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APPENDIX A: PUBLIC OUTREACH OVERVIEW



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UNINCORPORATED SAN MATEO COUNTY ACTIVE TRANSPORTATION PLAN

August 13, 2019

To: Julia Malmo-Laycock

Organization: Office of Sustainability, County of San Mateo

From: Sara Rauwolf, Toole Design, and Katie DeLeuw, EnviroIssues

Project: Unincorporated San Mateo County Active Transportation Plan

Re: Outreach Phase 1 Summary

The first phase of outreach for the Unincorporated San Mateo County Active Transportation Plan occurred from April to July 2019. During this period, the project team participated in six roadshow events and hosted two community workshops, and collectively received input from approximately 450 people.

Phase 1 Outreach Events

Event	Date	Approximate No. Attendees
Half Moon Bay Coastal Wildflower and Earth Day Festival	April 13, 2019	88
North Fair Oaks Health Fair and Bike Rodeo	April 27, 2019	167
Bike to Work Day in West Menlo Park	May 9, 2019	25
Bicycle Sunday on Cañada Road	June 2, 2019	17
Half Moon Bay Yacht Club	June 19, 2019	25
Fair Oaks Community Center	June 25, 2019	15
Pescadero Farmer's Market	July 11, 2019	25
Flood Park Movie Night	July 19, 2019	20
Siena Youth Center	July 15, 2019	75

Roadshow Events

Through the roadshow series, the project team staffed booths at various festivals and other events through San Mateo County hosted by other organizations. The purpose of this outreach was to:

- Raise awareness of the county's efforts to prepare this plan.
- Inform communities about the plan and opportunities for involvement.
- Promote the plan website and engagement opportunities through the site.
- Solicit input on current bicycling and walking destinations, opportunities, and deficiencies in Unincorporated San Mateo County.

At the roadshow events, the project team asked participants to identify preferred biking or walking destinations and challenges for walking or biking on a map. See Attachment A for roadshow event displays, including the interactive map. The map invited participants to provide input using different colored dots and markers:

- **Green** dots or drawn lines: Spot locations or corridors where people like to bike.
- **Yellow** dots or drawn lines: Spot locations or corridors that are difficult for biking.
- **Blue** dots or drawn lines: Spot locations or corridors where people like to walk.
- **Red** dots or drawn lines: Spot locations or corridors where it is difficult to walk or cross the roadway.

Below are more details about each event and some of the key takeaways for walking and biking in unincorporated areas of San Mateo County.

(1) Half Moon Bay Coastal Wildflower and Earth Day Festival Summary – April 13, 2019

The Half Moon Bay Coastal Wildflower and Earth Day Festival took place on April 13, 2019. Approximately 88 attendees stopped by the booth. The greatest concentration of yellow dots (indicating barriers for biking) were in parts of Princeton. Other yellow dot-concentrated areas include Highway 1 between Pacifica and Montara and along State Route 92, also indicating barriers for biking.

Figure 2 shows the three marked-up maps from the Half Moon Bay Coastal Wildflower and Earth Day Festival, with colored dots and open-ended comments from members of the public that were recorded by project staff.



Figure 1: A community member points out an important location at the Earth Day Festival

Comments from Half Moon Bay Wildflower Festival

1. Bike facilities not needed in Montara – fine as rural.
2. High-Intensity Activated Crosswalk (HAWK) beacon or Rectangular Rapid Flashing Beacon (RRFB) needed on Highway 1
3. Highway 1, Moss Beach hard to cross on weekends.
4. Traffic calming – Maverick Beach, Bluffs.
5. Like bike racks to provide parking in denser areas.
6. No safe bike lane on Coronado at Highway 1 to get kids to El Granada and Wilkinson Elementary from west of highway 1.
7. Highway 92 between Half Moon Bay and Highlands is stressful to bike, narrow shoulders.
8. Airport Street bicyclists on one side of road in both directions. Not a good location to bike.
9. E-bikes and scooters at beaches; sharing specifically.
10. Path near open space behind Half Moon Bay High.
11. Proposed path north where shown on map.
12. Improvements to existing Naomi Patridge Trail crossings for students.
13. Busy crossing near school; No bike facilities near school.
14. Need more events like Bicycle Sundays.

15. Charging stations on paths for bikes.
16. Not enough places for dogs to go off-leash (in San Mateo County generally).
17. Walking trail to Maverick's.
18. The coastal trail is amazing!
19. Aggressive motorcyclists on street.
20. Winding creek roads can be difficult to bike on, but are recreational routes.
21. Bike everywhere in County without sharing space with cars.
22. Main Street.
23. Need better/safer crossings.
24. Update GIS Sawyer Camp and Tunitas Creek.
25. El Granada to Cunha for school – can take trail but need bike facilities.
26. Miramar at Highway 1 has crossing issue.
27. Love to see Coastal Trail extended north from Miramar to Devil's slide.



Figure 2: Map Images from the Half Moon Bay Coastal Wildflower and Earth Day Festival

(2) North Fair Oaks Health Fair and Bike Rodeo Summary – April 27, 2019

The North Fair Oaks Health Fair and Bike Rodeo took place on April 27, 2019 and the project team spoke to approximately 167 attendees throughout the day. Many red dots were placed throughout the North Fair Oaks area, specifically near or along Middlefield Road in Redwood City, indicating that there are a lot of barriers to walking in that area (see **Figure 4**). Other areas with a high concentration of red dots include 5th Street and Spring Street. Lastly, a high concentration of yellow dots was placed along El Camino Real at Selby Lane, indicating issues with biking at that intersection. Refer to **Figure 4** for an image of the marked-up map with dots as well as individual comments that were collected by project staff.



Figure 3: The Project Team engaging with community members in North Fair Oaks

Comments from North Fair Oaks Health Fair and Bike Rodeo

1. Bay Road could be better for biking.
2. NFO [North Fair Oaks] has too many cars - hard for biking.
3. Cars don't always stop or slow down and they get mad at kids when we're crossing.
4. Area near Target is better for kids.
5. I'm 10 years old and I wish I could bike by myself but it's not safe enough.
6. Really hard to cross El Camino Real from our neighborhood to Shelby Lane.
7. People drive too fast on Marlborough and there are a lot of kids.
8. Marlborough Ave. is unsafe for kids because of speeding cars.
9. Bay Road should be improved for people/students walking.
10. *Middlefield is dangerous to cross (Spanish).*
11. *Improve crosswalks, build safe bike routes (Spanish).*
12. Drivers should watch out for people walking.
13. Pedestrian bridge to Target.
14. I take my kids to Marshall Street to bike and walk.
15. More signals to cross the street.
16. Would like a bike path between Redwood City library and Jefferson against the railroad.
17. Need continuous path along railroad tracks. Appreciate green paint on intersections to increase visibility of bicyclists.

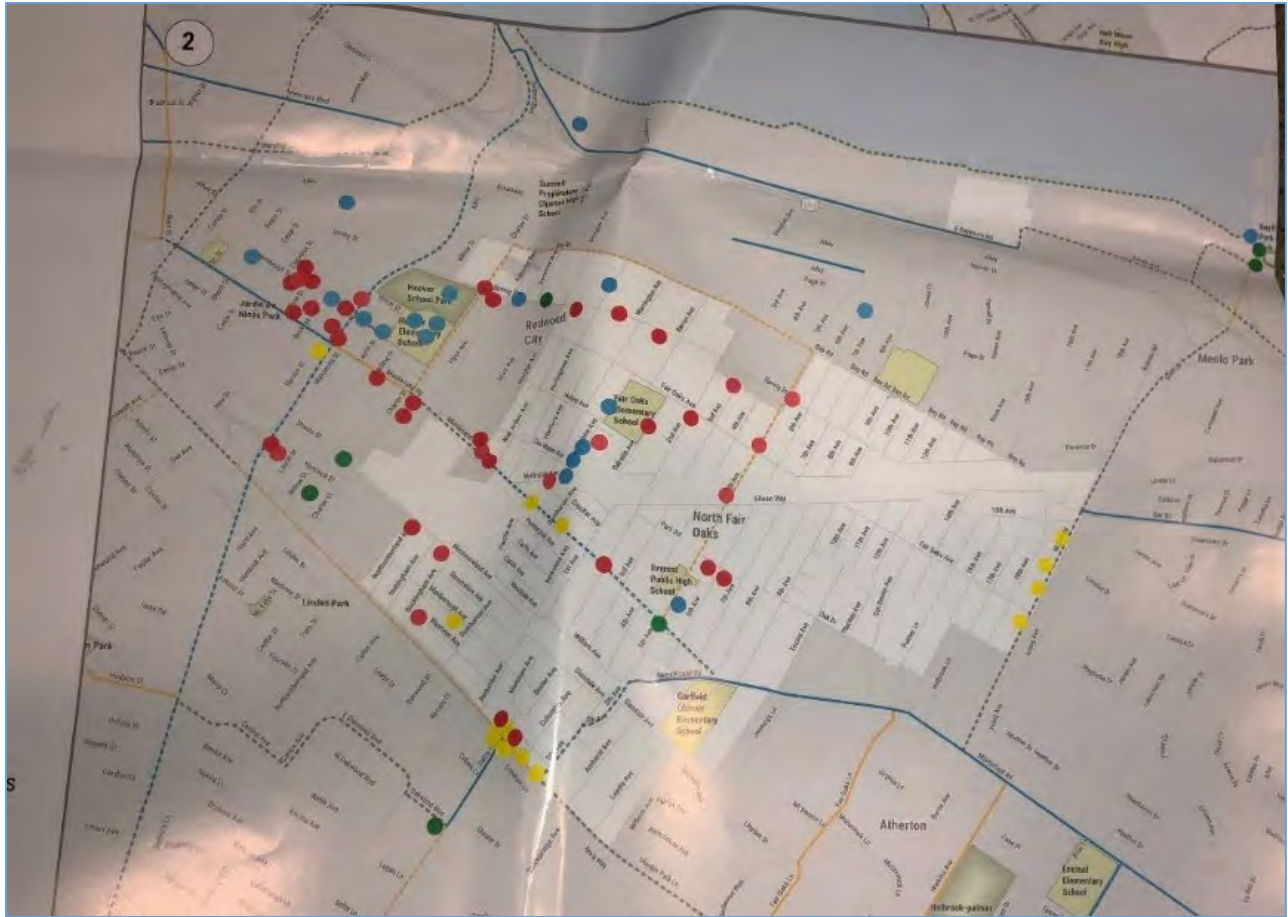


Figure 4: Map Images from the North Fair Oaks Health Fair and Bike Rodeo

Bike to Work Day in West Menlo Park Summary – May 9, 2019

Bike to Work Day took place on May 9, 2019. Around 25 people stopped by the West Menlo Park Energizer Station, and the project team discussed the Active Transportation Plan with seven of them. Comments recorded on the map and received verbally from those who engaged on the Plan at the energizer station were focused on Alameda de las Pulgas and the "Y" intersection, where Alameda de las Pulgas meets Santa Cruz Avenue, and various locations in North Fair Oaks where cycling and walking were seen as difficult.

Bicycle Sunday on Cañada Road Summary – June 2, 2019

The project team spoke with approximately 17 people about the Active Transportation Plan at Bicycle Sunday on Cañada Road on June 2, 2019. State Route 92 had the greatest concentration of yellow and red dots indicating challenging places to bike all along the route.

Two red dots were placed at the center of State Route 92, indicating an especially challenging location for walking, but Bicycle Sunday is a bicycle-focused event so this feedback may have intended to address conditions for bicycling.

Participants often noted that there is little to no space or infrastructure for cyclists, and that the shoulder of the road is too narrow for biking. Some participants used more than one dot to indicate and emphasize that this concern applies to the entirety of the corridor and is not limited to one spot.

Participants identified the 3.8-mile segment of Cañada Road near Crystal Springs Regional Trail where the event took place as a great place to bike and walk using green and blue dots. One visitor mentioned that they come to this area specifically because of its wonderful bike facilities.

Many visitors shared the same suggestion of increasing East-West access through Unincorporated San Mateo County by adding more route options along less trafficked roads. One such suggestion was opening access through the Phleger Estate part of the Golden Gate National Recreation Area to avoid riding along State Route 35, Skyline Boulevard. Similar sentiments were shared about avoiding State Route 84. **Figure 6** provides more detail, with dots placed on the same map used for previous events.



Figure 5: The Project Team at Bicycle Sunday on Cañada Road

Comments from Bicycle Sunday Event

1. Watershed access for bikes.
2. Phleger Estate through access so don't have to ride Skyline.
3. Increased amount of trash along Cañada. Consider creating a trash pickup day for cyclists.
4. Congested from construction on Magellan Ave, hazardous. Bicycle Sunday as been shortened. Consider reclosing the street to Edgewood.
5. Connect sawyer camp trail to Cañada Road.
6. 84 and Bear Gulch needs more shoulder, bikes are there regardless. Keeping the road maintained and paved is important.
7. Great facilities out here, that's why I come.
8. Highway 101 overcrossings for bikes.
9. Crystal Springs gap.
10. Crossing HWY 92 to get to sawyer camp trail.
11. Should be able to bike anywhere!
12. Highway 92 approaching HMB [Half Moon Bay]- very difficult to bike.

13. San Bruno Mtn- open fire roads for bike access.



Figure 6: Map Images from Bicycle Sunday

Pescadero Farmer's Market Summary – July 11, 2019

The project team attended the Pescadero Farmer's Market on Thursday, July 11, 2019, and spoke to approximately 25 individuals about the Plan. Bicycle routes with a high concentration of comments and orange markings on the project map, referring to uncomfortable bike routes, included Highways 1, Highway 84 and Pescadero Creek Road. Cloverdale Road was indicated as a great bike route by some, and an uncomfortable bike route by others. In terms of walking routes, difficult intersections identified on the project map included Highway 1 and Pescadero Creek Road and Stage Road and North Street, as shown in **Figure 7**.

Feedback Summary

This section summarizes the feedback received at the Farmer's Market. Participants were invited share feedback on open-ended questions. The following table summarizes responses to those questions.

What is it like to walk and bike in San Mateo County Today?

Verbatim Comments	<ul style="list-style-type: none">▪ Mostly recreational spandex people bike▪ Not any scarier than other locations▪ San Gregorio isn't very walkable or bikeable: narrow shoulders, on 84 people drive fast▪ Everywhere west of La Honda towards the ocean is hard▪ It's very dangerous to turn left from Highway 1 South onto Pescadero Road on the weekend (<i>from map</i>)▪ Main strip hectic on weekends (<i>from map</i>)▪ Stage Road is nice to ride on, then to Cloverdale to avoid the parallel section of Highway 1 (<i>from map</i>)▪ Driveways are tough on Pescadero Creek Road – suggest reducing speeds?▪ Section of Cloverdale near Highway 1 is tough (<i>from map</i>)▪ Pescadero Creek Road is not comfortable/safe for drivers (<i>from map</i>)▪ Not all that much traffic on Alpine Road (<i>from map</i>)▪ Alpine Road: Lots of cyclists, not a ton of cars, but maybe busy down the line (<i>from map</i>)
Key Takeaways	<ul style="list-style-type: none">▪ Walking and biking on the south coast is difficult due to a lack of safe infrastructure▪ People on bikes are often visiting recreational cyclists

What are the barriers that make walking and bicycling a challenge in your community?

Verbatim Comments	<ul style="list-style-type: none">▪ El Camino Real is challenging▪ Gaps on Cloverdale Road in terms of infrastructure▪ Highway 84 needs to be safer▪ Everything is very far apart▪ People don't know there are dog beaches and beaches with free parking
Key Takeaways	<ul style="list-style-type: none">▪ Walking and biking on the south coast is difficult due to a lack of safe infrastructure▪ Distances between destinations makes utilitarian cycling difficult

What types of walking and bicycling improvements would you like to see in your neighborhood?

Verbatim Comments	<ul style="list-style-type: none"> ▪ People don't want sidewalks (funky, charming) <ul style="list-style-type: none"> ▪ Coordinate with Pescadero planning process, rental/coop in town, ▪ Pescadero Creek to the high school – safer for walking ▪ No bikes on 84 ▪ Parking on Stage Road needs to be marked ▪ Stop the bike races ▪ A bike/walk trail separate from the road from Memorial Park to town and to the beach ▪ Signs for cyclists to pull over at pull-outs on Cloverdale ▪ Designate space for cyclists ▪ More signage ▪ Having well-marked bicycle paths is critical for safety, especially Highway 1, Pescadero Creek Road ▪ Highest priority @ town planning process was trail to the beach; fire station to beach – there is an existing Creekside trail ▪ Pescadero Creek Road needs a bike lane ▪ In Pescadero there should be a bike rental/ coop - create loop connecting Main st. / Harely Farms ▪ Passing lanes needed on Highway 1 between Half Moon Bay and Pescadero (<i>from map</i>) ▪ Proper bike lanes and ways to cross beach access and turn ins and turn outs needed (<i>from map</i>) ▪ Highway 1 is a deathtrap! Need another lane. Beach parking pullouts are tough (<i>from map</i>) ▪ Highway 1: maintain shoulder! Expand it and keep plant growth back – limits cycling space. Also cleaning it - broken glass and gravel (<i>from map</i>) ▪ Morado Road in Half Moon Bay: close to cars (<i>from map</i>) ▪ Maintain right of way on Highway 84: plant/ fallen tree clearance on sides (<i>from map</i>) ▪ Maintain Pescadero culture: avoid catering to tourists. Fear of gentrification but want accessibility (<i>from map</i>) ▪ Old La Honda Road/ 84 needs bike lanes or consistent, clean shoulders (<i>from map</i>) ▪ Old La Honda Road: paralell route – what is the status? Only 3 houses; could be local route for traffic and bikes (<i>from map</i>)
Key Takeaways	<ul style="list-style-type: none"> ▪ Connecting key destinations is important (schools, center of town, beach, commercial farms) ▪ Separating bicycles from cars would make both cycling and driving safer ▪ Maintenance of the right of way where cycling occurs on shoulders is important

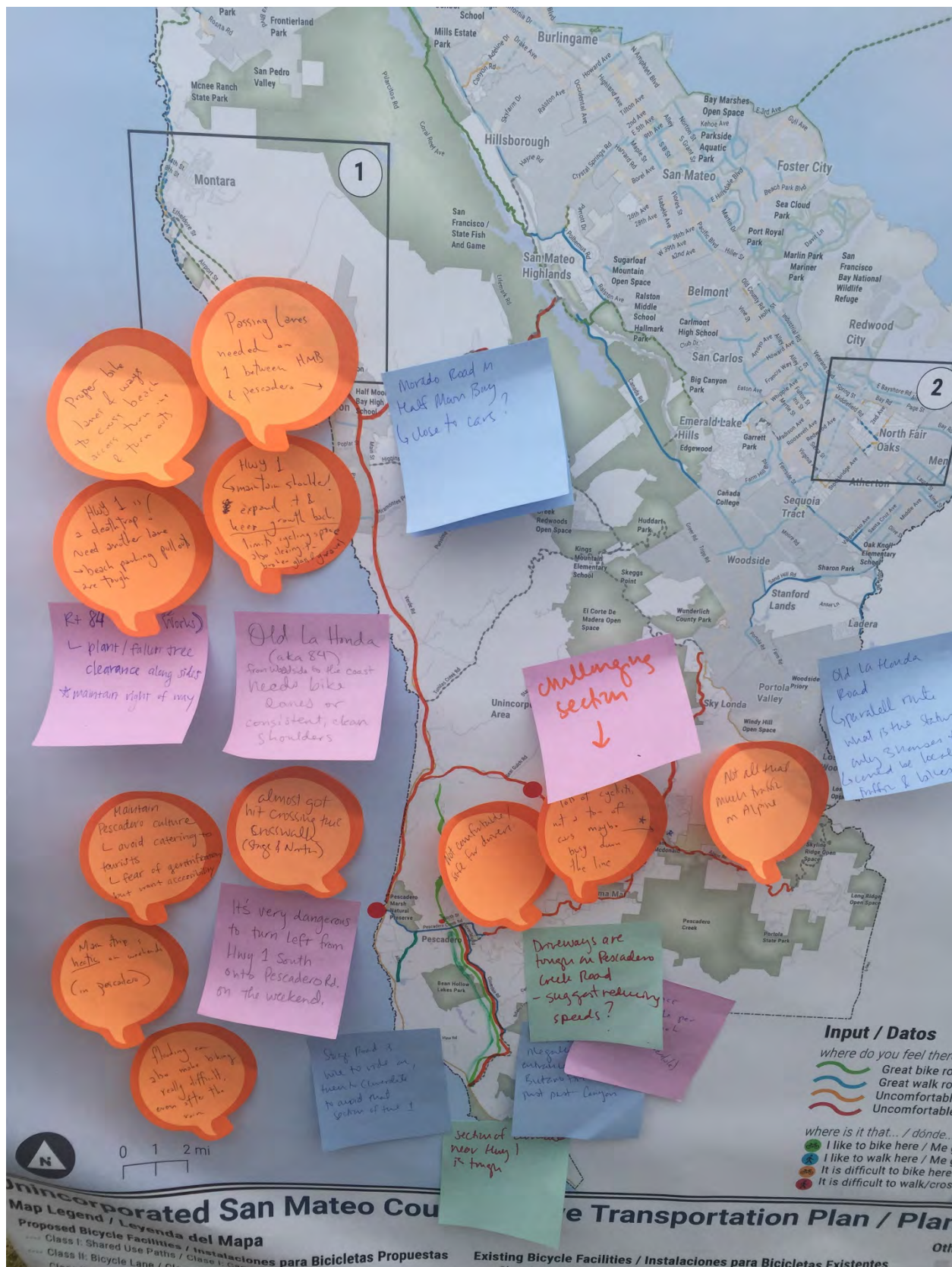


Figure 7: Map Comments at the Pescadero Farmer's Market

Flood Park Movie Night Summary – July 19, 2019

The project team attended the Flood Park Movie Night hosted by San Mateo County Parks on Friday, July 19, 2019, and spoke to approximately 20 attendees throughout the evening. No comments were recorded on the project map.

Feedback Summary

This section summarizes the feedback received at the Flood Park Movie Night. Participants were invited to share feedback on open-ended questions. The following table summarizes responses to those questions.

What is it like to walk and bike in San Mateo County Today?

Verbatim Comments	<ul style="list-style-type: none">▪ Old County Road is ok▪ Middlefield Road very unsafe: to get to Marsh on Middlefield is hard▪ Walkable and safe▪ Drivers drive into bike lanes▪ Make exterior streets (close to busy streets) more bikeable
Key Takeaways	<ul style="list-style-type: none">▪ Sentiments regarding the safety of cycling are mixed▪ Streets parallel to busy streets (for example Old County Road, which is parallel to El Camino Real) can be alright for cycling

What are the barriers that make walking and bicycling a challenge in your community?

Verbatim Comments	<ul style="list-style-type: none">▪ Small bike lanes▪ Mountains▪ Affordable bike repair – can't find it!▪ Bike got stolen
Key Takeaways	<ul style="list-style-type: none">▪ Narrow bike lanes aren't appealing▪ Geography within the County makes cycling difficult

What types of walking and bicycling improvements would you like to see in your neighborhood?

Verbatim Comments	<ul style="list-style-type: none">▪ SMCO biking app for resources and route maps▪ We need a path from RWC to Menlo▪ Dog friendly paths▪ Bikeshare!▪ We love the green striping on bike lanes▪ Bike paths▪ Need more paths▪ More protected bike lanes▪ Bike Lane business sponsorship opportunities▪ Bike Boulevards▪ Expand the Coastal Trail

Key Takeaways	<ul style="list-style-type: none"> More protected infrastructure is desired Green bike lanes/ bike boulevards are also appreciated
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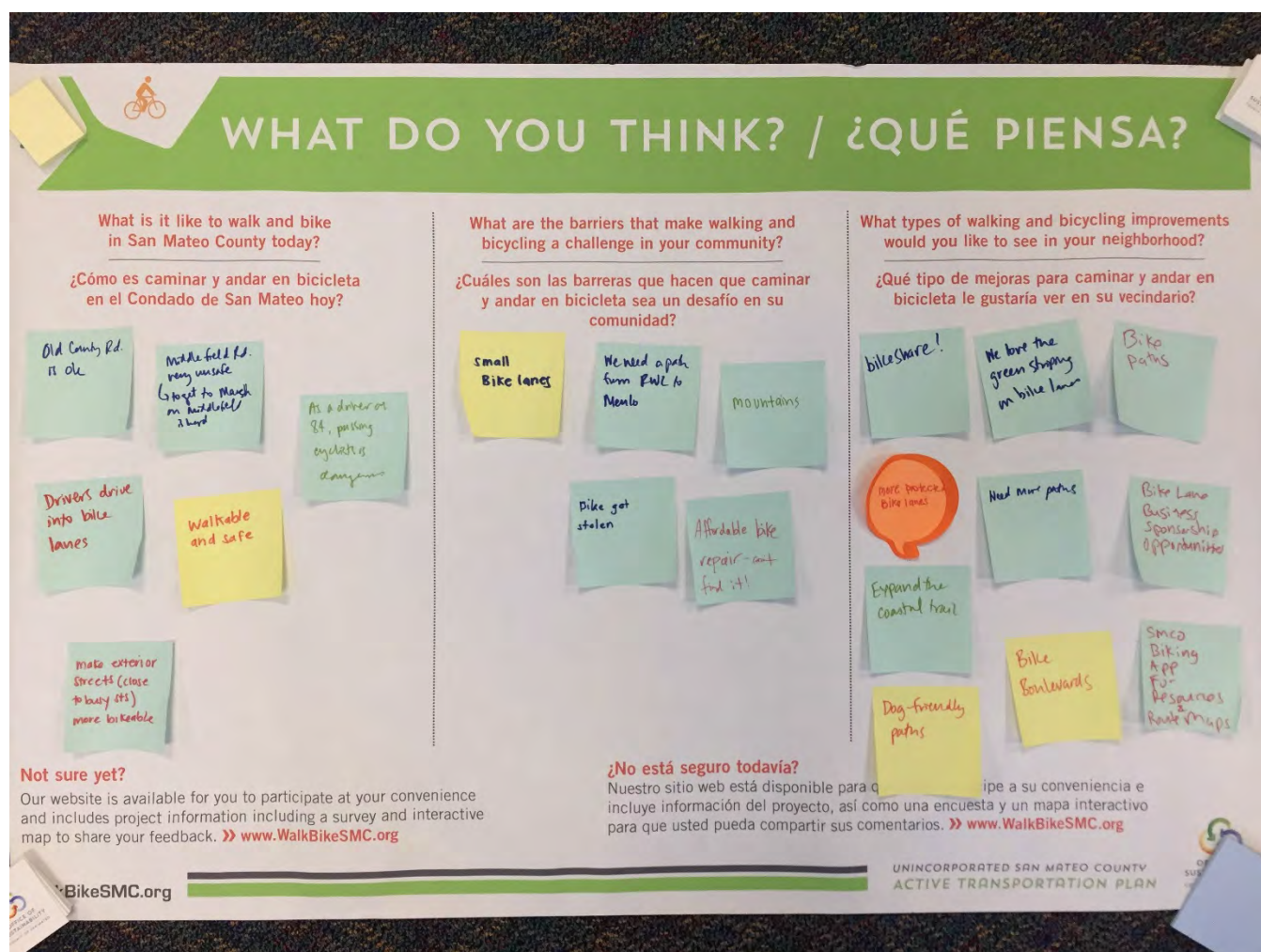


Figure 8: Flood Park Movie Night Comments

Siena Youth Center Summary – July 22, 2019

The project team visited the Siena Youth Center in North Fair Oaks on July 22, 2019 to gather input on the Plan from approximately 75 elementary and middle school-aged children. Participants gathered into groups of 5-8 and were asked to participate in a group exercise to discuss what would encourage group members to walk and bike more, and the types of places participants would like to be able to walk and bike to. Popular answers to the question “what would encourage you to bike more?” included more bike lanes, more separation from vehicle traffic, better maintained roads and bike lanes, access to a bicycle, and more secured bike parking. Popular answers to the question “what would encourage you to bike more?” included better crossings at major intersections and more or wider sidewalks. In terms of locations participants would like to walk and bike to, parks, homes and friends’ homes, community centers and shopping centers/ dining establishments were favored among many groups.

Groups were also invited to mark up maps of North Fair Oaks, indicating challenging or dangerous walking and biking routes. Middlefield Road, 5th Avenue and Bay Road were identified as challenging for both walking and biking in a number of groups. Other challenging walking and biking routes included Marlborough Road, Fair Oaks Lane, the northern side of the Caltrain tracks, Spruce Street, and Selby Lane. Refer to **Attachment C** for images of the marked-up maps, where red marks indicate difficult walking routes, and green indicate difficult biking routes, unless otherwise stated.



Figure 9: Sidewalk stencils at the Siena Youth Center event

Community Workshops

In June 2019, the project team hosted two community workshops – one on the coast and one on the bay side of San Mateo County. The goals of the two community workshops were to:

- Inform the public on the plan so far, where we are in the process, and what the next steps are.
- Receive feedback from public on the work that's been done so far and on current local transportation challenges.

The County notified people about the workshops throughout the month of June through:

- Emails distributed to the County email list and shared with partners and community organizations, such as the Silicon Valley Bike Coalition
- Social media posts – Nextdoor, Facebook and Twitter
- Flyers distributed to the Technical Advisory Committee and posted at community venues
- Press release to San Mateo Daily Journal

Workshop materials were provided in both English and Spanish and are included in Attachment B. The following section shares a summary of feedback from these events.



Figure 10: Community members participate at the workshop in Princeton



Figure 11: Community members sign in at the workshop in North Fair Oaks

Half Moon Bay Yacht Club Summary – June 19, 2019

The project team spoke with approximately 20 people about the Plan at the Half Moon Bay Yacht Club in Princeton on Wednesday, June 19 from 6:30 – 8:30 PM. Compiled Feedback is provided under Workshop 1 in the Feedback Summary section.

Fair Oaks Community Center Summary – June 25, 2019

The project team spoke with approximately 15 people about the Plan at the Fair Oaks Community Center in North Fair Oaks on Thursday, June 25 from 6:30 – 8:30 PM. Compiled Feedback is provided under Workshop 2 in the Feedback Summary section. In-person Spanish translation was provided, although no community members required that assistance.

Feedback Summary

This section summarizes the feedback received at the workshop. Participants were invited to view project documents, including findings from the draft Existing Conditions Report, and then share feedback on open-ended questions. The following table summarizes responses to those questions.

The following tables report on feedback received on the open-ended feedback boards, shown below in **Figure 12**.

What is it like to walk and bike in San Mateo County Today?

	Workshop 1 – Princeton	Workshop 2 – North Fair Oaks
Verbatim Comments	<ul style="list-style-type: none"> ▪ No way to cross the highway ▪ Lack of biking and walking paths along highway ▪ Great, I love it ▪ It's hard to cross the road on a bike because cars drive fast ▪ It's very difficult and at times dangerous to walk/bike in El Granada area, especially on holidays or weekends ▪ San Mateo hasn't cultivated a pedestrian and bike access culture or infrastructure ▪ Pedestrians do not have the right-of-way in Montara- no bike or ped lanes, very scary! SUVs, big trucks, narrow roads, speeding 	<ul style="list-style-type: none"> ▪ Sidewalks in NFO are either non-existent or too narrow for strollers or wheelchairs. We need ADA-approved and compliant sidewalks ▪ Walking and bicycling is very dangerous in NFO
Key Takeaways	<ul style="list-style-type: none"> ▪ It's difficult to cross Highway 1 ▪ It's difficult to bike on the coast due to lack of infrastructure, high vehicular travel speeds, lack of bike/ped culture 	<ul style="list-style-type: none"> ▪ Unsafe bicycle and pedestrian facilities ▪ Narrow sidewalks ▪ Lack of sidewalks

What are the barriers that make walking and bicycling a challenge in your community?

	Workshop 1 – Princeton	Workshop 2 – North Fair Oaks
Verbatim Comments	<ul style="list-style-type: none"> ▪ The highway! ▪ Pot holes ▪ Caltrans is messy, leaves debris ▪ How do people get more confident biking on dirt/volunteer trails? ▪ Heavy traffic- not enough stop signs 	<ul style="list-style-type: none"> ▪ Vehicle speeds ▪ Connectivity ▪ Availability ▪ Fitness ▪ Safety factors ▪ There are NO bike lanes in NFO, and we need those, not only on Middlefield

	<ul style="list-style-type: none"> ▪ Lack of bike path markings below Sam's. I'm not sure visitors know it's a bike path. ▪ Traffic near restaurants on Capistrano Road ▪ Trash cans in bike lanes ▪ Increased garbage/ broken glass from increased use ▪ Significant barrier is cars traveling above 45 mph – up to 70 mph from Montara to El Granada 	<p>Road, but around other main roads and points</p> <ul style="list-style-type: none"> ▪ Maintaining neighborhood identity without creating increased vehicle speeds
Key Takeaways	<ul style="list-style-type: none"> ▪ Improve walking and biking both along and across Highway 1 ▪ High vehicular travel speeds ▪ Physical barriers in bike lanes (trash, trash cans, etc.) 	<ul style="list-style-type: none"> ▪ High vehicular travel speeds ▪ Lack of safe bike facilities

What types of walking and bicycling improvements would you like to see in your neighborhood?

	Workshop 1 – Princeton	Workshop 2 – North Fair Oaks
Verbatim Comments	<ul style="list-style-type: none"> ▪ Working with shared micromobility companies like Jump ▪ Bike lanes are helpful ▪ Protected bike lanes make it easier for cars and bikes ▪ I like the traffic calming on Potrero ▪ A bike lane on Highway 1 ▪ Traffic calming and lower speed limit from Montara to Half Moon Bay ▪ Would also like solutions to include sustainable landscape practices (drainage, greenery) and not all asphalt and concrete. Keep the rural character of the place ▪ Need a safe place (traffic light) to cross Highway 1 by Montara/ Moss Beach ▪ Safe crossings on Highway 1 are urgently needed, especially in Moss Beach ▪ Increase the number of bike/ped paths and lanes ▪ Longer bike rides (5, 10, 15, 20 miles) ▪ Use narrower traffic lanes (9' or 9.5') for 35 mph and lower roads. Narrow lanes by adding bike lane or bike buffer and/or making the center line wider 	<ul style="list-style-type: none"> ▪ Separate lanes ▪ Flat terrain ▪ Bike-car rules ▪ Electric bikes ▪ Street lighting ▪ Neighborhood traffic calming that allows for street trees to not be removed ▪ Tons of stop signs on bike boulevards makes them flow and frustrating to use- bollards or yield signs instead? ▪ Protected bike lanes ▪ Use the Hetch-Hetchy right of way as an area of transportation for bikes and pedestrians by opening routes on that land ▪ Protected bike facility on Ringwood ▪ Redesign bike network around Middlefield ▪ Where appropriate, talk about scooters and multiple sign patterns (bikes, scooters, skateboards) so lanes are multi-use ▪ Middlefield Rd dashing crossings at Pacific and 3rd ▪ HAWK on redesign plans? ▪ High-visibility crosswalks

	<ul style="list-style-type: none"> ▪ Narrow lanes by adding parking and curb extensions ▪ Bike trail from Montara to Highway 1 ▪ Accommodations for e-bikes, etc. ▪ Trails are the principal answer here. Roads are narrow and dangerous ▪ Slow car traffic – reduce speed limits, traffic calming, enforcement. Remember that slower traffic means less carbon pollution ▪ More bike parking spots ▪ More bike/walk trails ▪ Use stop limit lines at crosswalks to keep cars away from crosswalk and create a visible safety zone ▪ Interim treatment before final trail ▪ Add street greenery- trees at curb extensions, green chicanes, green medians, greenery along walkways ▪ Paved path between coastal trail and Highway 1 trail by Sweetwood camp and Frenchman's creek ▪ Bike lanes and protected bike lanes are a good idea ▪ Would like electric bike charging stations ▪ Would like to see traffic calming that is sensitive/appropriate to local context ▪ Filling sidewalk gaps is good for scooters, roller skating, biking, and more. Good idea! ▪ Intersection improvements are better if you want to bike- safer when crossing the roads! 	<ul style="list-style-type: none"> ▪ Better bike lane signage ▪ ADA ramps on Middlefield ▪ Parklets and plants in NFO ▪ Trees, shade ▪ Benches for seniors ▪ Sidewalk pinch points ▪ Need bike parking, especially once we get bike lanes
Key Takeaways	<ul style="list-style-type: none"> ▪ Traffic calming in neighborhoods ▪ Improvements that incorporate greenery ▪ Narrower vehicle lanes to make room for bike infrastructure and slow traffic ▪ Consideration of e-bikes ▪ More trails ▪ Bike parking ▪ Safer crossings (Signalized Highway 1 crossings, especially near Montara/Moss Beach) ▪ Bike lanes and protected bike lanes 	<ul style="list-style-type: none"> ▪ Traffic calming in neighborhoods ▪ Improvements that incorporate greenery ▪ Consider other modes – electric bikes, scooters, skateboards, etc. ▪ High-visibility crossings ▪ Bike parking ▪ Protected bike lanes

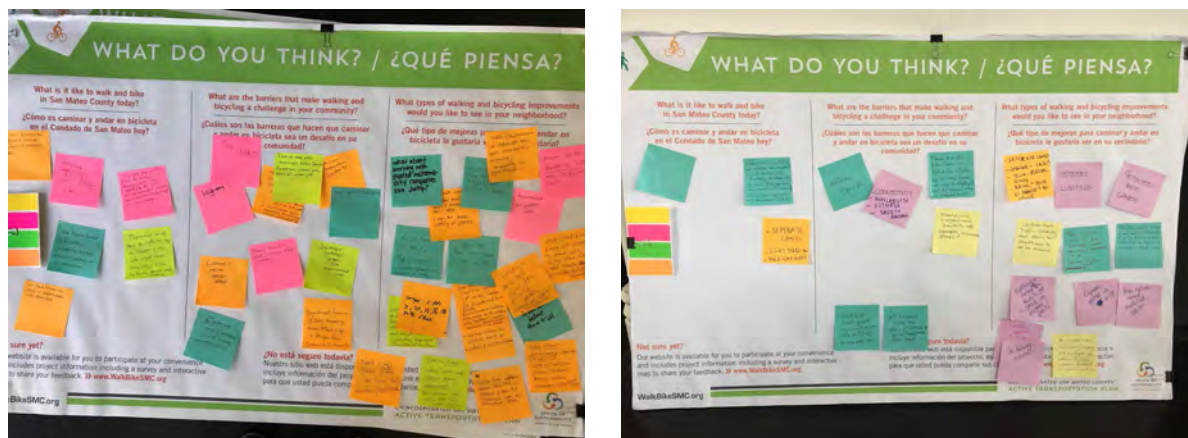


Figure 12: Feedback boards from the first two public workshops

Map Feedback

This table summarizes feedback received on the maps. Participants were invited to place dots of different colors on a map of San Mateo County, with unincorporated areas highlighted. This exercise was identical to those provided in the road show events, but new, unmarked maps were provided. This map contained insets for the mid-coast region between Montara and Half Moon Bay and for North Fair Oaks. In addition to placing dots on the map, participants were also invited to write open-ended responses on post-it notes or directly on the map. These maps are shown in **Figure 13**.

