CITY OF ALBANY
CITY COUNCIL AGENDA
STAFF REPORT

Agenda Date: May 5, 2025
Reviewed by: NA

SUBJECT: Active Transportation Plan Network Parking Analysis for Potential Bicycle Facilities on Solano Avenue

REPORT BY: Justin Fried, Transportation and Sustainability Manager
Jeff Bond, Community Development Director

SUMMARY

This item presents parking and cost analysis for potential bicycle facilities on Solano Avenue for City Council guidance on the Active Transportation Plan development.

STAFF RECOMMENDATION

That the Council receive a presentation on parking and cost analysis for potential bicycle facilities on Solano Avenue and provide direction to staff on whether to either:

1. Continue study of dedicated cycling facilities on Solano Avenue in the future cycling network analysis for the new Active Transportation Plan; or
2. Develop the future cycling network for the new Active Transportation Plan without dedicated cycling facilities on Solano Avenue

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

Review of compliance with the requirements of the California Environmental Quality Act will accompany the draft Active Transportation Plan once it has been developed.

BACKGROUND

The 2012 Active Transportation Plan does not include bicycle facilities on Solano Avenue in the identified bicycle network. For east-west bicycle facilities in that plan, 'Slow Bikeways' are proposed on Washington Avenue and Dartmouth Avenue and 'Fast Bikeways' are proposed on Marin Avenue and Brighton Avenue. Since 2012, there has been significant focus in the planning field on facility designs for busier corridors to provide safer cycling access closer to destinations.

Separated bikeways (also known as cycle tracks) are the only bicycle facility type considered to meet "All Ages and Abilities" guidance on a roadway with the characteristics of Solano Avenue (high motor vehicle volumes and high curbside activity). Protected facilities would be

expected to be safer and more comfortable for cyclists than conditions today. However, even with protected bike lanes, Solano Avenue's high volume of pedestrians and frequent unsignalized intersection crossings (due to short blocks) may continue to limit the range of users that are comfortable cycling on Solano.

Additional study of Solano Avenue began in 2018 as part of the Solano Avenue Complete Streets Study. During the development of the study the consultants prepared a memorandum discussing a range of options for cycling facilities on Solano Avenue with a high-level comparison based upon safety, comfort, loss of parking, construction costs, and construction impacts (Attachment 2). At the conclusion of that process, Council directed staff to evaluate bicycle safety improvements for Solano Avenue as part of an update to the Active Transportation Plan (Resolution 2019-69).

On February 18, 2025, Council discussed considerations for Solano Avenue and provided direction to staff to prepare an analysis of parking impacts of two alternatives of cycling facilities on Solano Avenue and a rough order of magnitude cost estimate. One alternative would consist of an uphill cycle track and parking reorganization to one side parallel parking and the other side 60-degree angle parking. The other alternative would consist of cycle tracks in both directions with parallel parking on both sides of the street.

Background on Solano Avenue

The relatively narrow right-of-way width, and the multiple functions of Solano Avenue make it difficult to accommodate all modes of travel to a high level of comfort. For example, Solano Avenue east of San Pablo Avenue serves a number of functions:

- a designated truck route for commercial truck activity in Albany and Berkeley;
- a bus route for AC Transit with local service (Line 18) and transbay service (Line G); and
- a main street retail corridor with significant pedestrian use.

Different segments of Solano Avenue have different upgrade needs:

- Solano Avenue between Masonic Avenue/Ohlone Greenway and Tulare Avenue needs curb ramp upgrades and sidewalk repairs to meet city legal obligation for accessibility improvements, as well as pavement rehabilitation work to maintain roadway function. In addition, sidewalk widths are narrow, and street furniture is dated. This segment would likely be the first phase of a future improvement project.

- Lower Solano Avenue between San Pablo Avenue and Masonic Avenue/Ohlone Greenway received streetscape improvements including lighting, furnishings, and corner curb extensions in the late 1990's/ early 2000's, as well as recent curb ramp upgrades. Although there are improvements that could be made to meet contemporary standards, this segment of Solano would likely be a second phase of a future improvement project.

- Solano Avenue east of Tulare Avenue is within Berkeley. The City of Berkeley's recently updated bike plan recommends this segment for a Class IV Cycletrack and a Complete Streets Corridor Study similar to its designation in the 2017 plan. Albany staff do not have any information on where future improvements to the Berkeley portion of Solano fits into the City of Berkeley's overall capital improvement program phasing.

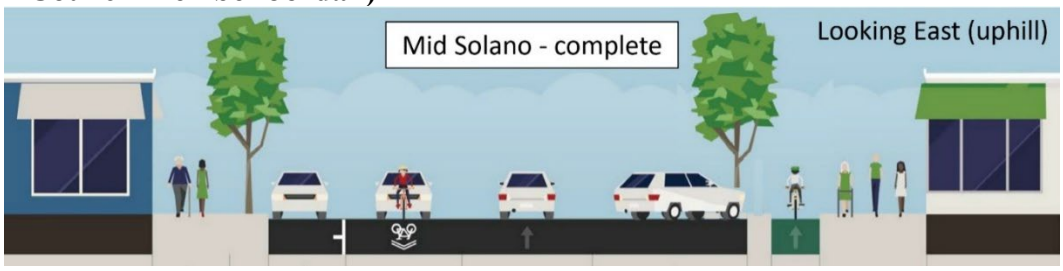
DISCUSSION

This report focuses on a high-level analysis of the parking, travel lane layout, and cost analysis requested by City Council. With this information, Council may be better informed to give direction on whether bicycle facilities on Solano Avenue should be studied and considered in the Active Transportation Plan (ATP). The design developed to provide that analysis is very preliminary and has not been presented for community feedback. If Council provides direction to pursue a bicycle facility further, community engagement and technical analysis will be incorporated into the ATP preparation. This report looks at two alternatives.

Alternative 1 – Uphill Separated Bikeway

Alternative 1 provides a separated bikeway in the uphill (eastbound) direction between angled parking and the sidewalk. In the downhill (westbound) direction, there is parallel parking, and cyclists would share the narrowed vehicle lane with motorists. This provides different levels of cycling comfort, parking capacity, and driving facilities in the uphill and downhill directions.

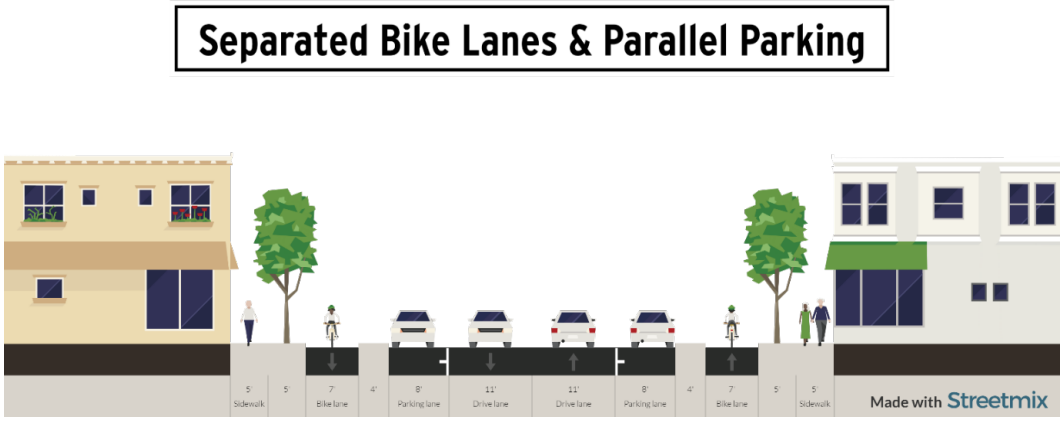
Alternative 1 (as shown in Attachment 2 – Evaluation of Bicycle Facility Options for Mid-Solano Avenue, from presentation to Traffic & Safety Commission by Council Member Jordan)



Alternative 2 – Separated Bikeways in Both Directions

Alternative 2 provides separated bikeways in both directions between parking and the sidewalk. With parallel parking in both directions, both vehicle travel lanes are narrowed. This alternative provides uniform cycling comfort, parking capacity, and driving facilities in both directions, but with a more-significant change to on-street parking for motor vehicles.

