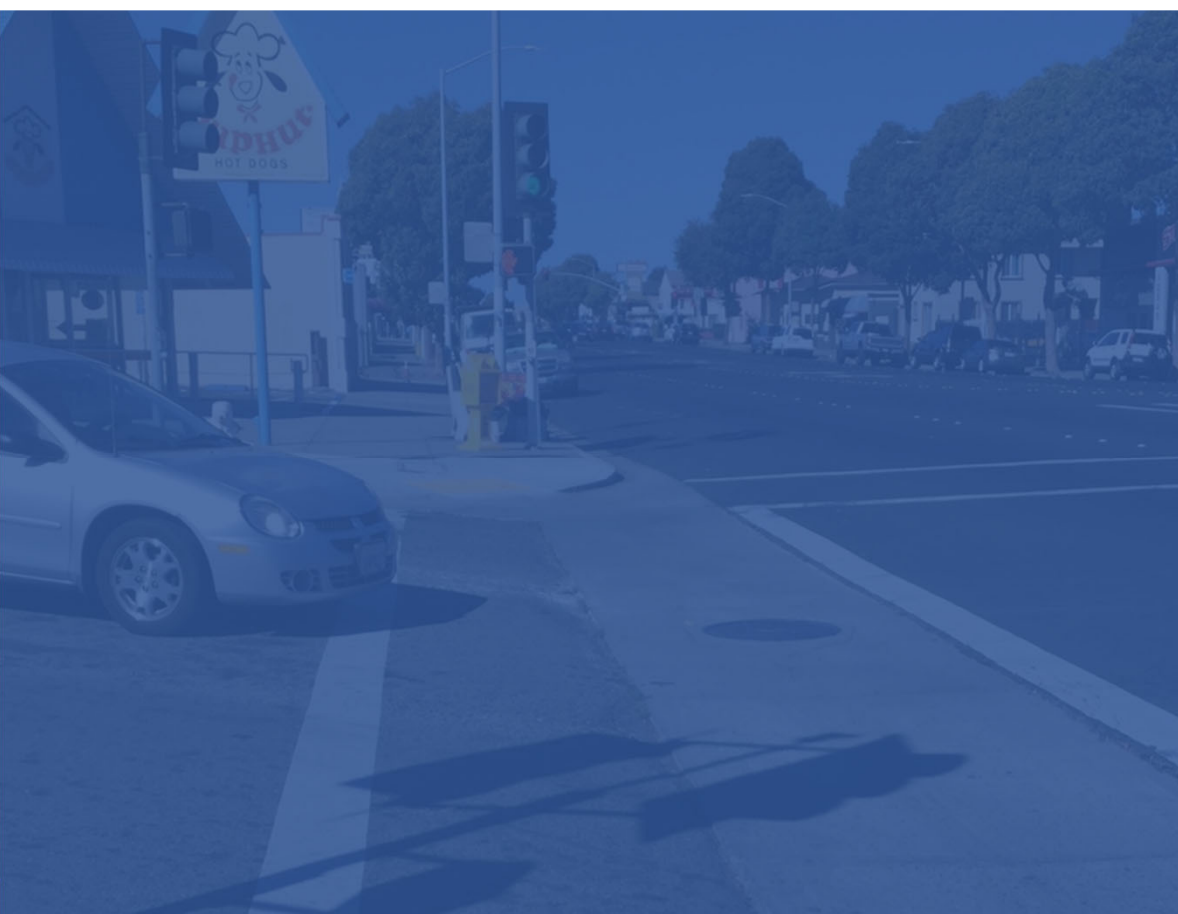
Northbound Total Average Load by Weekday Peak Period



Northbound Average Weekday Travel Speed – Line 72R



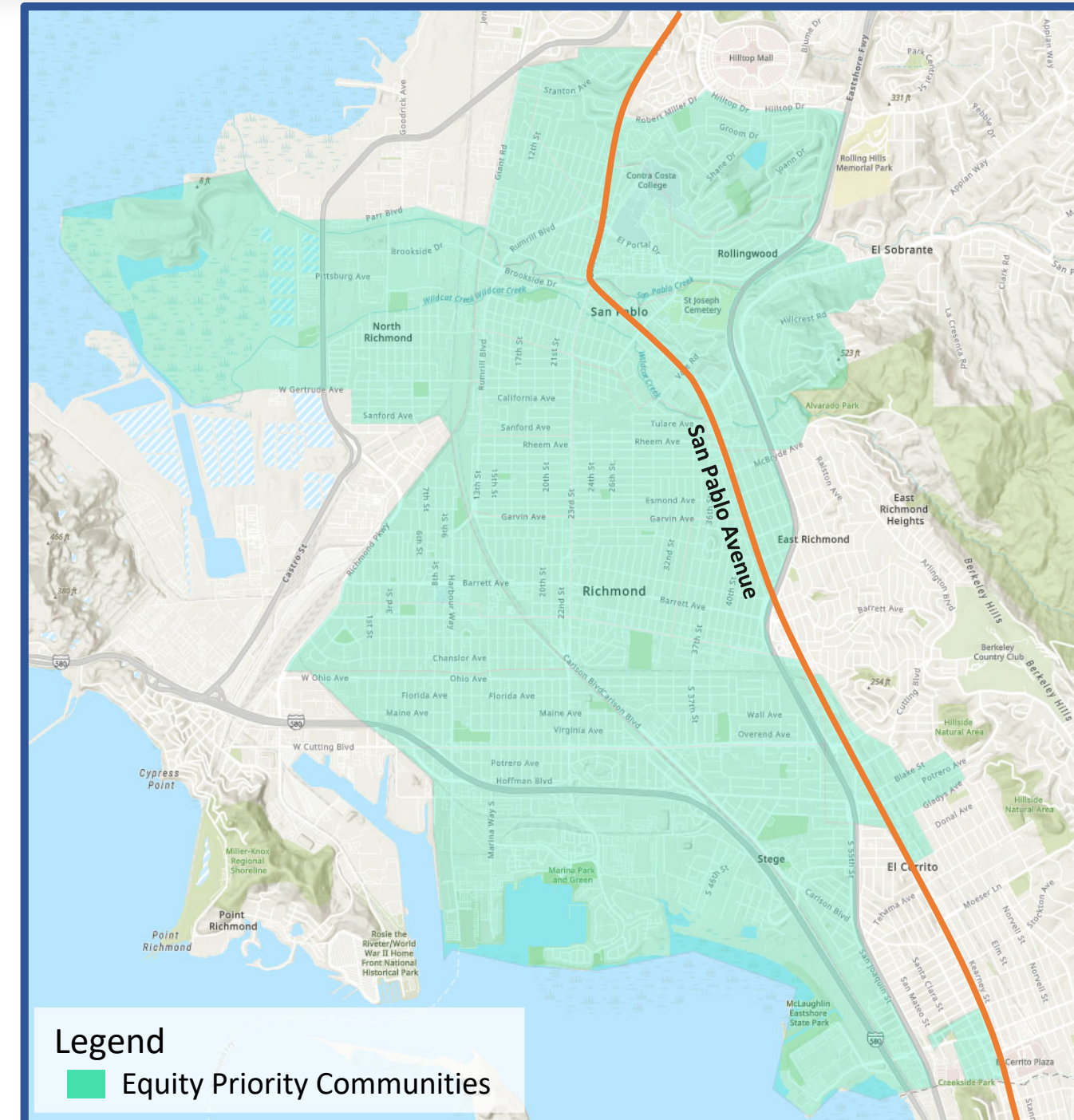
Project Need





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
 - 293 injuries or fatalities in recent 5-year period
 - 73 involving pedestrians or cyclists, including 3 deaths
- 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