	Workshop 1 – Princeton	Workshop 2 – North Fair Oaks
“I like to bike here” (green)	<ul style="list-style-type: none"> California Coastal Trail (multiple comments) Old San Pedro Mountain Road Franklin St (Montara) Ocean Blvd Montara near Farallone View Elementary School 	<ul style="list-style-type: none"> E Bayshore Rd Canada Rd Sand Hill Rd Ringwood and Coleman Middlefield Rd Rail corridor in NFO Some comments in Atherton (not unincorporated)
“It is difficult to bike here” (yellow)	<ul style="list-style-type: none"> South of tunnel coming into Montara Airport Blvd (multiple comments) El Granada Montara Highway 1 (multiple comments) Alpine Rd Sunshine Valley Rd Mirada Rd Frontage Rd 	<ul style="list-style-type: none"> Ringwood Ave – parking/drop-off/pick-up is common on Ringwood for high school, generating more conflict in the bike lane Canada Rd/ Crystal Springs Trail Cloverdale Rd Cloverdale Rd/Pescadero Creek Rd Skyline Blvd Sand Hill Rd/ Whiskey Hill Rd 5th Ave/ Williams Ave Marsh Rd/ Fair Oaks Ave Middlefield Rd/ Semicircular Rd E Bayshore Rd

"I like to walk here" (blue)	<ul style="list-style-type: none"> ▪ Mirada Rd ▪ Montara near Farallone View Elementary School 	<ul style="list-style-type: none"> ▪ Mirada Rd ▪ Some comments in San Carlos and Redwood City (incorporated)
"It is difficult to bike here" (red)	<ul style="list-style-type: none"> ▪ Between 92 and Frenchman Rd ▪ Highway 1 (multiple comments) 	<ul style="list-style-type: none"> ▪ Green Valley ▪ Middlefield Rd ▪ Sidewalks at Pescadero Middle/High School
Other comments	<ul style="list-style-type: none"> ▪ Continue bike lanes on Santa Cruz/Alameda for consistency with Santa Clara County ▪ Sidewalks in West Menlo Park are not useable. There is signage not to use the sidewalks near many schools. ▪ Stripe trails to show two directions and indicate sharing ▪ Need a path and/or traffic calming along Airport Blvd ▪ Would like a walking/biking route through Montara ▪ Deep ditch next to Airport Blvd and close proximity of cards and lack of continuous sidewalk make it difficult to walk here ▪ Highway 1 bike lane from Montara to Half Moon Bay – people drive too fast ▪ Can't get off coastal path/ into neighborhoods north of HMB ▪ Separate pedestrian path/ bike lane 	<ul style="list-style-type: none"> ▪ Add upgrades through Atherton on State Hwy El Camino Real ▪ Bay Rd and Ringwood Ave with 5-way stop control: Menlo Park Transportation wants to make this 4-way. Want to protect sidewalk and bike lanes for SBR from Bay Rd onto Ringwood ▪ Canada Rd intersections at end of Crystal Springs. Bikes should be allowed on hiking path ▪ Old Colma Rd – Trail would allow cyclists to stay off Mission Street ▪ Car clubs/motorcycles go really fast on Hastings Hill, make tight turns. Education? Speed enforcement? ▪ Add bike lanes on Woodside ▪ Angled curb right up to curb/intersection to help with visibility and blocking ▪ Bridge over train tracks (in NFO) ▪ Connect east and west NFO near new housing project and Dunbarton Corridor future transit hub ▪ Rails with Trails – build continuous grade-separated bike and ped trail along Caltrain and mandate any station rebuilds and future grade separation projects along trail

Comment Cards

Eight comment cards were received at the Half Moon Bay workshop and four comment cards were received at the North Fair Oaks workshop. The full text of these comments is included in Attachment A. This feedback was categorized according to geographic areas and topic themes. Need for low-stress connectivity along Highway 1 was a prominent theme of this input, with several participants requesting a bike path from Montara to Half Moon Bay.

Other Feedback

Participants suggested that the project team perform outreach at St. Anthony's church after church services, as well as attend the Pescadero Farmer's Market.

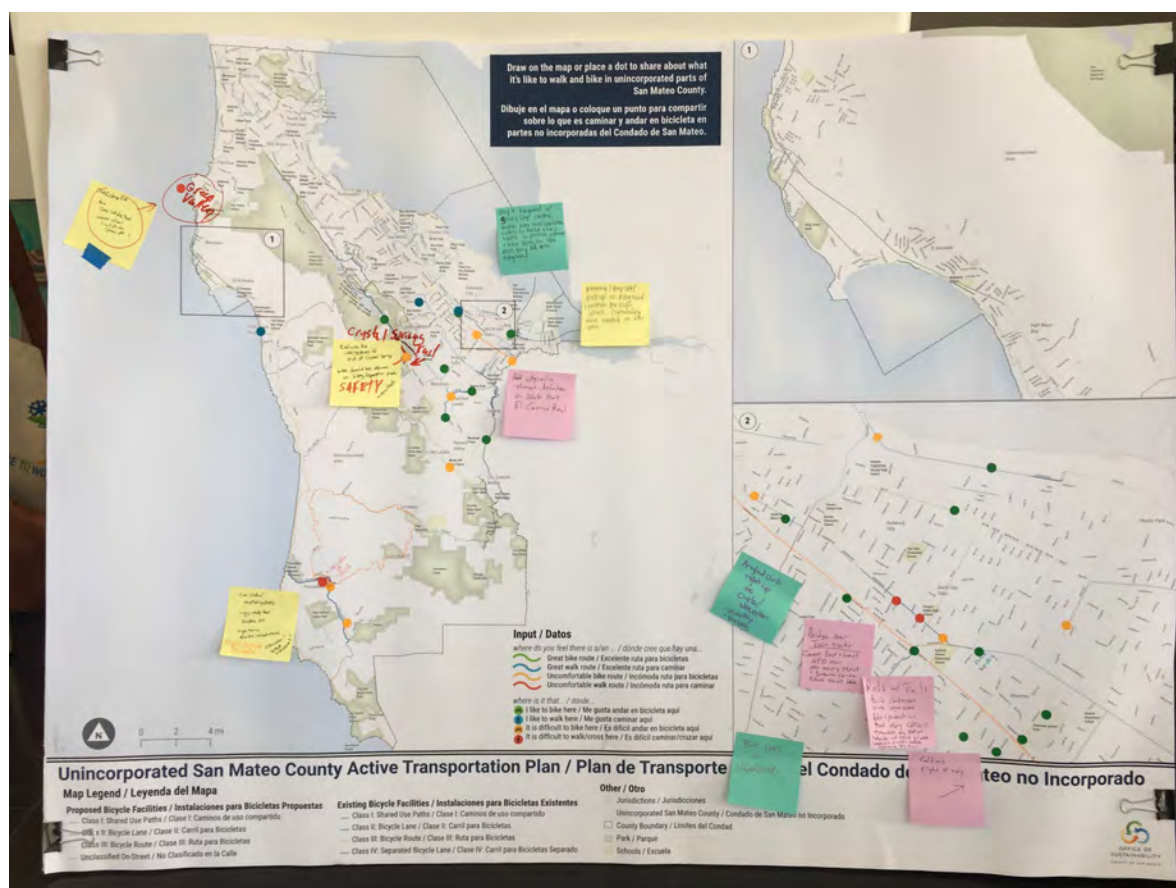


Figure 13: Map feedback at the two workshops

Next Steps

Community input on the current walking and bicycling experience in San Mateo County is crucial to this planning effort given that community members are the experts on biking and walking in San Mateo County on a daily basis. Technical analyses like the Pedestrian and Bicycle Gap analysis can be challenging to perform at a countywide scale and the infrastructure challenges identified by community members will help to focus on key locations that are important to the community.

ATTACHMENT A: COMMENT CARDS

Event	Comment	Geographic Theme	Topic Area
HMB	It's not easy to ride your bike from ocean Colony to downtown Half Moon Bay without riding on Highway 1. There's a bike lane off the highway part of the way to downtown not all the way. Cars go fast. It's tricky crossing the highway but most people don't want there to be more signals and crosswalks on Highway 1 because they see it as slowing traffic. There always seems to be conflict. There's also not a great walking path from ocean colony to downtown. It stops at cameron's, then you have to walk on the bluff or highway. Thanks for the community engagement	Highway 1	Low Stress Connectivity
HMB	We need a bike trail from Montara to Half Moon Bay. It doesn't have to be paved! But it needs to be safe. Interim would be better than nothing.	Highway 1	Low Stress Connectivity
HMB	Make more lights/crosswalks in El Granada because it is extremely dangerous for me to walk my dog (near El Granada post office)	Highway 1	Crossing Improvements
HMB	I bike recreationally and to do errands. I live in Moss Beach but keep my bike in Half Moon Bay because safe and convenient biking is less available on the MidCoast	Highway 1	Low Stress Connectivity
HMB	Make a more obvious bike path for idiot tourists because they walk around like chickens with their heads cut off	El Granada	Wayfinding
HMB	Can tourists stop going through El Granada as a shortcut? It is really annoying, and I can't get off the bus at the bus stop because of how many people there are.	Avenue Alhambra	Traffic management
HMB	Pedestrian/Bike Path from Montara to connect with path in El Granada	Highway 1	Low Stress Connectivity
HMB	Pedestrian path along Airport Blvd between Princeton and Moss Beach	Airport Blvd	Low Stress Connectivity
NFO	Easy fix: Canada Road hazard. Open southernmost section of Crystal Springs Trail/SMC property to bikes. Lightly used gravel road would allow bikes to avoid two 280 intersections and a dangerous Canada Rd. Resistance from Woodside is unreasonable and not supported by data. It's time to move beyond them. Liability?	Crystal Springs	Spot Improvement
NFO	Please consider Menlo Park Area - 5 schools. Menlo-Atherton High School, Laurel Goode School, Peninsula School, Encinal Middle School, and Hillview School - west of El Camino for controlled traffic around Menlo-Atherton during drop-off and pick-up times Mon - Fri. Current no parking anytime signs on both side of Ringwood ignored. Bicyclists don't stay on correct side of street and run through stop signs. Make 1/4 mile zone around the school - no driving for non-parking lot drop-offs (other than disabled). Have students walk.	Menlo Oaks	Safe routes to School
NFO	Bikes - electric bikes. Bring Tour de France, Safety rules (cars - bikes - vans), Separate Lanes, Helmet with torch lights, Health Factors - Fitness, Availability		Education and Encouragement
NFO	Jeff Clark - Maverick's, Sailing Team, Athletics – Swim/Run/Bike, invite US Olympic Biking, Tour de France		Education and Encouragement

ATTACHMENT C: SIENA YOUTH CENTER MAPS



UNINCORPORATED SAN MATEO COUNTY ACTIVE TRANSPORTATION PLAN

1. Do you walk and bike in San Mateo County?

- Number of people who bike 4
- Number of people who walk 5

2. What would encourage you to bike more? Check all that apply to your group.

- ☒ Access to a bicycle
- ☒ More bike lanes
- ☒ More secured bike parking
- ☒ More street lighting
- ☒ More separation from vehicle traffic
- ☒ Better maintained roads and bike lanes
- ☐ Lessons on how to ride a bike
- ☐ More info about routes I should take on a bike
- ☐ Seeing more people who look similar to me biking
- ☐ Other _____

3. What would encourage you to walk more? Check all that apply to your group.

- ☒ More or wider sidewalks
- ☒ More street lighting
- ☐ Slower vehicle traffic
- ☒ Better crossings at major intersections (i.e., cross walks, countdown timers)
- ☐ Other _____

4. What types of places would you like to walk and bike to in San Mateo County? Check all that apply to your group.

- ☐ Bus stop or train station
- ☒ Park
- ☒ Home/ Friends' homes
- ☒ Community center/ library (e.g. Siena Youth)

Use markers and sticky dots to mark dangerous or challenging walking or bicycling routes or intersections.





UNINCORPORATED SAN MATEO COUNTY ACTIVE TRANSPORTATION PLAN

■ = walking
■ = Bike

1. Do you walk and bike in San Mateo County?

- Number of people who bike 3
- Number of people who walk 3

2. What would encourage you to bike more? Check all that apply to your group.

- ☐ Access to a bicycle
- ☒ More bike lanes
- ☒ More secured bike parking
- ☒ More street lighting
- ☒ More separation from vehicle traffic
- ☒ Better maintained roads and bike lanes
- ☐ Lessons on how to ride a bike
- ☐ More info about routes I should take on a bike
- ☒ Seeing more people who look similar to me biking
- ☐ Other _____

3. What would encourage you to walk more? Check all that apply to your group.

- ☒ More or wider sidewalks
- ☒ More street lighting
- ☐ Slower vehicle traffic
- ☒ Better crossings at major intersections (i.e., cross walks, countdown timers)
- ☐ Other _____

4. What types of places would you like to walk and bike to in San Mateo County? Check all that apply to your group.

- ☒ Bus stop or train station
- ☒ Park
- ☒ Home/ Friends' homes
- ☐ Community center/ library (e.g. Siena Youth)

Use markers and sticky dots to mark dangerous or challenging walking or bicycling routes or intersections.





UNINCORPORATED SAN MATEO COUNTY ACTIVE TRANSPORTATION PLAN

Bad walking
Bad biking

1. Do you walk and bike in San Mateo County?

- Number of people who bike _____
- Number of people who walk _____

2. What would encourage you to bike more? Check all that apply to your group.

- ☒ Access to a bicycle
- ☒ More bike lanes
- ☒ More secured bike parking
- ☒ More street lighting
- ☐ More separation from vehicle traffic
- ☐ Better maintained roads and bike lanes
- ☐ Lessons on how to ride a bike
- ☐ More info about routes I should take on a bike
- ☐ Seeing more people who look similar to me biking
- ☐ Other _____

3. What would encourage you to walk more? Check all that apply to your group.

- ☒ More or wider sidewalks
- ☒ More street lighting
- ☒ Slower vehicle traffic
- ☒ Better crossings at major intersections (i.e., cross walks, countdown timers)
- ☐ Other _____

4. What types of places would you like to walk and bike to in San Mateo County? Check all that apply to your group.

- ☐ Bus stop or train station
- ☒ Park
- ☒ Home/ Friends' homes
- ☐ Community center/ library (e.g. Siena Youth)

Use markers and sticky dots to mark dangerous or challenging walking or bicycling routes or intersections.





UNINCORPORATED SAN MATEO COUNTY ACTIVE TRANSPORTATION PLAN

1. Do you walk and bike in San Mateo County?

- Number of people who bike 2
- Number of people who walk 1

2. What would encourage you to bike more? Check all that apply to your group.

- ☒ Access to a bicycle
- ☒ More bike lanes
- ☒ More secured bike parking
- ☒ More street lighting
- ☒ More separation from vehicle traffic
- ☐ Better maintained roads and bike lanes
- ☐ Lessons on how to ride a bike
- ☐ More info about routes I should take on a bike
- ☒ Seeing more people who look similar to me biking
- ☐ Other _____

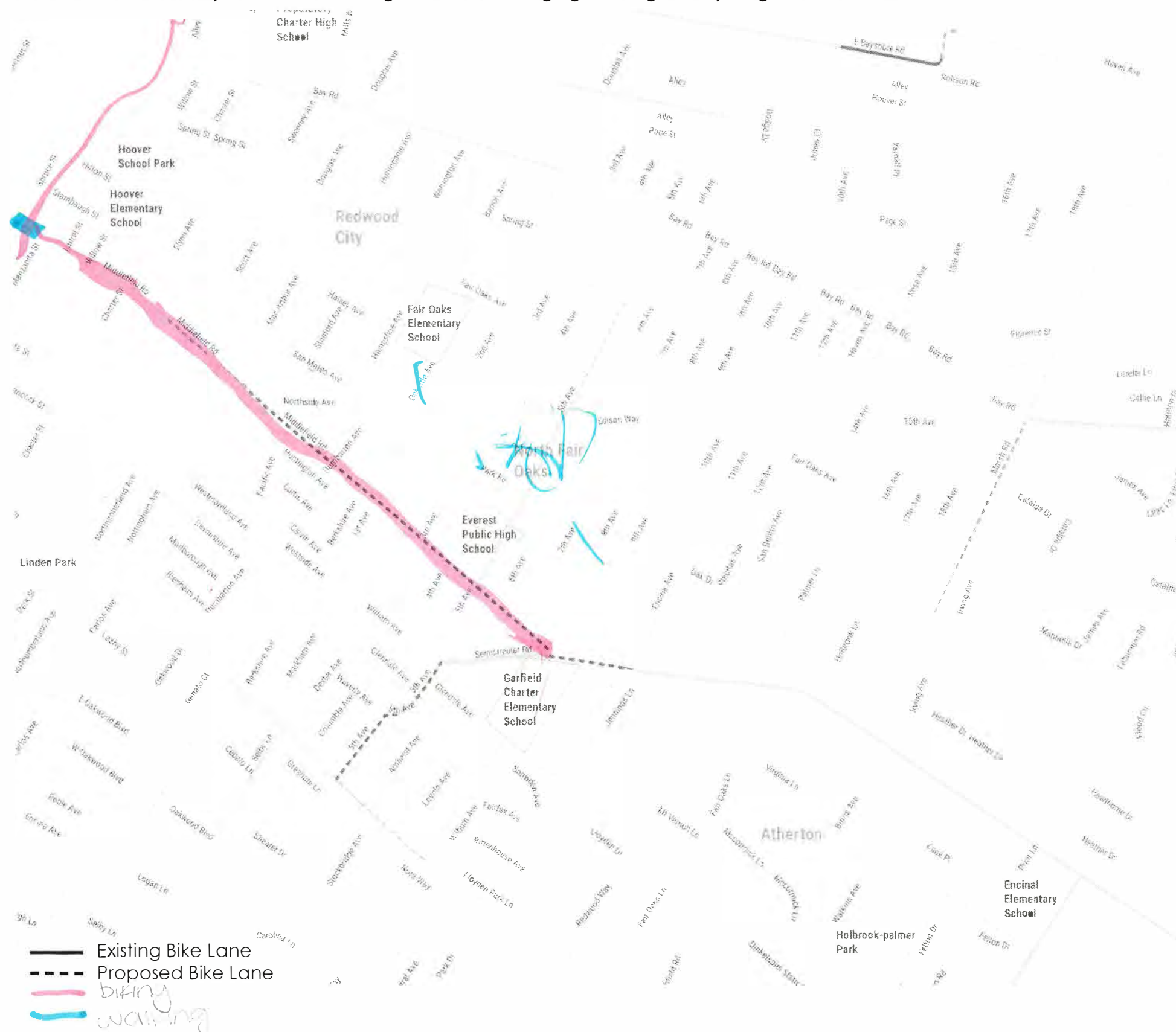
3. What would encourage you to walk more? Check all that apply to your group.

- ☐ More or wider sidewalks
- ☐ More street lighting
- ☐ Slower vehicle traffic
- ☒ Better crossings at major intersections (i.e., cross walks, countdown timers)
- ☐ Other _____

4. What types of places would you like to walk and bike to in San Mateo County? Check all that apply to your group.

- ☒ Bus stop or train station
- ☒ Park
- ☒ Home/ Friends' homes
- ☐ Community center/ library (e.g. Siena Youth)

Use markers and sticky dots to mark dangerous or challenging walking or bicycling routes or intersections.





Group 3

1. Do you walk and bike in San Mateo County?

- Number of people who bike 2
- Number of people who walk 5

2. What would encourage you to bike more? Check all that apply to your group.

- ☒ Access to a bicycle
- ☒ More bike lanes
- ☒ More secured bike parking
- ☒ More street lighting
- ☒ More separation from vehicle traffic
- ☒ Better maintained roads and bike lanes
- ☒ Lessons on how to ride a bike
- ☒ More info about routes I should take on a bike
- ☒ Seeing more people who look similar to me biking
- ☒ Other Better locks

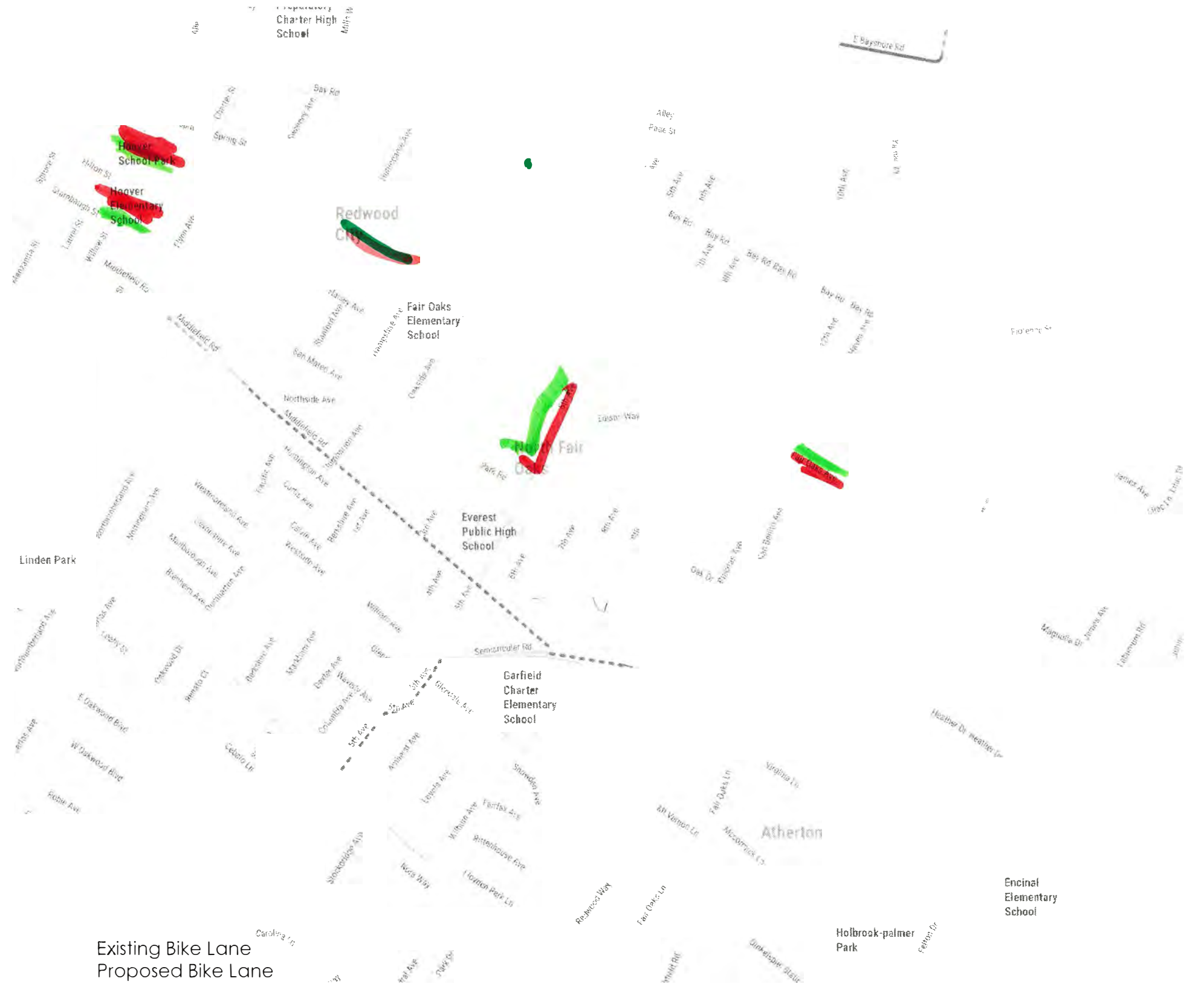
3. What would encourage you to walk more? Check all that apply to your group.

- ☐ More or wider sidewalks
- ☐ More street lighting
- ☐ Slower vehicle traffic
- ☒ Better crossings at major intersections (i.e., cross walks, countdown timers)
- ☒ Other More walking lanes

4. What types of places would you like to walk and bike to in San Mateo County? Check all that apply to your group.

- ☐ Bus stop or train station
- ☒ Park
- ☐ Home/ Friends' homes
- ☒ Community center/ library (e.g. Siena Youth)

Use markers and sticky dots to mark dangerous or challenging walking or bicycling routes or intersections.





UNINCORPORATED SAN MATEO COUNTY ACTIVE TRANSPORTATION PLAN

1. Do you walk and bike in San Mateo County?

- Number of people who bike 2
- Number of people who walk 1

2. What would encourage you to bike more? Check all that apply to your group.

- ☒ Access to a bicycle
- ☒ More bike lanes
- ☒ More secured bike parking
- ☒ More street lighting
- ☒ More separation from vehicle traffic
- ☒ Better maintained roads and bike lanes
- ☒ Lessons on how to ride a bike
- ☒ More info about routes I should take on a bike
- ☒ Seeing more people who look similar to me biking
- ☒ Other _____

3. What would encourage you to walk more? Check all that apply to your group.

- ☒ More or wider sidewalks
- ☒ More street lighting
- ☒ Slower vehicle traffic
- ☒ Better crossings at major intersections (i.e., cross walks, countdown timers)
- ☒ Other _____

4. What types of places would you like to walk and bike to in San Mateo County? Check all that apply to your group.

- ☒ Bus stop or train station
- ☒ Park
- ☒ Home/ Friends' homes
- ☒ Community center/ library (e.g. Siena Youth)

Use markers and sticky dots to mark dangerous or challenging walking or bicycling routes or intersections.





UNINCORPORATED SAN MATEO COUNTY
ACTIVE TRANSPORTATION PLAN

1. Do you walk and bike in San Mateo County?

- Number of people who bike 7
- Number of people who walk 8

2. What would encourage you to bike more? Check all that apply to your group.

- ☒ Access to a bicycle
- ☒ More bike lanes
- ☐ More secured bike parking
- ☐ More street lighting
- ☒ More separation from vehicle traffic
- ☒ Better maintained roads and bike lanes
- ☒ Lessons on how to ride a bike
- ☒ More info about routes I should take on a bike
- ☐ Seeing more people who look similar to me biking
- ☒ Other more stop signs for cars

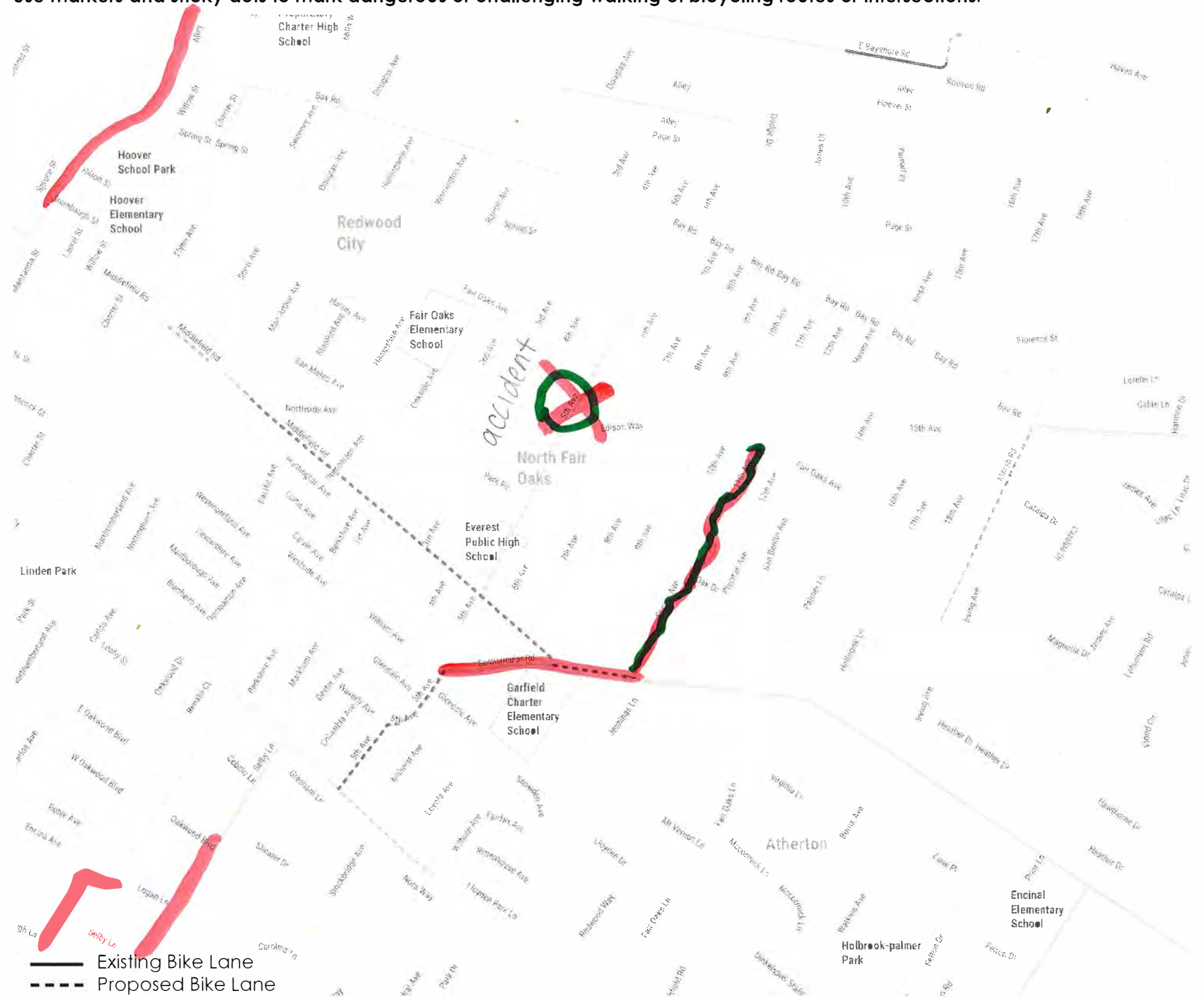
3. What would encourage you to walk more? Check all that apply to your group.

- ☐ More or wider sidewalks
- ☐ More street lighting
- ☐ Slower vehicle traffic
- ☐ Better crossings at major intersections (i.e., cross walks, countdown timers)
- ☐ Other Be more time to walk

4. What types of places would you like to walk and bike to in San Mateo County? Check all that apply to your group.

- ☐ Bus stop or train station
- ☒ Park
- ☐ Home/ Friends' homes
- ☒ Community center/ library (e.g. Siena Youth)

Use markers and sticky dots to mark dangerous or challenging walking or bicycling routes or intersections.



hard to
red-walk
green-hard to
bike



UNINCORPORATED SAN MATEO COUNTY
ACTIVE TRANSPORTATION PLAN

1. Do you walk and bike in San Mateo County?

- Number of people who bike 5
- Number of people who walk 6

2. What would encourage you to bike more? Check all that apply to your group.

- ☒ Access to a bicycle
- ☒ More bike lanes (*sidewalks are for people*)
- ☒ More secured bike parking (*Target*)
- ☐ More street lighting
- ☒ More separation from vehicle traffic
- ☒ Better maintained roads and bike lanes
- ☐ Lessons on how to ride a bike
- ☒ More info about routes I should take on a bike
- ☐ Seeing more people who look similar to me biking
- ☐ Other _____

3. What would encourage you to walk more? Check all that apply to your group.

- ☒ More or wider sidewalks
- ☐ More street lighting
- ☒ Slower vehicle traffic
- ☒ Better crossings at major intersections (i.e., cross walks, countdown timers)
- ☐ Other More time to cross the street

4. What types of places would you like to walk and bike to in San Mateo County? Check all that apply to your group.

- ☐ Bus stop or train station
- ☒ Park
- ☒ Home/ Friends' homes
- ☐ Community center/ library (e.g. Siena Youth)
- (chucke cheese) (Target, etc. well)*

Use markers and sticky dots to mark dangerous or challenging walking or bicycling routes or intersections.





OFFICE OF
SUSTAINABILITY
COUNTY OF SAN MATEO

UNINCORPORATED SAN MATEO COUNTY ACTIVE TRANSPORTATION PLAN

1. Do you walk and bike in San Mateo County?

- Number of people who bike 3
- Number of people who walk 2

2. What would encourage you to bike more? Check all that apply to your group.

- ☐ Access to a bicycle
- ☐ More bike lanes
- ☒ More secured bike parking
- ☐ More street lighting
- ☒ More separation from vehicle traffic
- ☒ Better maintained roads and bike lanes
- ☐ Lessons on how to ride a bike
- ☐ More info about routes I should take on a bike
- ☐ Seeing more people who look similar to me biking
- ☐ Other _____

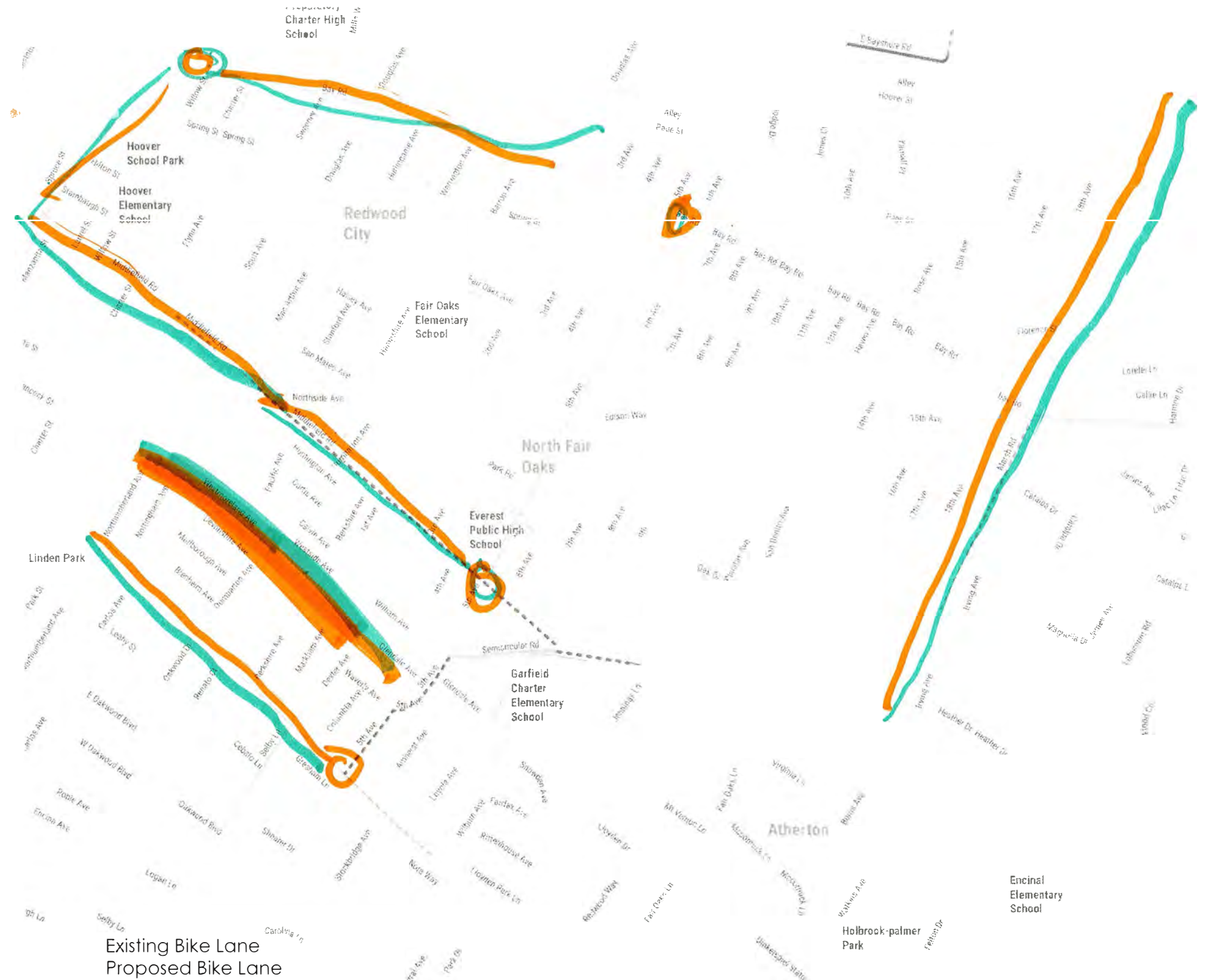
3. What would encourage you to walk more? Check all that apply to your group.

- ☐ More or wider sidewalks
- ☐ More street lighting
- ☒ Slower vehicle traffic
- ☐ Better crossings at major intersections (i.e., cross walks, countdown timers)
- ☐ Other _____

4. What types of places would you like to walk and bike to in San Mateo County? Check all that apply to your group.

- ☐ Bus stop or train station
- ☐ Park
- ☐ Home/ Friends' homes
- ☐ Community center/ library (e.g. Siena Youth)

Use markers and sticky dots to mark dangerous or challenging walking or bicycling routes or intersections.