Alternative 2 (as shown in Attachment 2– Evaluation of Bicycle Facility Options for Mid-Solano Avenue)



ANALYSIS

Council direction was focused on parking and costs. In the course of analyzing parking, it became apparent that other roadway safety and engineering issues are important at this conceptual level of analysis. Thus, to better understand the range of issues, the consultant team prepared a more detailed exhibit of 1-block from Santa Fe Avenue to Curtis Street as a sample of how on-street parking and separated bikeways could be configured (Attachment 1). The block includes both a signalized and unsignalized intersection as well as driveways onto Solano Avenue. The on-street parking dimensions, no parking red zones, vehicle lane widths, and bikeway widths are consistent with State and Federal standards, among others. Note that both the intersection design and parking counts provided in the analysis are at an early conceptual level and may change further if the project proceeds and as rules and guidance changes over time. Recent changes in accessibility guidance for public right-of-way, including for accessible parking spaces is one example that is likely to change the numbers provided following greater design development.

Motor Vehicle Sightlines

One of the keys to improving safety and avoiding collisions at intersections for all street users are clear sightlines for motorists traveling on Solano Avenue. It has been recommended that motorists have a relatively clear view of vehicles and pedestrian at a point 125 feet from an intersection. This distance is what would be required to react and stop if traveling at 20 mph and is consistent with the design of Lower Solano. Sight distance was measured to/from the centerline of Solano Avenue and to/from the centerline of the intersecting street.

In Alternative 1, the sight distance for the south side intersecting streets was measured from the 'shadow' of the angled parking, presuming that a driver entering Solano would conduct the turn in two stages, first stopping behind the crosswalk and eastbound bikeway, and then stopping again past the crosswalk and bike lane when the have a better view of intersecting traffic on Solano Avenue. For the north side of Alternative 1 and both sides of Alternative 2,

the sight distance was measured presuming the driver would encroach into the crosswalk but not the vehicle lane and assuming the driver sees 'through' a portion of the nearest parked vehicle (this assumption is consistent with sight lines when laid out in accordance with AB 413 daylighting law). These assumptions are consistent with commonplace driver behavior.

Parking

Due to the complexity of the proposed configuration and change in roadway width and curb lines associated with the alternatives, Parametrix laid out a plan-view sample block in order to detail available curbside parking under the two configurations. Alternative 1 is expected to have a moderate reduction in vehicle parking available. Alternative 2 would have a more significant reduction, which could lead to parking occupancy rates close to 100% in peak hours in high demand areas.

This analysis tabulated motor vehicle parking for the block between Santa Fe and Curtis as follows:

Existing:	27	
Alternative 1: Uphill Cycle Track:	26	-4%
Alternative 2: Two-way Cycle Track:	18	-33%

Emergency Services

The Fire Department routinely uses both an ambulance and Truck 1 to respond to service calls, including on Solano Avenue. Truck 1 is 10 feet 2 inches wide mirror to mirror but requires 15 feet of clearance when stopped to access equipment on either side of the vehicle.

Under the current layout and practice, the vehicle blocks the lane on one side of the street. With 15 feet of width on the opposite side, traffic is generally able to proceed slowly in both directions around the vehicle. If the call is expected to be for a longer duration, the Police Department is asked to provide traffic control.

Over the last 3 years, the Fire Department has responded to 385 calls for service on Solano Avenue from San Pablo Avenue to Tulare Avenue (of which 271 have been from Masonic Avenue to Tulare Avenue). 74% of these have been for medical calls and 26% other calls. Medical EMS related calls have averaged 30 minutes and 52 seconds and other calls (call types range from public assists to structure fires (including fire alarm activations)) averaged 21 minutes and 27 seconds on scene. Based upon the past 3 years, average annual response duration for calls on Solano Avenue from San Pablo to Tulare is around 60 hours (43 hours for the segment Masonic to Tulare).

In Alternative 1, the combined travel lane width is reduced to approximately 26 ft. With the fire engine width needs, this would restrict Solano traffic more clearly to one direction while on a call. This may require more-regular Police Department traffic control requests when there are service calls on Solano Avenue.

In Alternative 2, the combined travel lane width is reduced to 22 ft. With the fire engine needs, the Fire Department would likely block traffic in both directions while on a call on Solano Avenue and require Police Department traffic control when service calls are made on Solano Avenue.

Other Considerations

Other operational considerations for Solano Avenue include transit service, loading and delivery, parklets, user compliance, and events. These would need to be analyzed further but are noted in brief here.

- The alternatives discussed provide minimum 11-foot travel lanes and would likely include in-lane boarding for AC Transit service. AC Transit has developed multimodal design guidelines that would inform bike facility design at bus stop locations.

- The narrower travel lanes in the alternatives may require additional designated loading zones to allow for loading and delivery access to the commercial district without disrupting the flow of traffic. This would require repurposing additional space from general motor vehicle parking along Solano Avenue and/or on side street approaches.

- Existing restaurant parklets and bus stop parklets would need to change to utilize the new parking configuration.

- Parking-protected bicycle lanes will reduce vehicle-bicycle conflicts but introduce new bicycle-pedestrian conflicts for those accessing the parking lane. With the narrow sidewalks along Solano Avenue, pedestrians may also utilize the bicycle lane when the sidewalk is congested.

- A one-way facility would also introduce potential use of the bicycle lane for travelling in the opposite direction counter to the design intent.

- Design and operational strategies may need to be developed to address special events that use the roadway or sidewalks.

ENVIRONMENTAL CLEARANCE

Review of compliance with the requirements of the California Environmental Act will accompany the draft Active Transportation Plan once it has been developed.

SUSTAINABILITY CONSIDERATIONS

Goal 1 of the City's Climate Action Plan is "Decrease passenger vehicle miles traveled (VMT) through use of alternative modes." The decision regarding the future active transportation

network and motor vehicle parking configuration along Solano Avenue impacts the access to the commercial district via cycling.

SOCIAL EQUITY AND INCLUSIVITY CONSIDERATIONS

Equity and inclusivity considerations have been identified in prior engagement on this issue from the perspectives of small business owners, vulnerable roadway users, and people who rely on accessibility improvements for safe pedestrian travel. Different types of roadway users share a relatively narrow space on Solano Avenue. 'Equitable Outcomes' is Goal 3 for the developing Active Transportation Plan. The goal is to ensure the needs of all users, including disadvantaged populations, are integral factors in project prioritization and development.

CITY COUNCIL STRATEGIC PLAN INITIATIVES

This item will provide guidance for the development of the Active Transportation Plan. Goal 3 of the City Council's 2023-2025 Strategic Plan is "Promote streets that support safety and transportation mobility options. The first objective listed in the objectives of Goal 3 is to update the ATP.

FINANCIAL CONSIDERATIONS

A streetscape improvement project that incorporates not only bicycle facilities, but drainage, lighting, sidewalk, and roadway improvements would be a large undertaking under any of these alternatives. Changes to curb lines have implications for street and sidewalk grades (need to raise or lower the level of the pavement), which are constrained by ADA requirements, building access, and drainage needs. Based upon the work foreseen, a rough order of magnitude estimate for an inclusive project was prepared for the City and is in the range of $30-50 million, with $30 million involving reconstruction of infrastructure without significant changes to the layout and $50 million involving significant changes to layout including curb lines and accompanying roadway grade.