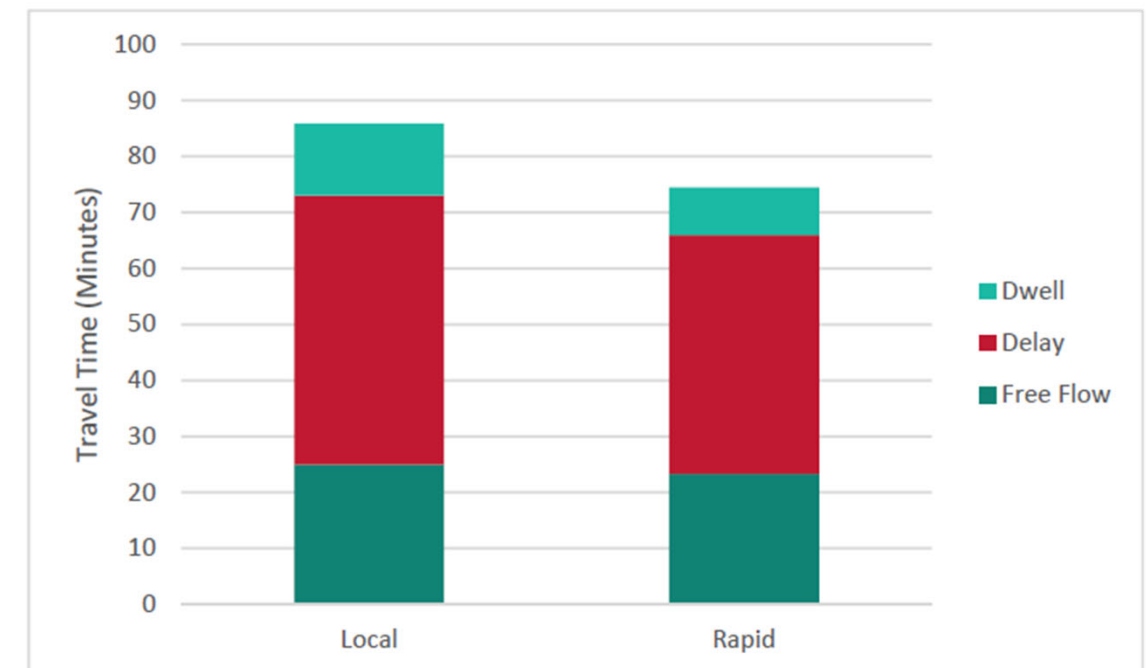
Source: Equity Priority Communities for Plan Bay Area 2050



Why should improving transit be a priority?

- 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)
- During peak period, Rapid buses spend 57% of travel time stuck in congestion
- 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

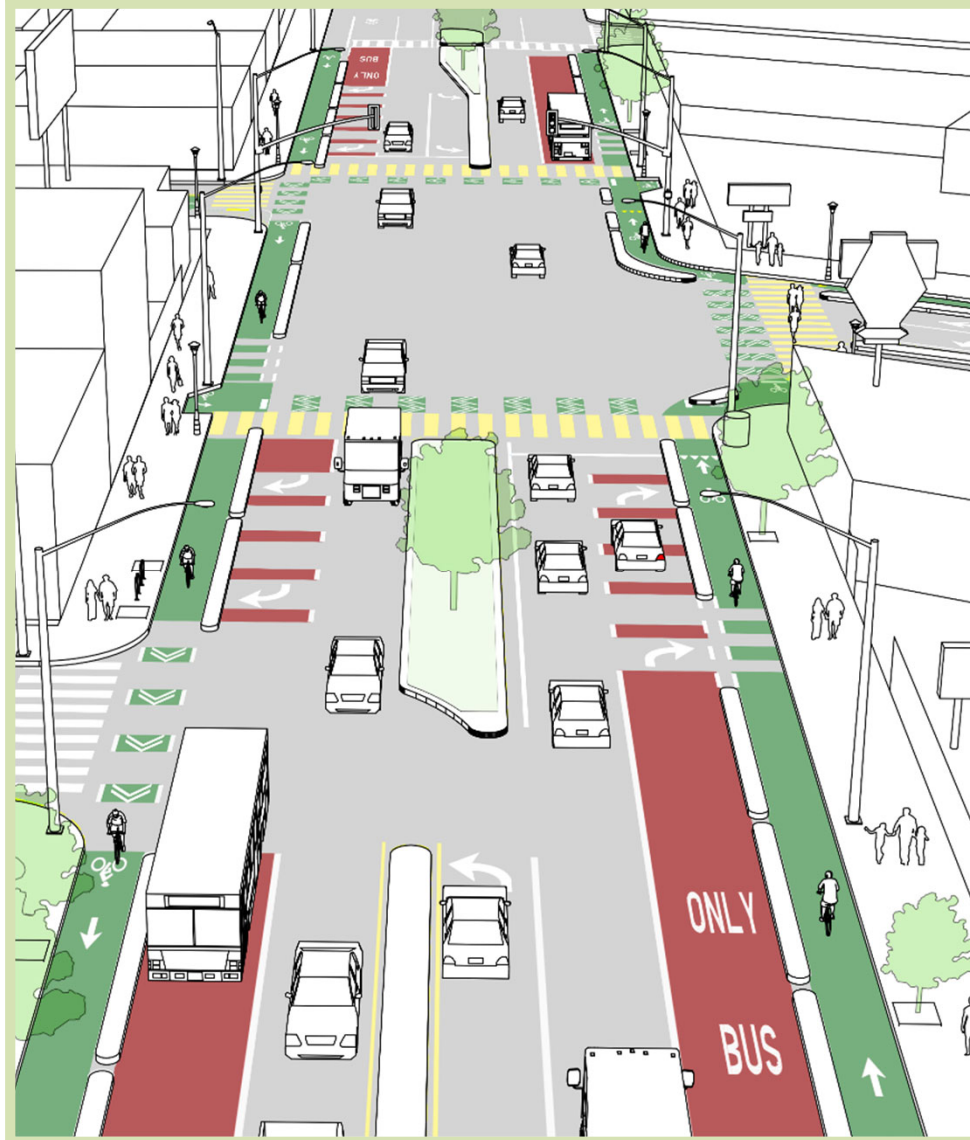
PM Peak Period Northbound Bus Travel Time





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

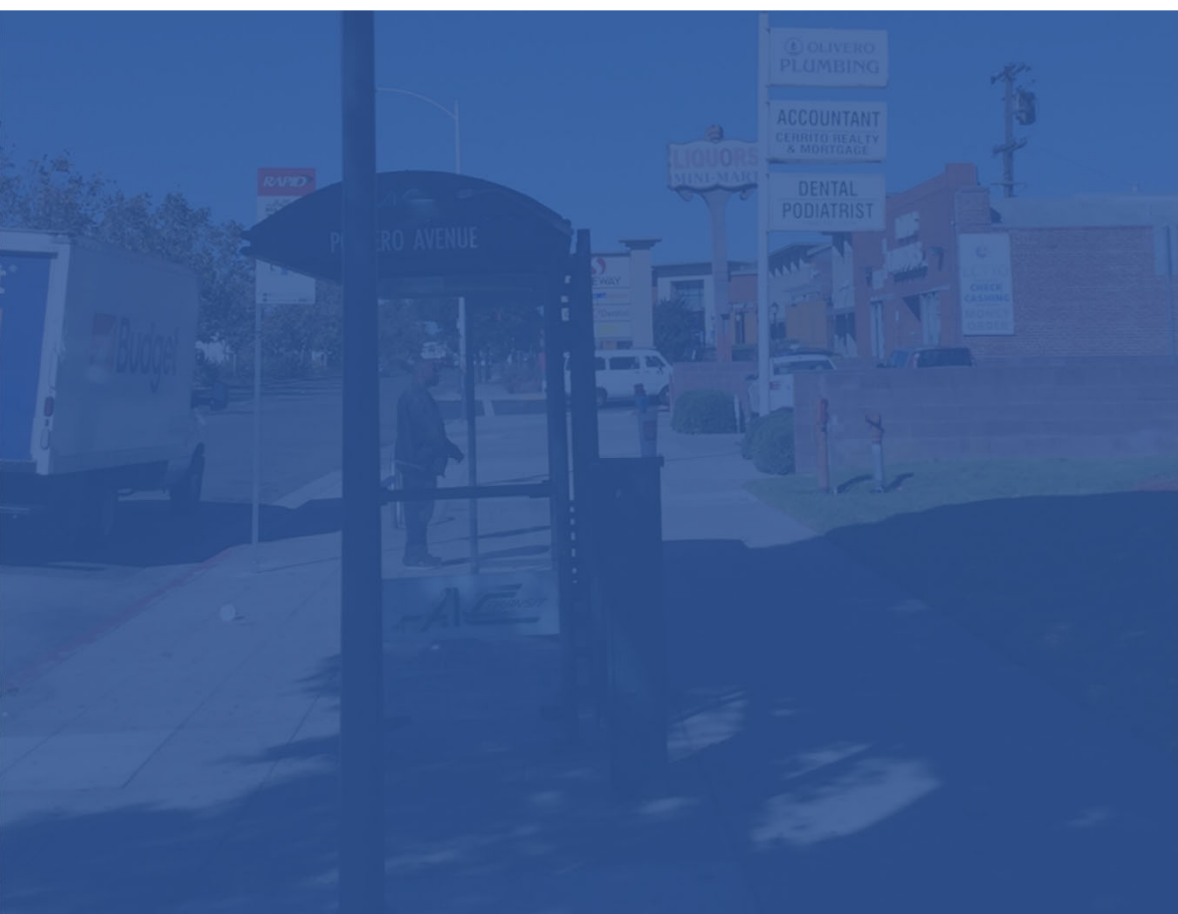
Near-Term Design Concept



Three concurrent project efforts:

- #1 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
- #2 Bus and Bike Lanes Demonstration Project in Oakland, Emeryville, and South Berkeley
 - 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
- #3 Bike improvements on parallel network in Berkeley and Albany
 - While continuing long-term planning efforts in those cities

Potential Solutions





What are the options to improve pedestrian safety?

- 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: Google

Signalization



Image Source: Google

Widen sidewalks and provide landscape buffers



Image Source: NACTO

Shortened crosswalks

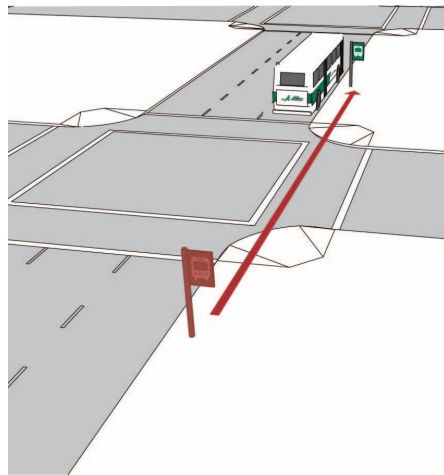


Image Source: Google



What are the options to improve transit?

Stop Relocation

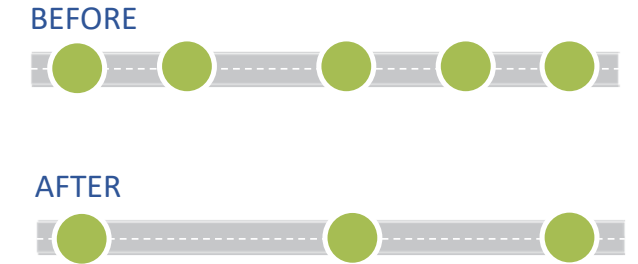


Level Boarding

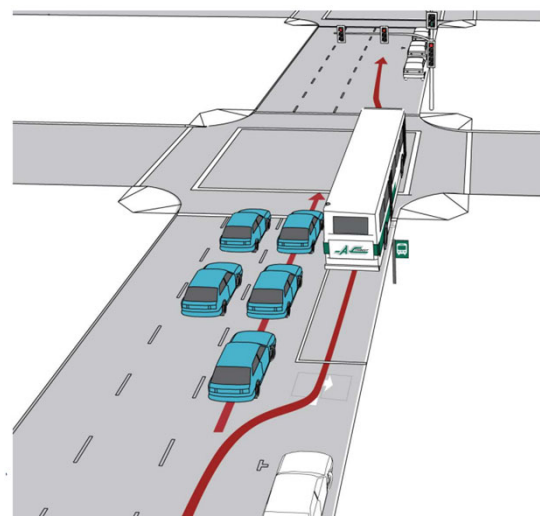


Image Source: AC Transit

Stop Consolidation



Queue Jumps



In-Lane Stops



Transit Signal Priority





How could a BRT be configured in this corridor?

Center-Running Bus Lanes

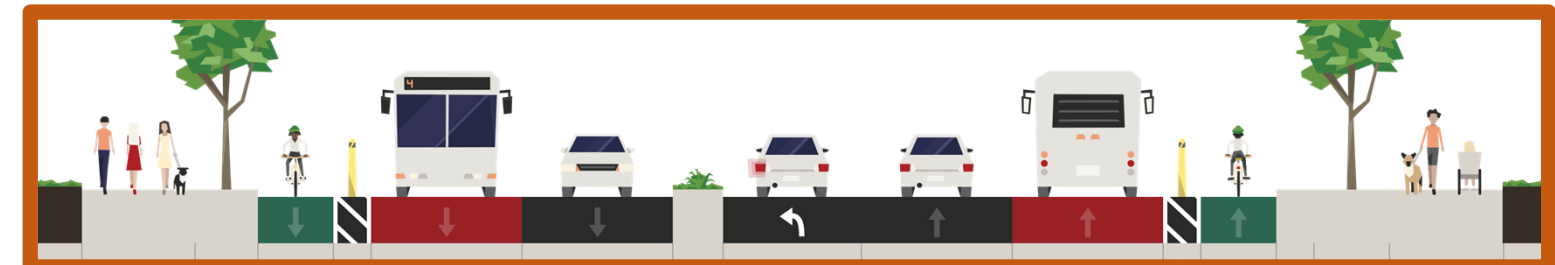
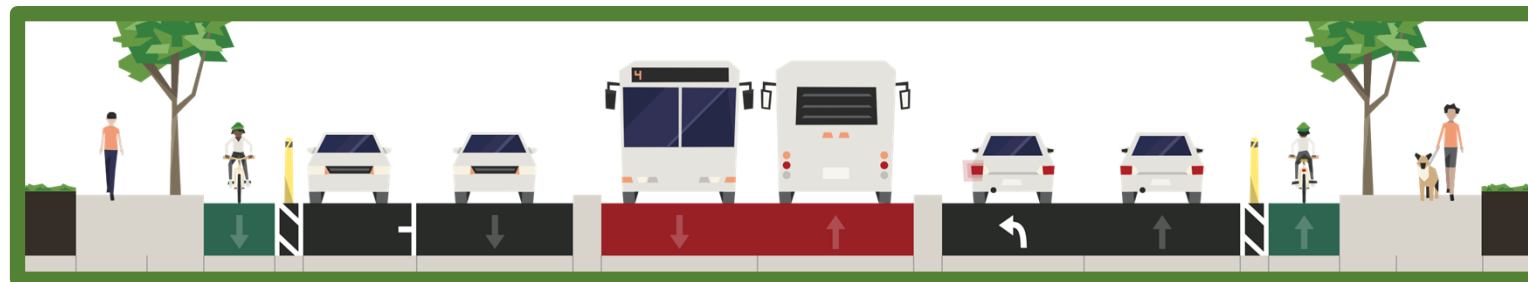


Image Source: SFMTA

Side-Running Bus Lanes







Image Source:









What are the benefits of BRT?

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



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 or as a near-term “quick-build” with a shorter construction duration due to less infrastructure required

Challenges Specific to Side-Running BRT



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?