UNINCORPORATED SAN MATEO COUNTY ACTIVE TRANSPORTATION PLAN

1. Do you walk and bike in San Mateo County?

- Number of people who bike 4
- Number of people who walk 4

2. What would encourage you to bike more? Check all that apply to your group.

- ☒ Access to a bicycle
- ☒ More bike lanes
- ☒ More secured bike parking
- ☒ More street lighting
- ☒ More separation from vehicle traffic
- ☒ Better maintained roads and bike lanes
- ☒ Lessons on how to ride a bike
- ☒ More info about routes I should take on a bike
- ☒ Seeing more people who look similar to me biking
- ☐ Other _____

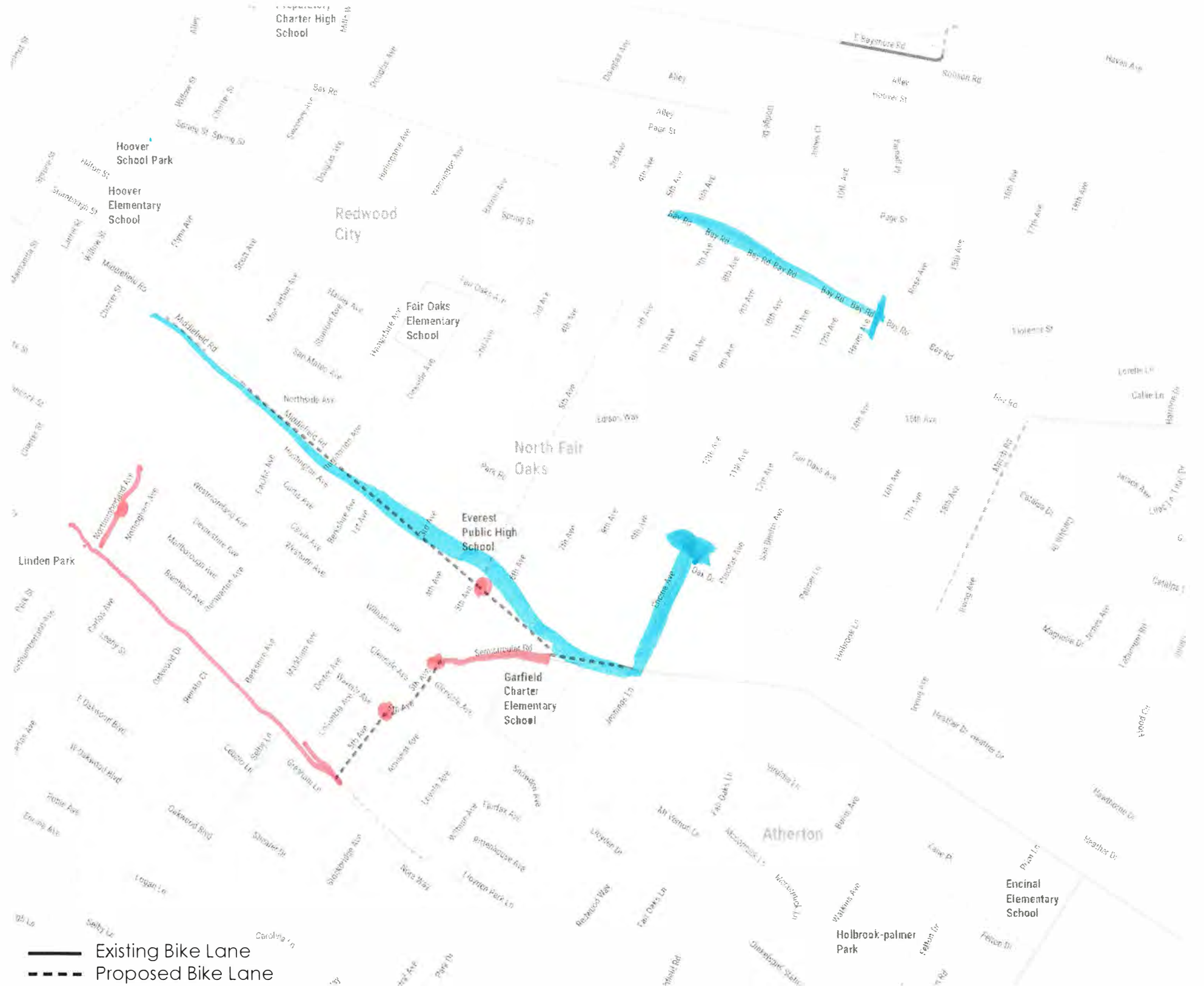
3. What would encourage you to walk more? Check all that apply to your group.

- ☒ More or wider sidewalks
- ☒ More street lighting
- ☒ Slower vehicle traffic
- ☒ Better crossings at major intersections (i.e., cross walks, countdown timers)
- ☐ Other _____

4. What types of places would you like to walk and bike to in San Mateo County? Check all that apply to your group.

- ☐ Bus stop or train station
- ☒ Park
- ☒ Home/ Friends' homes
- ☒ Community center/ library (e.g. Siena Youth)

Use markers and sticky dots to mark dangerous or challenging walking or bicycling routes or intersections.



UNINCORPORATED SAN MATEO COUNTY ACTIVE TRANSPORTATION PLAN

To: Julia Malmo-Laycock

Organization: Office of Sustainability, County of San Mateo

From: Sara Rauwolf, Toole Design, and Katie DeLeuw, EnviroIssues

Project: Unincorporated San Mateo County Active Transportation Plan

Re: Outreach Phase 2 Summary

The second phase of outreach for the Unincorporated San Mateo County Active Transportation Plan occurred between February and May, 2020. During this period, the project team participated in three roadshow events and hosted a virtual open house. Phase II outreach was initially intended to consist of eight in-person events (six road shows and two workshops), but the COVID-19 pandemic resulted in this outreach being moved online in early March.

The purpose of this outreach was to:

- Raise awareness of the County's efforts to prepare this plan.
- Educate people on the need for the plan, the work completed so far, and what we heard in Phase 1 of our outreach.
- Share the benefits and potential outcomes of the plan, including how recommended projects and programs aim to improve safety, access and comfort within specific communities.
- Solicit input on the draft recommendations for the Active Transportation Plan.

Roadshow Events

Through the roadshow series, the project team set up tables at three events/locations in unincorporated San Mateo County:

- Bicycle Sunday on Cañada Road, February 23, 2020
- Siena Youth Center Family Sports Night, February 27, 2020
- El Granada Post Office, February 29, 2020

At the roadshow events, the project team asked participants to provide feedback on preliminary bicycle network recommendations, types of pedestrian facilities they'd like to see implemented, and implementation priorities. See page 6 for photo documentation of the roadshow event displays, including the map, which asked participants to indicate which proposed projects they would or would not like to see implemented:

- **Green** dots: Proposed projects that people would like to see implemented.
- **Red** dots: Proposed projects that people would not like to see implemented.

Below are some key comments received during the roadshow events.

Comments from Siena Youth Center Family Sports Night Roadshow:

Bicycle

- Streetlights are needed near the Siena Youth Center since it is so dark
- Add more bike lanes to complete connections throughout the county

- Want more physically separated bike lanes for safety
- Train tracks are dangerous for many cyclists due to tire widths on most road bikes being thin enough to get stuck in the tracks
- There are many kids bike without helmets and lights in the area

Pedestrian

- Streetlights are needed near the Siena Youth Center since it is so dark
- More sidewalks are needed to protect pedestrians
- More physically separated sidewalks are desired for safety

Automobile

- Many comments on how fast people drive in the area and how uncomfortable it is
- People drive through the Chuck E. Cheese parking lot at 2541-43 El Camino Real, Redwood City, CA 94063 as a short cut, which presents conflicts with cyclists who bike through there to get to North Cumberland Avenue

Comments from El Granada Post Office Roadshow:

Bicycle

- Need to sweep gravel debris along the airport
- Use permeable surfaces instead of concrete
- Make it bike-able from Montara -> HMB
- Prefer to have it on the path off of Hwy 1
- Want to see separated bike paths
- Extend bike facilities to the ritz area
- Want safer NB biking routes on HWY 1
- Consider a separate bike path on median
- Bike education for kids
- We need a wide enough bike lane from the tunnel Montara -> HMB
- Connect all of the bike lanes. Places by the edge are too skinny

Pedestrian

- Add underpass at Whale Beach
- Lack of sidewalks and poor maintenance of existing sidewalks are a problem
- Street lighting needed along Ave Cabrillo
- Palo Alto: El Camino to Miramonte example of very good sidewalks
- Pedestrian tunnels desired

Automobile

- No roundabouts
- Add roundabouts
- Parking at the gym in Montara
- No parking along airport fence
 - Park so a truck can go around you
- Frontage road should be one-way going N
 - Southbound traffic diverted to another street
- AM traffic makes it difficult for firemen to get out

- Add roundabouts
- 2 paths: one faster path or Bike highway and one side a walking meandering path
- Add roundabouts (use visuals, use testimonials from real people to dispel myths)
- They eliminated the school busses.

Virtual Open House

The virtual open house included a short video presentation, an interactive webmap, and online survey. The interactive webmap asked participants to “like”, “dislike”, and provide comments on bike projects based on projects that they would or would not like to see implemented. This feedback was used to refine the proposed bicycle network, and projects that received strong support here are indicated in the project list in Appendix D. Two hundred ninety-four people participated in the online survey. A summary of survey responses is provided below.

Priorities in completing the network

In terms of implementation of the proposed bike network, most survey respondents would prefer to see a more robust and extensive countywide bicycle network, even if facilities consist of paint, flexposts, and signs, versus a network consisting of fewer, higher-quality facilities:

Understanding your bicycle network priorities will help us focus our implementation efforts. How would you like the County to focus on improving the bike network? Let us know which is most important to you:

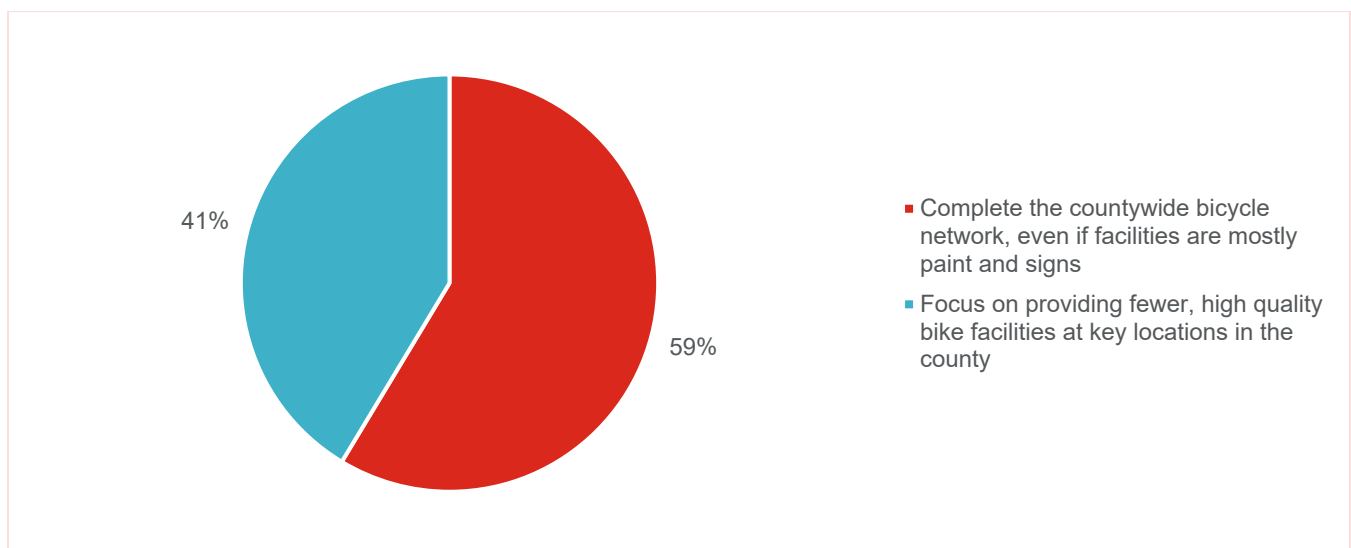


Figure 1: Network Buildout Question Response

Priorities in connecting to destinations

In order of priority, survey participants would like bikeways to connect to the following destinations:

1. Trails and parks
2. Libraries and community centers; shopping
3. Schools; jobs
4. Transit

This question was also analyzed by unincorporated county area, based on the community that each participant indicated they live, work, or spend the most time in. On this scale, 5 indicates that one is very likely to bike to a given destination; 4 indicates that one is somewhat likely to bike to a destination; 3 indicates that one is neutral to

bike to a given destination; 2 indicates that one is somewhat unlikely to bike to a given destination, and 1 indicates that one is very unlikely to bike to a given destination.

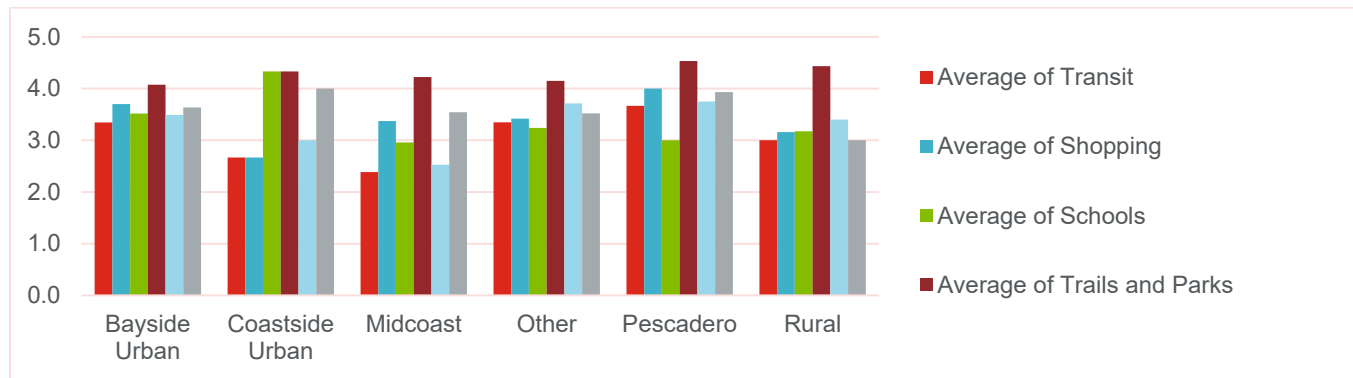
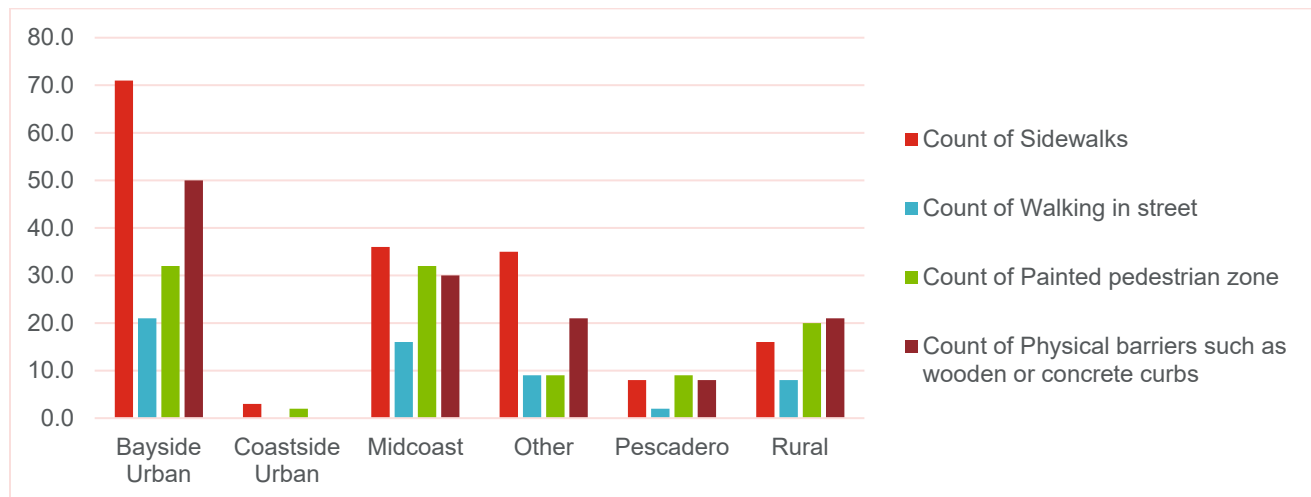


Figure 2: Destination Priority by Community¹

Preferred Pedestrian Facilities

When asked about the types of pedestrian facilities they'd like to see in their communities, most participants preferred sidewalks, followed by alternative pedestrian facilities with physical barriers like wooden or concrete curbs. Painted pedestrian facilities and no pedestrian facilities were much less preferred.

This question was also analyzed by unincorporated county area, based on the unincorporated community that each participant indicated they live, work, or spend the most time in. In "Bayside Urban" and "Other" communities, survey respondents had a fairly strong preference for sidewalks. In the "Rural" communities, respondent's preferences are mixed and painted pedestrian zones and alternative sidewalks with physical barriers are the preferred pedestrian facility types.



¹ Bayside Urban includes North Fair Oaks, Menlo Oaks, West Menlo Park, Sequoia Tract, and Emerald Lake Hills; Coastside Urban includes Broadmoor and Unincorporated Colma; Midcoast includes Montara, Princeton, Miramar, Moss Beach, and El Granada; Pescadero includes Pescadero; Rural includes Loma Mar, La Honda, Sky Loma, and other unincorporated communities; and Other includes responses from areas that are not within unincorporated San Mateo County.

Figure 3: Pedestrian Facility Preferences by Community

Presence of Sidewalks

When asked where they'd like to see sidewalks, 55% of survey respondents would like to see sidewalks provided along key corridors, 30% of survey respondents would like to see full sidewalk coverage, and 15% of survey respondents would not like to see sidewalks at all.

This question was also analyzed by unincorporated county area, based on the unincorporated community that each participant indicated they live, work, or spend the most time in. Not surprisingly, more urban communities would like more complete sidewalk coverage (at least along key corridors), while the more rural areas would like to see sidewalks in key locations.

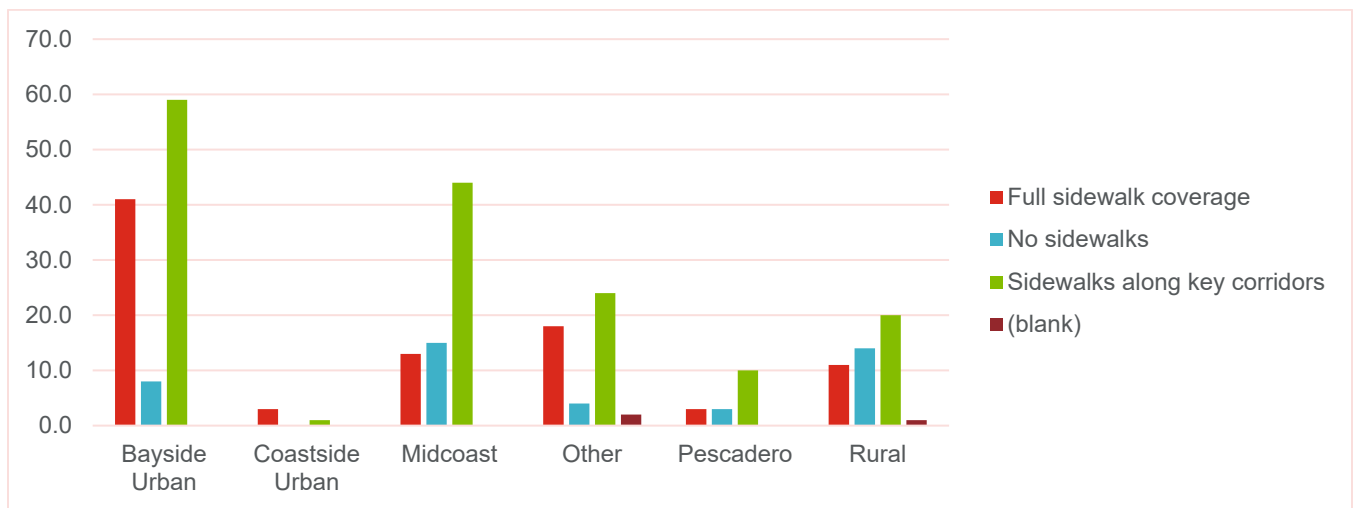


Figure 4: Sidewalk Preferences by Community

Roadshow Event Feedback

PEDESTRIAN FACILITIES
INSTALACIONES PARA PEATONES

WHAT FACILITIES WOULD YOU LIKE TO SEE IN YOUR COMMUNITY?
Place a dot to show what you think!

¿QUÉ INSTALACIONES LE GUSTARÍA VER EN SU COMUNIDAD?
¡Ponga un punto para mostrar lo que piensa!



SIDEWALKS
ACERAS

• • • • •



WALKING IN STREET
INSTALACIONES PARA CAMINAR EN LAS CALLES

•

with traffic calming



PAINTED PEDESTRIAN ZONES
ZONAS PEATONALES PINTADAS

•



VERTICAL BARRIERS (WOODEN, CURB, ETC.)
BARRERAS VERTICALES (MADERA, BORDILLO, ETC.)


• • • • •

WalkBikeSMC.org

UNINCORPORATED SAN MATEO COUNTY
ACTIVE TRANSPORTATION PLAN

OLYMPIE OF SUSTAINABILITY
COUNTY OF SAN MATEO

Roadshow Event Comments



WHAT DO YOU THINK? / ¿QUÉ PIENSA?

What is it like to walk and bike in San Mateo County today?

¿Cómo es caminar y andar en bicicleta en el Condado de San Mateo hoy?

There aren't places for bikes

Great express walking in Redwood Park. Wish more even sidewalks to walk in the region.

I walk with my walker. Because I can't drive anymore. I use near tickets and help.

I always walk! I don't have a car. I always look for a car.

I love biking! For recreation + transportation

What are the barriers that make walking and bicycling a challenge in your community?

¿Cuáles son las barreras que hacen que caminar y andar en bicicleta sea un desafío en su comunidad?

Cyclists don't have enough space. Makes it harder for cars.

uneven sidewalks are unsafe for seniors

I don't know how to ride a bike. getting a bike is too expensive.

More public awareness to get off phones!

What types of walking and bicycling improvements would you like to see in your neighborhood?

¿Qué tipo de mejoras para caminar y andar en bicicleta le gustaría ver en su vecindario?

wider bike lanes

Blueprints make it easier for people to see the future.

Even the sidewalks

Even the pavements for bike wheel safety

Signs to tell people drivers to slow down for people with walkers.

more education for walkers (don't run in the middle of the street)

Enhanced crosses with lights in main streets like Camino!

Curved edge for sidewalks rather than 90° edges

Not sure yet?

Be aware of the trees that can harm electronics.

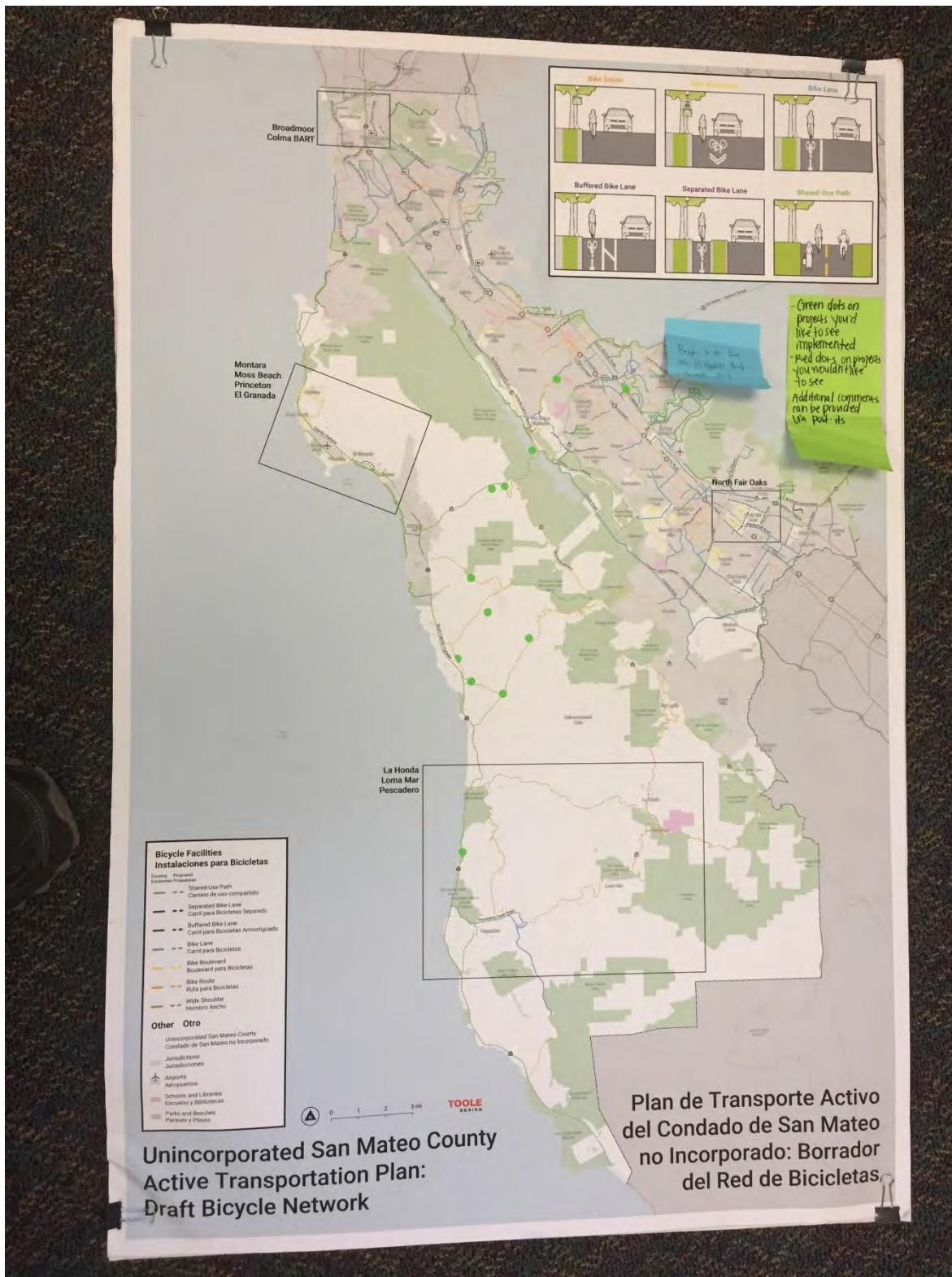
participate at your convenience using a survey and interactive map to share your feedback.

Thank you for coming to listen to us!

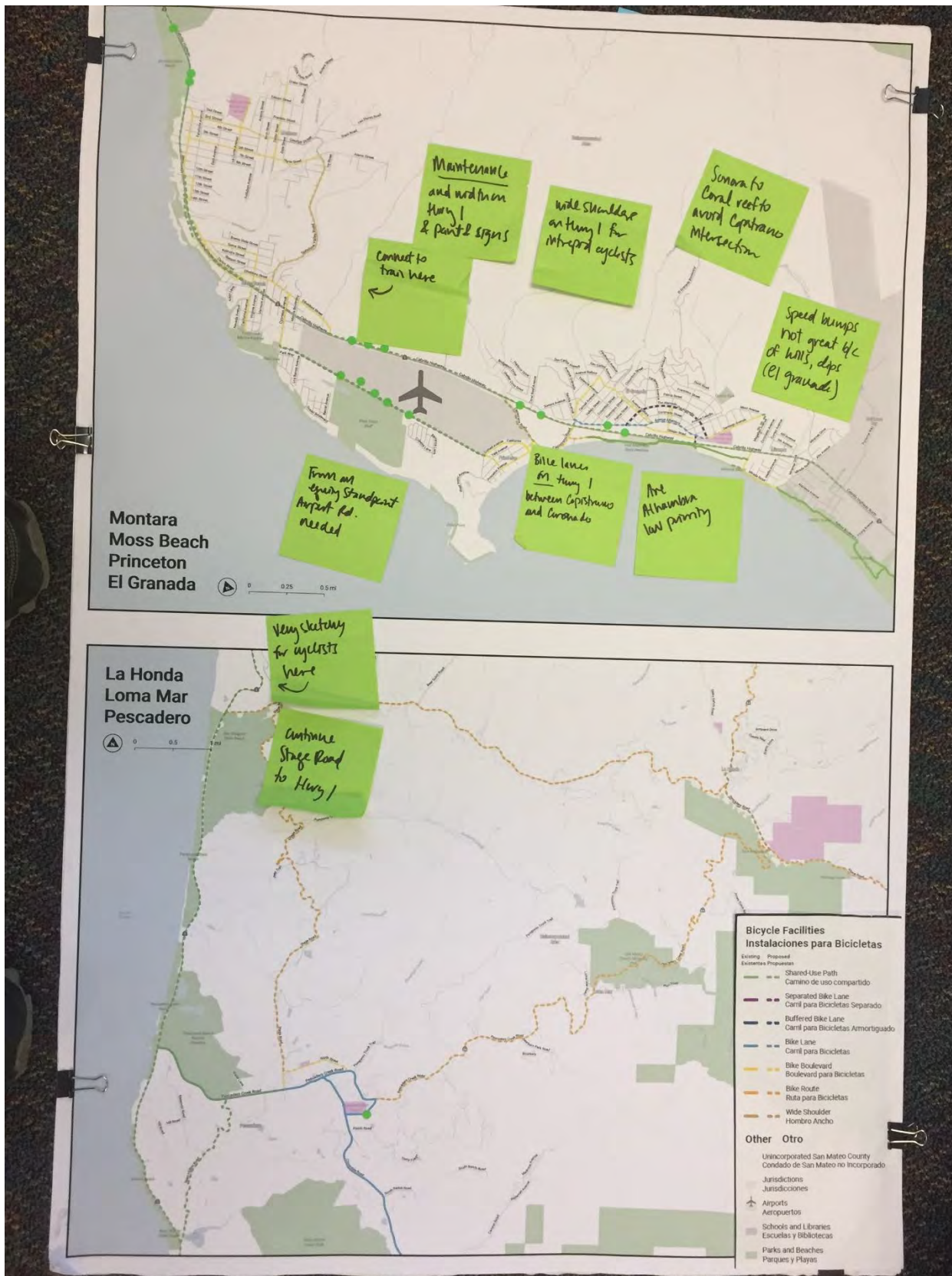
ilkBikeSMC.org

UNINCORPORATED SAN MATEO COUNTY
ACTIVE TRANSPORTATION PLAN

Roadshow Event Comments



Roadshow Map Comments



Roadshow Map Comments

UNINCORPORATED SAN MATEO COUNTY ACTIVE TRANSPORTATION PLAN

December 10, 2020

The third phase of outreach for the Draft Unincorporated San Mateo County Active Transportation Plan occurred between September and December 2020, including a month-long public comment period running from October 9, 2020 through November 9, 2020. During the third phase of outreach, the project team hosted a virtual open house, as well as two virtual pop-in meetings, and two virtual Facebook Live events. In addition, presentations were made to community councils and committees, such as the County's Bicycle and Pedestrian Advisory Committee. Phase III outreach was initially intended to include in-person events (road shows and workshops), however due to the COVID-19 pandemic outreach was conducted virtually.

The purpose of this outreach was to:

- Raise awareness of and increase community interest in the County's efforts to prepare this Plan.
- Educate people on the need for the Plan, what we heard in Phases I and II of our outreach, and work completed so far.
- Share benefits and anticipated outcomes of the Plan, including how implementation of elements of the plan would benefit, align with community priorities, and improve safety within specific communities
- Generate long-term support for the Plan and encourage community members to share their support with the Board of Supervisors.
- Provide an opportunity for the community to provide final comments on the Draft Plan.

Virtual Pop-In Meetings

Two virtual pop-in meetings were held during the Draft Plan public comment period, with one occurring on Wednesday, October 22 from 6:00 PM to 7:30 PM and the other on Saturday October 24th from 10:00 AM to 11:30 AM. Nine members of the public participated in detailed discussions about the Draft Plan over the two meetings. The pop-in meetings served as informal virtual gatherings where members of the public could check in and out at any time, provide comments and ask questions about the Plan. The following is a summary of feedback received during the two pop-in meetings:

Location-specific bicycle and pedestrian Improvements

- Desire to see a higher level of proposed bikeway facilities on many streets, including the Alameda de las Pulgas, Edgewood, Selby Lane, Avy and Altshul
- Desire to see underpasses for pedestrians to cross Highway 1
- Need for an ADA accessible crossing of Highway 1 in Miramar
- Need for a better pedestrian crossing of Santa Cruz Avenue between the Alameda de las Pulgas and Sand Hill Road, which is part of the Santa Cruz Corridor Study

Desire for more bike lanes

- Desire to know what the political climate is like with regard to removing on-street parking for bikeways
- Reduce space for cars and add bike lanes
- Interest in installing bicycle lanes because they can be relatively inexpensive
- Need to designate more miles of bike lanes in the Plan
- Concern that bicycle boulevard treatments may be more expensive than bike lanes

- On rural roads, why are wide shoulders better than bike lanes?
- Consider advisory bike lanes in rural areas

Need for network connectivity

- Need to ensure that good infrastructure recommendations in the unincorporated Country continue with connections in adjacent cities
- It's important to build out complete networks
- Desire for bicycle connections over the Santa Cruz Mountains, including State Route 92
- Speed up implementation of the Bay to Sea Trail
- Support for the completion of a missing segment on the Crystal Springs Trail
- Who is responsible for building facilities on El Camino Real, what is the timeline and who has to make it happen?

Safe Routes to School

- Selby Lane could be a good alternative safe route to school to Woodside Road
- More bicycle infrastructure is needed to connect kids to school
- Kids suffer from inactivity during the pandemic, once it's over we need to get the kids out and encourage them to bike more

Additional Comments

- General comments about the need for sidewalk improvements and the need for traffic calming
- Concern that there is a lack of infrastructure in North Fair Oaks

Facebook Live Events

In October and December of 2020, the project team also participated in two Facebook Live events – one in both English and Spanish hosted by the San Mateo County Office of Sustainability, destined for audiences countywide, and one in Spanish only hosted by the San Mateo County Sheriff's Office's Community Alliance to Revitalize Our Neighborhood (CARON) Program, aimed at residents and workers in North Fair Oaks. Both events were intended to provide participants with a better understanding of the Draft Unincorporated San Mateo County Active Transportation Plan, and to provide a space for participants to leave written questions or comments for staff.

Countywide Facebook Live – October 22, 2020

The first Facebook Live event was held on October 22, 2020 from 12:00 – 1:00 PM, with the first 30 minutes in English, and the second 30 minutes in Spanish. Facebook estimated that more than 1,300 individuals were reached by the video (saw the content), including over 700 video views, 15 video shares, and 39 comments. Members of the public who participated during the live event indicated they were tuning in from the following communities: Redwood City, Menlo Oaks, Broadmoor, El Granada, West Menlo Park, and San Bruno. Other participants may have tuned in and declined to indicate their place of residence. A summary of the comments received during this event are included below:

Location-specific improvements:

- Need to improve the bicycle and pedestrian proposal on Coleman
- Cross walks at Menlo Atherton high school across Ravenswood are needed
- Cross walk with lights at the proposed crosswalk between the middle school and Garden Village Elementary School is needed
- El Camino could have better sidewalk accessibility

Safe Routes to School

- ADA improvements on crosswalks especially near schools

Barriers to walking and biking:

- Pedestrian safety. In Broadmoor it's difficult in some areas to walk down the sidewalk due to cars that park with two wheels on the sidewalk. It makes it almost impossible to walk down the sidewalk with a stroller
- Lack of continuity of our bike lanes across jurisdictions



Figure 1: Countywide Facebook Live held on October 22, 2020

North Fair Oaks Facebook Live – December 2, 2020

County staff participated as panelists in a second Facebook Live held on October 22, 2020 from 6:00 – 7:00 pm in Spanish on the topic of active transportation in North Fair Oaks. The event was hosted and moderated by the San Mateo County Sheriff's Office's Community Alliance to Revitalize Our Neighborhood (CARON) Program, and other panelists included the chair of the North Fair Oaks Community Council and representatives from Redwood City 2020 and the Multicultural Institute. During the event, panelists discussed active transportation needs in North Fair Oaks, and County staff provided an overview and solicited feedback on the Draft Unincorporated San Mateo County Active Transportation Plan from panelists and community members.