If Council directs staff to further develop designs, more-detailed cost estimates can be prepared and incorporated into future budget appropriations as necessary.

NEXT STEPS

If the Council makes a recommendation to continue studying the potential for dedicated cycling facilities on Solano Avenue in the new Active Transportation Plan, staff will incorporate potential cycling facilities into upcoming public engagement on the future active transportation network. Identifying project priorities will be the focus of a third round of engagement in the plan development. The final decision on the incorporation of Solano Avenue into the bike network would be part of adoption of the final plan.

If the Council directs not to include dedicated cycling facilities on Solano Avenue, staff will conduct upcoming public engagement and analysis on alternative bicycle transportation network routes. Solano Avenue is expected to remain part of the discussion for the priority

pedestrian network as well as for locations where the priority cycling network crosses Solano Avenue.

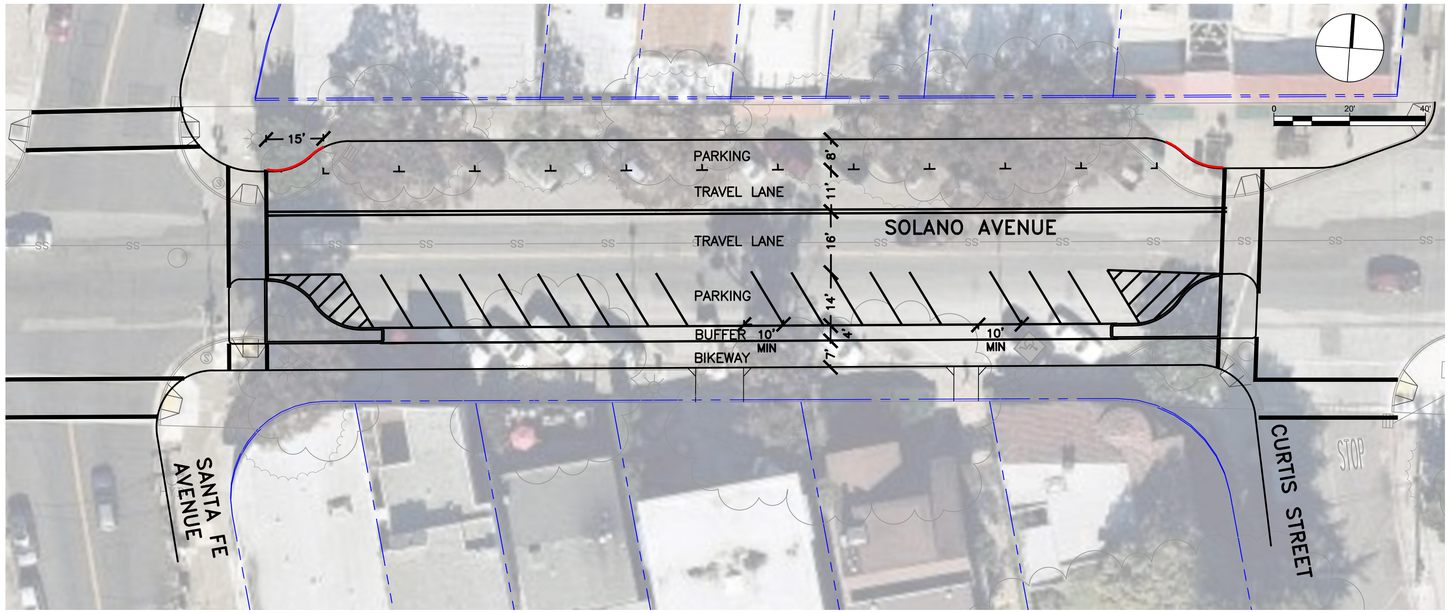
Independent of this direction, staff will continue to develop plans for accessible curb ramps and pavement repair for Solano Avenue between Masonic Avenue and Tulare Avenue under a nearer-term capital improvement project to meet obligations to upgrade accessibility along the corridor.

Engagement for Phase 2 of development of the Active Transportation Plan is getting underway with a public workshop scheduled for May 20th from 5:30-7:30 at the Community Center.

Attachments

1. Concept Alternatives for Parking Analysis
2. Evaluation of Bicycle Facility Options for Mid-Solano Avenue Memo

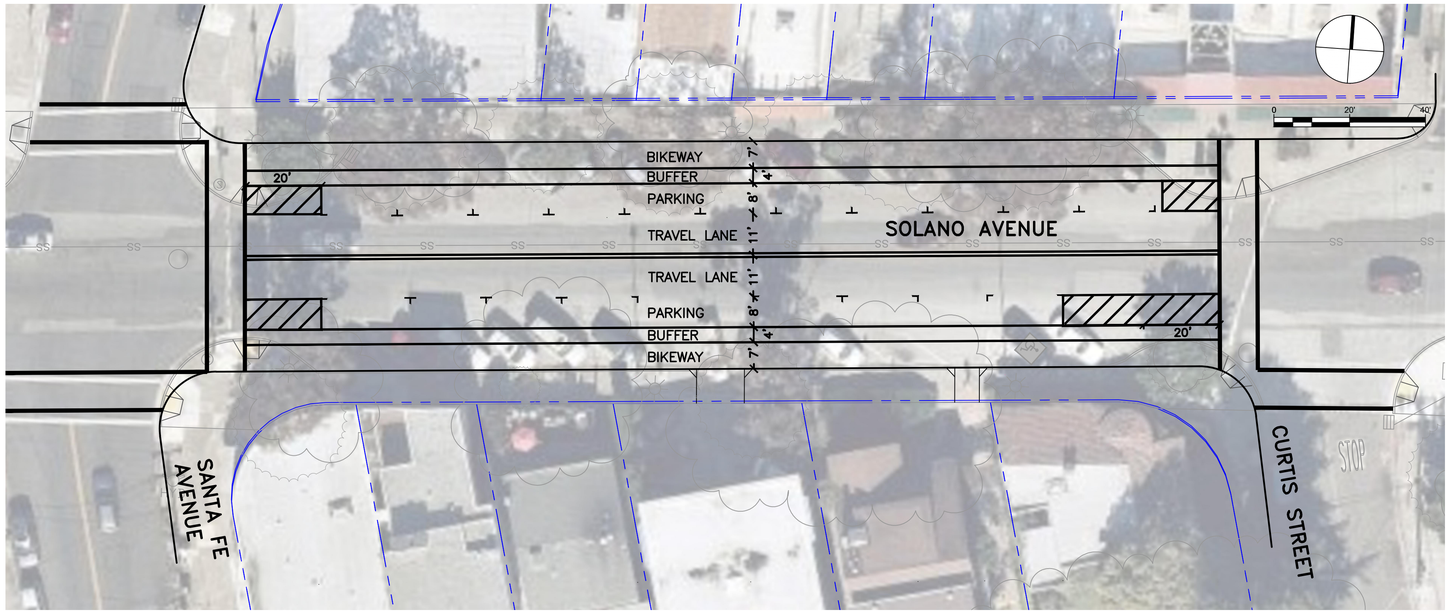
ALTERNATIVE 1



PARKING COUNT

EXISTING CONDITIONS	27
PROPOSED CONCEPT	26

ALTERNATIVE 2



PARKING COUNT

EXISTING CONDITIONS	27
PROPOSED CONCEPT	18

CONCEPTUAL

NOT FOR CONSTRUCTION

811 Know what's below. Call before you dig.

Parametrix

DRAWN: VM	CHECKED: AL	ADDRESS: 6001 Shellmound St, Ste 500 Emeryville, CA 94608 (510) 343-6400
DESIGNED: VM	APPROVED: AL	