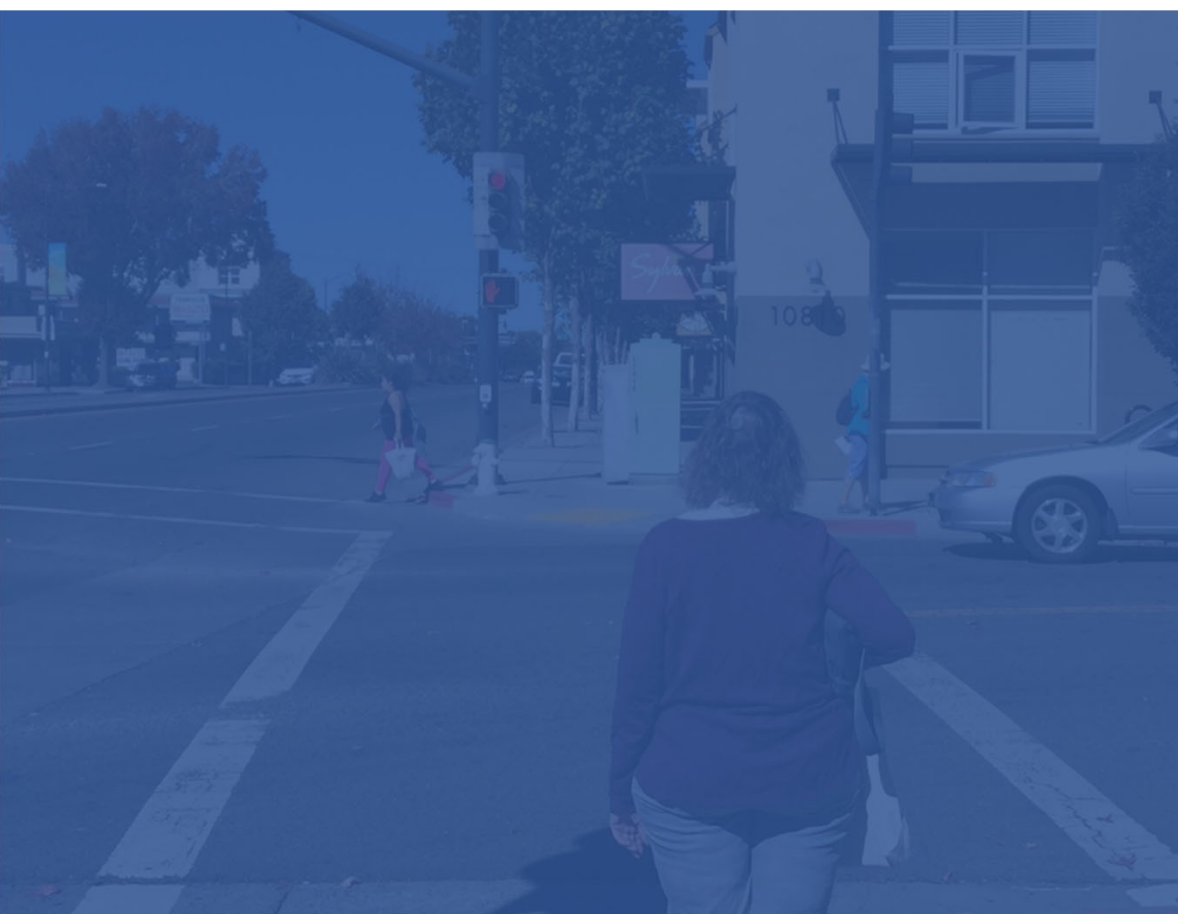
- Each occurrence where the bus shifts between side-running and center-running or passes through mixed-flow segments, a travel time penalty is incurred
- However, different configurations are acceptable
 - TEMPO BRT is a combination of **side-running**, **center-running**, and mixed-flow
- Recommend 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



Bus Lane Implications





VISSIM Traffic Microsimulation Model Overview

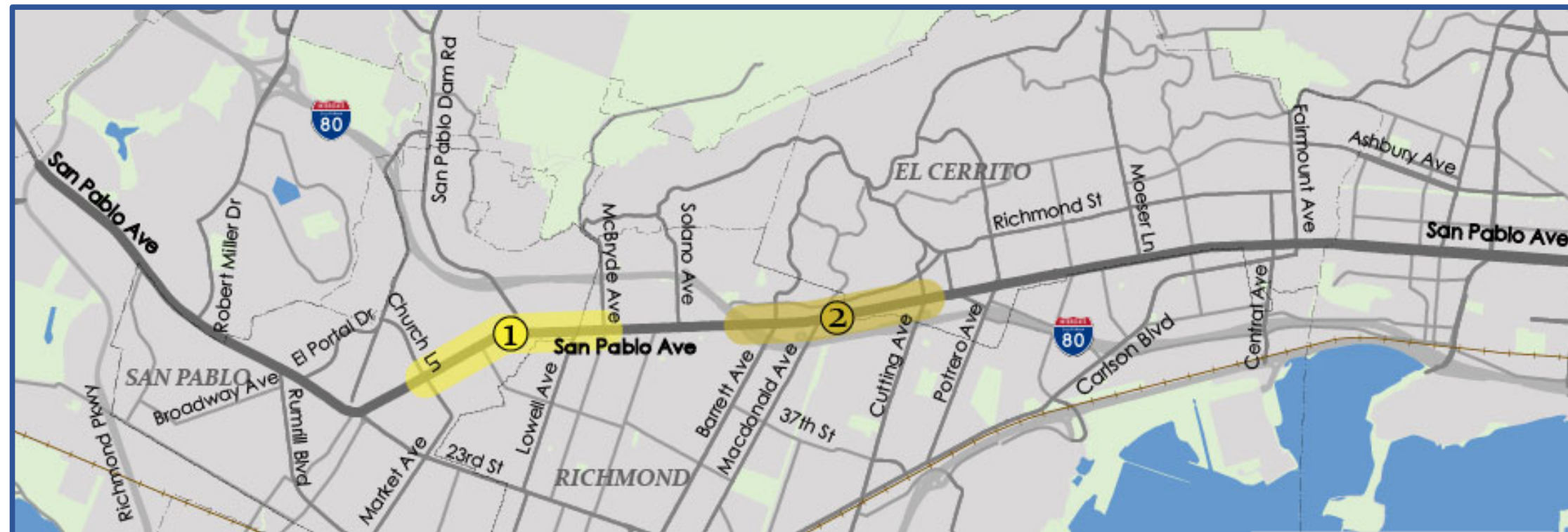
Model Development

Two analysis segments

- Segment 1: Church to McBryde (1.1 mi)
 - 7 signalized intersections
 - 3 BRT side or center stations
- Segment 2: I-80 EB ramps to Cutting (1.1 mi)
 - 7 signalized intersections (includes Ohlone Greenway)
 - 2 BRT side or center stations

Measures of Effectiveness

- Transit travel time and variability
- Auto travel time
- Intersection delay and LOS
- Intersection queuing
- Network-wide metrics on delay and vehicles served



LEGEND

Study Segments

- ① McBryde Ave to Church Ln
- ② Cutting Blvd to I-80 EB Ramps



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

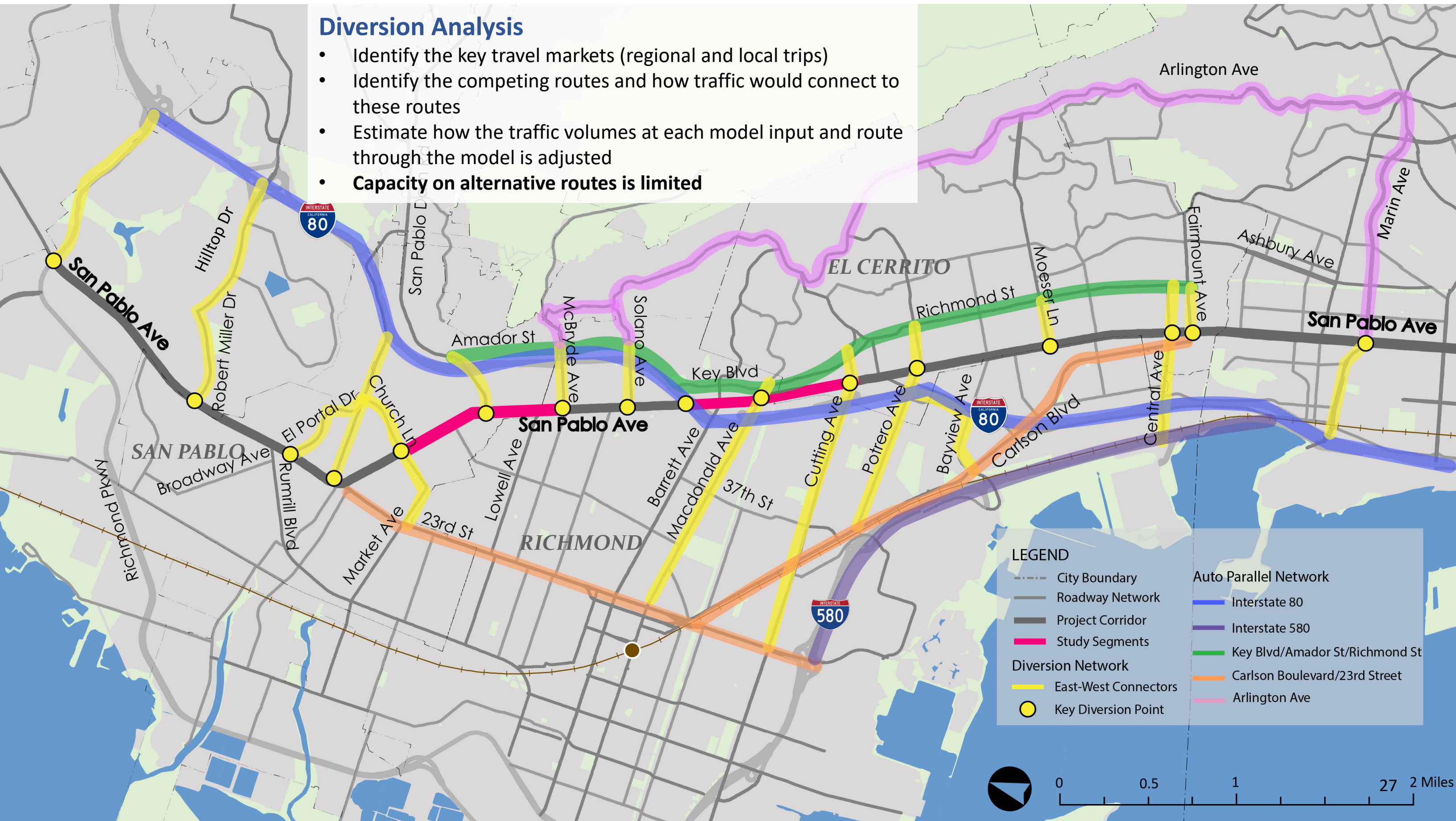
- Additional traffic congestion on San Pablo Avenue ➡ Some drivers will change their mode, route, or time of day with **center-running** and **side-running** BRT
- **Center-running BRT**: localized diversion due to left-turn restrictions