A week after the event, Facebook analytics indicated that more than 1,500 individuals had been reached by the recorded video (number of individuals who saw the content), including over 800 video views, 18 video shares, and 193 comments, many of which were shared during the live event. A summary of the comments received as part of this event are included below:

General Walking and Biking needs in North Fair Oaks

- Needs are not met with sufficient infrastructure; currently no bike lanes
- Many accidents involving both pedestrians and cyclists observed; vehicles do not stop for these modes
- Riding a bike and walking in North Fair Oaks is very risky
- There is a notable change in safe facilities between North Fair Oaks and adjacent jurisdictions
- Right now cars are given the priority, when we should be prioritizing pedestrians and cyclists
- Bicycles are often stolen from community members; locks and bike parking are needed, for example at 5th and Middlefield
- There is very little green infrastructure in North Fair Oaks today, which discourages walking on a hot day
 - o Suggestion to integrate trees and other green infrastructure into active transportation design elements, for instance trees in traffic circles as in the Menlo Park-adjacent portion of North Fair Oaks
 - o Suggestion to utilize the SFPUC Hetch-Hetchy right of way to provide green spaces and allow public walking and biking paths

Pedestrian Safety Needs

- More lighting is needed for pedestrian crossings, and more street lights generally
- Speed limits are needed so that vehicles can stop in time for pedestrians
- Ramps/ curb cuts are needed for ADA access
- The Middlefield Road sidewalk widening project is great – it creates more space for people with strollers

Bicycle Safety Needs

- Programs on bicycle and bicycle facility education or parent/child bike clubs would be appreciated
- More sharrows and green streets are needed
- Dedicated spaces for bicycles are needed
- Bike lights are needed for visibility at night

Location-specific improvements:

- A light is needed urgently at the pedestrian crossing of El Camino Real at Selby Lane – it is very dangerous
- On Bay Road there are lots of old cars parked that belong to the auto repair shops on the same street
- There is also a crossing on 5th Avenue near Semicircular that's dangerous because cars can't see people crossing. A signal placed in advance indicating there is a crossing is needed
- A separated bike lane would be best on Middlefield Road given the level of car traffic there

- On the 5th Ave overcrossing there is very little light and now that it's getting dark earlier and we want to walk in that area given that here is no park to walk in or to walk our dogs in it's dangerous
- On Middlefield Road pedestrians are not respected
- Green spaces are needed for children to recreate

Outreach and Engagement

- This plan is the result of community voices, the fruit of the community's labor in attending events and participating in these conversations
- It is crucial that the community be involved in these processes, and that the County be flexible
- The County should share the information and lift up voices of those who don't always find out about these events

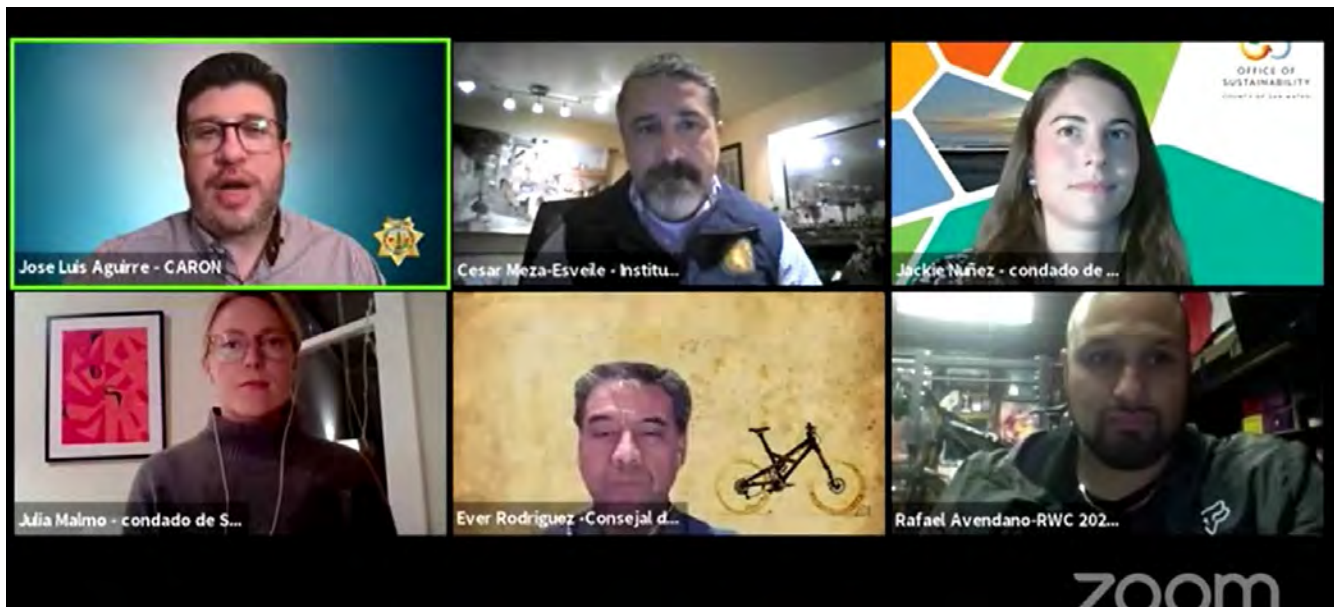


Figure 2: North Fair Oaks Facebook Live held on December 2, 2020

Written Comments received on the Draft Plan

The Draft Unincorporated San Mateo County Active Transportation Plan was accessible to the public via an interactive online format on walkbikesmc.org, the project website, from October 9 through November 9, 2020. Members of the public were invited to provide comments directly on the interactive Draft Plan, via a comment form on the project website, or by email. Nearly 300 comments were received on the interactive Draft Plan documents, and dozens more were received via the comment form on the website and by email. The most prevalent themes in the comments pertained to: cross-county bicycle connectivity, concerns regarding safety and high speeds, pedestrian-specific improvement requests, and comments regarding specific corridors. A summary of key themes and comments received are included below:

Cross-county bicycle connectivity

- Need for end-to-end dedicated walk/bike routes, north/south and east/west connector projects
- Support for regional trails, including the Bay to Sea Trail, Bay Area Ridge Trail, San Francisco Bay Trail, and the Dumbarton Trail
- Support for the Parallel Trail and wider shoulders on State Route 1 between the Midcoast and Pacifica
- Support for bikeways on El Camino Real

Safety and High Speeds

- Desire for a higher level of bike facility on certain corridors including Selby Lane, San Carlos Avenue, Edgewood Road, Santa Cruz Avenue, Altschul Avenue, and Crystal Springs Road
- Speeding on State Route 35, State Route 84 and Kings Mountain Road - need for safe infrastructure such as uphill bike lanes and traffic enforcement
- Safe routes to school should be prioritized

Pedestrian-specific improvement requests

- Desire for more sidewalks and better lighting in various areas throughout the County, as well as green infrastructure
- Support for a separate bicycle and pedestrian crossing of the Caltrain railroad tracks in North Fair Oaks, which is currently a major barrier
- A lot of unincorporated areas in San Mateo County have no sidewalks but allow spill-over street parking; encourage driveway use and create bike/ped paths on county streets instead.
- Pedestrian infrastructure gaps exist near schools including Roy Cloud and La Entrada schools
- Many sidewalk gaps exist in Midcoast communities, including between Quarry Park and El Granada Elementary and Wilkinson School in El Granada
- More crosswalks are needed by Miramar, there is a bus stop and cars don't stop
- Improvements needed surrounding the Half Moon Bay Yacht Club
- Provision of a delineated pedestrian pathway free of parked vehicles, from where the sidewalk ends on Prospect at Denniston Creek, to the west end of Princeton Ave at West Point (or at least to Vassar) needed
- Sidewalk gaps in Moss Beach on Carlos Street, and on the west side of State Route 1 from California to Cypress



Figure 3: Draft Unincorporated San Mateo County Active Transportation Plan

Comments regarding specific corridors

- Coleman Avenue (Menlo Oaks): need for safer facilities to walk & bike
- More walking & biking infrastructure needed in North Fair Oaks, especially on major corridors such as Middlefield Road and El Camino Real
 - Need to provide essential facilities in lower income areas and not just focus on those used for recreation
 - Middlefield Road should have a separated bike lane
 - 5th Avenue underpass needs improvement so that people feel safe walking
- Better street lighting, and bike and pedestrian facilities on Airport Road are needed
- Build facilities on Santa Cruz Avenue and the Alameda de las Pulgas (West Menlo Park)
- A safe path along Highway 1 is needed on the Midcoast, and from Moonridge Apartments to Half Moon Bay
- Coronado and Avenue Alhambra is a dangerous intersection for pedestrians and bicyclist
- Need for safe bikeway on State Route 84
- Need path from Sawyer Camp Trail to State Route 92 for bikes and pedestrians
- Multimodal access to parks and preserves should be prioritized
- Safe bike lanes are needed along Lakeview Way for children to travel to go to elementary schools: Clifford and Roy Cloud (Emerald Hills)

Bicycle and Pedestrian Advisory Committee Review

Feedback on the Draft Plan was solicited from the County's Bicycle and Pedestrian Advisory Committee (BPAC) at the BPAC's October 15th and November 17th meetings. The following is a brief summary of comments received from the BPAC at these meetings as well as from written correspondence received from individual members:

Need to Increase the Prominence of Key Projects in the Plan

- The Dumbarton Corridor should be a prominent component of the Plan and shown on the proposed bikeway network as it is a transformative, project for the underserved communities of North Fair Oaks and Belle Haven
- Concern that the Crystal Springs Gap along Lower Skyline Road, which has substantial support and is a major north/south corridor, should be rated higher
- Addition of a shared use path to the proposed bicycle network along Lower Skyline and State Route 92 between the existing southern terminus of the Sawyer Camp Trail and Canada Road to complete a key missing segment of the Crystal Springs Trail gap
- Support for the proposed grade separated pedestrian/bicycle crossing of the Caltrain Corridor in North Fair Oaks and to better highlight it in the Plan
- For the section describing the Grand Boulevard Initiative and El Camino Corridor Studies, specifically call out sections located in the unincorporated County

Prioritization Criteria

- Concern that some popular projects were given a low prioritization
- Concern that connectivity project evaluation criteria normalized by project length could reflect a bias that bikes are only useful for short trips

Additional Bicycle-related Comments

- Collision statistics can be misleading, some places have few accidents because cyclists avoid these areas
- Concern about language that states a desire to preserve motor vehicle parking as a constraint in the consideration for bikeway selection recommendations
- The unincorporated County bike network needs to connect with multiple jurisdictions in the County
- When resurfacing streets with existing bike lanes where parking is allowed, consider narrowing the traffic lane to eliminate door zone bike lanes
- Need to add high stress facilities such as Lower Skyline from Bunker Hill Road and the part of State Route 92 that is part of the Crystal Springs Gap, the Santa Cruz/Alameda de las Pulgas Corridor and the high stress Portola/Sand Hill intersection should be identified as spot gaps


Next Steps

Community input on the Draft Unincorporated San Mateo County Active Transportation Plan informed subsequent revisions to the Draft Plan, leading to the development of the final Unincorporated San Mateo County Active Transportation Plan to be considered by the San Mateo County Board of Supervisors for adoption.


The County recognizes that digital-only engagement due to COVID-19 restrictions has limited the number and demographic of people that are able to provide feedback. There will be additional opportunities for communities to provide input as the projects identified in the Plan are funded and implemented. We are committed to ongoing additional community engagement as we move forward, including in-person outreach when safe and appropriate.

As projects begin to move into design and installation phases, community members will be involved in the conversations that shape the process. As a project is being developed, community members will be invited to provide input and feedback on the proposed design and voice any preferences and concerns.

For projects that include design elements that are new to a community, conversations or educational campaigns will occur after project implementation and will be aimed at educating the community on how to navigate the redesigned space. Feedback will also be collected after a project is installed, which might result in adjustments to the design and will help inform future projects in the same community.



APPENDIX B: TECHNICAL ANALYSIS SUMMARY MEMORANDUMS



CONTENTS

Plans and Policies Review

Existing Conditions Memorandum

Existing Bicycle Network Maps

Demand Analysis Memorandum

Gap Analysis Memorandum

Review of Existing Plans

Many parts of unincorporated San Mateo County have been the focus of planning and design studies in the past. Below is a table summarizing existing planning documents that support the Unincorporated San Mateo County Active Transportation Plan. While many of these planning documents focus on land use, operations, or environmental protection, the key takeaways for walking and bicycling in unincorporated parts of San Mateo County are listed in an additional column. Plans are organized by scale (local, county, regional, state), then alphabetically.

Plan Name	Date	Goals Related to Active Transportation	Key Active Transportation Findings
Local Plans			
Bicycle and Pedestrian Plans for neighboring jurisdictions	Various	<ul style="list-style-type: none"> Coordination between the Active Transportation Plan and bicycle and pedestrian plans in adjacent communities. 	<ul style="list-style-type: none"> Several cities and towns adjacent to unincorporated parts of the County have adopted pedestrian and bicycle plans During the development of plan recommendations, connections that would help to make walking and bicycling networks continuous between jurisdictions will be identified
North Fair Oaks Community Plan	2011	<ul style="list-style-type: none"> Improve connectivity and reduce mobility barriers for all modes Improve health and safety Improve travel and transit connections between North Fair Oaks and surrounding communities within the region Provide safe and affordable housing to meet current and future needs Maintain a vital and viable mix of land uses Provide adequate infrastructure to support current uses and facilitate future development Promote development and redevelopment Maintain and generate local employment opportunities Require and encourage appropriate developments to support housing- and employment-generating land uses Improve access to park and recreational facilities Support the creation of new public transit routes and stations 	<ul style="list-style-type: none"> Presents design guidelines and standards for roadway and streetscape design, including lane widths, bicycle lane widths, sidewalks, landscaping, crosswalks, bulb-outs, street furniture, lighting, and art Proposes additional railroad track crossing locations Identifies expanded bicycle network and pedestrian network improvements Identifies pedestrian network improvements along Middlefield Road, El Camino Real, and 5th Avenue

Plan Name	Date	Goals Related to Active Transportation	Key Active Transportation Findings
Plan Princeton	Under-way	<ul style="list-style-type: none"> Enhance coastal access, recreation, research, and education opportunities Support and expand coastal-dependent and coastal-related uses Provide facilities needed by the commercial fishing industry and recreational boaters Promote economic development Abate neighborhood blight and zoning violations Address parking, circulation, and infrastructure needs Identify and evaluate potential solutions to shoreline erosion problems Protect and restore water quality and sensitive habitats Maintain compliance with the California Coastal Act and state airport compatibility requirements 	<ul style="list-style-type: none"> Proposes updates to the land use policies, plans, and regulations in the area Identifies Princeton Avenue as an important on-street pedestrian and bicycle route Cypress Avenue connects parts of the community to trails to the North Identifies access to Pillar Point Bluff as an important consideration for active transportation planning
Stanford Bicycle Commuter Access Study	2017	<ul style="list-style-type: none"> Examine opportunities and challenges for current bicycle commuters Present projects in neighboring communities that will increase the number of people who commute by bike 	<ul style="list-style-type: none"> Considers access to Stanford University from certain “bicycle sheds.” Entrances on Stock Farm Road and Junipero Serra Boulevard may have implications for Unincorporated San Mateo County Identifies need for partnership with San Mateo County on Alameda de las Pulgas and Santa Cruz Avenue improvements
County Plans			
C/CAG Countywide Bicycle and Pedestrian Plan	2011	<ul style="list-style-type: none"> A comprehensive countywide system of facilities for pedestrians and bicyclists More people riding and walking for transportation and recreation Improved safety for bicyclists and pedestrians Complete streets and routine accommodation of bicyclists and pedestrians Strong local support for non-motorized transportation 	<ul style="list-style-type: none"> Identifies pedestrian focus areas and bicycle facilities of countywide significance Design guidance for bicycle and pedestrian facilities that may need updating Recommends numerous on-street facilities for inland parts of the County, without classifying whether these would be bike lanes or bike routes
C/CAG Countywide Transportation Plan 2040	2017	<ul style="list-style-type: none"> Provide people with viable travel choices and encourage use of healthy, active transportation through a safe continuous, convenient, and comprehensive bicycling network that reduces reliance on the automobile for short trips Promote safe, convenient, and attractive pedestrian travel that promotes healthy, active communities while reducing reliance on the automobile for short trips Provide guidance on self-help transportation funding measures and other funding sources administered by C/CAG 	<ul style="list-style-type: none"> Identifies crossings of major highway barriers as a challenge for walking and bicycling Calls for increased bicycle infrastructure and support facilities Identifies key focus areas for walking, including schools, transit stations, shopping centers, and neighborhoods

Plan Name	Date	Goals Related to Active Transportation	Key Active Transportation Findings
Climate Action Plans for San Mateo County	2012, 2013. Update underway	<ul style="list-style-type: none"> Reduce County greenhouse gas (GHG) emissions by 17 percent below 2005 levels by 2020 Reduce San Mateo's GHG emissions to 80 percent below current (2012) levels by 2050 Includes a goal to Design for Mobility and Connectivity Includes a goal to provide opportunities for non-motorized and alternative travel 	<ul style="list-style-type: none"> Government Operations Climate Action Plan includes a commute alternatives program Recommends a traffic impact fee to fund active transportation improvements Recommends that new projects in North Fair Oaks, urban communities, and business districts to include improved design elements to enhance walkability and connectivity while balancing impacts on vehicle congestion. Recommends that new construction be required to install traffic calming and complete streets, including pedestrian and bicycle infrastructure and bicycle parking Recommends that large employers be required to implement a Commute Trip Reduction program Recommends Safe Routes to School programs
Community-Based Transportation Plans for San Mateo County's communities	Various	<ul style="list-style-type: none"> Integrate infrastructure and policy recommendations from Community-based transportation plans into the Active Transportation Plans as appropriate. 	<ul style="list-style-type: none"> Plan for Daly City and Combined plan for Redwood City, North Fair Oaks, and East Palo Alto is underway Improved pedestrian and bicycle safety and amenities are identified as strategies in the low-income transportation plan Recommends free or discounted bicycles to low-income persons Painted crosswalks desired at intersections Pedestrian and Bicycle improvements desired on El Camino Real (countywide), including bike lanes, longer crosswalk times, widened sidewalks, improved landscaping and slower traffic Lighting desired at El Camino Real and 5th Avenue
Connect the Coastside: Evaluation of Recommended Alternative to Address Potential Future Transportation Deficiencies	Underway	<ul style="list-style-type: none"> Evaluate the impacts of future developments on future transportation systems and infrastructure Identify transportation improvements to address future deficiencies 	<ul style="list-style-type: none"> Comprehensive Transportation Management Plan (CTMP) that encompasses active transportation and other areas Recommends 10 proposed bicycle and pedestrian improvements in the Coastside area, totaling \$49 million Identifies several pedestrian crossings of Highway 1 in the Coastside area Highlights some feasibility and design considerations for proposed projects
Green Infrastructure Plan	2019	<ul style="list-style-type: none"> Implement infrastructure that uses natural features to capture and treat stormwater as it flows into bodies of water 	<ul style="list-style-type: none"> Identifies several green infrastructure elements that can be integrated into active transportation facilities. Recommends updates to several planning and policy documents to include provisions for green infrastructure Includes design guidelines and prioritized project locations for GI along streets in the public right of way.

Plan Name	Date	Goals Related to Active Transportation	Key Active Transportation Findings
Highway 1 Congestion & Safety Improvement Project: Final Preliminary Planning Study	2015	<ul style="list-style-type: none"> • Provide safer access to the beaches, coastal areas, and local communities along Highway 1 between Gray Whale Cove and Mirada Road in Miramar for vehicles, pedestrians, and bicyclists • Alleviate traffic congestion along Highway 1 • Improve pedestrian and bicycle crossings for the residents and visitors along Highway 1 	<ul style="list-style-type: none"> • At five locations, proposes both a cost effective and comprehensive alternative to account for possible funding limitations • General improvements include pavement resurfacing, drainage improvements, raised medians, pedestrian refuges, highway lighting, pavement markings, and signage • States that the primary cause of historical collisions in the project area is speeding, and most proposed alternatives have design aspects to slow vehicles
Highway 1 Safety and Mobility Improvement Study San Mateo County Midcoast Communities: Princeton, El Granada and Miramar, CA	2010	<ul style="list-style-type: none"> • Increase pedestrian, bicycle, and vehicle safety along Highway 1 • Provide more transportation options for those that cannot, or choose not to use cars for local trips and commuting • Reduce congestion and maintain road capacity • Design a consistent highway corridor that supports the character and vitality of adjoining villages, recreation and natural surroundings • Address the challenge of shoreline erosion, remaining sensitive to the dynamic coastal environment • Reduce greenhouse gas emissions through the reduction of vehicle miles traveled 	<ul style="list-style-type: none"> • Proposes a network of secondary alternatives for pedestrian and bicycle circulation, built upon existing and planned trails and other opportunity sites, such as El Granada's historic medians • States that visitors to Highway 1 often park on the shoulder and cross the roadway at unmarked locations • States that bicyclists often ride on the shoulder of Highway 1, as well as on completed portions of the Coastal Trail • Proposes improvements to define roadway edges, improve intersection visibility, improve gateway design and wayfinding, construct roundabouts, manage access, and add walkways and bikeways • Proposes short-, mid-, and long-term action plans for policies and infrastructure improvements
Highway 1 Safety and Mobility Improvement Study: Phase 2	2012	<ul style="list-style-type: none"> • Increase pedestrian, bicycle, and vehicle safety along Highway 1 • Identify more transportation options for local and commuting trips for non-drivers • Ensure safe and efficient traffic circulation • Ensure that Highway 1 is a corridor that responds to both natural and built contexts 	<ul style="list-style-type: none"> • Proposes improvements to medians in community areas, designated bicycle and pedestrian crossing locations, roundabouts, bicycle and pedestrian improvements on parallel routes in communities, and parking configurations for beach and trail access
Individual Plans for Countywide Trail Projects	Various	<ul style="list-style-type: none"> • Goals vary, but specific facility recommendations will be implemented into the Active Transportation Plan as appropriate 	<p>Trails include:</p> <ul style="list-style-type: none"> • Bay Area Ridge Trail • California Coastal Trail • Ohlone Portol'a Heritage Trail • San Francisco Bay Trail • San Francisco Public Utilities Commission Ridge Trail • Skyline to Sea Trail
Local Coastal Program Policies	2013	<ul style="list-style-type: none"> • Generate an understanding of the County's Local Coastal Program, the policies and amendments of which are summarized through August 2012 	<ul style="list-style-type: none"> • Provides mandatory and recommended guidance on trail planning and design consistent with development policies for the Coastal Zone in unincorporated areas of San Mateo County

Plan Name	Date	Goals Related to Active Transportation	Key Active Transportation Findings
San Mateo County General Plan (Infrastructure Volume)	1986	<ul style="list-style-type: none"> Promote the provision and maintenance of public and private services and facilities that are basic to human habitation, including water supplies, wastewater management, transportation systems, and solid waste management Promote the provision and maintenance of infrastructure improvements at all levels commensurate with the type and density of development anticipated in adopted land use plans Promote the provision of infrastructure improvements in a manner that minimizes their environmental impacts, conserves energy, protects communities, and efficiently uses public funds 	<ul style="list-style-type: none"> Touts the inexpensive, non-polluting, and healthful nature of biking and walking Provides standards for Class I, II, and III bikeway updates Calls for both short- and long-term bike parking and notes the success of bike lockers Identifies barriers to walking such as freeways, railroads, and the expansion of automobile facilities Supports improved sidewalk design and maintenance
San Mateo County Sea Level Rise Vulnerability Assessment	2018	<ul style="list-style-type: none"> Increase the resilience of the County's economy, environment, and communities through collaborative planning and projects Map assets and future risk scenarios Assess vulnerability by identifying the impacts of flooding, sea level rise, and erosion on people, structures, and community functions Provide solutions that will lead to actionable results Build awareness by sharing information Build a collaborative Countywide network to support joint actions and solutions 	<ul style="list-style-type: none"> Promotes the protection of transportation corridors to provide a buffer for sea level rise by elevating, fortifying, or relocating roadways to protect public transportation and roadway systems in the future Proposes to, in the near term, develop emergency response plans in the County that includes active transportation Encourages investing in public transit, the bicycle facility network, and pedestrian safety
San Mateo County Trails Master Plan	2001	<ul style="list-style-type: none"> Provide an updated Trails Plan with the latest detailed alignments Link trails among existing and proposed trails in San Mateo County cities and parks, and to adjacent Counties Develop a set of policies and guidelines that can be used during detailed trail planning to ensure adequate trails are constructed within constraints presented by the environment Provide a plan for access for recreational and educational purposes to portions of the County where no access is currently available Improve access to and along the coast Provide recreational opportunities to area residents Provide commuter routes for alternative types of transportation (e.g. bicycles) 	<ul style="list-style-type: none"> States that most of the Bay Area Ridge Trail in San Mateo County is in unincorporated parts of the County and the Plan should look for opportunities to support it Identifies 166 miles of existing trails and 139 miles of proposed trails across jurisdictions in the unincorporated County, categorized as County Trail Routes and Regional Trail Routes. Not all of these trails are County Park improvements. Lists several design elements and policies for trails that have been considered and evaluated to maintain safety and minimize disturbance to the natural environment Mandates that new trail routes should include Management Plans, described in detail in the document Trail design and management guidelines were developed to address compliance with County General Plan and Local Coastal Plan policies.

Plan Name	Date	Goals Related to Active Transportation	Key Active Transportation Findings
Regional Plans			
Grand Boulevard Initiative	Ongoing	<ul style="list-style-type: none"> Collaborate between cities, counties, and other local and regional agencies to improve the performance, safety, and aesthetics of El Camino Real. El Camino Real will achieve its full potential as a place for residents to work, live, shop and play 	<ul style="list-style-type: none"> The largest component of El Camino Real in unincorporated San Mateo County is located in North Fair Oaks. Significant focus on mixed-use development and urban design Calls for a pedestrian-oriented environment and improved streetscapes Calls for stronger pedestrian and bicycle connections with the corridor Provides Transportation Demand Management toolkit
Plan Bay Area 2040	2017	<ul style="list-style-type: none"> Identify transportation and land use strategies to enable a more sustainable, equitable, and economically vibrant future Reduce per-capita carbon dioxide emissions Plan for adequate housing Reduce adverse health impacts Direct development within urban footprint Provide equitable access in terms of housing, jobs, and transportation Ensure current and future economic vitality Increase the non-auto mode share Reduce vehicle operating and maintenance costs due to pavement conditions Reduce per-rider transit delay due to aged infrastructure 	<ul style="list-style-type: none"> Details a regional transportation investment strategy States that growth in Priority Development Areas is critical for the region to meet its housing and sustainability goals. North Fair Oaks is the only Priority Development Area in unincorporated San Mateo County States that housing costs are so high that even with improved low-cost transportation options, like walking, bicycling, and transit, combined housing and transportation costs for Bay Area residents is expected to increase States that, to reach and maintain a state of good repair of transportation infrastructure, the Bay Area will need to spend about \$254 billion over the next 24 years. Coordination with State of Good Repair projects will help to stretch active transportation dollars further
State Plans			
Caltrans District 4 Bike Plan	2018	<ul style="list-style-type: none"> Reduce the number, rate, and severity of bicycle and pedestrian involved collisions Increase walking and bicycling in California Maintain a high-quality active transportation system Invest resources in communities that are most dependent on active transportation and transit 	<ul style="list-style-type: none"> States that most State highways allow bicycling, but the lack of low-stress facilities and crossings results in most bicycling happening on local streets and bikeways Reports that Caltrans has established a target to triple bicycling by 2020 to reach a mode share of 4.5%, compared to 1.5% in 2000 Recommends increasing bicycle parking at transit and park-and-ride locations because end-of-trip facilities are a critical element in supporting bicycling Provides a ranked list of recommended bicycle infrastructure projects for each county Proposes projects that include numerous segments of Class I trail along Highway 1 Includes intersection improvements at 10 intersections along Highway 1

August 12, 2019

To: Julia Malmo-Laycock

Organization: County of San Mateo

From: Lucas Woodward and Sara Rauwolf, Toole Design

Project: Unincorporated San Mateo County Active Transportation Plan

Re: Existing Conditions Memorandum

This memo presents an overview of existing walking and bicycling conditions in unincorporated San Mateo County. The purpose of this memo is to describe the area's physical and planning context, describe typical features of its existing active transportation system, and set the stage for infrastructure and programmatic recommendations that will expand the active transportation network and support its use by residents, workers, and visitors. A summary of key findings in this memo may be included as a chapter in the eventual Unincorporated San Mateo County Active Transportation Plan document (the Plan). Opportunities and challenges identified here will be evaluated in greater detail and addressed through infrastructure, policy, and programmatic recommendations in future phases of the Plan.

Existing conditions discussed in this memo include:

- Planning context
- Existing pedestrian and bicycle network, and transit access
- Connections to regional trails
- Bicycle and pedestrian counts
- Collision trends
- Existing plans and policies
- Opportunities

Planning Context

Plan Study Area

Unincorporated San Mateo County excludes incorporated cities and towns, encompassing diverse communities, each with its own priorities that result in varied bicycling and walking infrastructure countywide. These communities, located on both bay and ocean sides of the county, range in population from 210 people in Loma Mar to 15,454 in North Fair Oaks.¹ **Figure 1** shows the unincorporated communities listed below. The map highlights the most populated unincorporated communities in San Mateo County, specifically North Fair Oaks and the Coastside communities, which include Montara, Moss Beach, Princeton, El Granada, and Miramar totaling approximately 14,000 people. These areas are shown in greater detail on project maps with insets. In addition, the County has three large golf courses and tens of thousands of acres of rural lands used for parks, open space, agriculture and rural residential purposes.

¹ American Community Survey Five-year Estimates, 2017.

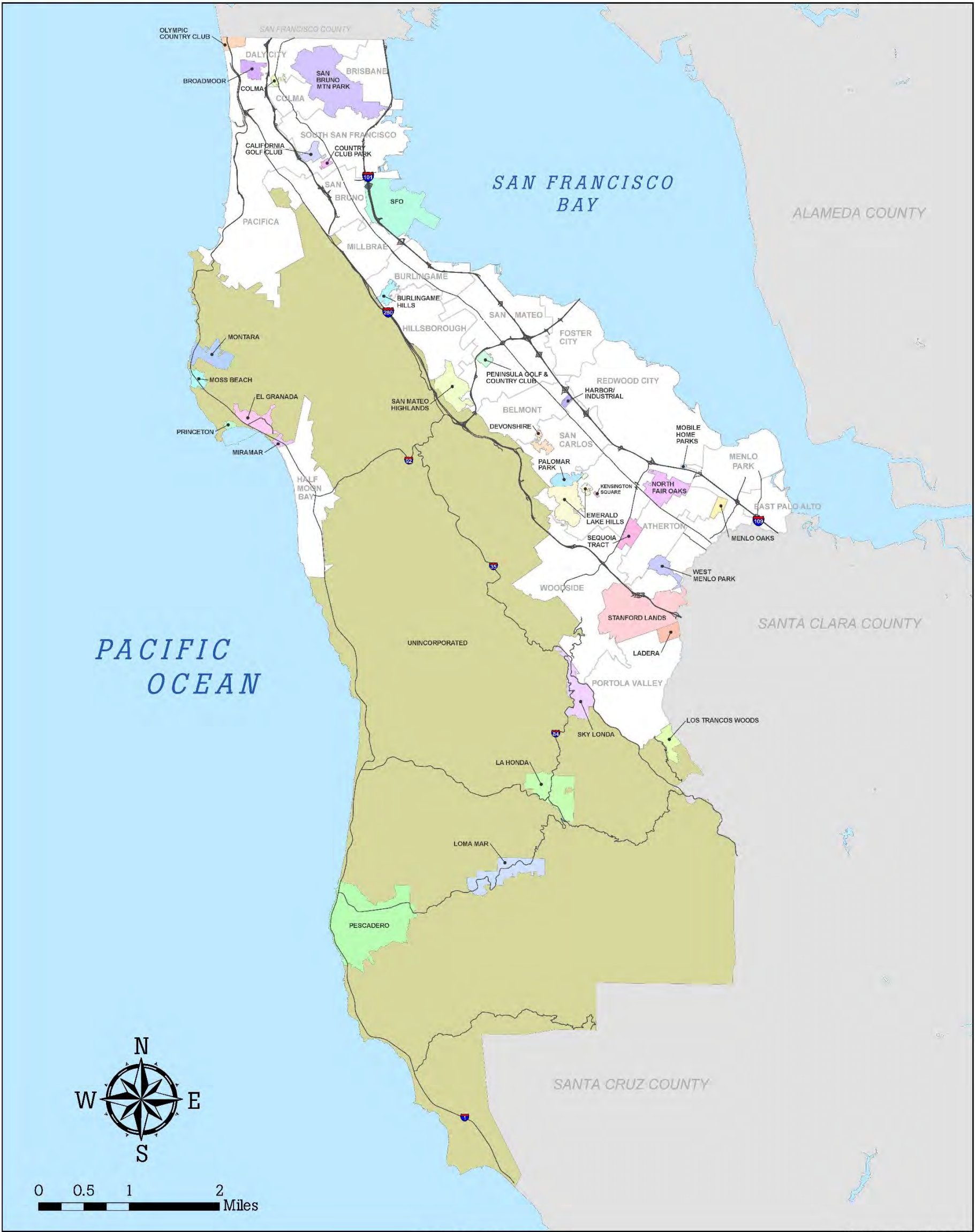


Figure 1: Unincorporated Areas of San Mateo County

The Planning Department recognizes 33 unincorporated areas in San Mateo County, and this plan will address walking and bicycling within them:

- | | | | |
|--------------------------|----------------------|-----------------------------------|---------------------------------------|
| • Broadmoor | • Ladera | • North Fair Oaks | • San Francisco International Airport |
| • Burlingame Hills | • La Honda | • Olympic Country Club | • San Gregorio |
| • California Golf Club | • Loma Mar | • Palomar Park | • San Mateo Highlands |
| • Colma (unincorporated) | • Los Trancos Woods* | • Peninsula Golf and Country Club | • Sequoia Tract |
| • Country Club Park | • Menlo Oaks | • Pescadero | • Sky Loma |
| • Devonshire | • Miramar | • Princeton-by-the-Sea | • Stanford Lands |
| • El Granada | • Mobile Home Parks | • San Bruno Mountain Park | • West Menlo Park |
| • Emerald Lake Hills | • Montara | | • Other Unincorporated Areas |
| • Harbor/Industrial | • Moss Beach | | |
| • Kensington Square | | | |

Land Use and Character

With inviting beaches, lush redwood groves, varied topography, a mild climate, and San Francisco and Silicon Valley nearby, San Mateo County enjoys many natural assets that support active transportation. Over 750,000 residents live in San Mateo County, mostly in cities and towns in northern and eastern parts of the county. While these cities and towns each have their own distinct character, San Mateo County's unincorporated areas also encompass a wide range of communities, each with unique physical challenges, engineering constraints, and community priorities.



Figure 2: Two women enjoy a bike ride along the San Mateo County coast

Unincorporated San Mateo County includes two densely populated communities – Broadmoor and North Fair Oaks, unincorporated pockets of suburban areas, such as West Menlo Park and Emerald Lake Hills, coastal communities like El Granada and Montara, and more remote inland communities like La Honda and Pescadero. While there are few major employment centers in unincorporated parts of San Mateo County, there are pockets of

industrial land near the Half Moon Bay Airport and unincorporated Belmont, neighborhood commercial areas in some communities, and large agricultural areas between Highway 1 and the Santa Cruz Mountains.

Parks and Open Space

San Mateo County has numerous open space areas, with over 60 percent of the County's land area categorized as Forest, Open Space, Parks, or Recreation.² These areas, owned and managed by either the County or State, provide an excellent setting for recreational walking and bicycling. San Mateo County also has numerous beaches, attracting many people to walk and bike along the coast.

Demographics

This section draws on the U.S. Census American Community Survey to provide basic demographic information on unincorporated San Mateo County. Demographic data for unincorporated San Mateo County were determined by analyzing data for all of San Mateo County and subtracting that from the incorporated cities and towns.³

While Census generally provides the most consistent data available on demographic characteristics, it has some limitations. First, Census data for transportation is for work trips only, which is less than 20 percent of all trips statewide. Work trips tend to be the longest trips, and the often shorter trips made for shopping, dining, and socializing, may pose great opportunities for active transportation.⁴ Also, some tables that report data for households, such as household income and vehicle ownership, can misrepresent income or vehicle ownership by person in higher cost-of-living areas where it is common for people to live with roommates. Finally, due to the low populations of Census-designated places in San Mateo County except North Fair Oaks, margins of error can be high.

Age

The population in unincorporated San Mateo County has been steadily increasing. The population has increased by 5.3 percent over five years from 62,000 people in 2012 to over 65,000 people in 2017.⁵ The oldest and youngest residents of an area are often less comfortable walking and bicycling than those in other age groups⁶, and 41 percent of the County's population is older than 65 or younger than 20. The age distribution is presented in **Figure 3**.

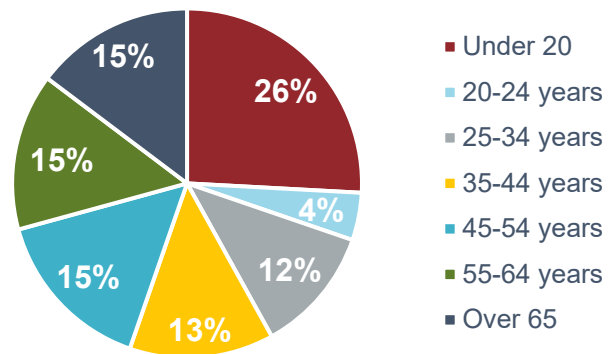


Figure 3: Age of residents in unincorporated San Mateo County

Race and Ethnicity

The racial breakdown of unincorporated parts of San Mateo County is similar to that of the county as a whole. About 68 percent of the population is White, 13 percent Asian, one percent Black, and 14 percent Some Other Race, with about four percent identifying as two or more races. But there are significant differences among communities. In Broadmoor, about half the population identifies as Asian, and in North Fair Oaks, 37 percent identify as Some Other Race.

² San Mateo County GIS Enterprise Data

³ Other communities are Census-designated places and can be studied directly.

⁴ California Household Travel Survey

⁵ American Community Survey Five-year Estimates, 2017.

⁶ NACTO, Designing for All Ages and Abilities, 2017.

The US Census describes people of Hispanic or Latino descent as an ethnicity, not a race. Therefore, people who identify as Hispanic may also describe themselves with one or more racial categories. Throughout the county, people of Hispanic ethnicity are generally evenly split between those identifying as White and those identifying as Some Other Race; 70 percent of the population in North Fair Oaks is Hispanic. **Figure 4** presents the racial and ethnic breakdown in North Fair Oaks versus in all unincorporated areas of San Mateo County.

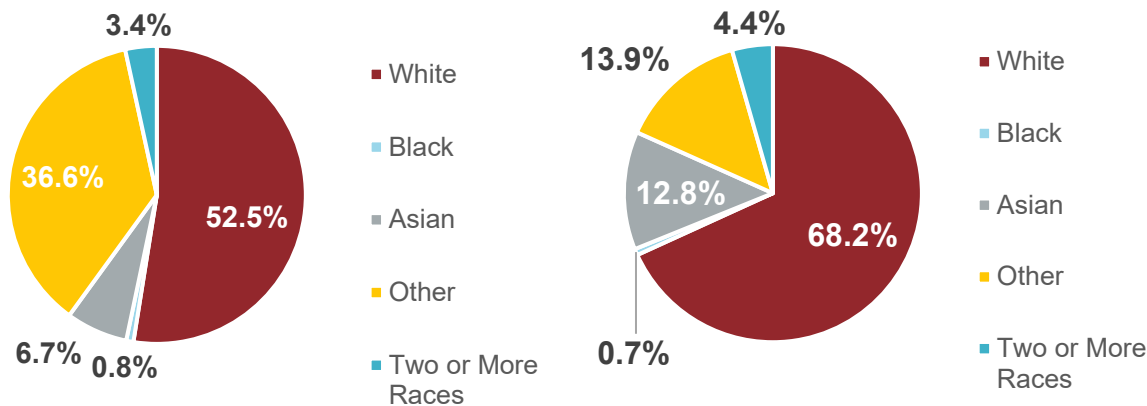


Figure 4: Racial breakdown of North Fair Oaks and all unincorporated areas

Travel Patterns

Vehicle Ownership

Only three percent of households in unincorporated San Mateo County do not own a vehicle, while 75 percent of households own two or more vehicles (

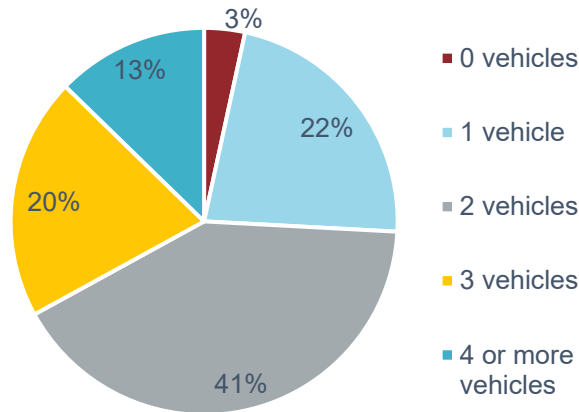


Figure 5: Vehicle Ownership in Unincorporated San Mateo County

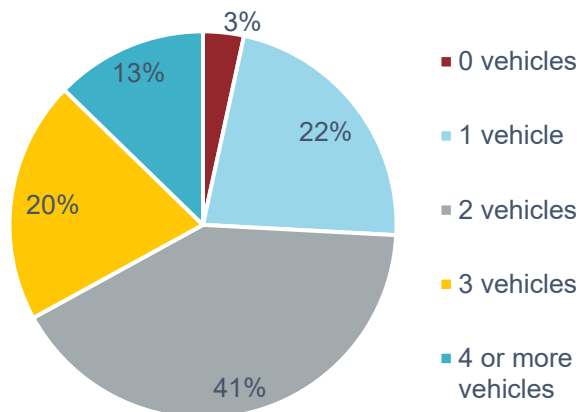


Figure 5). Of Census-designated places, North Fair Oaks has the highest rate of car-free households in the County at 3.4 percent. While vehicle ownership is often correlated with income, it can also reflect communities where walking, biking, and transit infrastructure is insufficient to provide other transportation options.

Commute Characteristics

Approximately 11 percent of unincorporated San Mateo County residents walk, bike, or take transit to work: five percent of people commute on transit, four percent of people walk to work, and two percent bike to work (**Figure 6**). Commute trips only comprise around 15 percent of household trips, per the California Household Travel Survey (CHTS), but they are nonetheless important to understand. Commute data are very rich with high sample size, and commute trips tend to be longer than other trips, with a significant impact on residents' quality of life. As shown in **Figure 6**, most residents drive to work.

Today's commuting patterns, presented in **Figure 7**, indicate the possibility of mode shift for those whose commute travel time is less than 10 minutes.⁷ This is an important commuting characteristic for active transportation planning, as most driving trips of less than 10 minutes are within a comfortable distance for walking or bicycling, as well as some trips from 10-24 minutes. These data suggest that at least 9 percent, and possibly up to 47 percent commute trips could be made walking and bicycling.