CITY OF ALBANY
SOLANO AVENUE FROM SANTA FE AVENUE TO CURTIS STREET
CONCEPT ALTERNATIVES

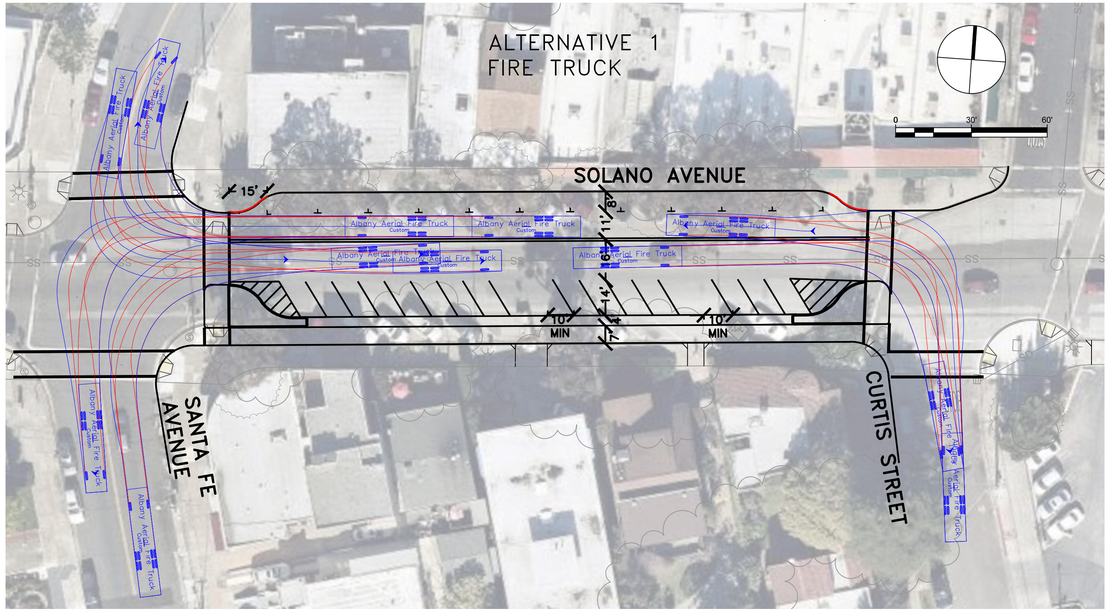
REVISIONS		
5		
4		
3		
2		
1		
NO.	DESCRIPTION	

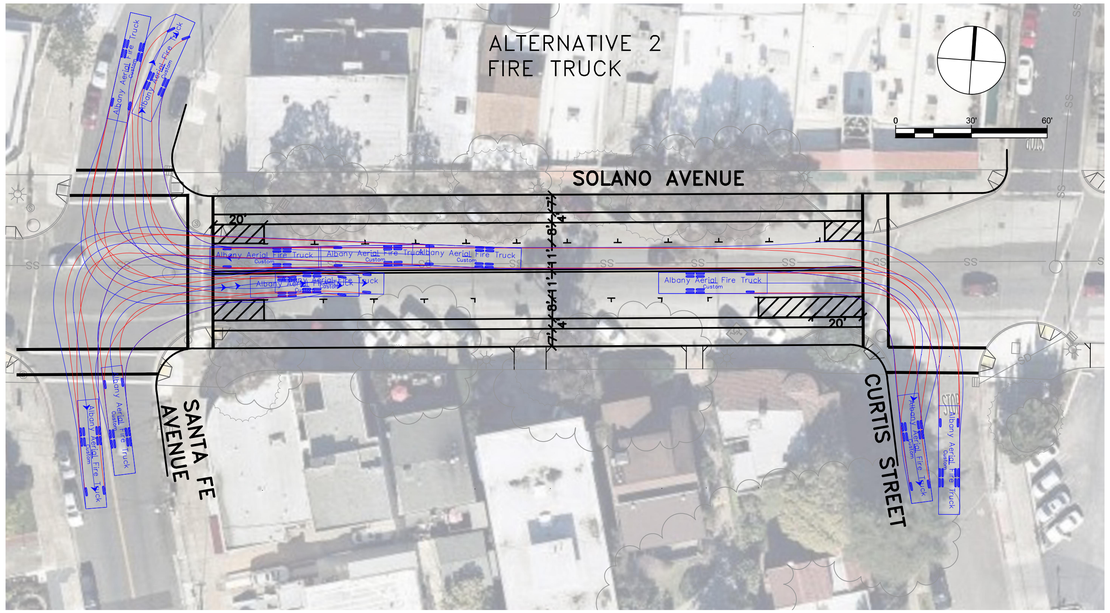
DATE 04/25/2025 | SCALE 1" = 20'