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

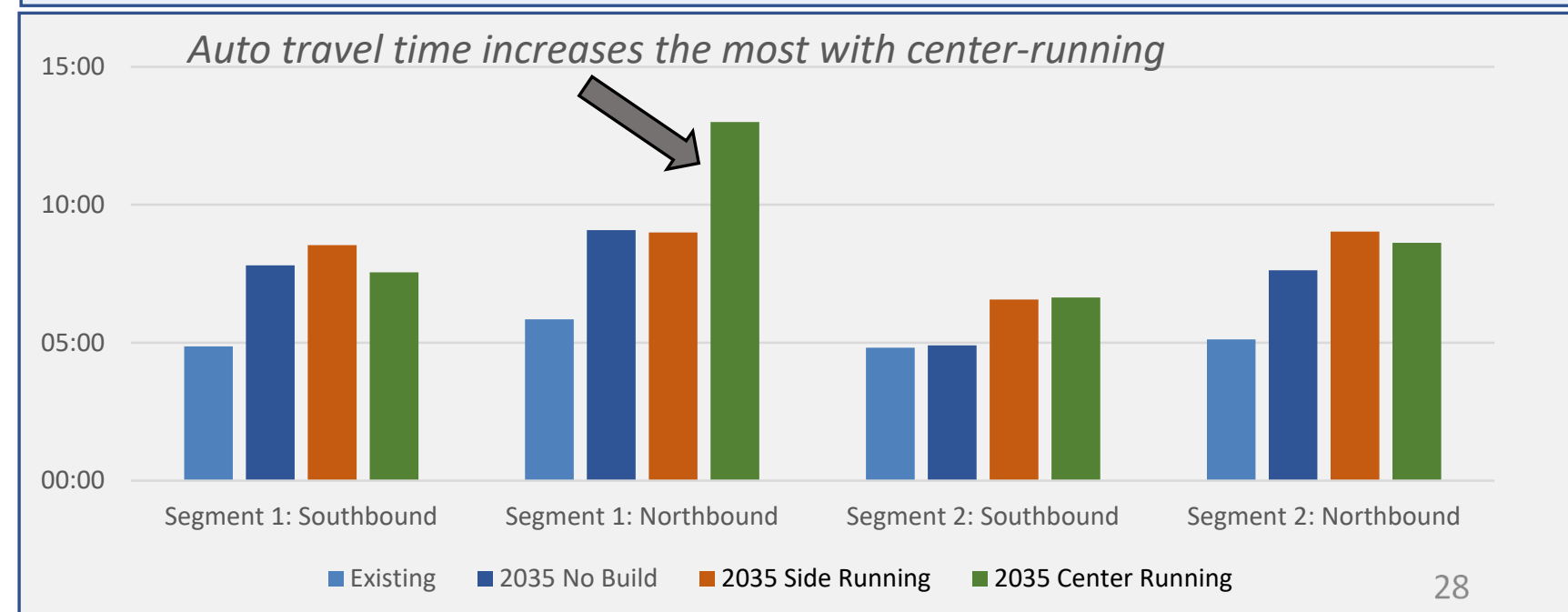
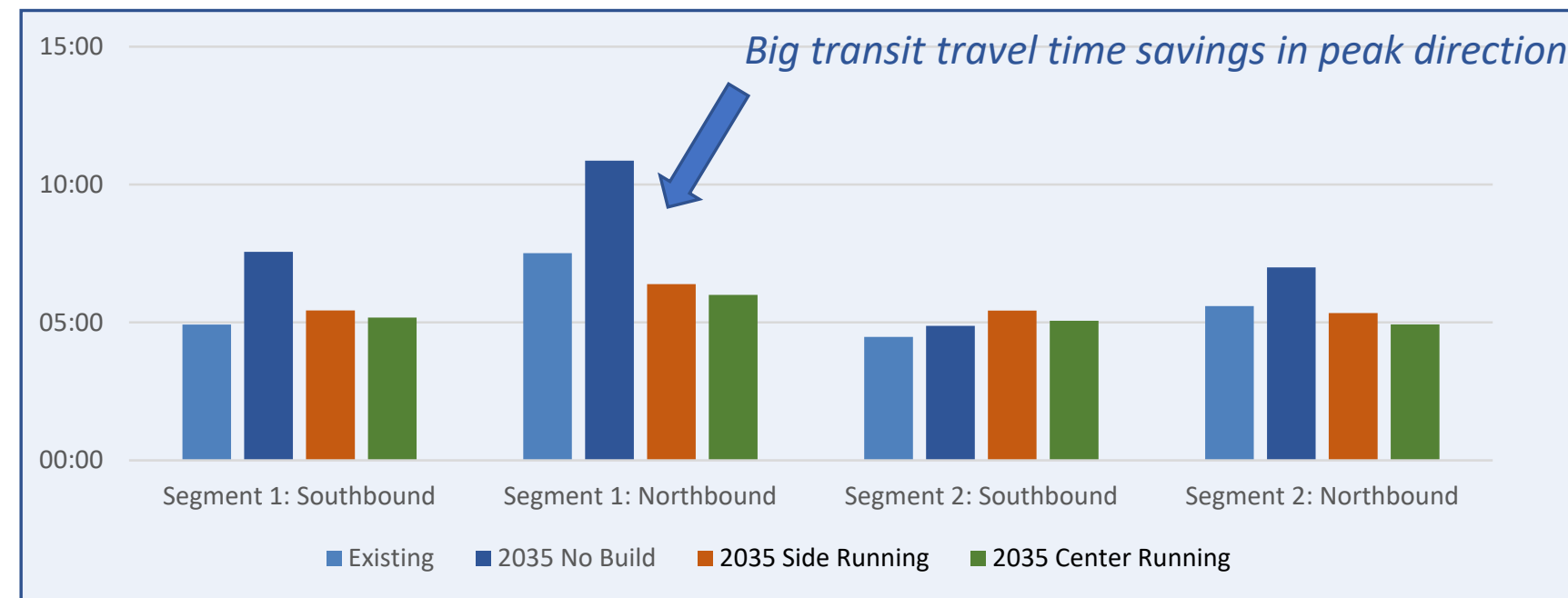
- Identify the key travel markets (regional and local trips)
- Identify the competing routes and how traffic would connect to these routes
- Estimate how the traffic volumes at each model input and route through the model is adjusted
- **Capacity on alternative routes is limited**