Non-work trips are made to visit friends and family or for trips to school, errands, entertainment, outings, recreation, and medical trips.⁸ While California Household Travel Survey (CHTS) data cannot be

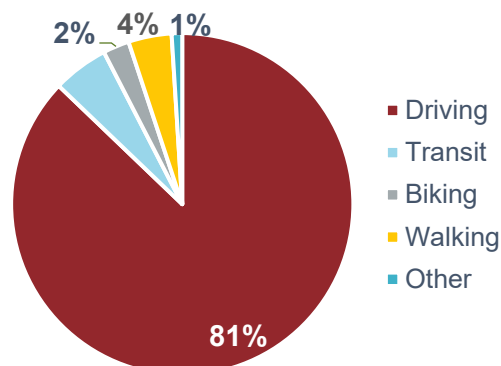


Figure 6: Mode Share for Unincorporated San Mateo County

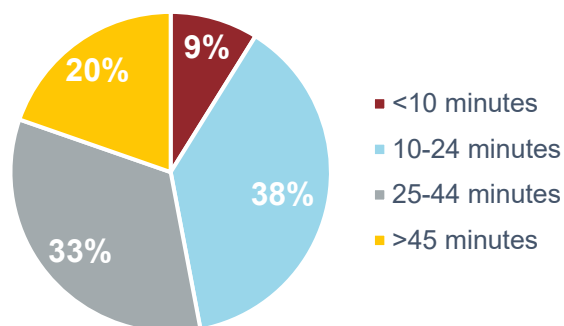


Figure 7: Commute Length for Unincorporated San Mateo County

⁷ Per the 2017 U.S. Census American Community Survey 5-year Summary, 9 percent of unincorporated San Mateo County residents have a commute of less than 10 minutes.

⁸ 85-90% range references the National Household Travel Survey (15 percent) and California Household Travel Survey (9.9 percent).

analyzed separately for unincorporated San Mateo County, non-work trips are more likely to be made using active transportation. This is because non-work destinations, such as an errand or a friend’s house, are likely to be located closer to home. This Plan will reflect recommendations for active transportation for all trip purposes.

Tourism and Recreation Trips

While walking and bicycling for transportation are important to plan for, recreational walking and bicycling likely account for a large portion of trips in unincorporated San Mateo County. Recreational trips are not among those presented in the mode split above, but recreational walking and biking are common in unincorporated San Mateo County, especially along the coast and in the hills on weekends. The importance of recreational trips is borne out in the County’s Count data, which show that pedestrian and bicycle counts in coastal communities like Miramar and towns like Portola Valley that are adjacent to unincorporated areas are higher on weekends than weekdays. By contrast, weekend pedestrian and bicycle counts at locations within more urbanized areas of San Mateo County, such as Millbrae, are not generally any higher than weekday counts.

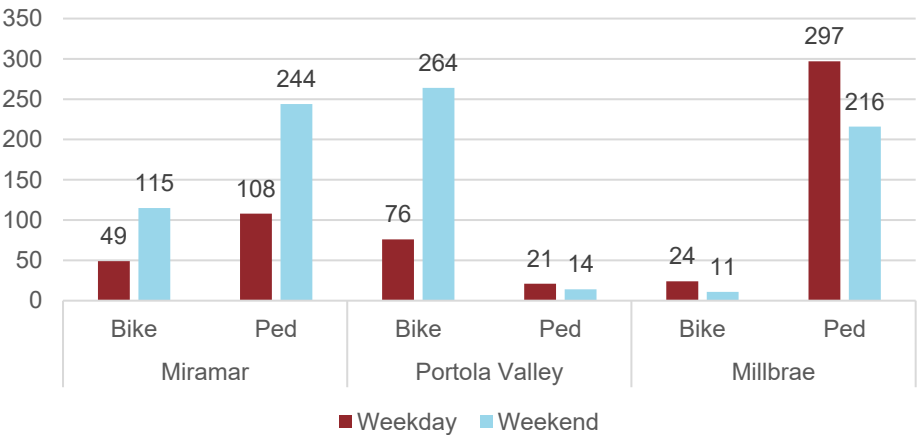


Figure 8: Weekday and weekend counts in San Mateo County

Recreational bicyclists include both avid cyclists who are comfortable sharing roadways with higher-volume or -speed traffic and more casual bicyclists who ride for exercise and enjoyment but who may be less comfortable riding in mixed traffic. Off-street facilities like the Crystal Springs Trail and the Coastal Trail are welcoming for the latter group. Most recreational walks include trips on other modes to reach a trail, park, or other walking destination. Recommendations as part of the Plan will include gap closure projects to expand the existing bicycle and pedestrian networks to better serve off-street facilities.

Connections to Regional Trails

The County Trails plan identifies 166.5 miles of existing recreational trails in San Mateo County and identifies over 300 more miles of proposed trails. While this Active Transportation Plan is focused on sidewalks, on-street facilities, and shared use paths, it may include recommendations to improve access to trailheads and design guidance for recreational trail facilities. Many trailheads are in the hills where access includes travel on higher-speed roadways, and this planning effort can develop policies to improve connections to them.

Existing Bicycle, Pedestrian, and Transit Facilities

Existing Pedestrian Network

Pedestrian networks are comprised of sidewalks, trails, streets and roads, roadway crossings, and overcrossings. These facilities should be connected, protected, and properly designed to accommodate the needs of people walking. Due to the large geographic area of San Mateo County, the types of issues typical to pedestrian networks are often highly localized, relating to sidewalks and crossing opportunities nearest particular destinations.

Typical Challenges

Several types of issues affect the walking environment in San Mateo County.

Lack of sidewalks and sidewalk amenities:

The need for sidewalks depends on the land use context. In denser, more urban areas like Broadmoor and North Fair Oaks, sidewalks may be appropriate on all streets. But there are gaps in many of these locations. This plan will recommend priority locations for sidewalk investments.

In other areas, quiet streets may actually be the type of pedestrian infrastructure that is needed; **Figure 8** provides a possible example in the Coastsides.

Lack of crossing opportunities: In some parts of the County, busy roadways, railroads, and other features are barriers for pedestrians. Highway 1, which is maintained by Caltrans, is one example. Traveling south from Pacifica, the first signalized intersection is at Capistrano Road, beyond the communities of Montara and Moss Beach, and the next is not until Coronado Street, almost a mile to the south. Instead of walking, people may cross midblock or drive short distances just to avoid barriers. Providing traffic control devices such as signals, pedestrian signals, and roundabouts may be options recommended for further study in the Plan.

Lack of street trees: Trees can enhance the walking experience by providing shade and scenic interest, especially in warm, sunny locations.



Figure 9: In areas without sidewalks, quiet streets to walk on can be an important – and safe – part of the pedestrian network



Figure 10: People crossing with the help of a rectangular rapid flashing beacon (RRFB) in North Fair Oaks

High speed traffic: High traffic speeds can negatively impact people walking and bicycling. Whether people are walking, biking, or driving, high vehicle speeds give less time to notice and respond appropriately to other roadway users or changing roadway conditions. Collisions that do occur at high speeds are also more severe. Also, even with separation, walking and bicycling next to high-speed traffic can create a loud and uncomfortable environment for people walking and bicycling. For these reasons, speed is an important determinant of the appropriate type of bicycle facility for a given street.

Lighting and Visibility: As discussed in the Collision Analysis, pedestrian collisions disproportionately occur during evening hours. Lighting can be a complicated issue for the County to address, due to its management by several public and private agencies, but improved lighting in appropriate settings may help to improve pedestrian safety. This plan will also identify policy and infrastructure recommendations to improve visibility.

Condition of existing facilities: The Plan will make recommendations for areas where pedestrian facilities do not meet the Americans with Disabilities Act (ADA) standards, as identified through outreach and existing data sources.

Considerations for the Active Transportation Plan

In order to create a safe and comfortable pedestrian network for all users, the Plan will consider, among other things:

- **Existing sidewalks and walking paths:** While sidewalks may not be appropriate at every location in unincorporated San Mateo County, the Plan will propose closing sidewalk gaps where appropriate to ensure that people can walk freely on connected facilities.
- **Connections to existing and proposed trails:** Trails are used by people walking, and are an important aspect to the quality of life in San Mateo County. This Plan should help to provide safe and complete connections to trailheads, so people may not need to use their vehicles for each outing.
- **Crosswalk locations:** The Plan will consider crosswalks at intersections as well as mid-block locations to help ensure that people can walk to their desired destinations without compromising their safety. Recommendations may include enhanced crossing infrastructure, like Rectangular Rapid Flashing Beacons (RRFBs) where appropriate.
- **Access to important destinations:** Due to the countywide scale of this planning effort, and the importance of highly localized features to the pedestrian network, it will be important to focus improvements on locations that the community identifies as important destinations during the Plan's public engagement activities.

Existing Bicycle Network

San Mateo County's bicycle network consists of bike lanes, bike routes, and trails. Some facilities, such as the California Coastal Trail, are enjoyable for people of all ages and abilities to use. Other facilities, such as bike lanes along major arterials with high traffic volumes and speeds, can be stressful for even the most experienced riders.

The existing bicycle network in San Mateo County is comprised of the following facilities.

Class I Trails

Class I trails are two-way facilities that are physically separated from motor vehicle traffic and used exclusively by bicyclists, pedestrians, and other non-motorized users. Trails provide low-stress facilities for bicyclists and pedestrians but still interact with motor vehicles at driveways and intersections. Class I trails in unincorporated San Mateo County include the California Coastal Trail near El Granada and the Sawyer Camp Trail west of I-280.



Figure 11: The California Coastal Trail, a Class I trail, in El Granada

Class II Bicycle Lanes

Class II bicycle lanes provide an exclusive space for bicyclists in the roadway. Bicycle lanes are established by painting lines and symbols on the roadway surface. Bicycle lanes are for one-way travel and are normally provided in both directions on two-way streets and/or on one side of a one-way street. Bicycle lanes may be used temporarily by vehicles accessing parking spaces and entering and exiting driveways and turn pockets at some intersections. Some “buffered bicycle lanes” include a painted buffer zone to further separate the bicycle lane from the adjacent vehicular travel lane.

Class III Bicycle Routes

Class III bike routes have signage that indicate that the roadways are shared with motor vehicle traffic. These facilities can be comfortable for people of all ages and abilities to ride on if traffic speeds and volumes are low. These low-stress facilities are called bicycle boulevards in some communities. However, some bike routes exist on higher speed roadways and may be demarcated with signage or shared lane markings.

Class IV Separated Bicycle Lanes

Class IV bicycle lanes are separated from motor vehicle traffic with both vertical and horizontal features such as planters or parked vehicles and are distinct from the sidewalk. These facilities provide the greatest separation of the on-street facility types and are generally comfortable for people of all ages and abilities. There is currently one Class IV separated bicycle lane on Chilco Street in Menlo Park but none in unincorporated areas of the county.

Choosing appropriate bicycle facilities

The appropriate bicycle facility depends on land use and transportation context. In general, as traffic speeds and volumes increase, more separation from traffic is needed to accommodate bicyclists of all ages and abilities. When appropriate bicycle facilities are not provided, people may resort to bicycling on the sidewalk.

Through the Active Transportation Plan, San Mateo County seeks to create a bicycle network that can serve users of all skill levels and build upon the successes of the current network. **Table 1** provides an overview of the existing bicycle network in unincorporated San



Figure 12: A bicyclist in North Fair Oaks opts for the sidewalk instead of the street

Mateo County, as well as the proposed network from C/CAG's 2011 Comprehensive Bicycle and Pedestrian Plan (CBPP). That plan's recommendations for unincorporated areas were developed in partnership with the County of San Mateo. Many on-street facilities proposed in the CBPP were left unclassified and may be suitable for bike lanes or bike routes. This planning effort will help to define these unclassified routes and assess the recommendations in the 2011 plan to ensure that they are still relevant for the County. The Comprehensive Bicycle and Pedestrian Plan will soon be updated and recommendations from this planning effort will inform the update.

Table 1: Existing and Proposed Bikeways

Facility Type	Existing Mileage	Mileage Proposed in 2011 C/CAG Plan
Class 1 Trail	8.3	16.3
Class 2 Bike Lane	13.7	4.7
Class 3 Bike Route	2.0	31.0
Class 4 Separated Bikeway	--	--
Unclassified On-Street Facility		50.1

Considerations for the Active Transportation Plan

A bicycle network should be safe, comfortable, and connected to successfully serve all bicyclists. To accomplish this, the Plan will consider, among other things:

- **Existing connectivity issues:** Jurisdictional boundaries are unimportant to the experience of a person bicycling. This plan should address connectivity issues within unincorporated parts of the county and identify issues that may exist within incorporated areas to ensure that bicycle facilities don't disappear at any point and are fully connected.
- **Low-stress facilities:** While some people are confident bicycling on any street, any increases in bicycling in the county will likely come from those people who are less comfortable sharing traffic with fast-moving traffic. Facilities should be designed so people of all ages and abilities can confidently bike in San Mateo County.
- **Safe routes to schools:** Walking and bicycling to school is associated with many positive outcomes for children, and community members mentioned the importance of school connections.
- **Priorities for other bicycle planning efforts in the County:** Other planning documents like the CBPP and the Caltrans District 4 Bicycle Plan have established many priorities for bicycling in San Mateo County.

Recommendations will include infrastructure, program, and policy recommendations.

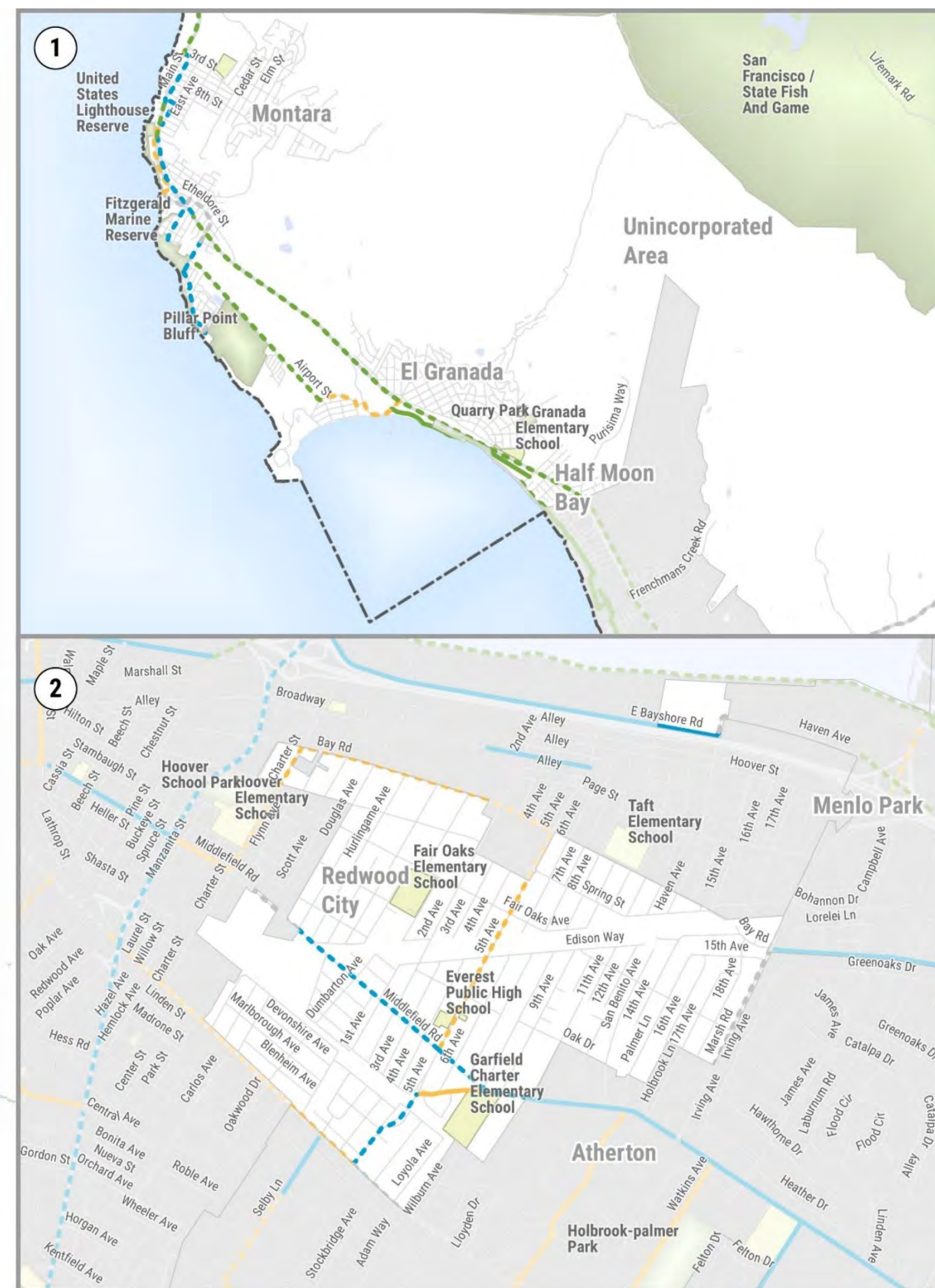


Figure 13: Existing and proposed bikeways in San Mateo County

Existing Transit Network

Ensuring safe and convenient access to transit is an integral component of a successful active transportation plan. San Mateo County is served by Caltrain, SamTrans, and BART. All of these modes of transportation accommodate bicycles, and their transit stations are important focal points of pedestrian activity.

Caltrain

There are no Caltrain stations located within unincorporated parts of the County, but many stations are close enough to unincorporated communities to serve unincorporated areas. In particular, the Atherton and Redwood City Caltrain stations are located within one mile of parts of North Fair Oaks and can easily be accessed on a bicycle or feeder buses. Over 7,000 of Caltrain's approximately 65,000 weekday passengers ride their bikes to a station, and bicycles are accommodated on specific train cars with facilities to secure bicycles. Caltrain has developed a Bicycle Parking Management Plan, which identified a need for both additional bike parking and bike parking that is better suited to user preferences. The agency is currently working to implement the plan's recommendations.

SamTrans

SamTrans' 17 bus route serves the Coastsides communities, as well as the school day-only 18 route. North Fair Oaks is served by several bus routes, most notably the frequent ECR, 296, and 397 routes. SamTrans also operates service in other unincorporated parts of the County; many of these routes connect neighborhoods with Caltrain stations. All SamTrans buses are equipped with bicycle racks, which hold two bicycles, except for the 60-foot articulated buses which hold up to three bicycles. Two additional bicycles are allowed inside the bus, depending on passenger loads.

BART

The Colma BART station is located within an unincorporated pocket of San Mateo County, though it is a very small area with few residents or businesses. Nonetheless, this station serves Broadmoor, one of the more populous Census-designated places in San Mateo County. Eight on-demand BikeLink lockers are available at this BART station, and bicycles are permitted on all BART trains. The San Francisco International Airport BART station is also located in unincorporated San Mateo County and serves passengers traveling to and from SFO. **Figure 15** presents a map of existing transit routes in the county. Transit has the potential to extend the range of active transportation trips to make them a reasonable alternative to driving, even for longer trip distances. This Plan should develop recommendations to ensure that people walking and biking can safely access transit stops and stations, focusing on established walk and bicycle sheds. The Plan should also consider the need for bike parking at transit stations.



Figure 14: SamTrans Buses Accommodate Bicycles on Front Racks

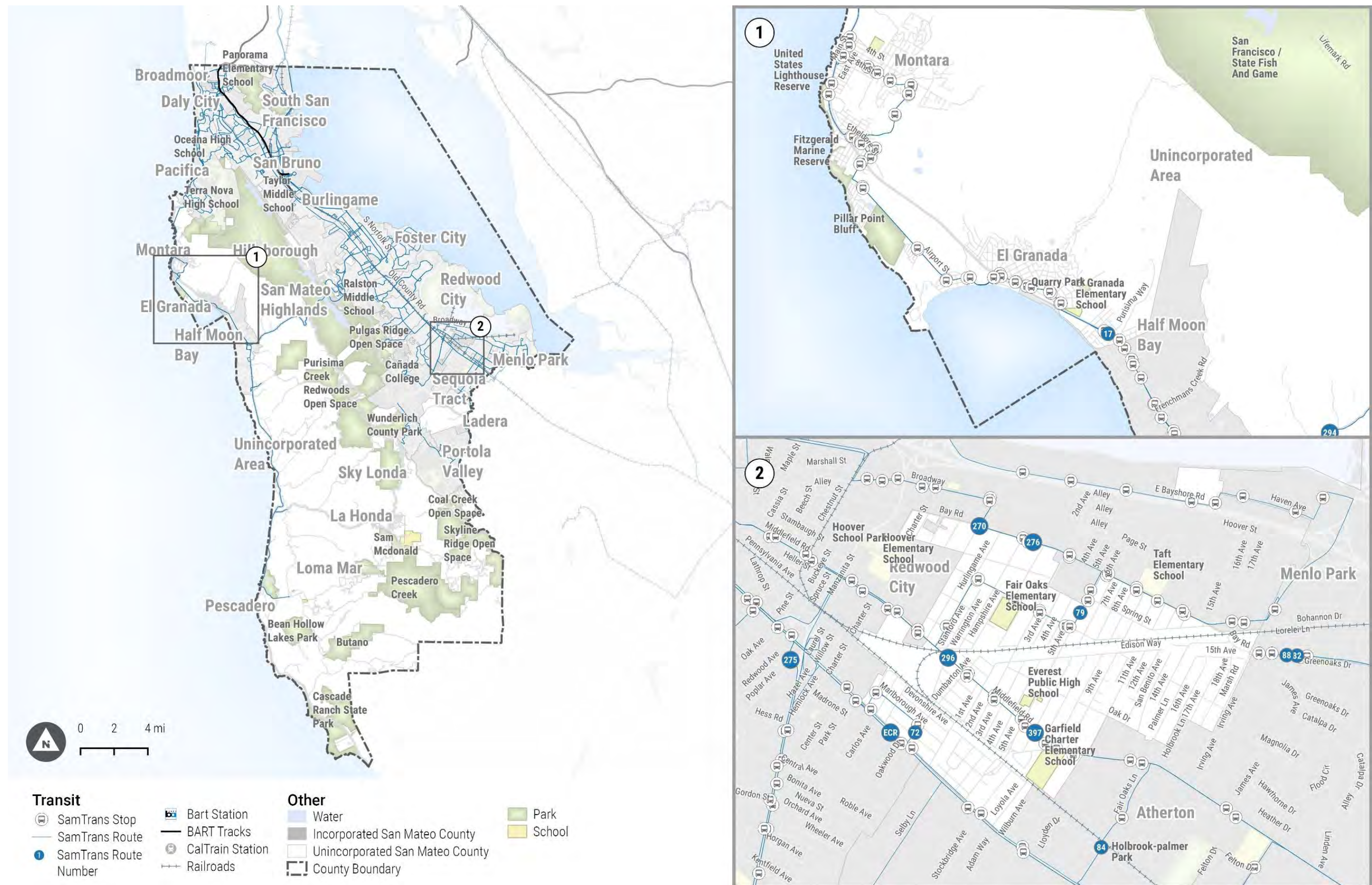


Figure 15: Transit Routes in San Mateo County

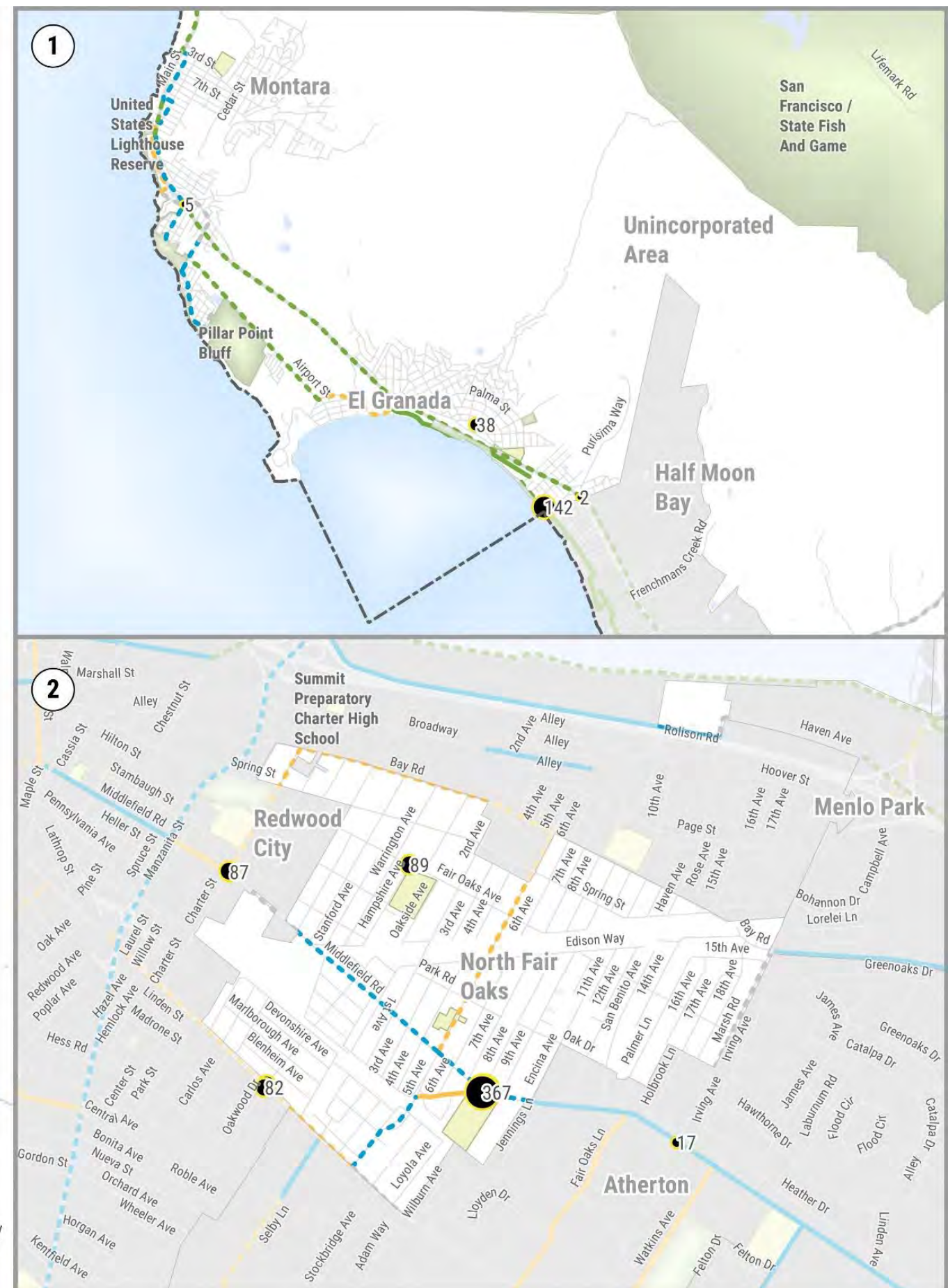
Bicycle and Pedestrian Counts

Each year, San Mateo County collects bike and pedestrian counts at key locations throughout the county. These data, presented in **Figure 16** and **Figure 17**, inform where bicycle and pedestrian infrastructure should be evaluated to determine if improvements are needed to serve existing volumes and support bicycling and walking increases. Counts are taken either at weekdays during peak commute hours, weekends between 12:00 and 2:00 pm, or at both times, consistent with methodology from the National Bicycle and Pedestrian Documentation Project.

Examples of high-volume locations include Middlefield Road in North Fair Oaks, which has relatively high pedestrian volumes, and Mirada Road in El Granada, which has relatively high bicycle volumes. The policy and program recommendations for this planning effort will include an assessment of current count practices to identify opportunities for the countywide count to help address active transportation goals.



Figure 16: Pedestrian Counts in San Mateo County, 2016-2018



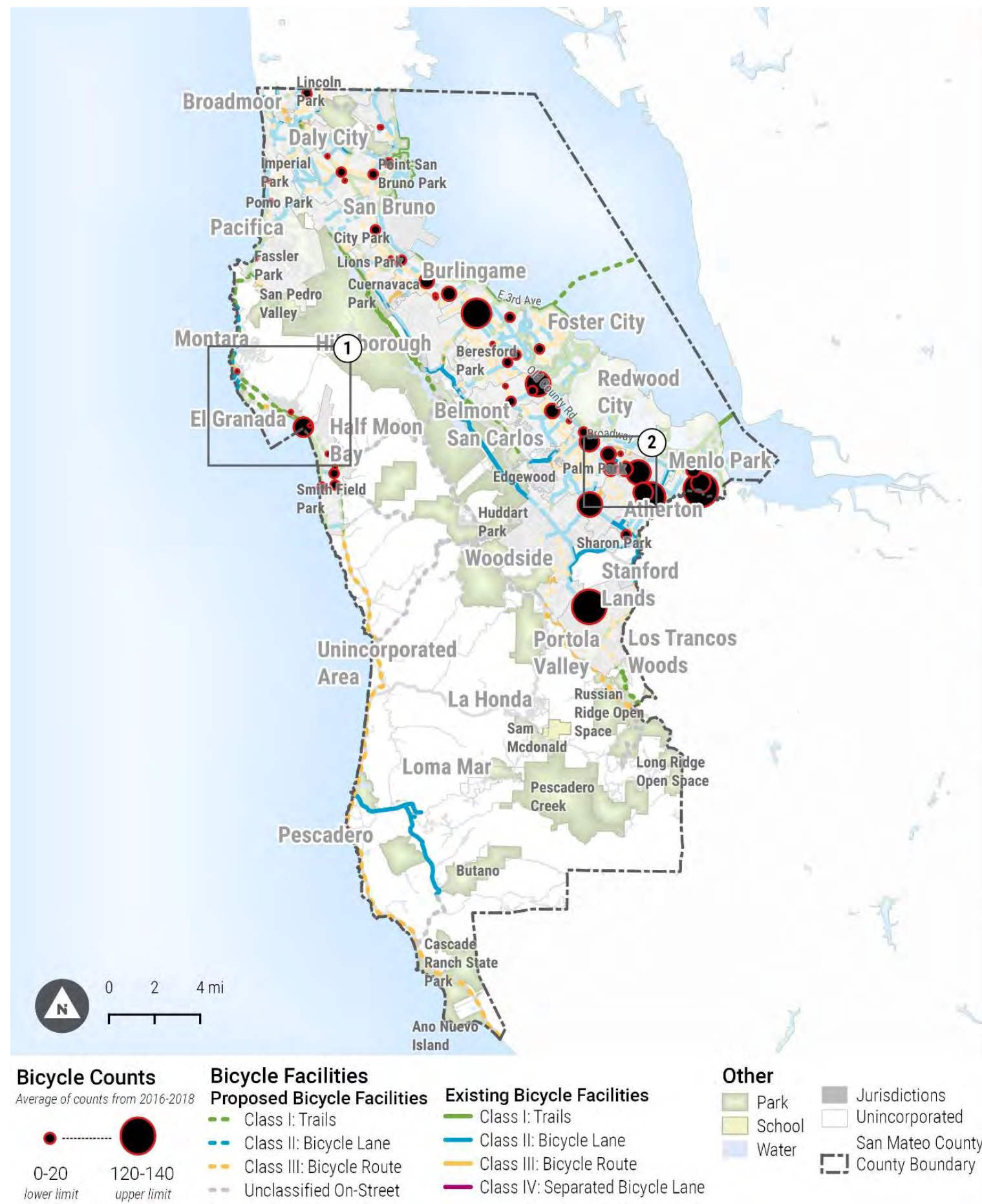
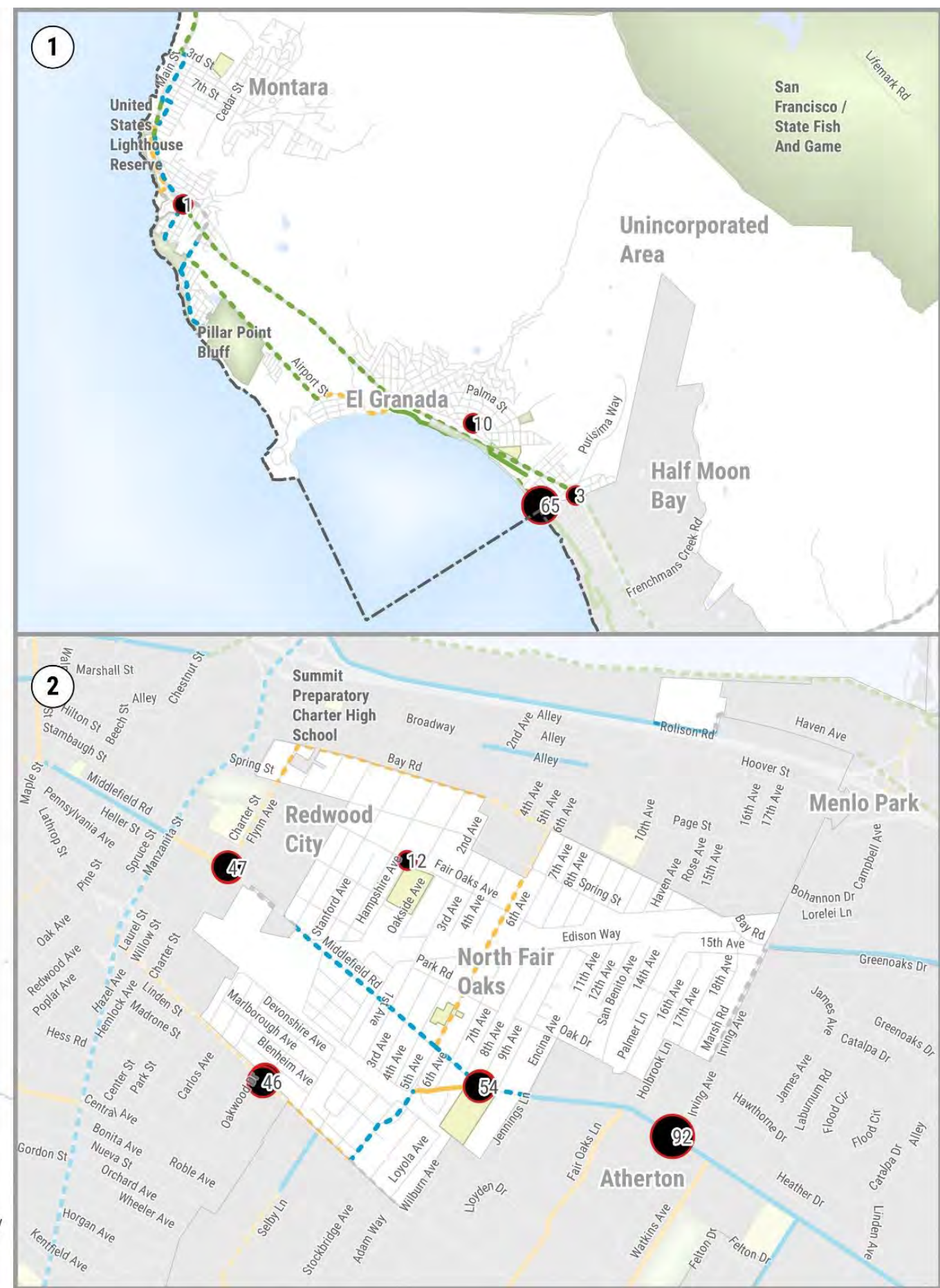


Figure 17: Bicycle Counts in San Mateo County, 2016-2018



Collision Trends

This plan will identify strategies to reduce the frequency and severity of collisions involving bicycles and pedestrians. The first step to addressing these collisions is understanding where, when, why, and how they occur. The following analysis aims to help County staff and the community better understand the bicycle and pedestrian collision history in San Mateo County. The analysis reports patterns over time, crash severity, primary collision factors, and other trends. These data were gathered from the University of California's Transportation Injury Mapping System (TIMS). This analysis of collision trends draws on five years of collision data (2013 – 2017), presented in **Figure 19**.

The following sections discuss several aspects of bicycle and pedestrian collisions. Sections detailing pedestrian collisions and bicyclist collisions follow separately, as their patterns are quite different. Bicyclists and pedestrians use different facilities, travel at different times of day, and travel at different speeds. When considering TIMS data, it is important to recognize that collision records rely on an officer's assessment of what occurred in a collision and how they interpret California law. This analysis does not include any collisions not reported to law enforcement or any near misses.



Figure 18: Distribution of Bike and Pedestrian Collisions in Unincorporated San Mateo County

Trends though Time

After an initial decrease in bicycle collisions from 2013 to 2014, the number of bicycle collisions increased by over 10% from 2014 to 2017. In comparison, the number of pedestrian collisions has fluctuated from year to year, slowly growing from 2014 to 2016 and then dropping from 14 to nine from 2016 to 2017. See **Figure 18** for collision locations.

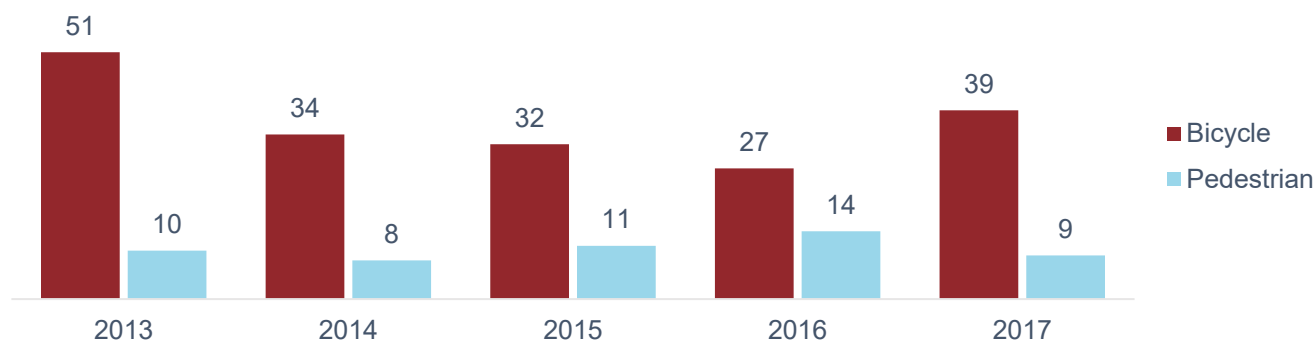


Figure 19: Bicycle and Pedestrian Collisions in Unincorporated San Mateo County, 2013-2017

Day of Week

While the number of pedestrian collisions remained consistent regardless of day of the week, 47 percent of bicycle collisions occurred on a Saturday or Sunday (**Figure 20**). This high percentage of weekend bicycle collisions suggests that many of these can be attributed to recreational bicycling. The prevalence of collisions during recreational bike rides suggests that safety education and outreach, potentially in partnership with organizers of group rides may be effective strategies to improve bicyclist safety. This also suggests that safety enhancements on popular recreational facilities may be as important as physical safety improvements on streets that connect to destinations.