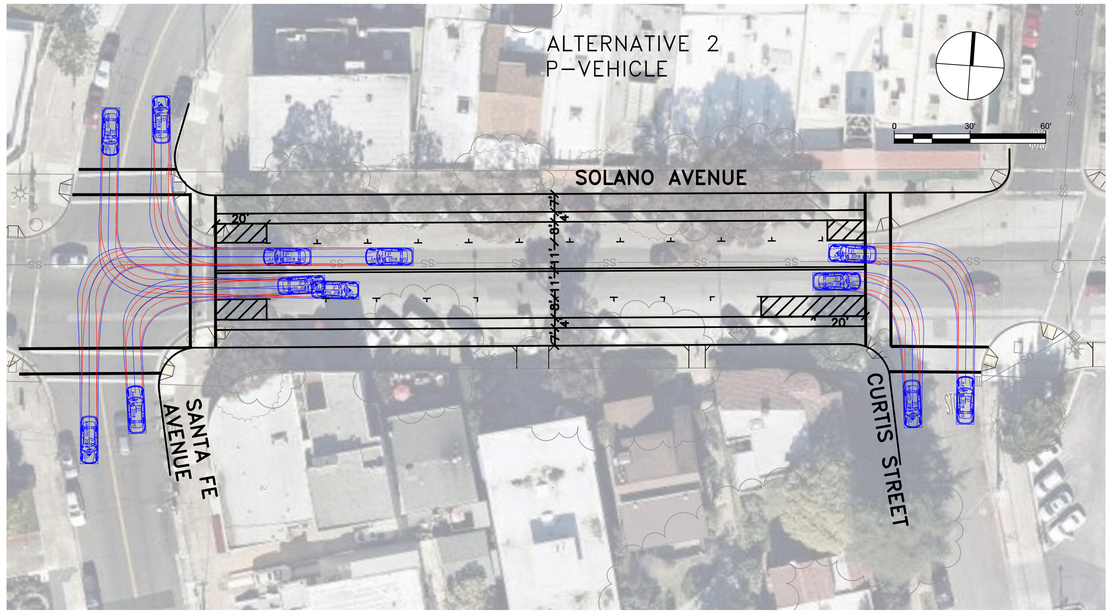
PMX PROJECT NO. 474-8976-001

DRAWING P-3

SHEET NO. 1 OF 3







CONCEPTUAL

NOT FOR CONSTRUCTION

811 Know what's below. Call before you dig.

Parametrix

DRAWN: VM	CHECKED: AL
DESIGNED: VM	APPROVED: AL

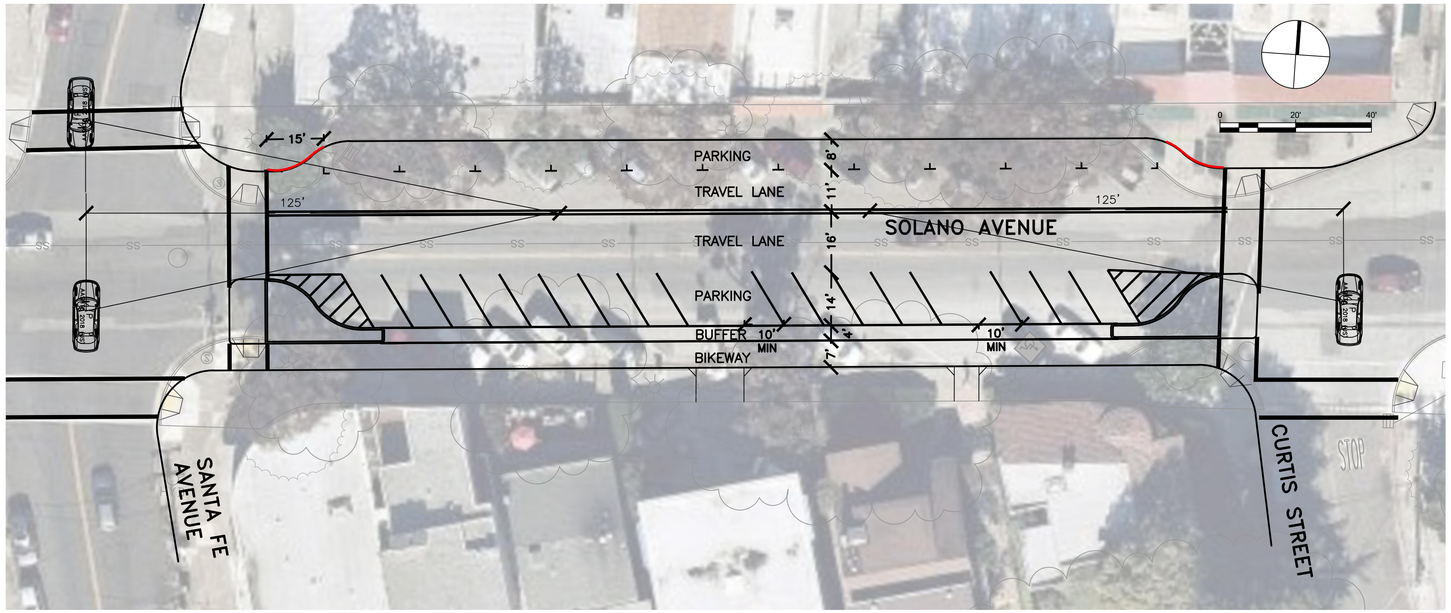
ADDRESS:
6001 Shellmound St, Ste 500
Emeryville, CA 94608
(510) 343-6400

CITY OF ALBANY
SOLANO AVENUE FROM SANTA FE AVENUE TO CURTIS STREET
TURNING MOVEMENTS

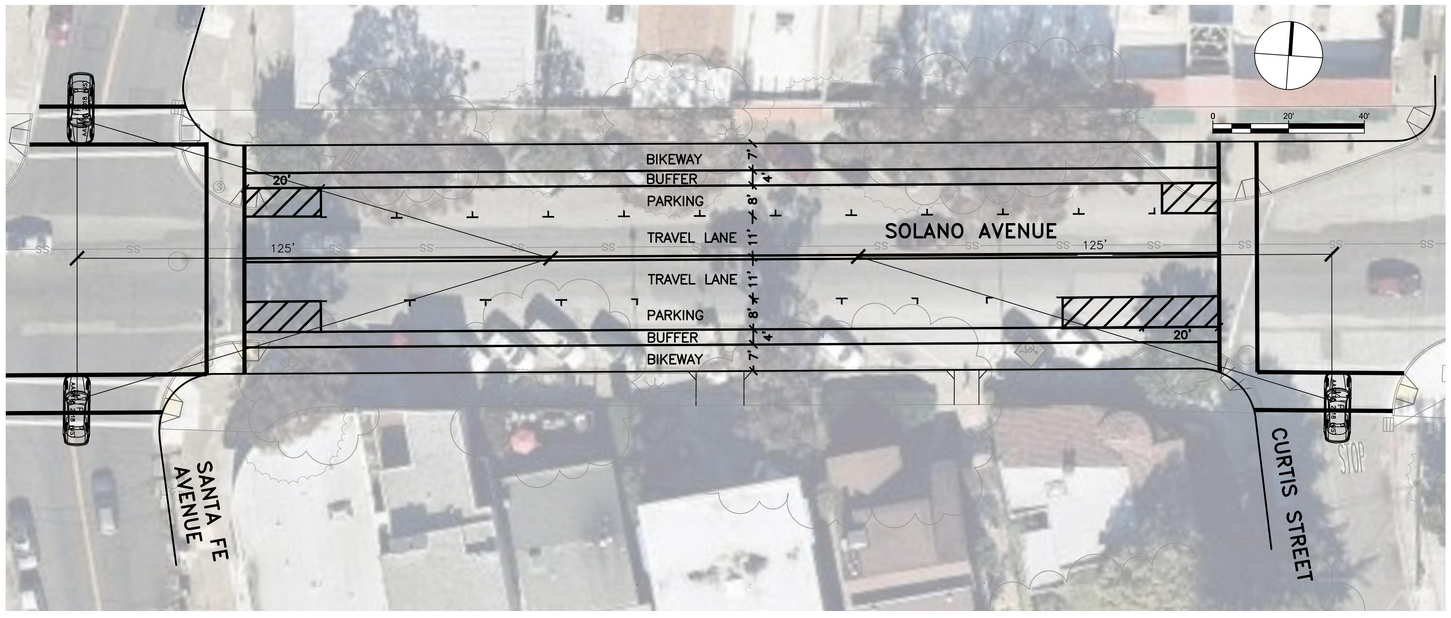
REVISIONS	
5	
4	
3	
2	
1	
NO.	DESCRIPTION

DATE 04/25/2025	SCALE 1" = 30'
PMX PROJECT NO. 474-8976-001	
DRAWING P-3	
SHEET NO. 2 OF 3	

ALTERNATIVE 1
SSD AT 20 MPH PER CA HDM



ALTERNATIVE 2
SSD AT 20 MPH PER CA HDM



GENERAL NOTE: PARKING RESTRICTIONS ARE VARIABLE BASED ON LOCATION OF CURB RAMP AND MARKED CROSSWALK.

CONCEPTUAL
NOT FOR CONSTRUCTION

811 Know what's below. Call before you dig.

Parametrix

DRAWN:	CHECKED:
VM	AL
DESIGNED:	APPROVED:
VM	AL

ADDRESS:
6001 Shellmound St, Ste 500
Emeryville, CA 94608
(510) 343-6400

CITY OF ALBANY
SOLANO AVENUE FROM SANTA FE AVENUE TO CURTIS STREET
SIGHT DISTANCE

REVISIONS	
5	
4	
3	
2	
1	
NO.	DESCRIPTION

DATE	SCALE
04/25/2025	1" = 20'

PMX PROJECT NO. 474-8976-001

DRAWING P-3

SHEET NO. 3 OF 3

TOOLE DESIGN

1635 BROADWAY
SUITE 200
OAKLAND, CA 94612

510.298.0740
TOOLEDESIGN.COM

Date: April 30, 2019

To: Anne Hersh, AICP, City of Albany

From: Kenneth Loen, PE; Joel Shaffer, EIT and Brooke DuBose, AICP

Project: Solano Avenue Complete Streets Plan

Subject: Evaluation of Bicycle Facility Options for Mid-Solano Avenue

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The purpose of this memorandum is to provide summary information about accommodating bicycle facilities on Solano Avenue. The 2012 Albany Active Transportation Plan did not designate Solano Avenue as part of the citywide bike network; however, it did identify supportive bicycling safety improvements for the corridor. If the City reconsiders this policy decision at any point, there are several design options for including bike facilities along Solano Avenue. Given the multiple demands on the corridor as the City's main street, each option will have trade-offs. Several options are presented in this memo, including the Albany Traffic and Safety Commission recommendation that was introduced and acted on at the February 28, 2019 Commission meeting.