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

- Greatest bus travel time decrease and auto delay increase with transit lanes is in northern segment (Richmond/San Pablo)
- With No-Build, including ongoing transit signal priority projects, transit is **7% slower** than auto in peak direction

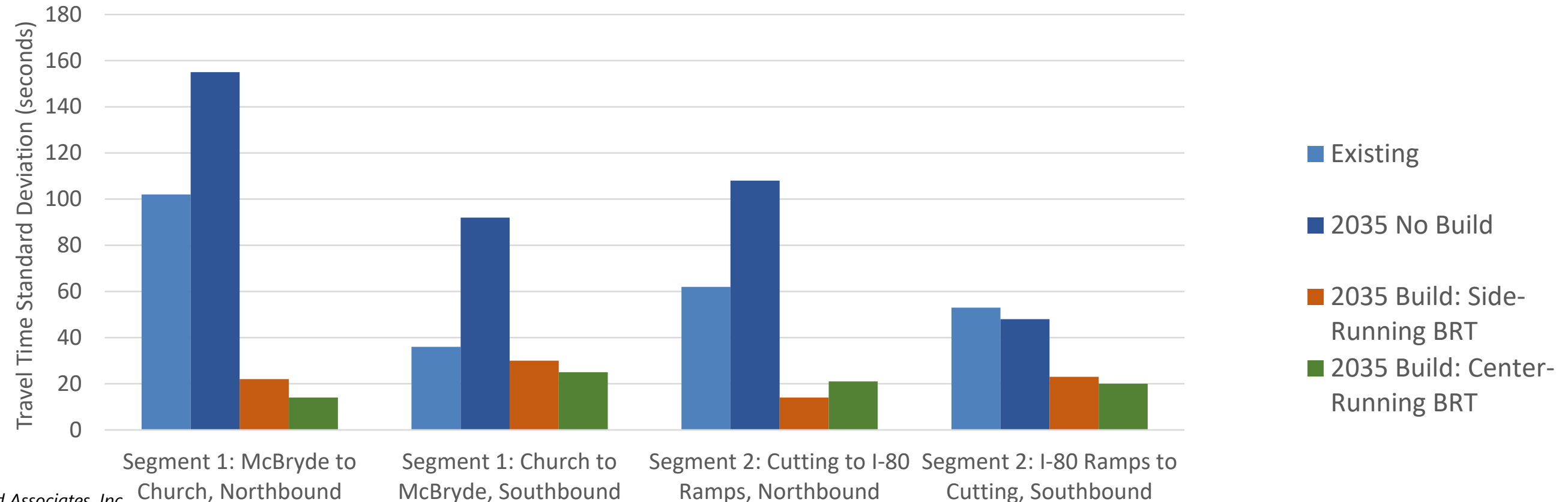


Metric	Center-Running	Side-Running
Change in transit travel times (peak direction)	30%-45%	25%-40%
Change in auto travel times	0%-45%	0%-35%
Bus speed relative to auto	25%-55% faster	15%-40% faster



Transit ridership and reliability findings

- 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
- Bus travel time variability improves by over 50%-80% with both center and side-running options



Bicycle + Parking Options





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

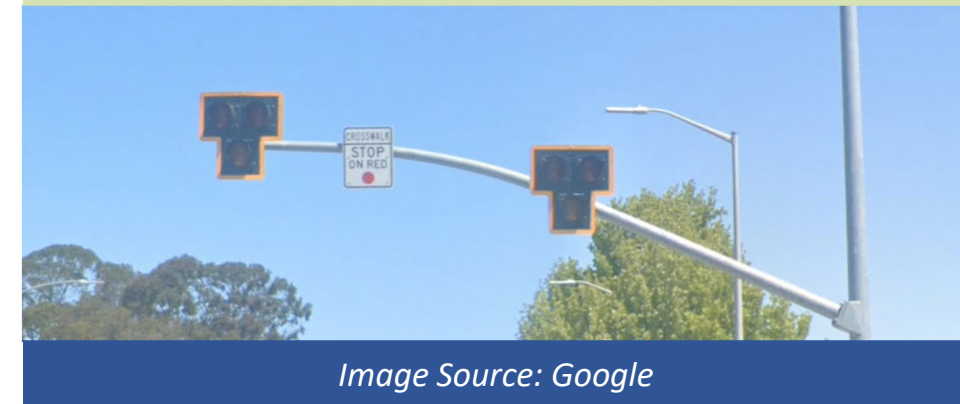


Image Source: Google

Protected intersection treatments



Image Source: Google

New & protected bike facilities and crossings



Image Source: CATSIP



What options are feasible for bicycle facilities?

Class II Bike Lane



Image Source: Google

Buffered Class II Bike Lane



Image Source: Google

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 Rheem Avenue



Images Source: Google



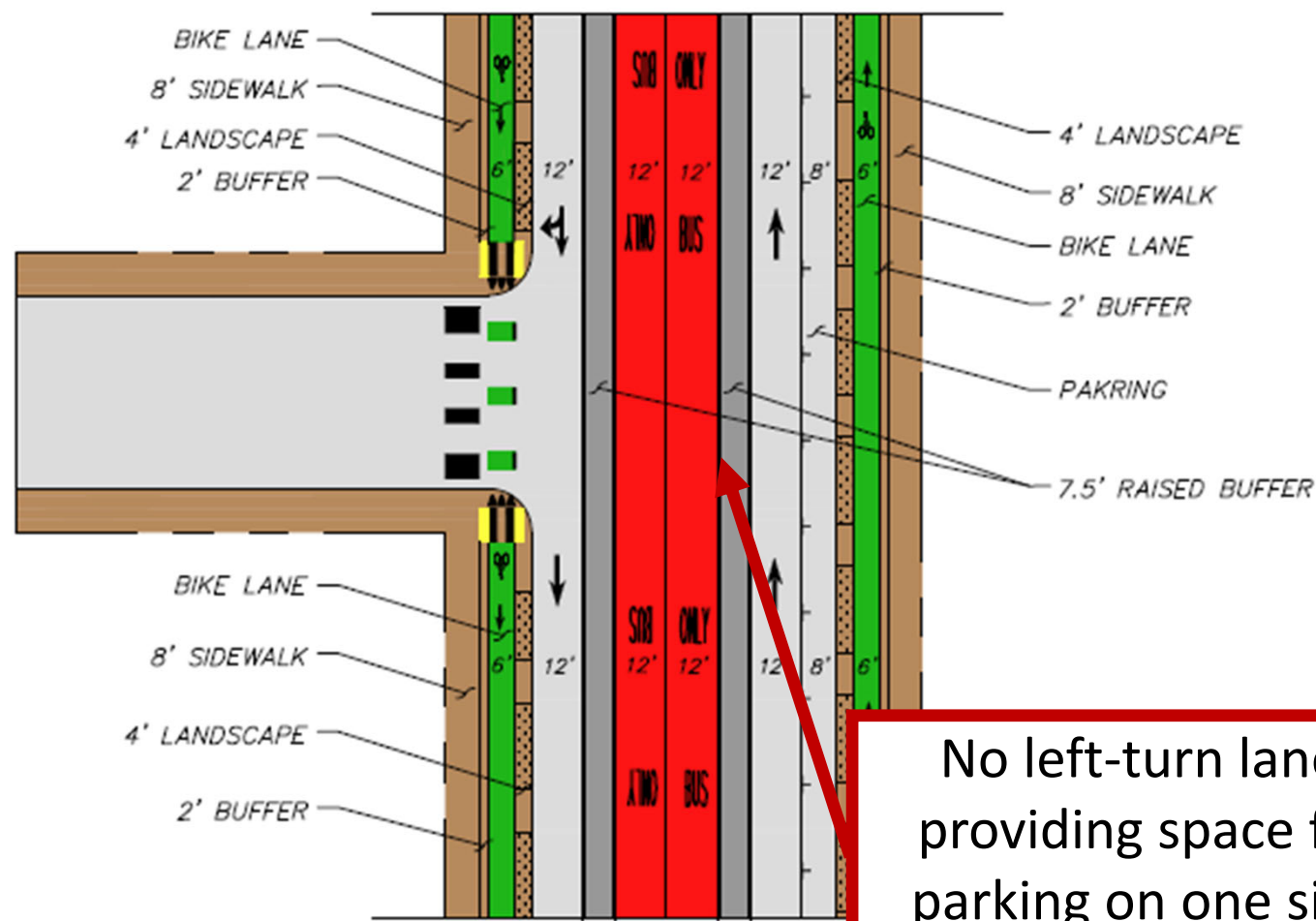
What are the options for a lower-stress parallel bikeway?