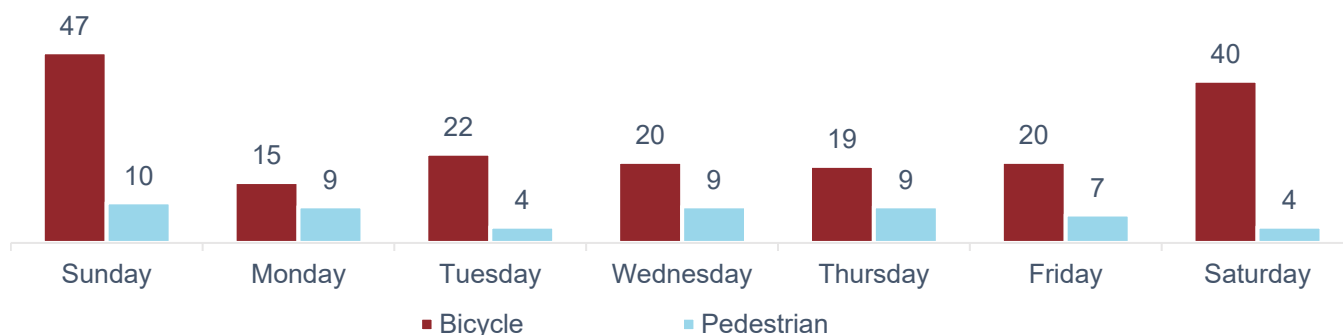


Figure 20: Bicycle and Pedestrian Collisions by Day of Week

Pedestrian Collisions

Crash Severity

As shown in **Figure 20**, there were 52 pedestrian collisions over the five-year period analyzed, resulting in 46 visible injuries and six deaths. The TIMS database only focuses on collisions where injuries are recorded, so there are likely more unreported non-injury collisions, as well as undocumented near misses.

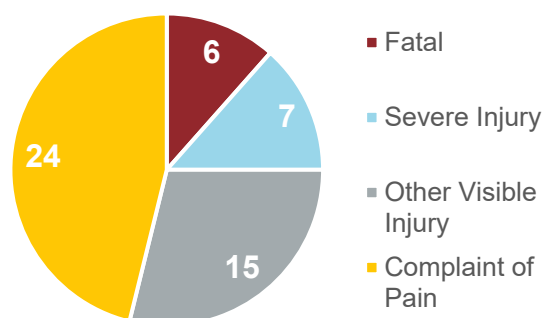


Figure 21: Pedestrian Crash Severity

Primary Collision Factors and Locations

Table 2 indicates the most common primary collision factors for pedestrian collisions in unincorporated San Mateo County. The most common pedestrian collision factors were violations of the pedestrian right of way and pedestrian violations. 30% of pedestrian collisions were caused by a pedestrian right of way violation, implying that a bike or motor vehicle fails to yield when a pedestrian has the right of way. 25% of pedestrian collisions were caused by a pedestrian violation, an example which is crossing the street against a traffic signal. Another 13% of pedestrian collisions were caused by improper turning, referring to driver errors like turning right when right turns on red are restricted.

Figure 22 presents pedestrian locations when a collision occurred.

Thirty of the 52 pedestrian collisions occurred when a pedestrian was crossing the road, and over 40% of these crossing collisions occurred when a pedestrian was crossing the road at a location outside of a crosswalk. This implies that the need for additional pedestrian crossing locations.

Lighting

The presence of lighting appears to influence the overall severity of pedestrian collisions. Analysis of lighting in all pedestrian collisions (**Figure 23**) versus in fatal and severe pedestrian collisions.

Figure 24 shows that over 60% of pedestrian collisions occurring without streetlights result in severe or fatal injury. Safety benefits of lighting are documented in the Federal Highway Administration's (FHWA) Safe Transportation for Every Pedestrian (STEP) program and may be an effective strategy for parts of San Mateo County.

Table 2: Primary Pedestrian Collision Factors

Primary Collision Factor	Number
Pedestrian Right of Way	16
Pedestrian Violation	13
Improper Turning	7
Unsafe Speed	6
Unsafe Starting or Backing	4
Unknown	3
Automobile Right of Way	2
Improper Passing	1

Source: TIMS, 2013-2017

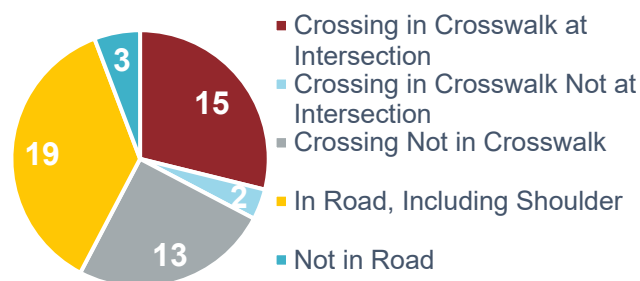


Figure 22: Location of Pedestrian During Collision

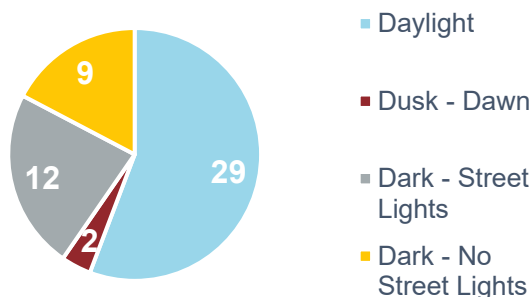


Figure 23: Lighting in Pedestrian Collisions

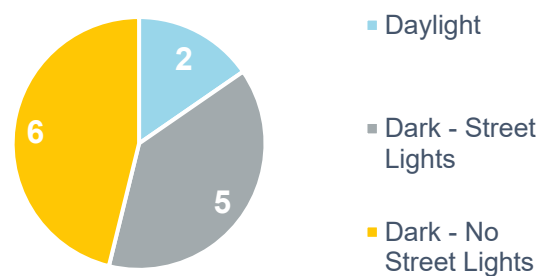


Figure 24: Lighting in Fatal and Severe Pedestrian Collisions

Pedestrian Collisions in Urbanized Areas

Urbanized areas in unincorporated San Mateo County include, among others, North Fair Oaks and Broadmoor, with North Fair Oaks being the largest. **Figure 25** presents the bicycle and pedestrian collisions that occurred in North Fair Oaks versus in the rest of unincorporated San Mateo County. About 18 percent of bicycle collisions in unincorporated areas of San Mateo County occurred in North Fair Oaks, roughly proportional to its share of the unincorporated County's population. While the North Fair Oaks community makes up a relatively small area of the larger unincorporated San Mateo County, half the pedestrian collisions occur there.

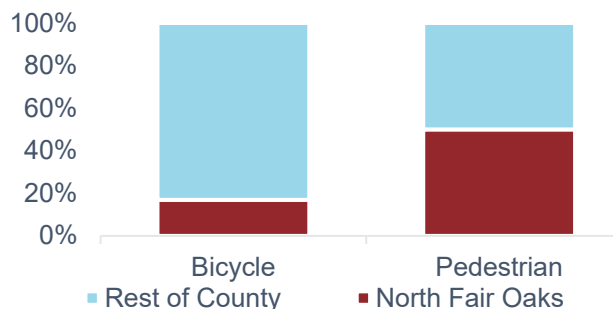


Figure 25: Collisions in North Fair Oaks and Other Unincorporated Areas

Bicycle Collisions

Crash Severity

Over the five-year period, there were 183 bicycle collisions, resulting in 179 injuries and four deaths (**Figure 25**). Overall, while fatalities are rare, bicycle collisions were likely to be more severe than pedestrian collisions: 73% of bicycle collisions resulted in visible injury or death, compared to 54% of pedestrian collisions. As with pedestrian collisions, it should be noted that the TIMS database only includes collisions where an injury was recorded, so there are likely more non-injury bicycle collisions that occurred and were not reported, as well as near misses.

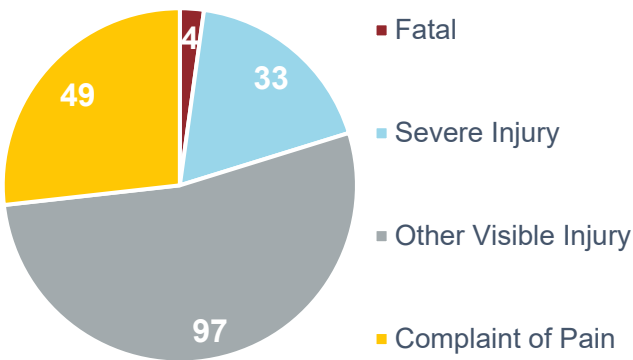


Figure 26: Bicycle Crash Severity

Primary Collision Factors

Table 3 indicates the most common primary collision factors for bicycle collisions in unincorporated San Mateo County. The most common bicycle collision factors were “improper turning” and “unsafe speed”, accounting for over 60 percent of bicycle collisions. Other common violations include violations of the automobile right of way and riding on the wrong side of the road. Over 35% of bicycle collisions were caused by “improper turning”, such as a “right hook” when a driver turns right without checking and/or yielding to bicyclists in the bike lane. An additional 29% of bicycle collisions were caused by unsafe speeds, and another 12.5% were caused by “automobile right of way”, referring to when a bicyclist is in the path of an oncoming vehicle because they have not yielded correctly.

Table 3: Primary Bicycle Collision Factors

Primary Collision Factor	Number
Improper Turning	65
Unsafe Speed	53
Automobile Right of Way	23
Wrong Side of the Road	13
Improper Passing	8
Source: TIMS, 2013-2017	

Bicycle and Motor Vehicle Collisions

Of the 182 collisions analyzed, 101 (55.5%) involved a motor vehicle. While all four fatal collisions involved a motor vehicle, severe injuries are common for bicycle-only collisions, such as those occurring on weekends, when the high speed of recreational rides on San Mateo County’s hilly roads may contribute to the severity of injuries. **Figure 26** presents the severity of bicycle collisions that do and do not involve motor vehicles.

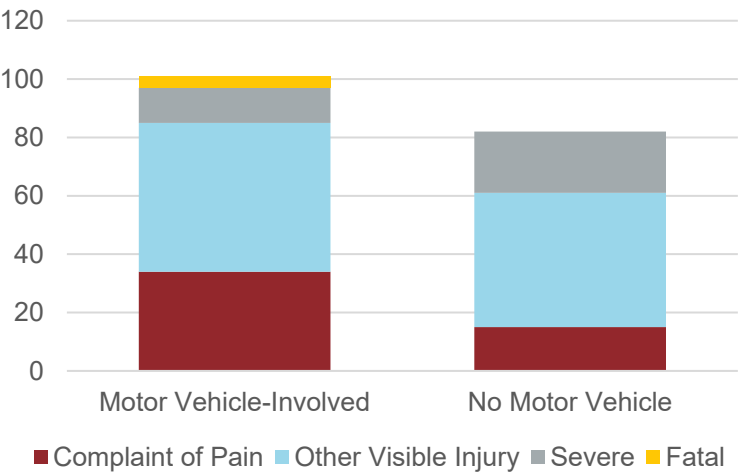


Figure 27: Motor Vehicle Involvement in Bicycle Collisions

Considerations for the Active Transportation Plan

Key takeaways from the collision analysis include a need for the following strategies:

- **Prioritize investments for high-collision locations:** People are already walking and riding at these locations, and investments could improve safety. These streets will be included in the recommended improvements and could be prioritized for implementation.
- **Use collision factors for pedestrian infrastructure and education programs or campaigns:** Each of the high-frequency collision factors points to a need for both infrastructure and education. Suitable infrastructure can help make the movements of bicyclists, pedestrians, and drivers more predictable. Education can help all parties understand rules and responsibilities, safe ways to share the public right-of-way, and proper use of infrastructure to help avoid collisions.
- **Leverage existing Vision Zero policies and programs:** Vision Zero is a policy that aims to eliminate all traffic fatalities and severe injuries. It treats collisions as preventable occurrences and identifies strategies that reduce both the likelihood and severity of collisions. Many communities within the Bay Area have adopted Vision Zero policies and are developing action plans, and this could be a policy recommendation of this planning effort. These policies set communities on a path toward safer roadways for all users and may be a beneficial framework for reducing fatal and severe bicycle and pedestrian collisions.



Figure 28: Simulating curb extensions at a crosswalk with safe-hit posts and enhancing the crossing with an RRFB are enhancements that a vision zero program might recommend

Considerations for the Active Transportation Plan

The following items are considerations for developing the Active Transportation Plan drawn from the findings and recommendations from the studies reviewed.

- Active transportation is a key strategy to help several other planning efforts achieve goals in numerous areas including health, sustainability, and safety.
- Recommendations that mitigate challenging crossings of State Route 1 have been identified in numerous planning studies. An important outcome of this Plan should be to support the implementation of these recommendations.
- Key side street routes that provide alternatives to State Route 1 should be identified and studied for possible improvements to the walking and bicycling environment.
- Coordinating with Caltrans is needed to solve many issues for walking and bicycling along and across state highways in unincorporated parts of San Mateo County. Three state highways of note are State Route 1 on the Coastsides, important locations for pedestrians and bicyclists along State Route 92 within the Coastsides and other parts of the County, and State Route 82 in North Fair Oaks.
- Pedestrian and bicycle facilities' design is governed by national and statewide standards, but also certain local policies like the Local Coastal Program.
- This Plan should consider a variety of destination types in its recommendations. Many issues identified in the Coastsides and State Route 1 studies relate to people accessing beaches, parks, and trails.
- While there are other planning efforts like the Trails Master Plan that identify new trails, the Active Transportation Plan should include recommendations that make these trails work better with improved crossings and on-street access to trails. Connections should be made with the Regional Trail Network – both North to South and East to West
- This plan should identify important connections with adjacent communities to support the development and prioritization of recommendations within unincorporated areas and support continuity between jurisdictions.
- The plan should help to connect urban areas on the east side of the county to open space on the west side, which would also foster connections between low-income communities and open space amenities.
- The plan should develop policy and infrastructure recommendations to address “last mile” connections with transit

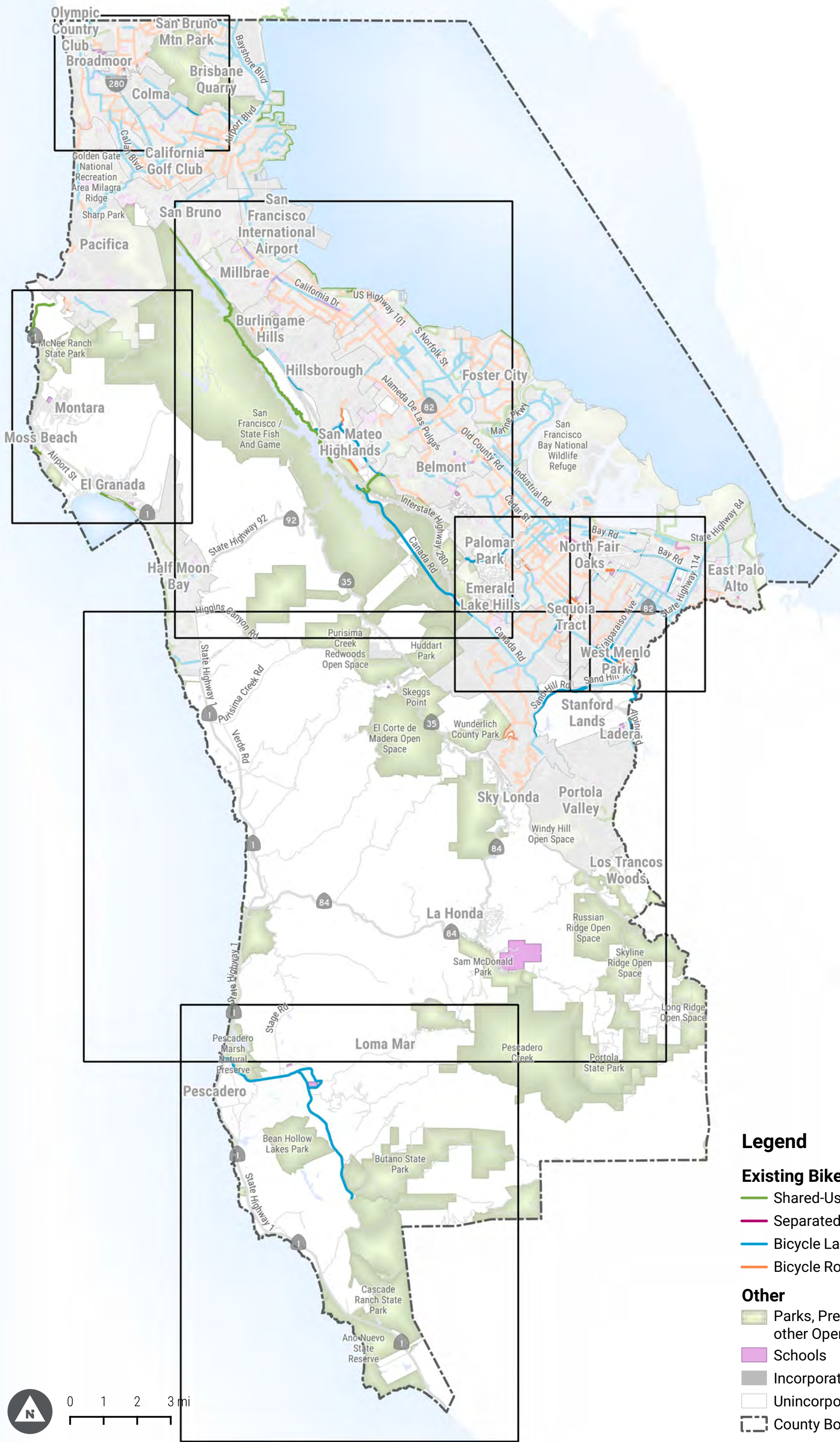
Opportunities

This review of Existing Conditions demonstrates the progress that San Mateo County has made in developing its active transportation networks as well as the support for active transportation in other planning documents. San Mateo County's pedestrian and bicycle infrastructure and programs can be further strengthened through these opportunities:

- Increasing connectivity between existing pedestrian and bicycle facilities
- Upgrading high-stress facilities and/or identifying lower-stress routes
- Focusing on addressing the historical causes of bicycle and pedestrian collisions
- Recommending policies – such as lighting, enhanced crossing treatments, and red curb areas for visibility – that depend on land use context to provide relevant recommendations for a large geographic area
- Highlighting key focus areas with high volumes or projected volumes of people walking and bicycling to ensure that the Plan makes recommendations where they are most needed
- Increasing access to transit
- Enhanced active transportation encouragement and education programming

Subsequent phases of the Unincorporated San Mateo County Active Transportation Plan will provide infrastructure and programmatic recommendations to address these opportunities.





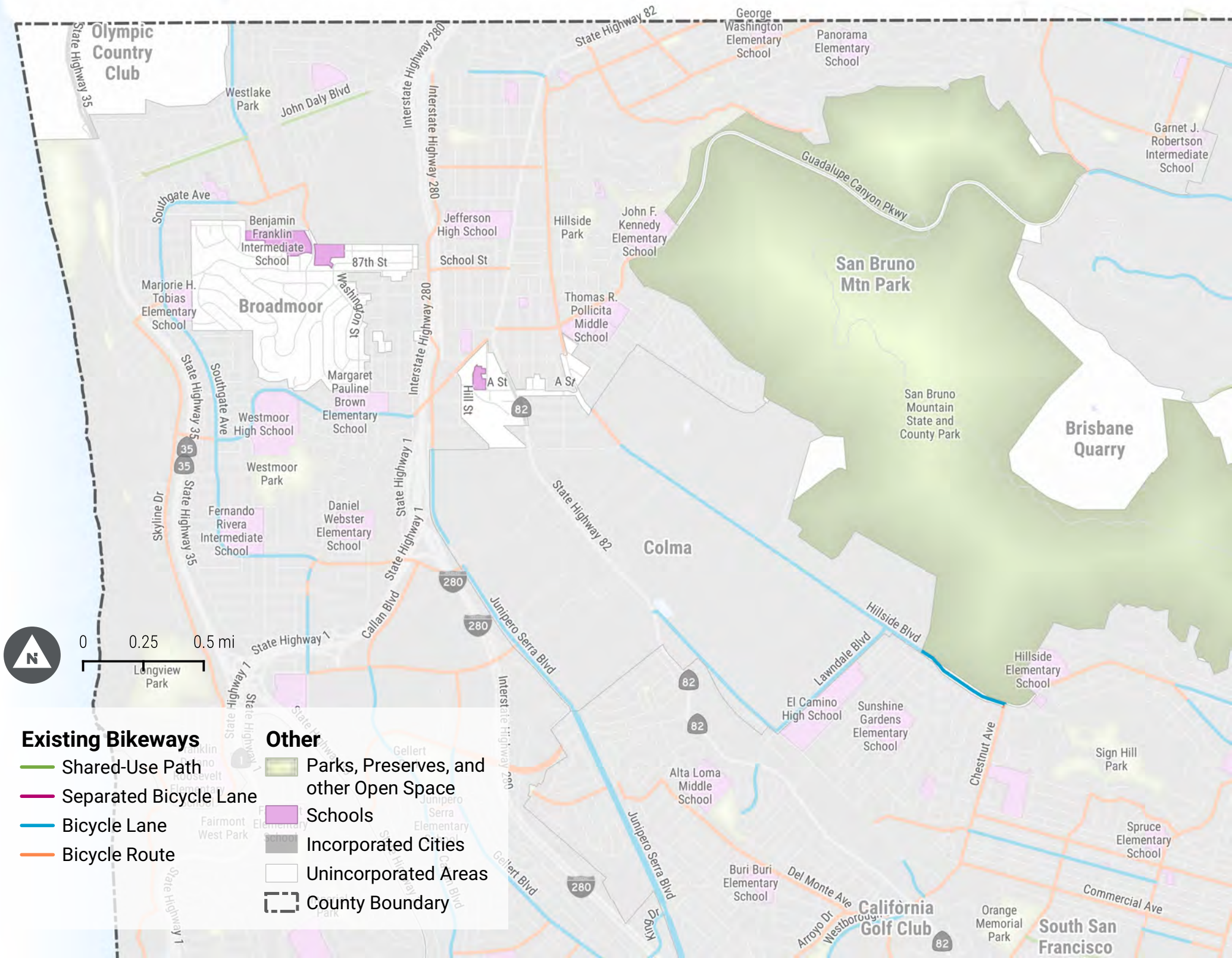
Legend

Existing Bikeways

- Shared-Use Path
- Separated Bicycle Lane
- Bicycle Lane
- Bicycle Route

Other

- Parks, Preserves, and other Open Space
- Schools
- Incorporated Cities
- Unincorporated Areas
- County Boundary



Existing Bikeways

- Shared-Use Path
- Separated Bicycle Lane
- Bicycle Lane
- Bicycle Route

Other

- Parks, Preserves, and other Open Space
- Schools
- Incorporated Cities
- Unincorporated Areas
- County Boundary

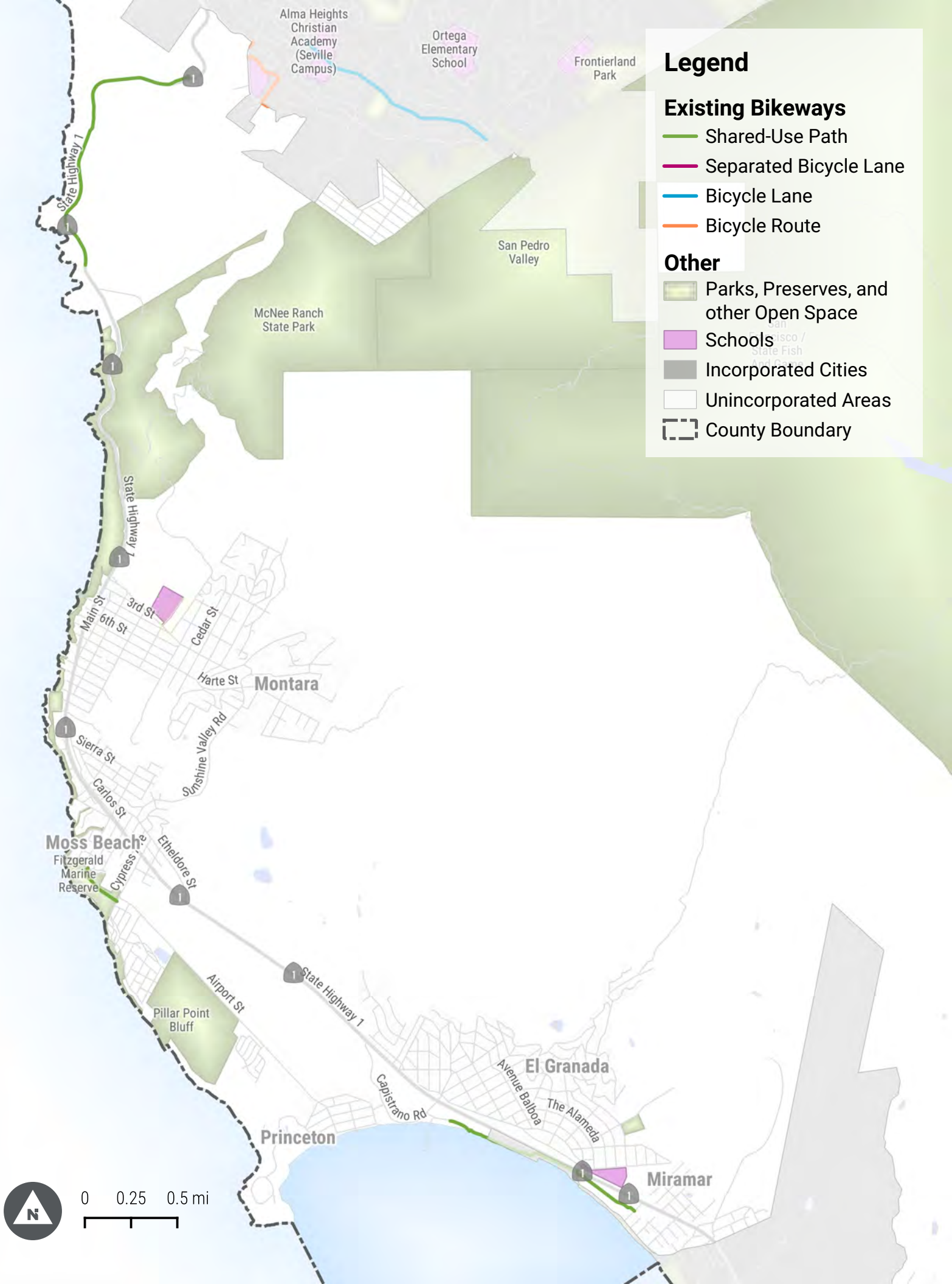
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Existing Bikeways

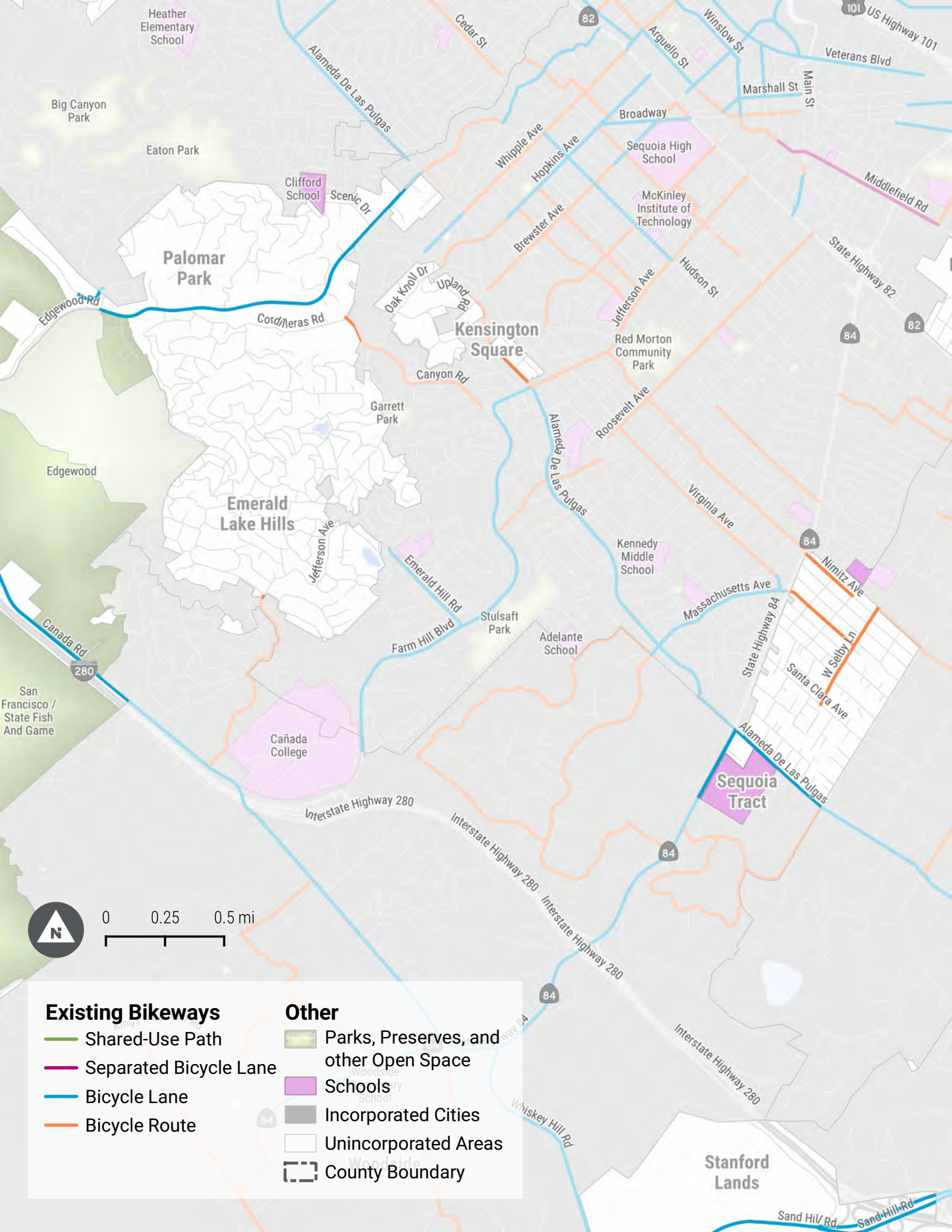
- Shared-Use Path
- Separated Bicycle Lane
- Bicycle Lane
- Bicycle Route

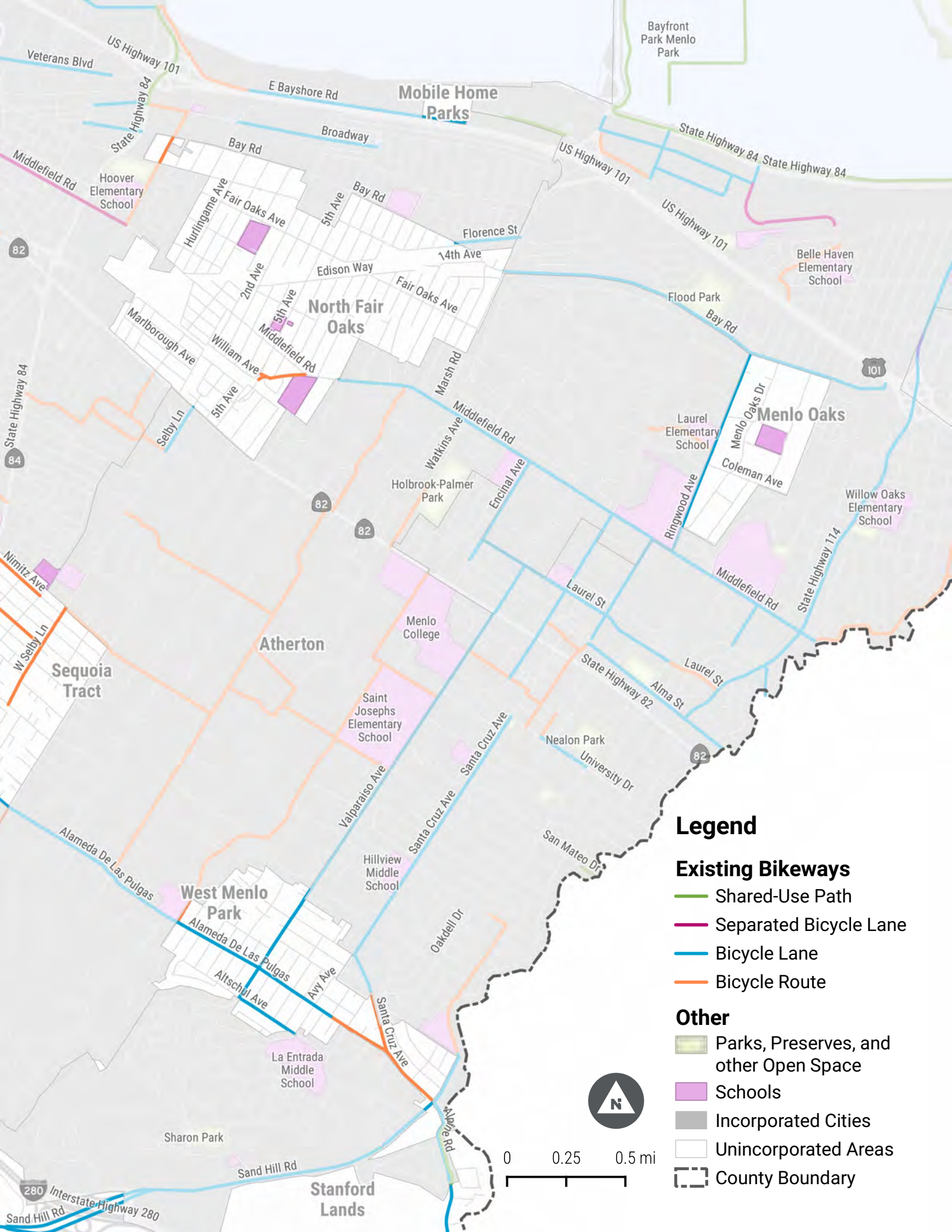
Other

- Parks, Preserves, and other Open Space
- Schools
- Incorporated Cities
- Unincorporated Areas
- County Boundary









Legend

Existing Bikeways

- Shared-Use Path
- Separated Bicycle Lane
- Bicycle Lane
- Bicycle Route

Other

- Parks, Preserves, and other Open Space
- Schools
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- Unincorporated Areas
- County Boundary



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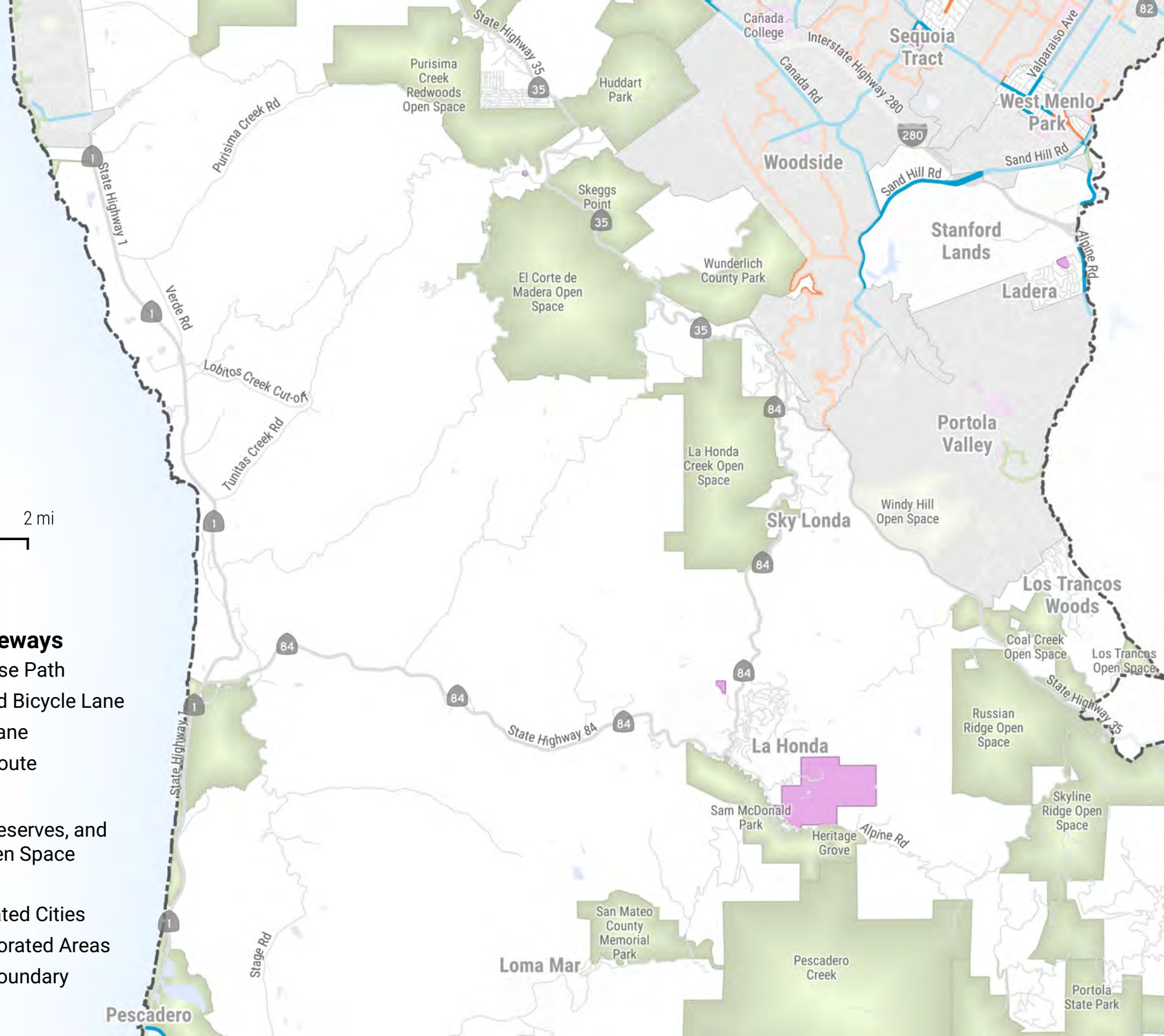
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Legend

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- Unincorporated Areas
- County Boundary



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MEMORANDUM

August 13, 2019

To: Julia Malmo-Laycock
Organization: San Mateo County Office of Sustainability
From: Lucas Woodward and Laura Krull, Toole Design Group
Project: Unincorporated San Mateo County Active Transportation Plan

Re: Potential Demand Analysis Memorandum

As a part of the Unincorporated San Mateo Active Transportation Plan development, Toole Design conducted a demand analysis to identify areas in unincorporated San Mateo County with potential for bicycle and pedestrian activity. Potential Demand Analysis is used to determine where there is a high potential for people to walk and bike. This memo presents the findings from this analysis and is intended as an internal-facing product that supports subsequent recommendations development and prioritization tasks in the Plan.

This analysis focuses on walking and bicycling for utilitarian trips, understanding that recreational walking and bicycling is very popular in San Mateo County.

METHODOLOGY

This analysis draws upon best practices from academic research to estimate areas with a high potential number of walking and bicycling trips. The goal of the Potential Demand Analysis is to identify patterns and areas with high potential for bicycle and pedestrian demand based on development patterns and demographic factors. However, the analysis is not meant to be predictive of actual bicycle activity.