The option developed by the Traffic & Safety Commission recommends high-comfort bicycle facilities in one direction and lower comfort sharrows in the other direction, Option 1. Options 2-5 were developed by civil engineering staff from Toole Design. These were developed in consideration of the existing conditions along the corridor, including the street grade (which is relatively shallow at typically <3% running grade, with some locations approaching 5%), street widths, parking layouts, and traffic control features. These options include various facility types that span the range of low-cost, basic facilities to high cost, high comfort facilities. All four Toole options provide equivalent bicycle facilities in both directions.

The options evaluated in this memo are:

1. Separated bike lane with downhill shared lane (Albany T&S Commission)
2. Conventional bike lanes with back in angled parking
3. Buffered bike lanes with both angled and parallel parking
4. Buffered bike lanes with parallel parking on both sides of the street
5. Separated bike lanes with parallel parking on both sides of the street

The outcomes of the various options differ in several key measures:

Measures	Low Impact/ Desired outcome	Medium	High Impact/ Less desirable outcome
Bicycle Safety Enhancement	The option would be expected to offer the highest level of safety enhancements	The option would be expected to offer additional safety enhancements	The option would be expected to offer some safety enhancement compared to existing conditions
Bicycle Level of Comfort	Yes		No
	A high comfort bicycle facility provides significant separation from motorized traffic, and clear assignment of right-of-way at intersections. It can be envisioned as one in which people of all bicycling ages and abilities would be comfortable riding along the corridor.		
Parking (approximate number of on-street parking stalls)	Preserves a high number of existing stalls (>90%)	Preserves 60%-90% of existing stalls	Preserves less than 60% of existing stalls
Construction Cost	Baseline costs for all projects; the work consists solely of removing existing striping, installing new paint stripes, and some pavement repair. For angled parking the parking stalls are converted to a back-in parking configuration. Assumes new ADA curb ramps constructed at all intersections.	In addition to the baseline costs, additional work may include signing changes, curbside use reassignment, and more extensive pavement repairs.	In addition to the Low and Medium costs, work may include major civil reconstruction efforts, including removing curb bulbs, reconstruction of sidewalks and curb ramps, grinding and paving intersections, moving signal and light poles, etc. The differential in cost associated with this category is significantly higher than the differential between Low and Medium costs.

Option details are presented on the following pages.

OPTION 1: UPHILL SEPARATED BIKE LANE WITH DOWNHILL SHARED LANE

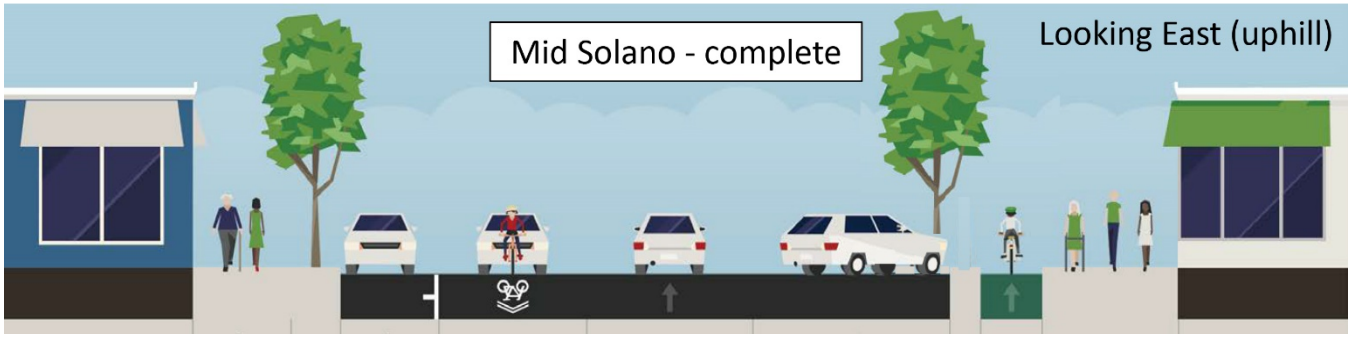
This option, put forth and supported by the Albany Traffic and Safety Commission, provides a protected bike lane along with back-in angled parking on the south side of the street and shared lane markings with parallel parking on the north side of the street. Impacts to on-street parking loss would be moderate (10-40% loss) as a result of changing one side of the street from angled parking to parallel parking. The remaining angled parking would be converted from the existing “front-in” parking configuration to a new “back-in” configuration. Given the reconfigured parking, this option has the ancillary pedestrian benefit of enabling people to load the backs of their vehicles from the sidewalk or within the parking lane (for the back-in parking and parallel parking configurations, respectively) instead of from the street. In addition, the one-way separated bike lane further separates pedestrian space from vehicle space, serving as a de facto buffer that creates a more attractive pedestrian realm on the south side of the street.

Physical work would include removing existing pavement markings (primarily parking stall striping) and installing new pavement markings (sharrow markings and new parking stall striping). Additional work on the south side of the street would consist of, but would not be limited to: removal of existing curb bulbs, reconstruction of existing sidewalks at all intersection corners, construction of new ADA curb ramps at all intersection corners, removal of existing planters and trees at certain locations, grind and overlay pavement at all intersections, construct new full depth pavement where curb bulbs are removed, adjustments and potential replacement of existing drainage features, moving light poles, moving signal poles, signal revisions, etc.

The costs associated with this option would be high and construction impacts would be significant. Traffic detours would likely be in effect for the duration of construction, and sidewalk closures would be required.

In addition, it is important to create a consistent user experience and comfort level along a bicycle corridor, regardless of the direction of travel. Without consistency, less confident bicyclists may find themselves “stranded” at one end of a corridor because they are not comfortable returning on a shared street after riding on a high-comfort bicycle facility for the original outbound trip. This effect is particularly concerning for children, older adults, and slower riders who will be comfortable in a fully separated bikeway but would never consider riding their bicycle in lane with motorized traffic. While some jurisdictions have implemented uphill conventional bike lanes paired with downhill sharrows in highly constrained locations, that approach can be successful because the conventional bike lane and sharrow treatments are relatively similar in comfort and appeal to similar bicycle rider groups. That design approach is typically only considered in constrained locations on relatively steep streets (>5%), where uphill riders may be considerably slower than motorized traffic.

This option presents a different scenario of a “High Comfort” facility in only one direction. Shared lane markings are not considered bicycle facilities and create no benefit to cyclist comfort in the westbound direction. Because of the slope of Solano Avenue is less than five percent, and due to the sizable imbalance of bicyclist comfort levels in opposing directions, this arrangement faces the challenges identified above and is not considered “all ages and abilities” option for the corridor.



Loss of Parking	Cost	Const. Impacts	Safety Enh.	High Comfort
Medium	High	High	Medium	No