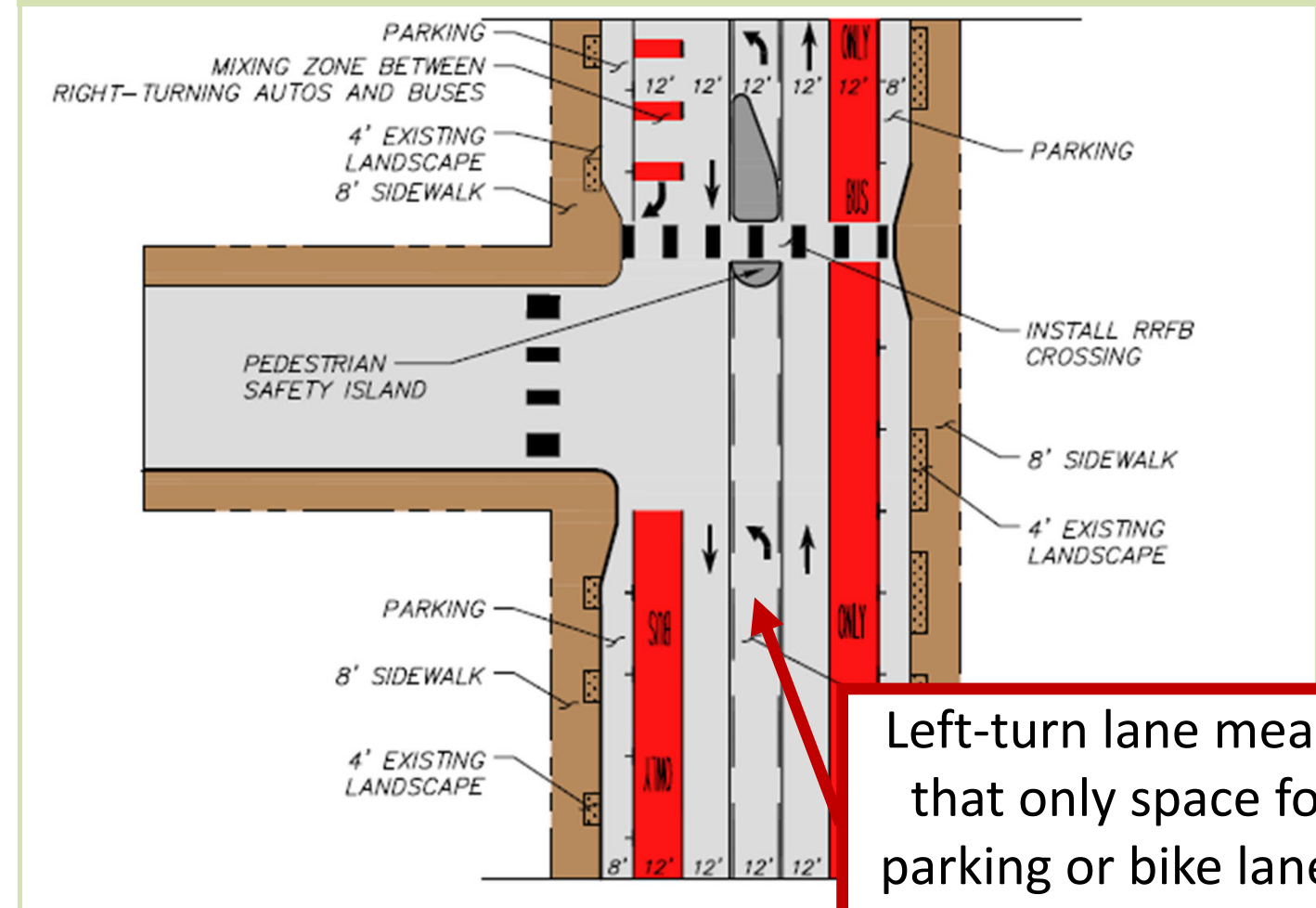
How does center-running BRT vs side-running BRT transit compare for bikes?

Center-Running BRT



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

Side-Running BRT (with parking)



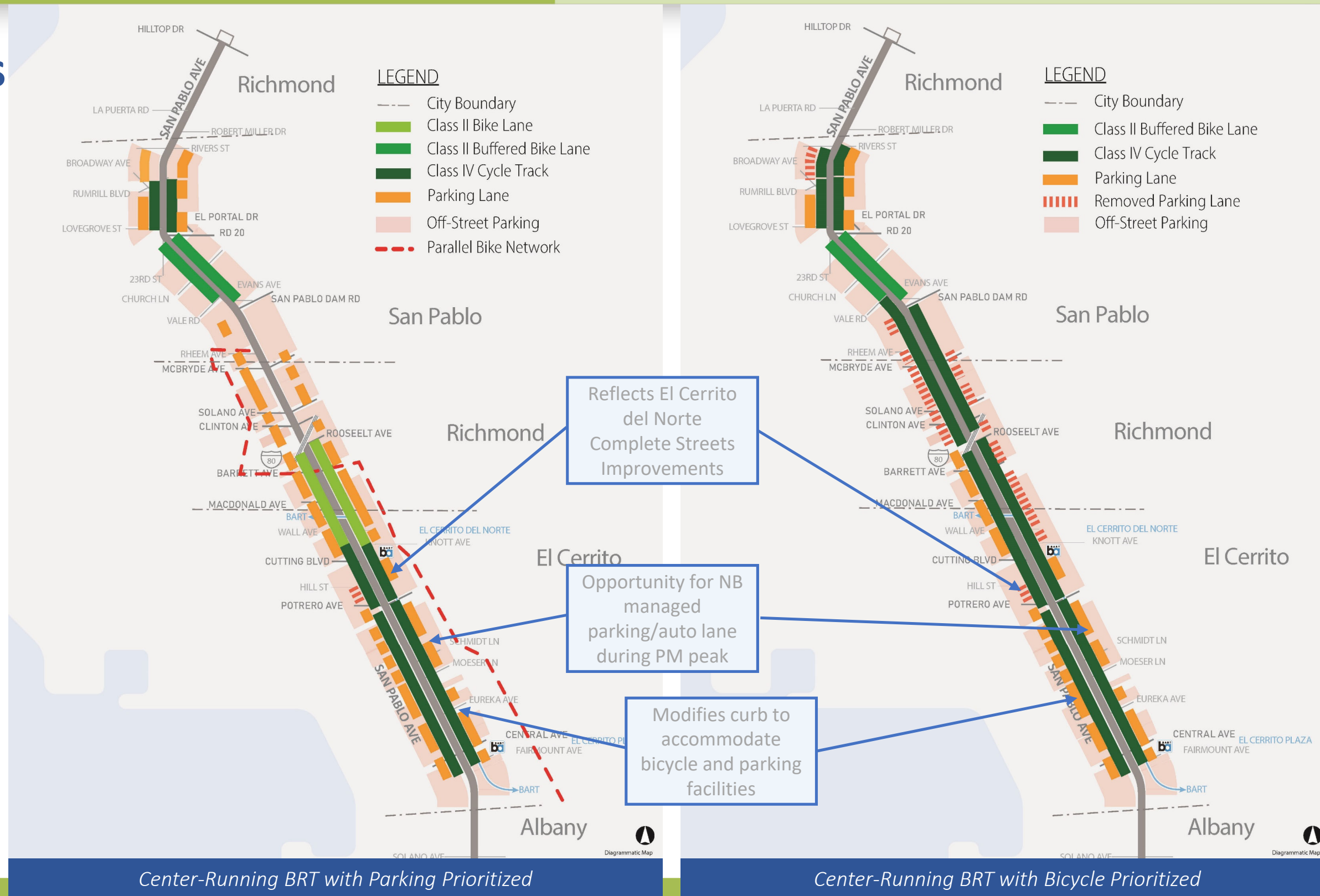
Left-turn lane means that only space for parking or bike lanes, not both