The geographic scale of analysis is at the census block level; these geographies have the richest population and employment data gathered in the U.S. Census. The demand analysis is a sum of four factors:

- Population density
- Employment density
- Land use mix
- Intersection density

DEMAND ANALYSIS FACTORS

Researchers have shown how the built environment influences travel demand along three dimensions; density, diversity, and design. Specifically, density, land-use diversity and pedestrian-oriented design reduces trip rates and encourages non-auto travel.¹ Given that bicycle and pedestrian trips are generally short and thus bicycle and pedestrian activity is context specific, there is not one industry standard for which variables to include when

¹ Cervero, R., & Kockelman, K. (1997). Travel demand and the 3 ds: density, diversity, and design. Transportation Research Part D: Transport and Environment 2(3). 199-219. [https://doi.org/10.1016/S1361-9209\(97\)00009-6](https://doi.org/10.1016/S1361-9209(97)00009-6)

estimating demand. Therefore, the analysis uses broader variables that have been statistically significant in many demand models. While it will not be possible to calibrate the model to the County's existing count data, we will provide a qualitative assessment of how patterns may differ between locations with existing count data and the overall demand model.

Population Density

Population density is a major determinant for both recreational and utilitarian trips. The more people are in an area, the higher the probability people are walking or biking, both due to the proximity of origins and destinations and to the raw additional number of people located within it.²

Calculation: population in census block / area of census block

Employment Density

Employment density is also a major determinant for utilitarian trips, since it serves as a bicycle or walking trip generator and attractor. Job data is provided by the 2015 Origin-Destination Employment Statistics (LODES) dataset from the Longitudinal Employer-Household Dynamics (LEHD). While employment has increased since 2015, this is the most recent comprehensive data available for employment density.

Calculation: Jobs in census block group / area of census block group

Land use mix

Land use diversity is also associated with pedestrian and bicycle activity. Having more land uses co-located can reduce the distance between destination, reducing vehicle miles traveled and correlating positively with active transportation usage³. Non-motorized mode choices and the likelihood to choose a walking trip is most strongly associated with local land use patterns^{4,5}. Transit oriented development (TOD) is an example of high land use diversity, where transit, housing, and retail are co-located.

Calculation: Total number of different land uses within the census block. Land uses from County data were consolidated into seven different categories. For example, different scales of residential development such as single-family residential and multi-unit residential would all fall under the residential category.

Intersection Density

Research into travel mode choice has shown that intersection density is highly correlated with increased active transportation trips.⁶ Areas with a high number of intersections with three or more legs tend to have better connectivity and high densities and diversities of utilitarian destinations and are therefore locations in which walking and bicycling are more likely to occur.

Calculation: Total number of intersections with 3 or more legs within the census block / total area of the census block.

² Nielsen, Thomas & Skov-Petersen, Hans. (2018). Bikeability – Urban structures supporting cycling. Effects of local, urban and regional scale urban form factors on cycling from home and workplace locations in Denmark. *Journal of Transport Geography*. 69. 36-44. 10.1016/j.jtrangeo.2018.04.015.

³ Boer, R., Zheng, Y., Overton, A., Ridgeway, G., & Cohen, D. (2007). Neighborhood design and walking trips in ten U.S. metropolitan regions. *American Journal of Preventive Medicine*, 32(4), 298-304.

⁴ Ewing, R., & Cervero, R. (2001). Travel and the built environment: A synthesis. *Transportation Research Record: Journal of the Transportation Research Board*, 1780, 87-114.

⁵ Ewing, R., & Cervero, R. (2010). Travel and the built environment: A meta-analysis. *Journal of the American Planning Association*, 76(3), 265-294.

⁶ Winters, M., Brauer, M., Setton, E., Teschke, K. (2010) Built Environment Influences on Healthy Transportation Choices: Bicycling Versus Driving. *Journal of Urban Health*, 2010.

CALCULATION

The total demand score is a summation of population density, employment density, land use mix and intersection density. Each factor is calculated separately and then the factors are weighed equally to create a composite score, as shown in Table 1 below.

Table 1, Potential Demand Factors

Factor	Calculation	Data Source	Weight
Intersection Density	# intersections with > 3 legs	Street network	25%
Population Density	Total population / census block area	2016 ACS 5-year estimates	25%
Job Density	Total employment/census block area	2014 Origin-Destination Employment Statistics (LODES), from the Longitudinal Employer-Household Dynamics (LEHD)	25%
Land Use Mix Density	Total land use types within ¼ mile/census block area	County land use data	25%
Total			100%

RESULTS

Figures 1-4 highlight the six unincorporated areas with the highest potential demand for bicycling and walking. These include:

- » North Fair Oaks
- » Unincorporated Colma/Broadmoor
- » Sequoia Tract
- » Emerald Lake Hills
- » West Menlo Park
- » Coastside communities, stretching from Montara to El Granada.

Figure 2 displays only census blocks above the 90th percentile in demand countywide. Most of these census blocks are located within North Fair Oaks, consistent with the community's high population density, mix of land uses, and relatively small blocks.

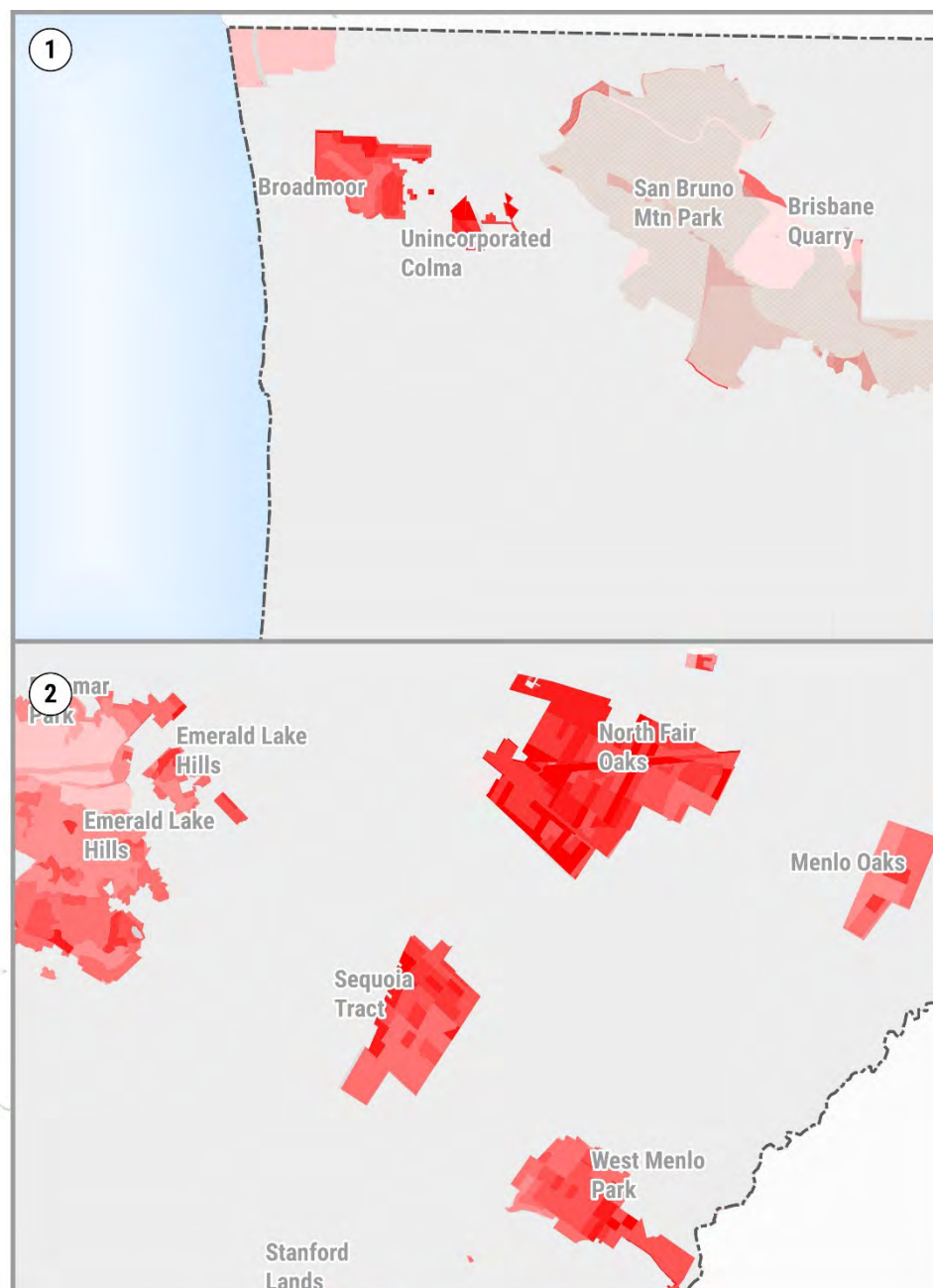
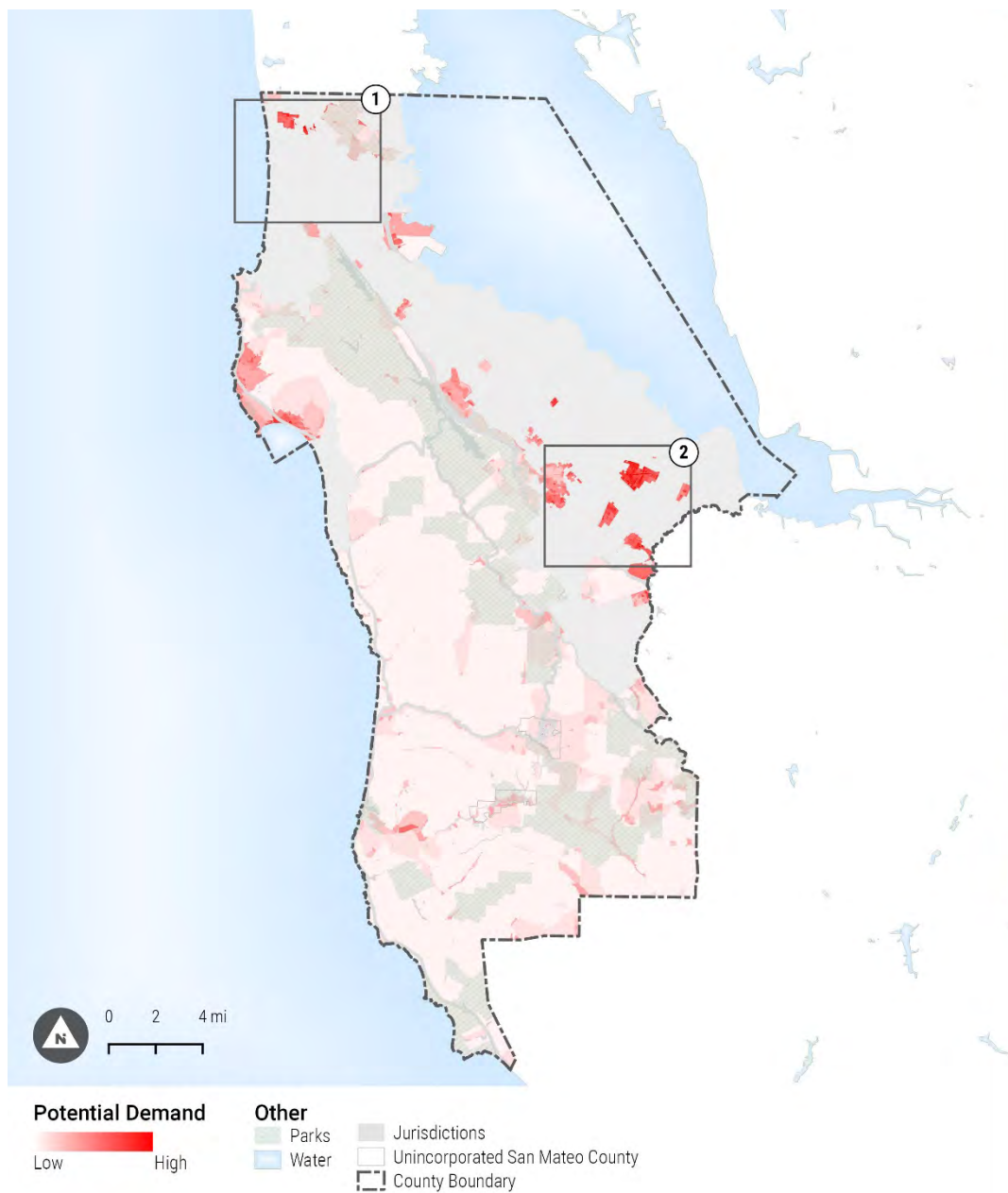


Figure 1: Potential Demand - Unincorporated San Mateo County

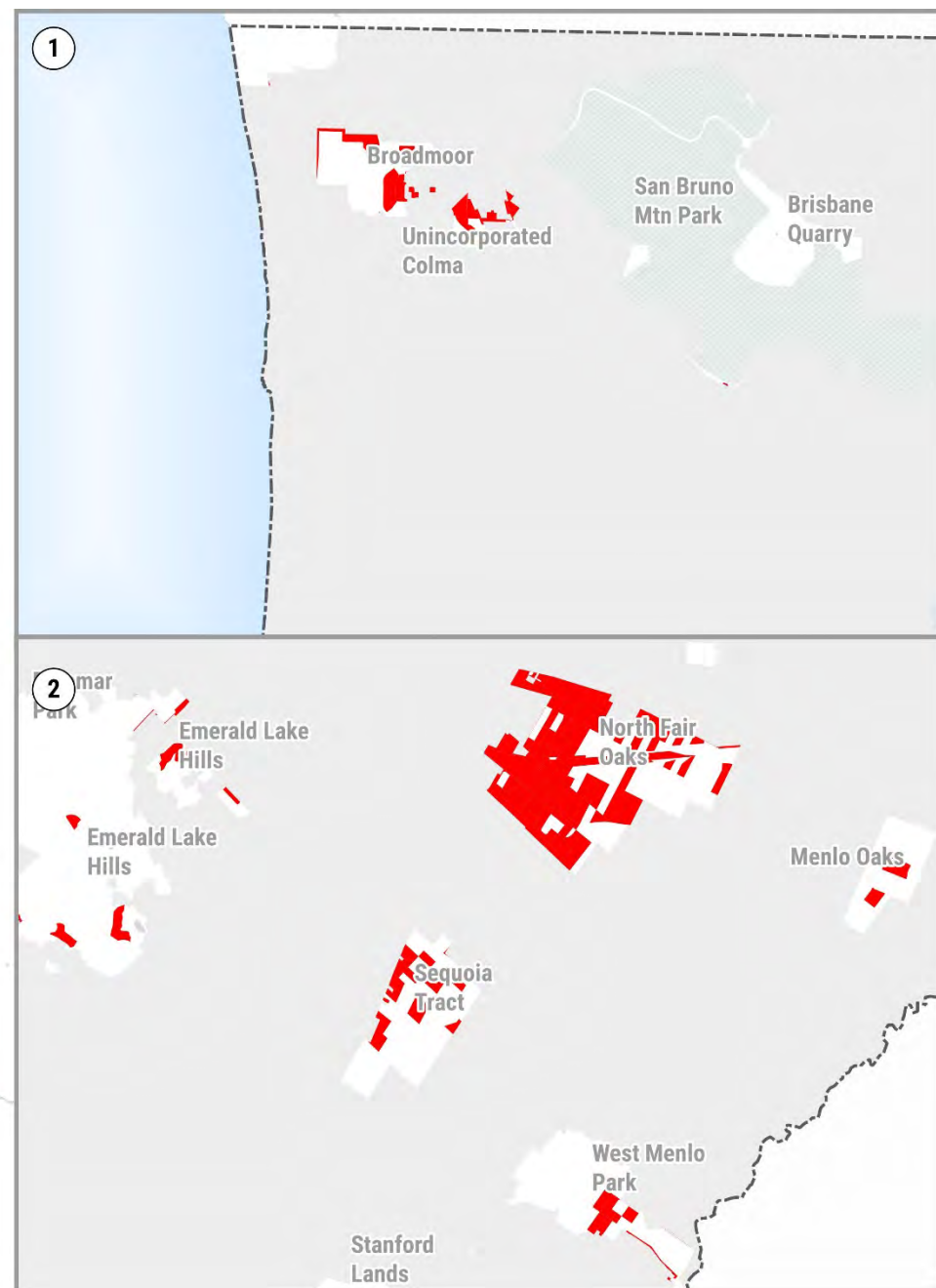
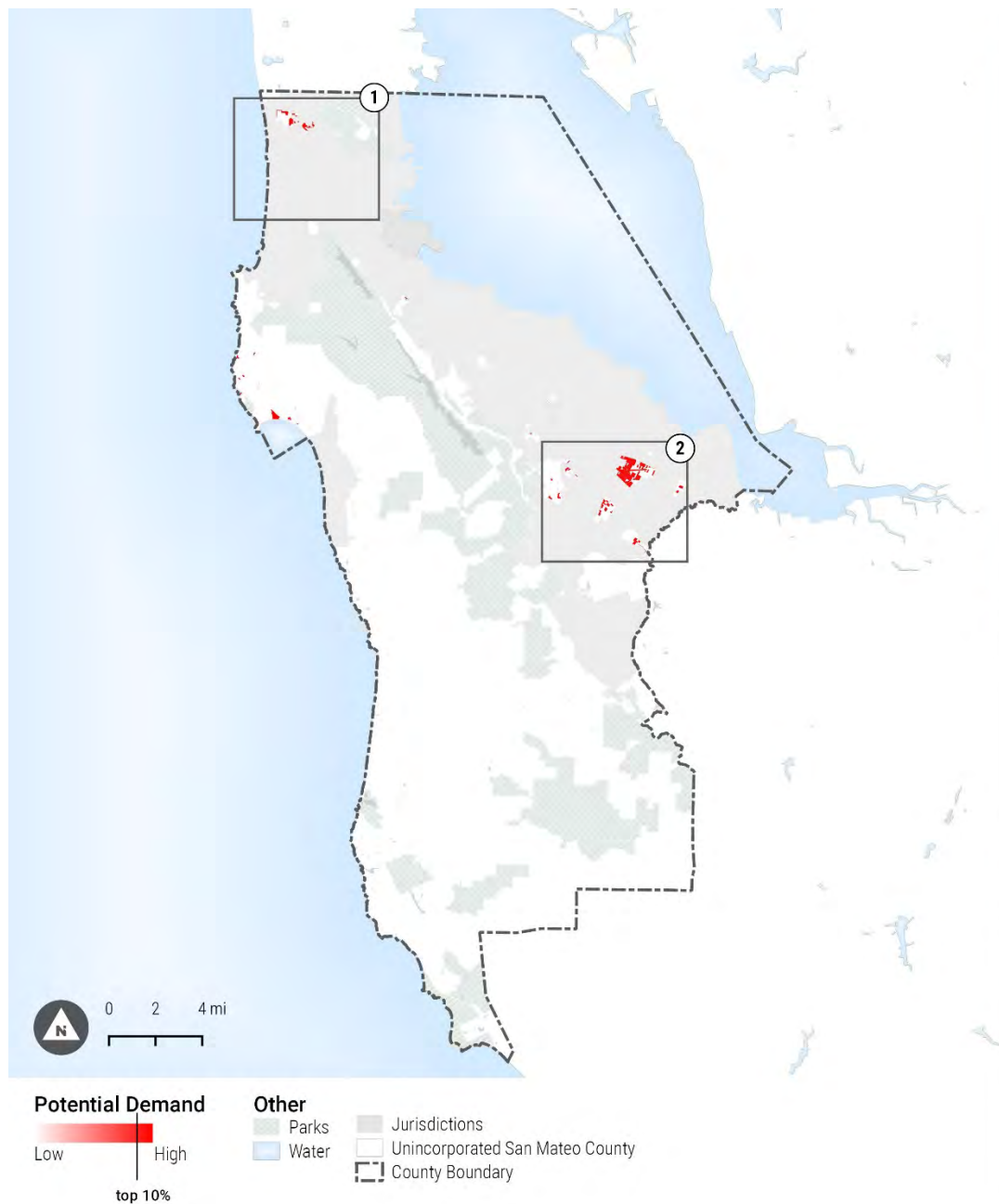


Figure 2: Potential Demand - Top 10%

While this plan focuses on unincorporated areas within the county, demand is not static and demand from neighborhood jurisdictions can pass through unincorporated areas. **Figure 3** illustrates the varied demand throughout San Mateo County, with the high potential demand areas concentrated along the peninsula, with a pocket of high demand near Half Moon Bay.

Figure 4 overlays some of the highest demand areas in San Mateo County with the existing and proposed bicycle network. The existing bicycle network is sparse within some of these areas. Improvements like the Middlefield Road Improvement Project will significantly improve connectivity in North Fair Oaks. Other high-demand areas in unincorporated San Mateo County include proposed bicycle facilities as per C/CAG's 2011 Comprehensive Bicycle and Pedestrian Plan. These proposed facilities would connect with existing bicycle facilities to improve accessibility between unincorporated communities and destinations in San Mateo County's cities and towns.

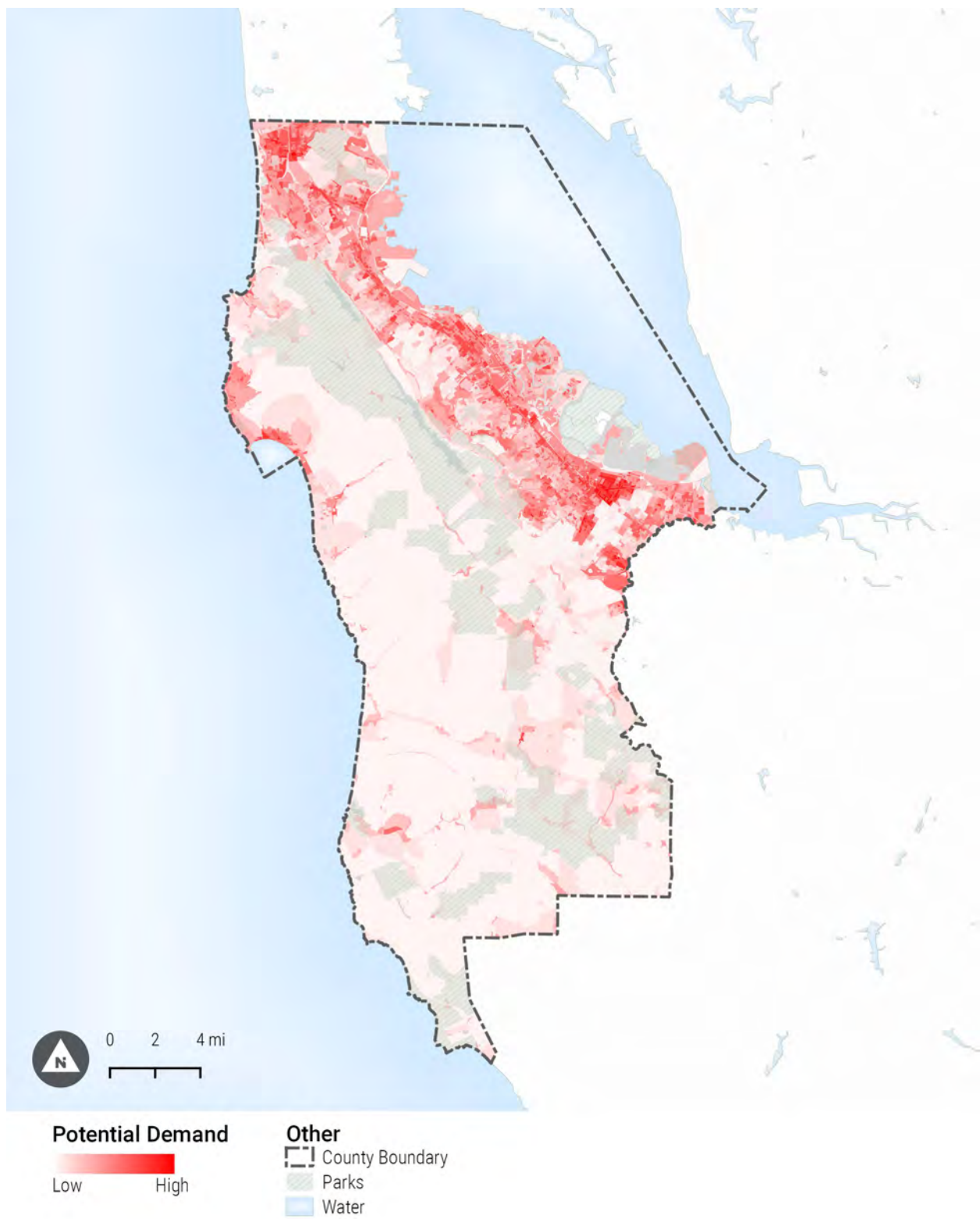


Figure 3: Countywide Potential Demand

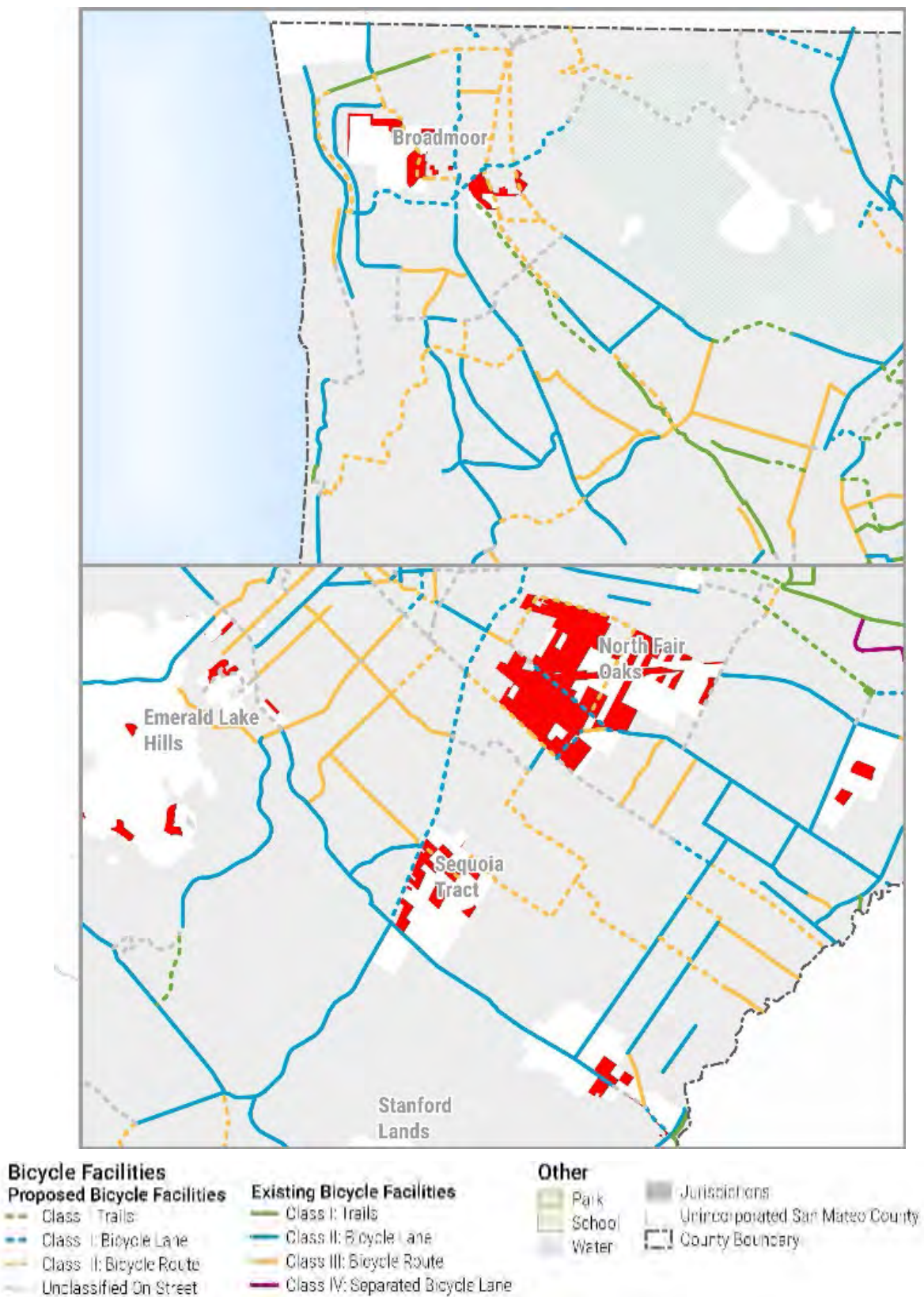


Figure 4: Potential Demand and Bicycle Network

COMPARISON WITH COUNT DATA

The demand analysis studies areas with high potential for walking and bicycling. These can be compared qualitatively with areas where the County has collected pedestrian and bicycle data.

Bicycle and Pedestrian Counts are shown in **Figure 5** and **Figure 6**. These maps show similar patterns, with higher volumes of pedestrian and bicycle activity generally found in incorporated cities and towns. Consistent with the demand analysis for unincorporated areas, high levels of pedestrian and bicycle activity were observed in North Fair Oaks and in the Coastside communities. There are also locations with high potential for walking and bicycling where counts were not performed between 2016-2018, like Broadmoor, unincorporated Colma, and Montara. These may be locations for future counting efforts.

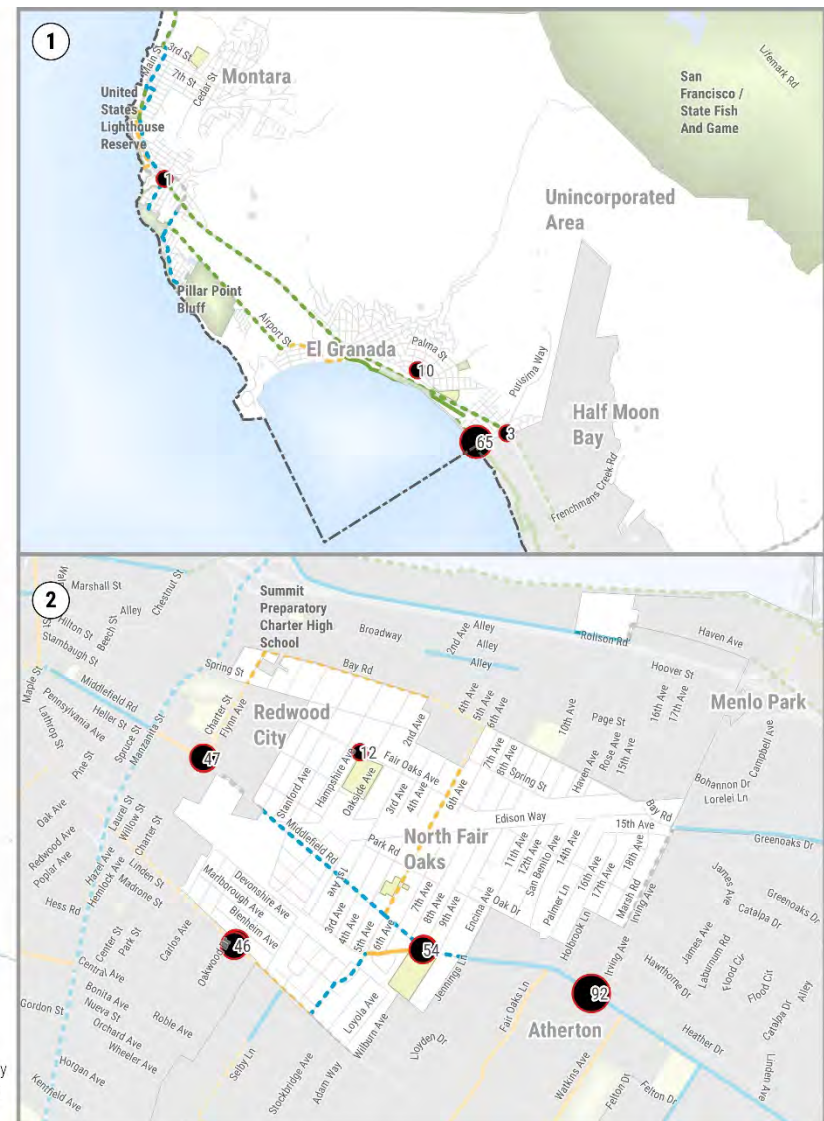
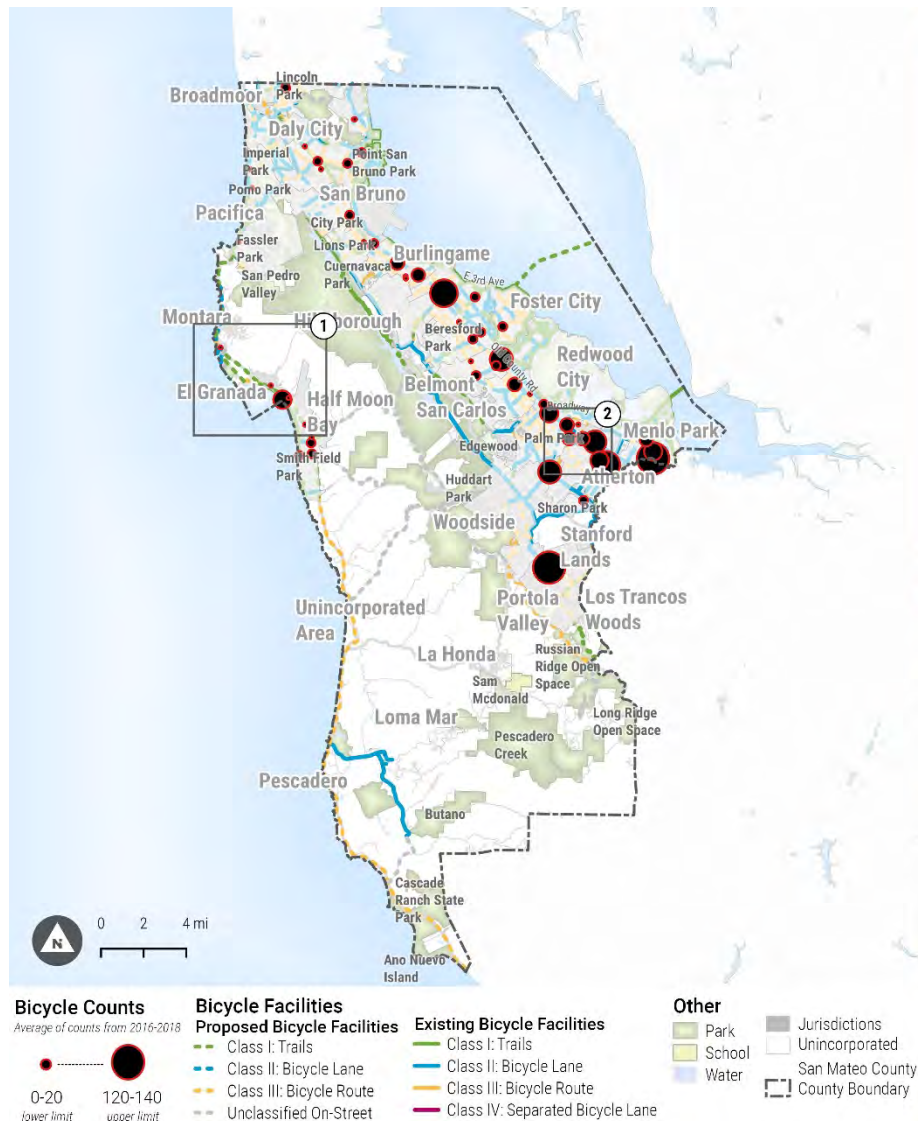


Figure 5: Peak period bicycle counts⁷ in San Mateo County (2016-2018)

⁷ Manual bicycle counts were taken during AM Peak (7-9AM) or PM Peak (5-7PM) during weekdays and midday (12-2PM) on weekends between 2016-2018. Counts represent the total cyclists during that two hour window. If counts were done over multiple days during the time period, the total was averaged.

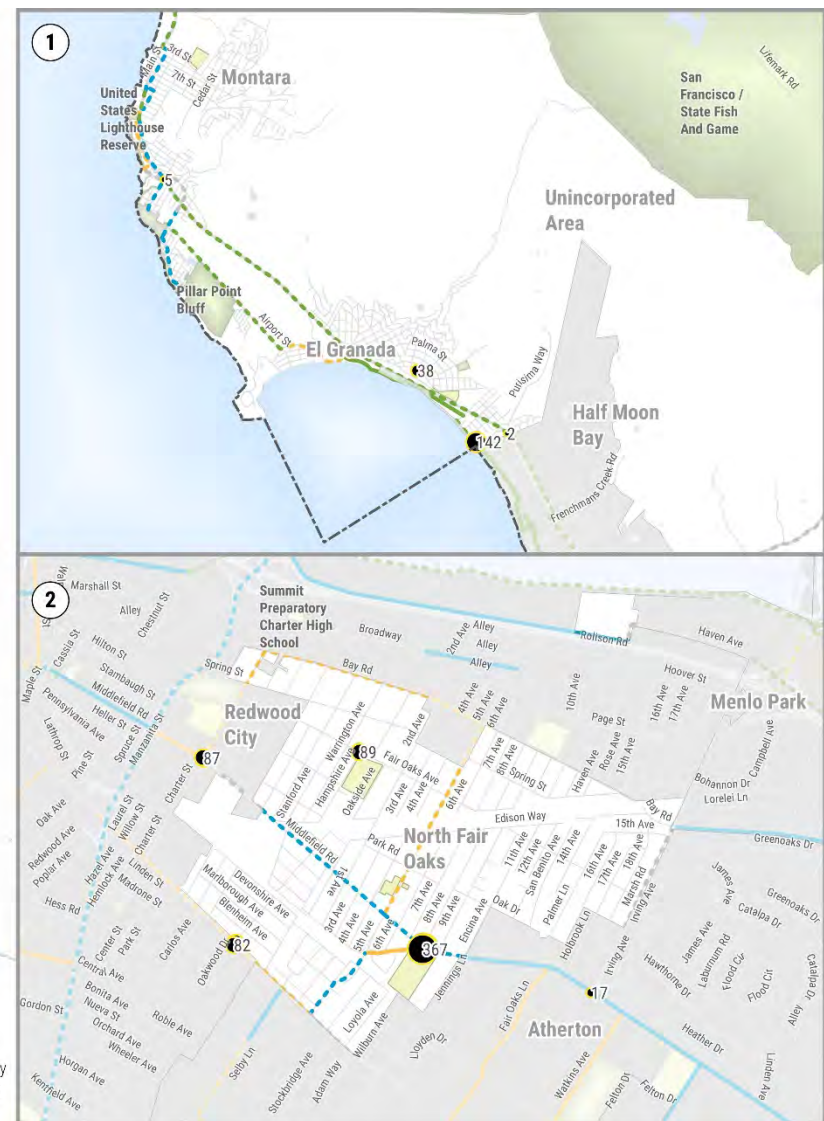


Figure 6: Peak Period Pedestrian Counts⁸ for San Mateo County

⁸ Manual pedestrian counts were taken during AM Peak (7-9AM) or PM Peak (5-7PM) during weekdays and midday (12-2PM) on weekends between 2016-2018. Counts represent the total pedestrians during that two hour window.

CONCLUSIONS

Potential demand in Unincorporated San Mateo County is concentrated in three areas: in the north near Broadmoor, further south along the coast, and in the bayside communities in the southern part of San Mateo County. Identifying the six communities that represent some of the highest areas of demand can help focus connections to and within these areas to further build out the bicycle and pedestrian networks.