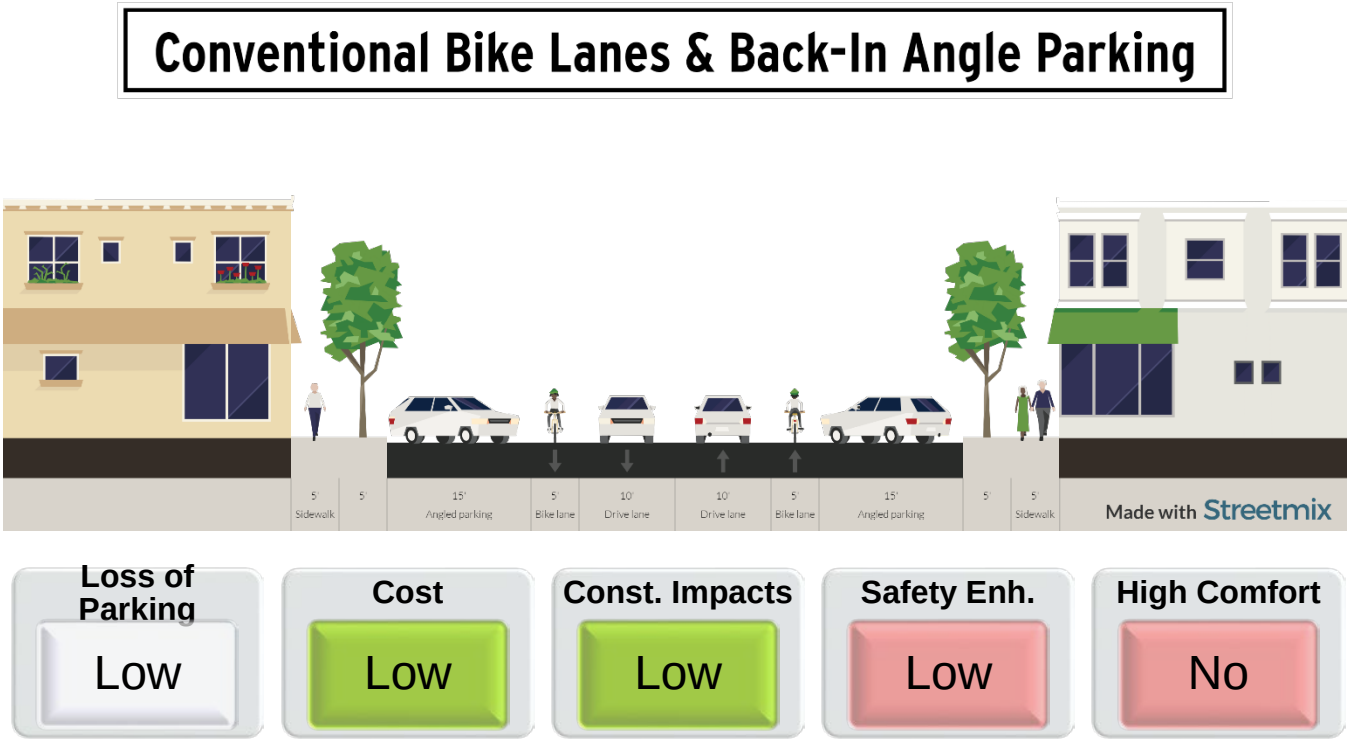
Note that the Safety Enhancement and High Comfort measures are based on the fact that the high-comfort facility is provided in only one direction on the corridor, with no accompanying high-comfort facility to provide a return trip.

OPTION 2: CONVENTIONAL BIKE LANE WITH BACK IN ANGLED PARKING

This option provides plain (conventional) bike lanes along with back-in angled parking on both sides of the street. Parking retention would be high and impacts would be expected to be minimal—the only substantive change would be converting from the existing "front-in" parking configuration to a new "back-in" configuration. This conversion is recommended because of the safety concerns related to bike lanes adjacent "front-in" angled parking, since drivers backing out of angled parking spaces have very poor visibility of bicyclists in the bike lane[1]. Given the reconfigured parking, this option has the ancillary pedestrian benefit of enabling people to load the backs of their vehicles from the sidewalk instead of the street.

Physical work would include removing existing pavement markings (primarily parking stall striping) and installing new pavement markings (bike lane striping and new parking stall striping). Due to the poor condition of the existing pavement, which could result in bicyclists swerving unexpectedly into traffic to avoid compromised pavement seams and potholes, pavement repair would be necessary to ensure a safe riding lane for bicycles. New ADA ramps would be constructed at all intersections.

The costs associated with this option would be low and the design could be installed more quickly than options requiring reconstruction of the curb line. Minor sidewalk closures may be required for ADA ramp construction. However, the resulting bicycle facilities would be basic and would provide only minimal safety enhancements. These facilities would not be considered "High Comfort" facilities because the bike lanes include no physical separation from moving traffic, and place bicyclists between moving traffic and parked cars. This arrangement is not considered "low stress" for bicyclists.



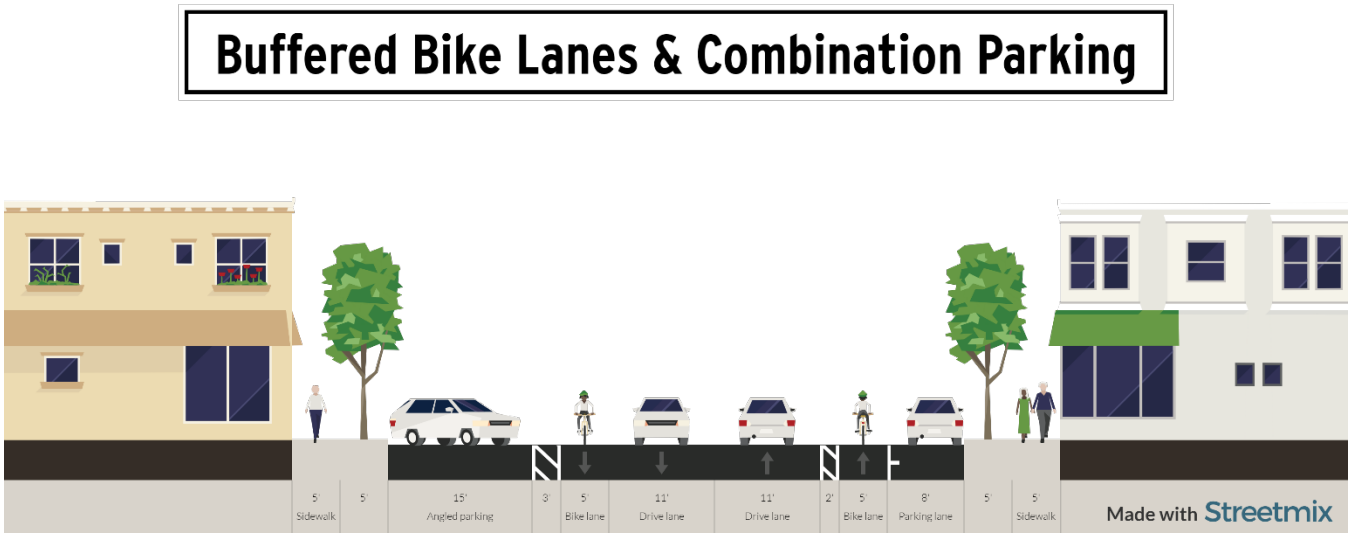
[1] *AASHTO "Guide for the Development of Bicycle Facilities", 2012; p.4-17*

OPTION 3: BUFFERED BIKE LANE WITH COMBINED PARKING

This option provides buffered bike lanes along with back-in angled parking on one side of the street and parallel parking on the other. Parking impacts would be expected to be higher than Option 2 (and the same as Option 1) as a result of changing one side of the street from angled parking to parallel parking. The remaining angled parking would be converted from the existing “front-in” parking configuration to a new “back-in” configuration. Given the reconfigured parking, this option has the ancillary pedestrian benefit of enabling people to load the backs of their vehicles from the sidewalk or within the parking lane (for the back-in parking and parallel parking configurations, respectively) instead of from the street.

Physical work would include removing existing pavement markings (primarily parking stall striping) and installing new pavement markings (bike lane striping and new parking stall striping). New ADA ramps would be constructed at all intersections. Signage related to parking configurations would be changed. Additional pavement repair would be necessary to ensure a safe riding lane for bicycles. This option would not change any of the existing curb or sidewalk extents.

The costs associated with this option would be somewhat higher than Option 2. This option could be installed more quickly than options requiring extensive reconstruction of the curb line. Minor sidewalk closures may be required for ADA ramp construction. However, the resulting bicycle facilities would be only marginally better than conventional bike lanes and would provide only minimal safety enhancements. The resulting bicycle facilities would not be considered “low stress” for bicyclists.