Parking/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



Center-Running BRT with Parking Prioritized

Center-Running BRT with Bicycle Prioritized



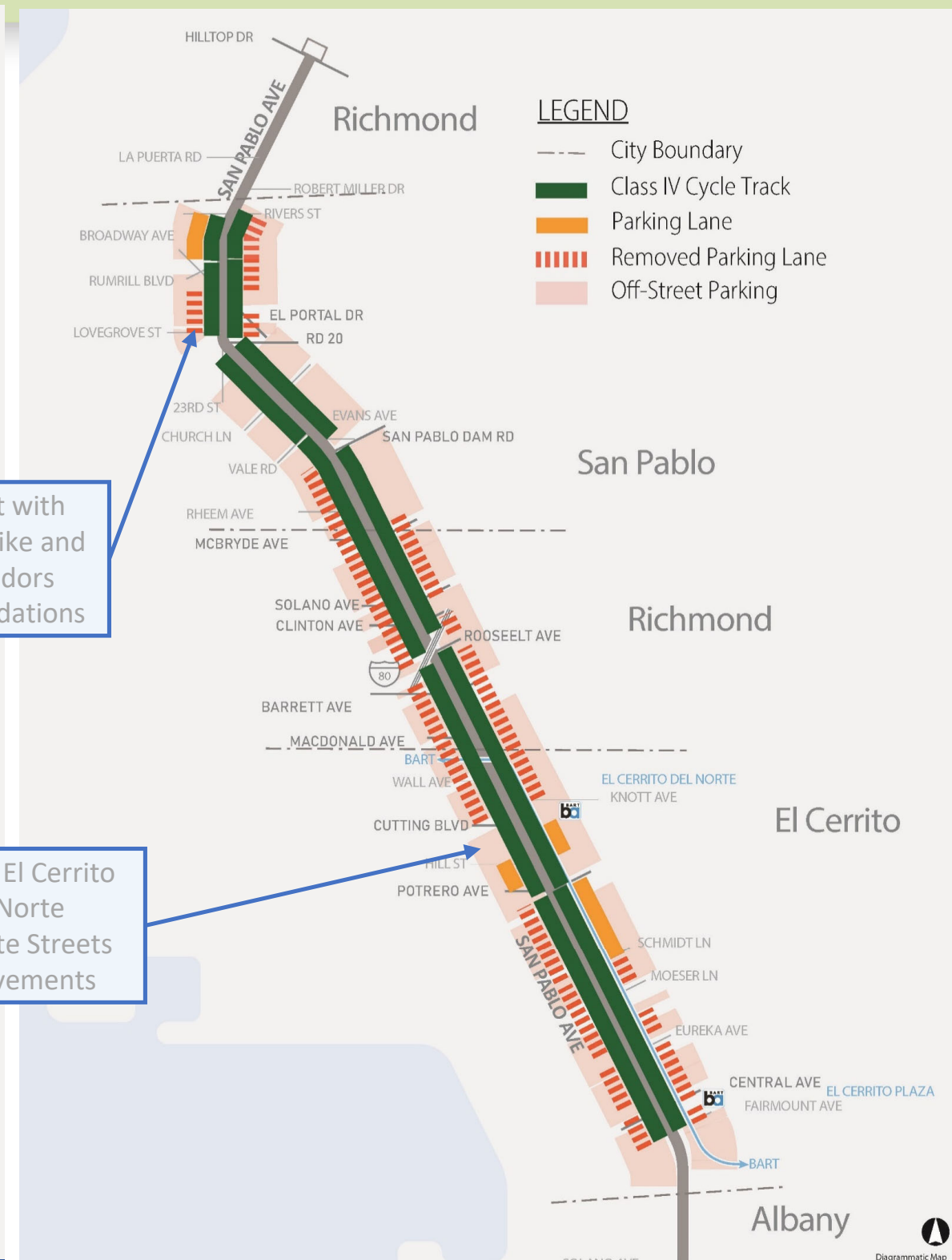
Parking/Bike Options

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

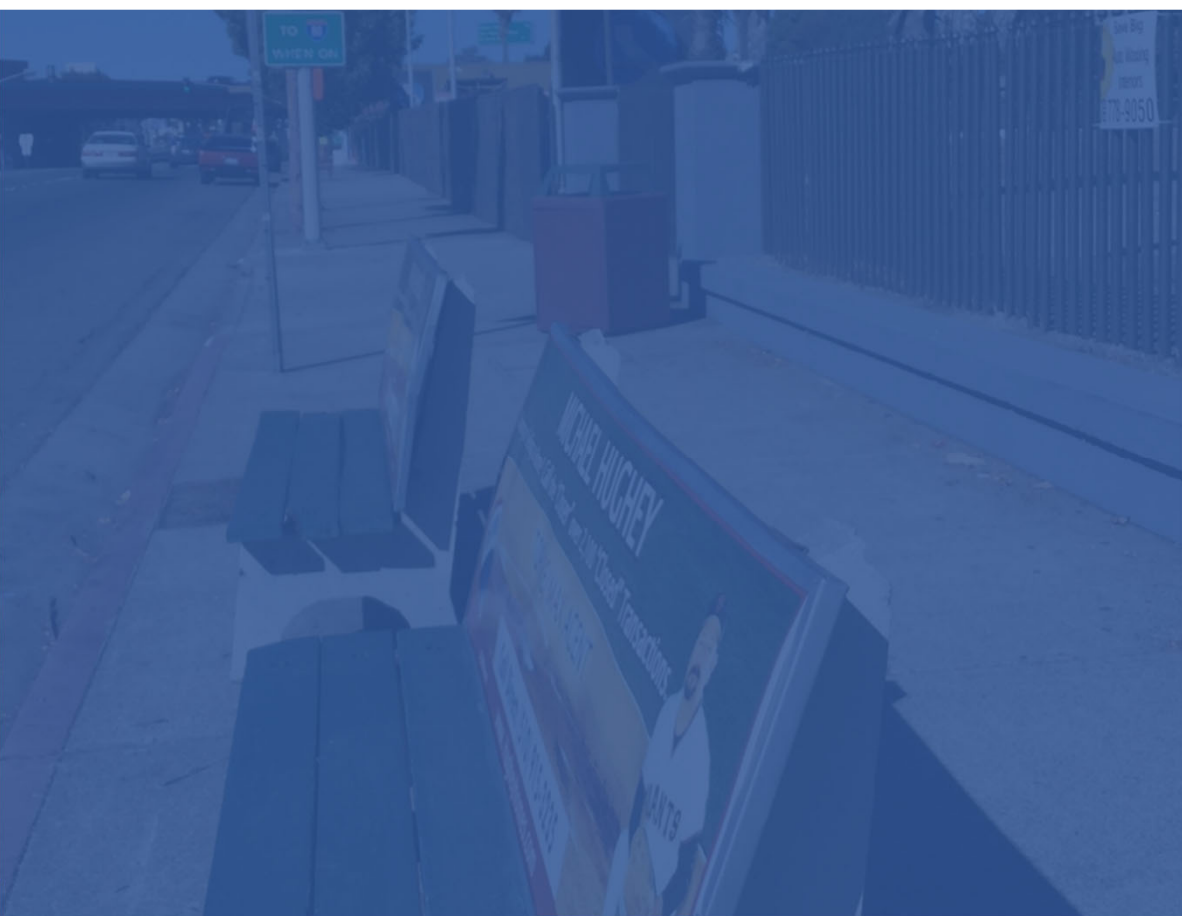


On-street parking is currently plentiful and redundant, but new, more dense development will change the role of on-street parking



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

Next Steps





Upcoming Presentations

Agency	Meeting Date
WCCTAC Board	Fri. May 13
San Pablo Council	Mon. June 6
Richmond Council	Tues. June 28
AC Transit Board	Wed. July 13 (tentative)
El Cerrito Council	Tues. July 19





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



Questions for Decision-Makers



1. Should we focus right now on pedestrian safety improvements only?
2. Should we continue to consider a corridor-wide bus lane solution?
3. If a bus lane is desired, is there a preference for side-running or center-running?
4. What is the priority between a parking lane and a bike lane? Does the priority vary geographically?