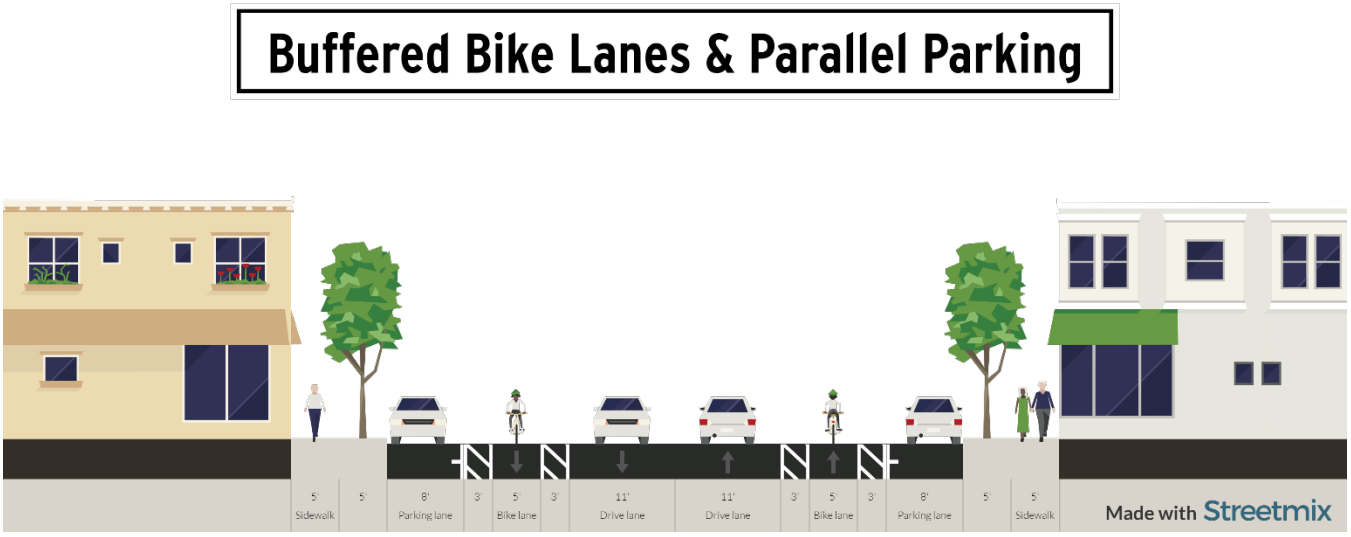
Loss of Parking	Cost	Const. Impacts	Safety Enh.	High Comfort
Medium	Medium	Medium	Medium	No

OPTION 4: BUFFERED BIKE LANE WITH PARALLEL PARKING

This option provides buffered bike lanes along with parallel parking on both sides of the street. It is anticipated that less than 60 percent of on-street parking would be preserved as a result of changing both sides of the street from angled parking to parallel parking. Given the reconfigured parking, this option has the ancillary pedestrian benefit of enabling people to load the backs of their vehicles from within the parking lane instead of the street.

Physical work would include removing existing pavement markings (primarily parking stall striping) and installing new pavement markings (bike lane striping and new parking stall striping). New ADA ramps would be constructed at all intersections. Signage related to parking configurations would be changed. Additional pavement repair would be necessary to ensure a safe riding lane for bicycles. This option would not change any of the existing curb or sidewalk extents.

The costs associated with this option would be similar to Option 3. This option could be installed more quickly than options requiring extensive reconstruction of the curb line. Minor sidewalk closures may be required for ADA ramp construction. The resulting bicycle facilities would provide additional safety enhancements, though still would not be considered “low stress” facilities because of the parking vehicles crossing over the bike lanes, and the use of only paint stripes for buffers between the bike lanes and motorized traffic.



Loss of Parking	Cost	Const. Impacts	Safety Enh.	High Comfort
High	Medium	Medium	Medium	No

OPTION 5: SEPARATED BIKE LANE WITH PARALLEL PARKING

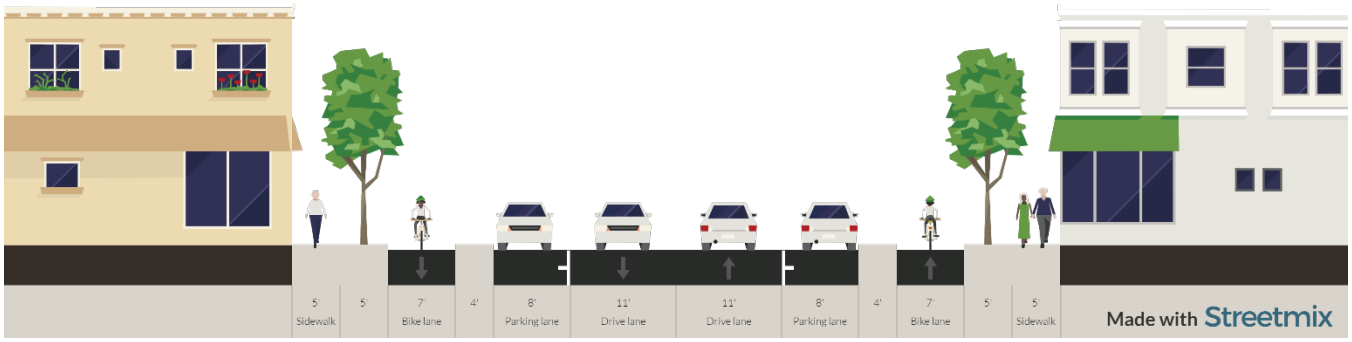
This option provides separated bike lanes along with parallel parking on both sides of the street. It is anticipated that less than 60 percent of on-street parking would be preserved as a result of changing both sides of the street from angled parking to parallel parking. Given the reconfigured parking, this option has the ancillary pedestrian benefit of enabling people to load the backs of their vehicles from within the parking lane instead of the street. In addition, the one-way separated bike lanes further separate pedestrian space from vehicle space, serving as a de facto buffer that creates a more attractive pedestrian realm.

Physical work would be extensive and costs would be very high due to the need to remove all curb bulbs along the corridor. The existing curb bulbs are very wide, typically the full width of the angled parking. Because of this width, it would not be possible to design a separated bike lane that wraps around the curb bulbs in a manner that a bicyclist could comfortably navigate. If the bike lanes were allowed to transition around the curb bulbs on shallower, more comfortable tapers, the result would be to eliminate the vast majority of parking. For these reasons, the only practicable way to design a separated bike lane facility would be to remove the curb bulbs to allow the separated bike lanes to proceed along a straight path, thus providing a safe and comfortable bicycle facility while at the same time allowing full parallel parking utilization.

This option would also include the baseline work of removing existing pavement markings, installing new pavement markings, changing signage related to parking configurations, and spot pavement repairs. Additional work would consist of, but would not be limited to: removal of existing curb bulbs, reconstruction of existing sidewalks at all intersection corners, construction of new ADA curb ramps at all intersection corners, removal of existing planters and trees at certain locations, grind and overlay pavement at all intersections, construct new full-depth pavement where curb bulbs are removed, adjustments and potential replacement of existing drainage features, moving light poles, moving signal poles, signal revisions, etc. Construction impacts would be significant in order to accomplish this work. Traffic detours would likely be in effect for the duration of construction, and sidewalk closures would be required.

This option can be expected to add a minimum of approximately $350,000 to the cost of each non-signalized intersection, and a minimum of approximately $550,000 to the cost of signalized intersections, in addition to the base costs associated with the previous options. Note that these cost estimates are planning-level only and may be found to be higher during design. This option does, however, provide the highest quality bicycle facilities, with significant safety enhancements and very high comfort facilities. This is the only option of those listed in this memo that would be considered a “low stress” facility.

Separated Bike Lanes & Parallel Parking



Loss of Parking	Cost	Const. Impacts	Safety Enh.	High Comfort
High	High	High	High	Yes