In the recommendations task, we may recommend new pedestrian and bicycle facilities in high-demand areas that are not served well by existing infrastructure. Demand scores for census blocks in San Mateo County can be incorporated into the prioritization process, where bicycle and pedestrian facilities that serve higher-demand areas are prioritized. This information can also support projects in competitive funding applications.

November 7, 2019

To: Julia Malmo-Laycock

Organization: County of San Mateo

From: Sara Rauwolf and Laura Krull, Toole Design

Project: Unincorporated San Mateo County Active Transportation Plan

Re: Gap Analysis Memorandum

This memo presents an overview of the pedestrian and bicycle network gaps in Unincorporated San Mateo County. The purpose of this memo is to identify areas in Unincorporated San Mateo County where pedestrian and bicycle facility types may be lacking or may not match the needs of the users and local environment. These gaps will be used to create the recommended study network in the next phase of the project.

The bicycle network gap analysis identifies:

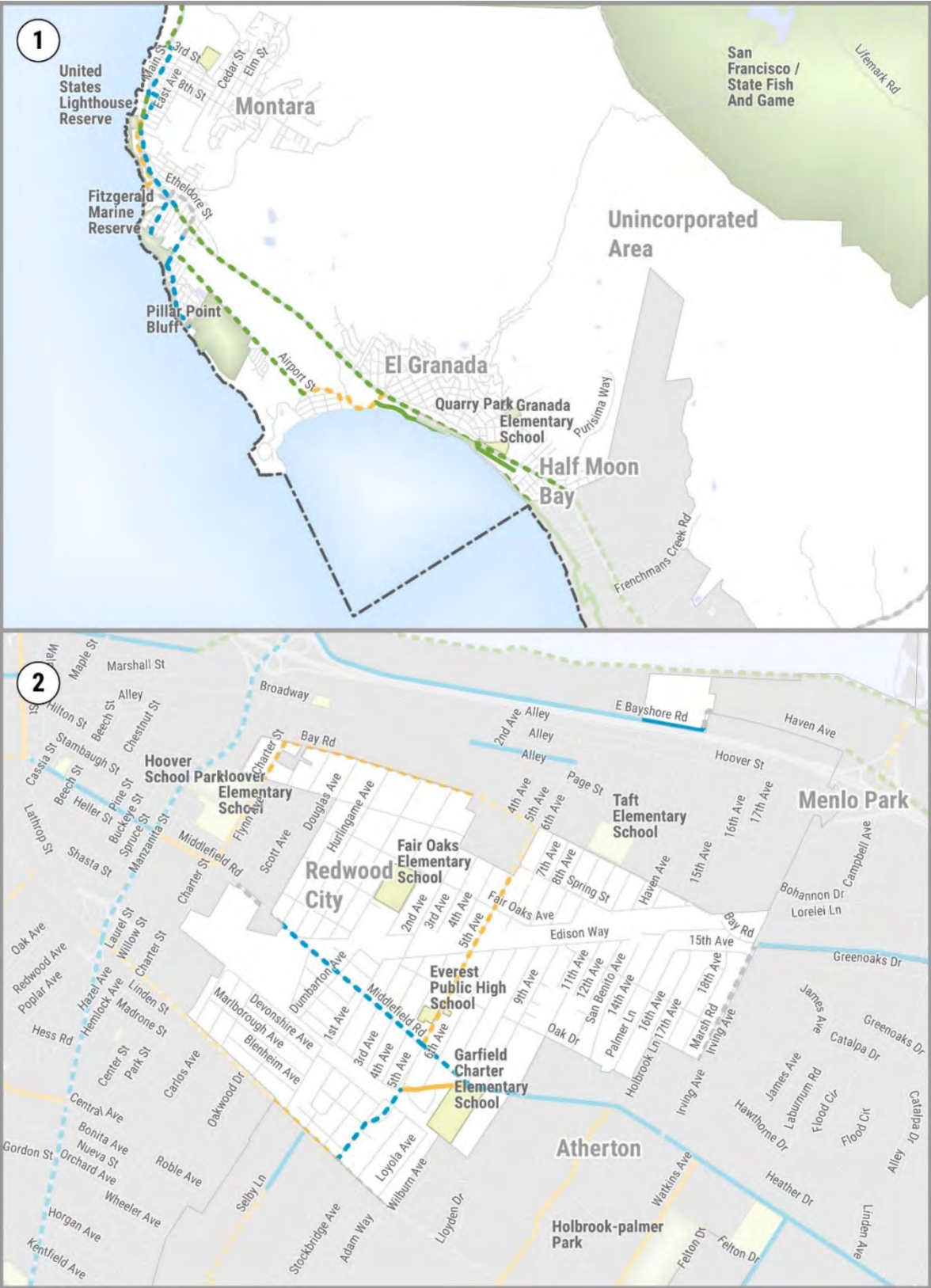
- 1) Spot and segment gaps in the bicycle network
- 2) Existing high stress bicycle facilities
- 3) High demand areas that are not connected to the bicycle network
- 4) Gaps in bicycle access to key destinations, as identified by community members through the public engagement process and in conjunction with County staff

The pedestrian network gap analysis identifies:

- 1) Spot gaps in the pedestrian network
- 2) Gaps in pedestrian access to key destinations, as identified by community members through the public engagement process and in conjunction with County staff

The findings of the gap analysis will help inform network recommendations for improved pedestrian and bicycle accessibility and will help the County prioritize investments in areas that will reduce network gaps and improve overall network connectivity.

Bicycle Network Gap Analysis



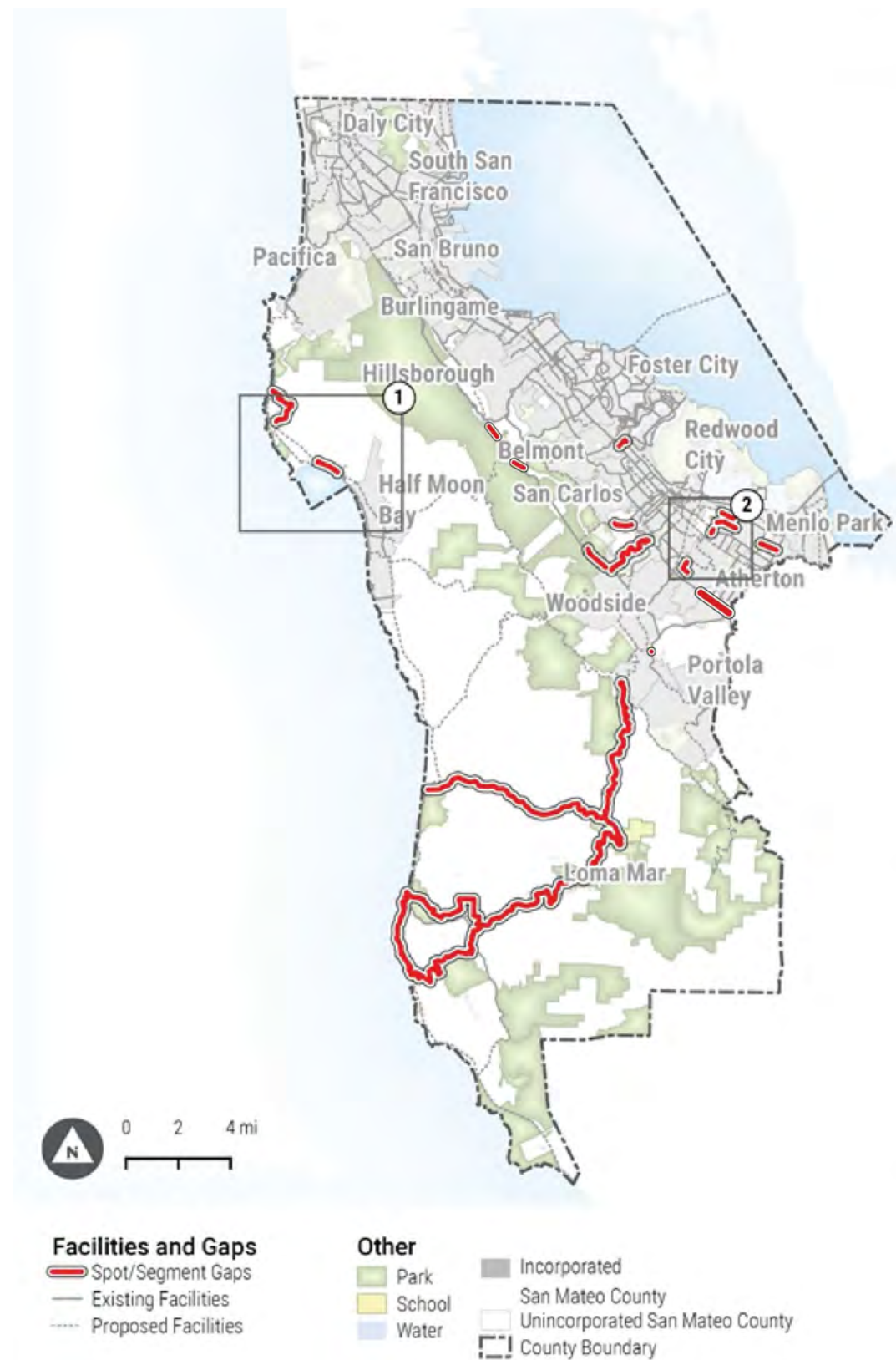
Existing and Proposed Bicycle Network

The existing bike network and proposed network from the 2011 C/CAG San Mateo County Bicycle and Pedestrian Plan are used as the baseline for this analysis, so it is important to understand the location of these existing and proposed facilities.

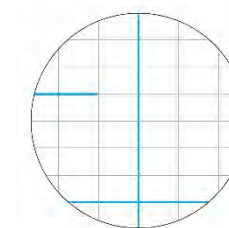
San Mateo County's bicycle network consists of bike lanes, bike routes, and trails. Some facilities, such as the California Coastal Trail, are enjoyable for people of all ages and abilities to use. Other facilities, such as bike lanes along major arterials with high traffic volumes and speeds, can be stressful for even the most experienced riders.

The existing and proposed facilities in Unincorporated San Mateo County are concentrated near North Fair Oaks, the midcoast communities north of Half Moon Bay and Pescadero. Unincorporated San Mateo County provides facilities in more urbanized areas, as well as trails for recreational users.

Figure 1. Existing and Proposed Bicycle Network



Bicycle Network Spot and Segment Gaps



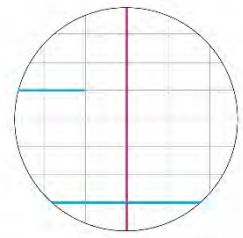
Spot and segment gaps are sections in the network where there are breaks in dedicated bikeway connectivity. These locations occur where there are already missing links between network facilities and are meant to highlight areas that would improve overall connectivity and access.

These gaps are primarily located in the central and south part of the unincorporated areas, including State-managed highways. The gaps in the southern part of the county represent missing links between the east and west sides of the county and would increase access to the coast and recreation areas.

Spot and segment gaps identified include many longer recreational routes in the more rural areas of the county, and shorter gaps in the more urbanized areas.

Figure 2. Bicycle Network Spot and Segment Gaps

Existing High Stress Bicycle Facilities



Using Federal Highway Administration (FHWA) facility recommendations and California Manual of Uniform Traffic Control Devices (CA MUTCD) guidelines, the existing bicycle network was assessed to determine if the existing facility is appropriate for bicyclists of all ages and abilities. Bicycle facilities that were identified as high stress are shown in the map.

The longest existing high stress bicycle facility runs along Canada Road from just north of Woodside through the San Mateo Highlands along Polhemus Road to Crystal Springs Road. This represents a key north-south connection. Additional facilities represent smaller gaps throughout the east side of the county.

Upgrading high stress facilities to all ages and abilities facility types can reduce high stress segments and improve network connectivity for all users of ages and

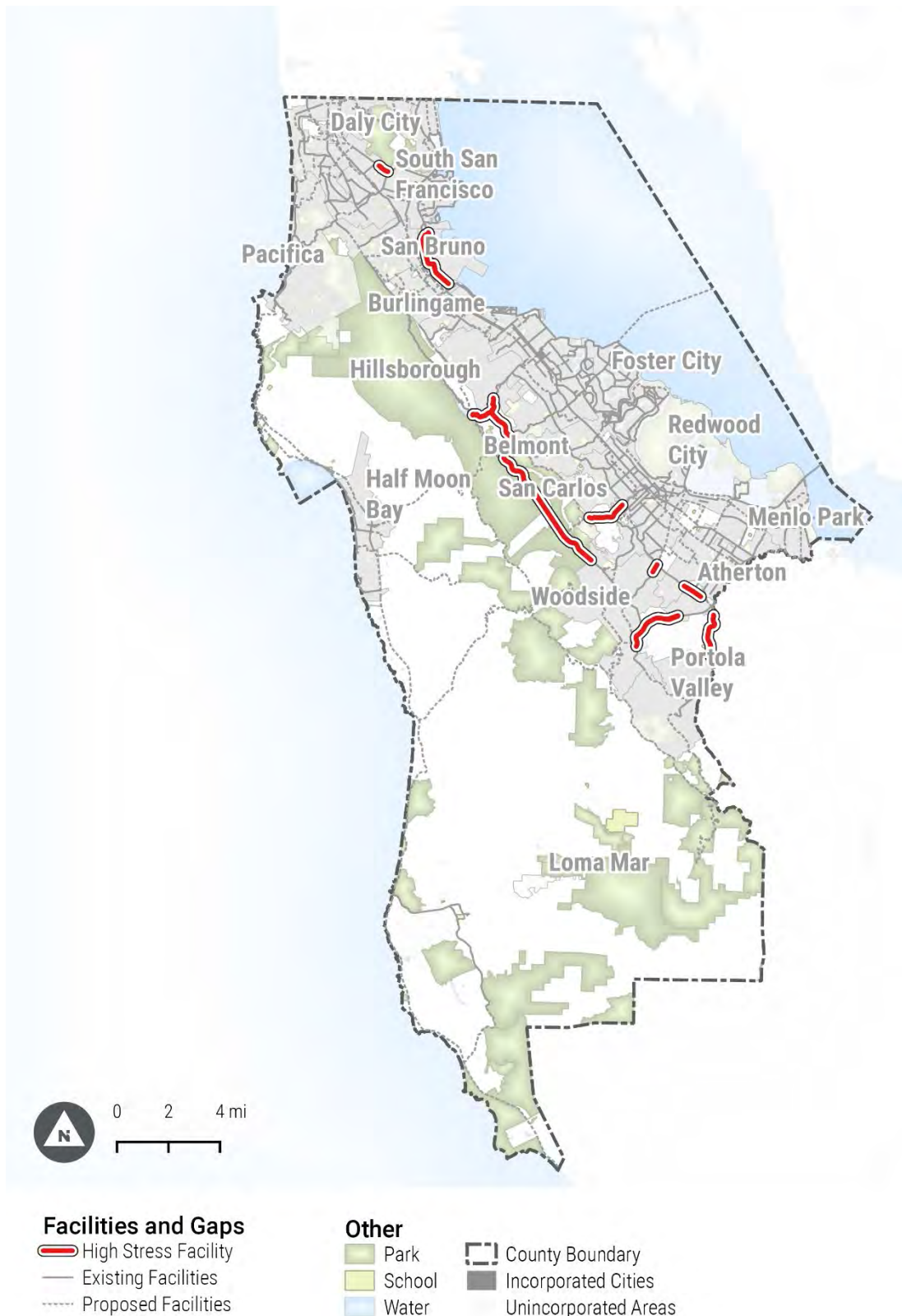


Figure 3. High Stress Bicycle Facilities
abilities.

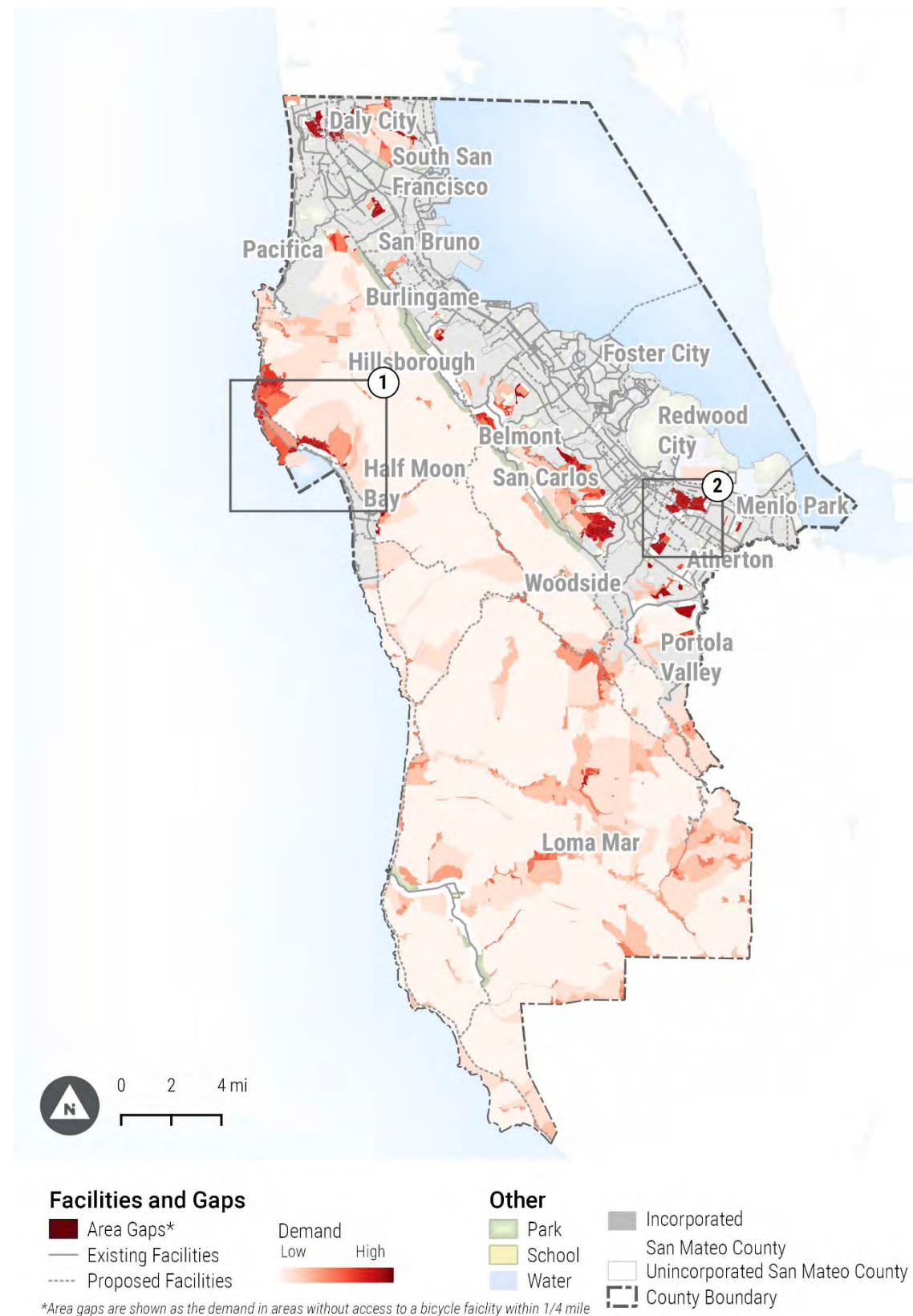
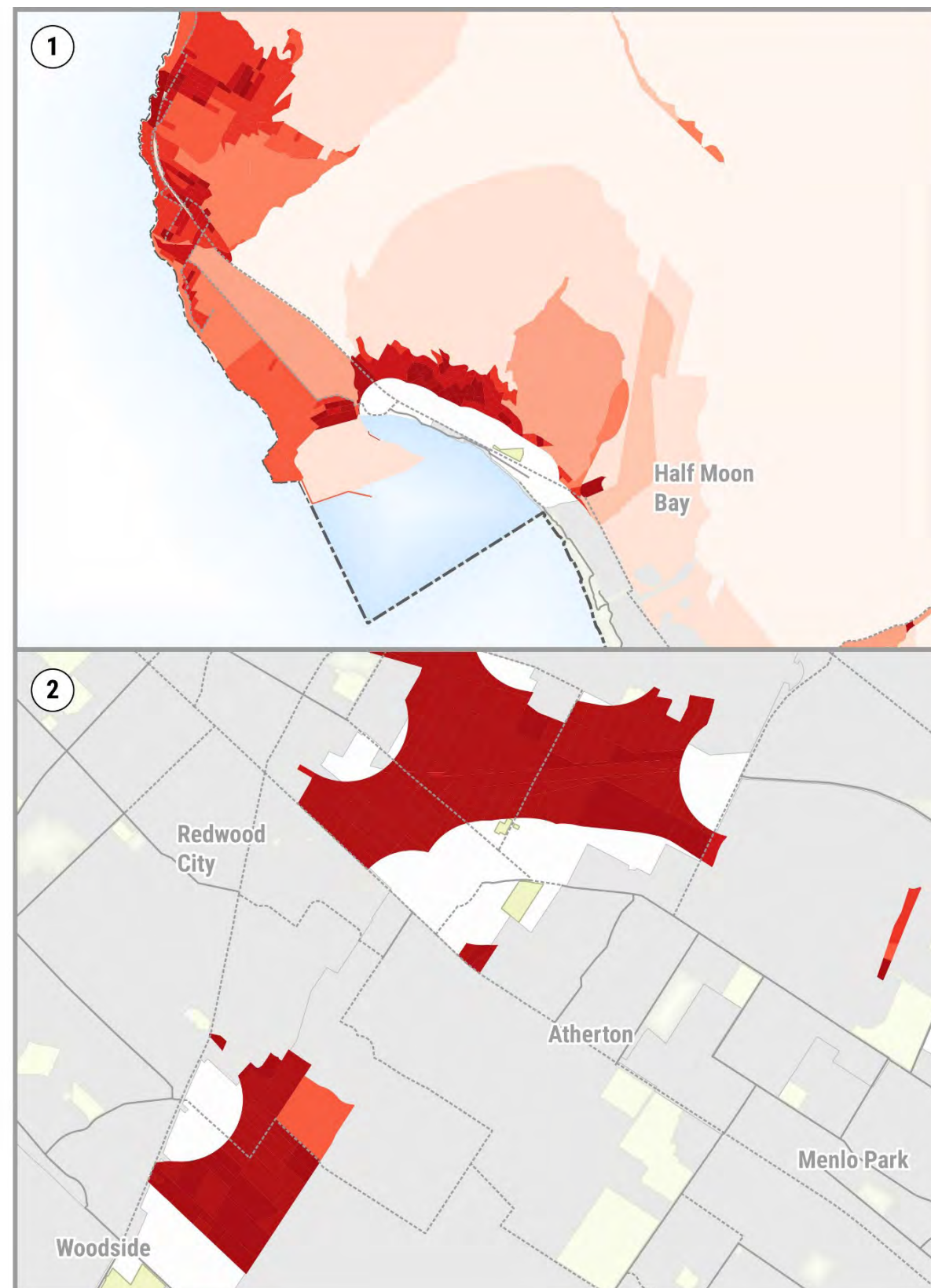
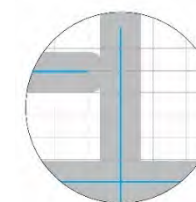


Figure 4. Bicycle Network Area Gaps



Bicycle Network Area Gaps



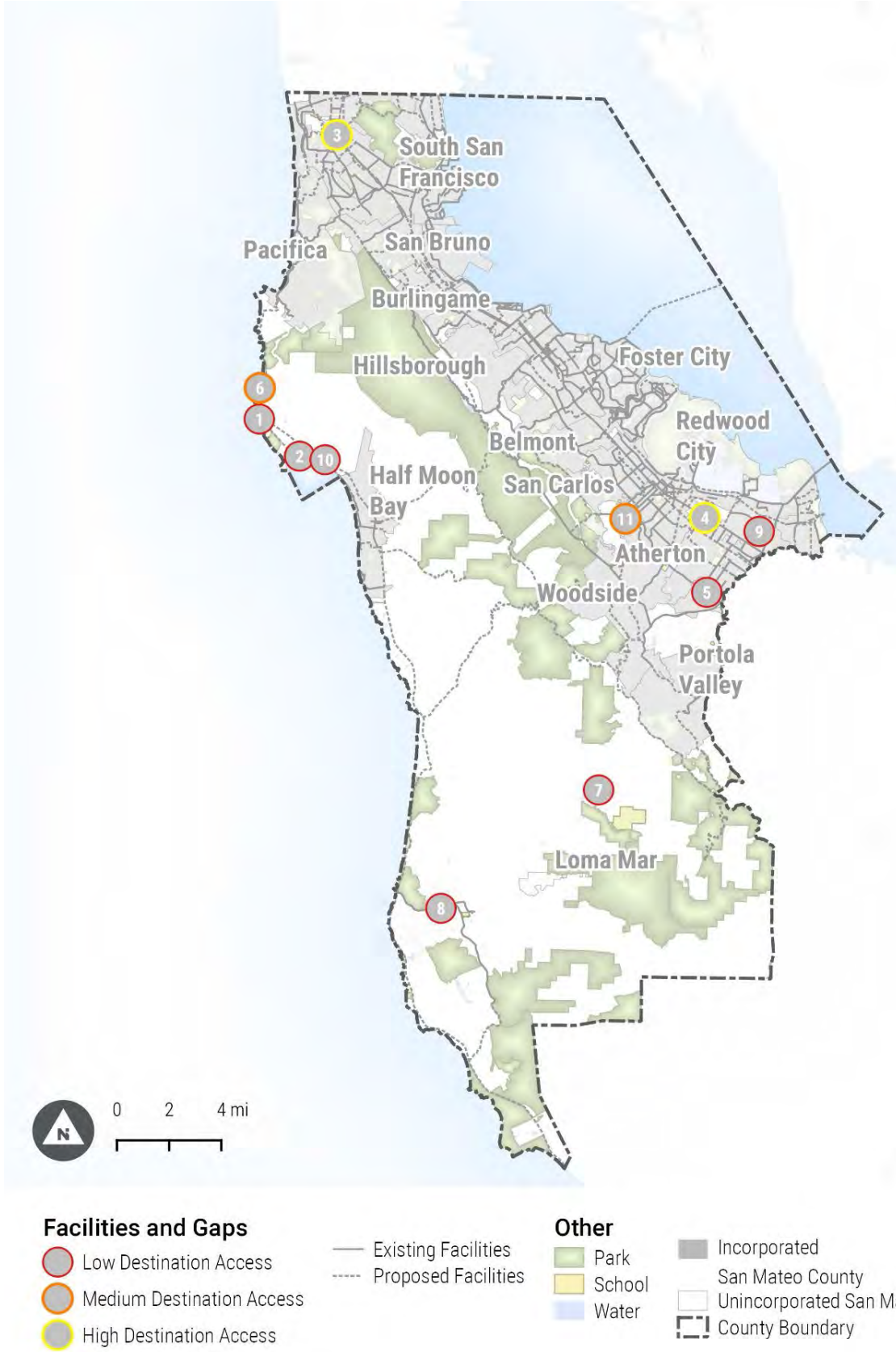
Area gaps were identified by assessing the areas without access to bicycle facilities (within ¼ mile) and determining the demand for these areas. The goal of identifying these area gaps is to ensure that areas with relatively higher demand have access to bicycle facilities.

High Demand Areas without Bicycle Access

There are many high demand areas without bicycle access in the north of the county, as well as in areas adjacent to Redwood City, midcoast communities north of Half Moon Bay, North Fair Oaks, Sequoia Tract, and in areas adjacent to San Carlos including Devonshire and Emerald Lake Hills. Additionally, there are some segments in the south of the county that have lower, but contiguous, demand without a facility. The analysis only assesses connections via existing facilities, so some area gaps have a previously proposed facility in the area, which is a good indicator that the previously identified facilities are located in appropriate places.

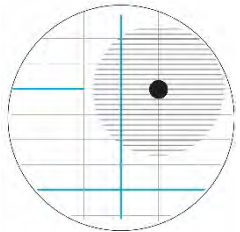
Relative Higher Demand Areas without Bicycle Access

When analyzing demand, it's important to assess areas with relatively high demand in addition to those with absolute high demand. Relatively high demand may include medium demand areas surrounded by very low demand areas in rural or lower density contexts. For example, it would be surprising for Loma Mar to have as high a demand as the midcoast are, where multiple small communities are adjacent to each other, but the areas around Loma Mar with relatively higher demand may still be important to the network for that portion of the county.



1	Fitzgerald Marine Reserve Ranger Station	2	Maverick's Event Center	3	Colma BART
Direct Access	Yes	Direct Access	None	Direct Access	Yes
Bicycle Amenities	Low	Bicycle Amenities	Low	Bicycle Amenities	Medium
Bike Mileage	0.15 mi	Bike Mileage	0.26 mi	Bike Mileage	0.15 mi
Overall	Low	Overall	Low	Overall	High
4	Everest Public High School	5	West Menlo Park Post Office	6	Highway 1 and 8th St Intersection, Montara
Direct Access	Yes	Direct Access	None	Direct Access	Yes
Bicycle Amenities	Medium	Bicycle Amenities	Low	Bicycle Amenities	Low
Bike Mileage	0.40 mi	Bike Mileage	0.25 mi	Bike Mileage	0.30 mi
Overall	High	Overall	Low	Overall	Medium
7	La Honda Community Market	8	Pescadero Post Office	9	Peninsula School
Direct Access	Yes	Direct Access	None	Direct Access	Yes
Bicycle Amenities	Low	Bicycle Amenities	Low	Bicycle Amenities	Low
Bike Mileage	0 mi	Bike Mileage	0.25 mi	Bike Mileage	0 mi
Overall	Low	Overall	Low	Overall	Low
10	El Granada Post Office	11	Oak Knoll Dr and Canyon Rd Intersection		
Direct Access	None	Direct Access	Yes		
Bicycle Amenities	Low	Bicycle Amenities	Low		
Bike Mileage	0.33 mi	Bike Mileage	0.26 mi		
Overall	Low	Overall	Medium		

Bicycle Access to Key Destinations



Eleven key destinations were identified by County staff and at public engagement events. Three criteria were used to assess bicycle access:

- **Direct Access:** Evaluates if there is direct bicycle access (a connecting bicycle facility) to the key destination.
- **Bicycle Amenities:** Evaluates the presence of bicycle amenities within 1/8 mile of the key destination and are generally scored into low, **medium** or high categories. Amenities include bike racks, bike repair stations, bike shops, bicycle wayfinding.
- **Bike Mileage:** The sum of bicycle facilities within a 1/8 mile.

A composite overall score was created by considering the above three criteria, assessing if each destination has low, medium, or high bicycle access. Most key destinations have low bicycle access. The destinations with the most bicycle access are Colma BART and Everest High School. The destinations with low and medium bicycle access are distributed fairly equally across the county.

Figure 5. Bicycle Access to Key Destinations

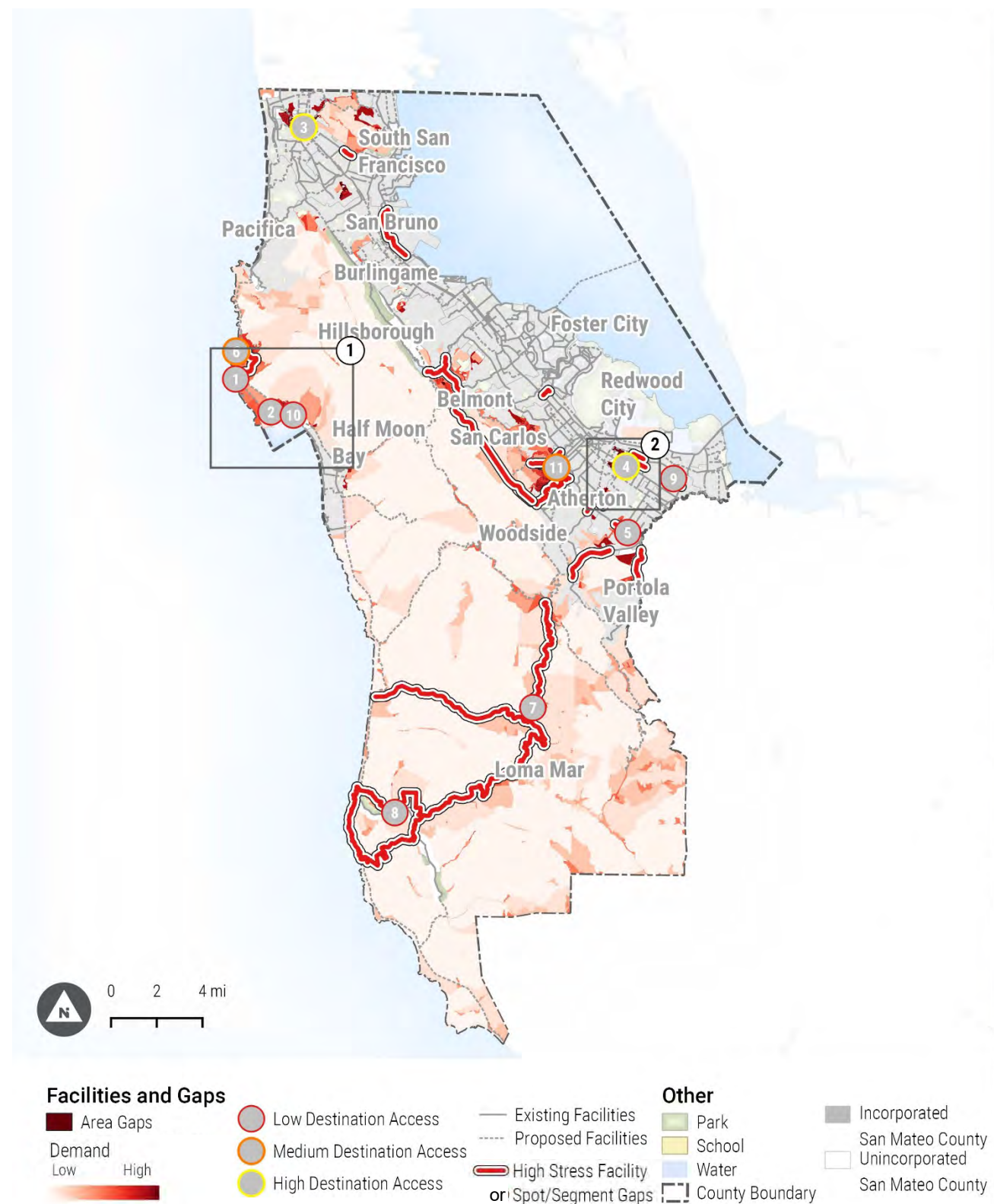
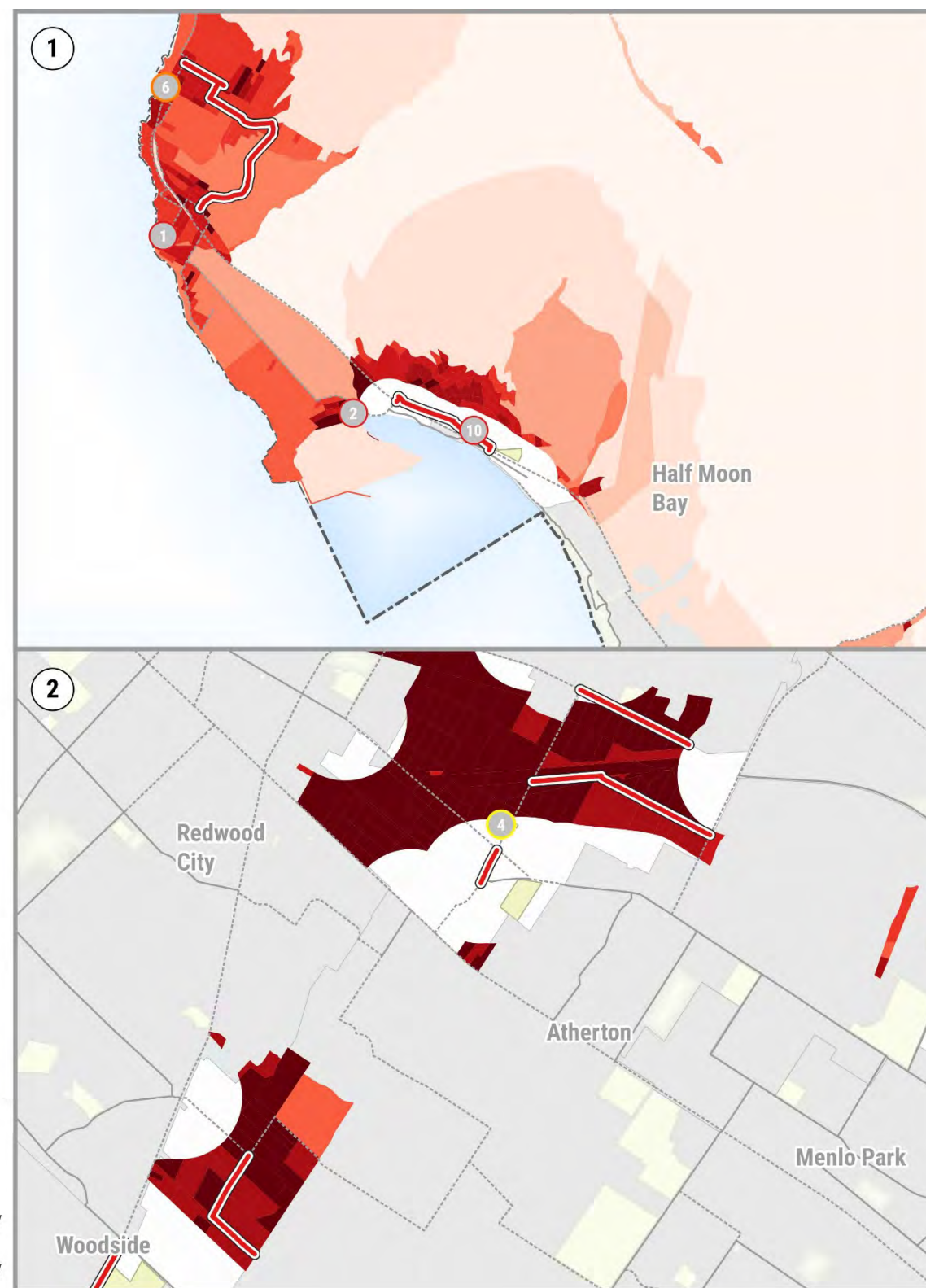


Figure 6. Bicycle Network Overall Gaps



Bicycle Network Overall Gaps

The map illustrates existing high stress facilities, spot and segment gaps, and area gaps (high demand areas without access to a bike facility within 1/4 mile). This helps show how all the bicycle gap analyses can be overlaid to justify potential gap closure recommendations during the development of the updated proposed bikeway network.

The identified gaps are a mixture of utilitarian and recreational gaps. Key gaps include connections from the coast and Pescadero to Portola Valley and north-south connections from Belmont to Emerald Hills. Many of the spot and segment gaps and high-stress facilities are located within area gaps, although there are some high demand areas without bicycle facility access near Daly City as well as some pockets in the central county.

The gaps identified in this analysis will serve as the foundation for the bicycle network. Filling existing network gaps will create a more robust, consistent, and connected network.

Pedestrian Network Gap Analysis

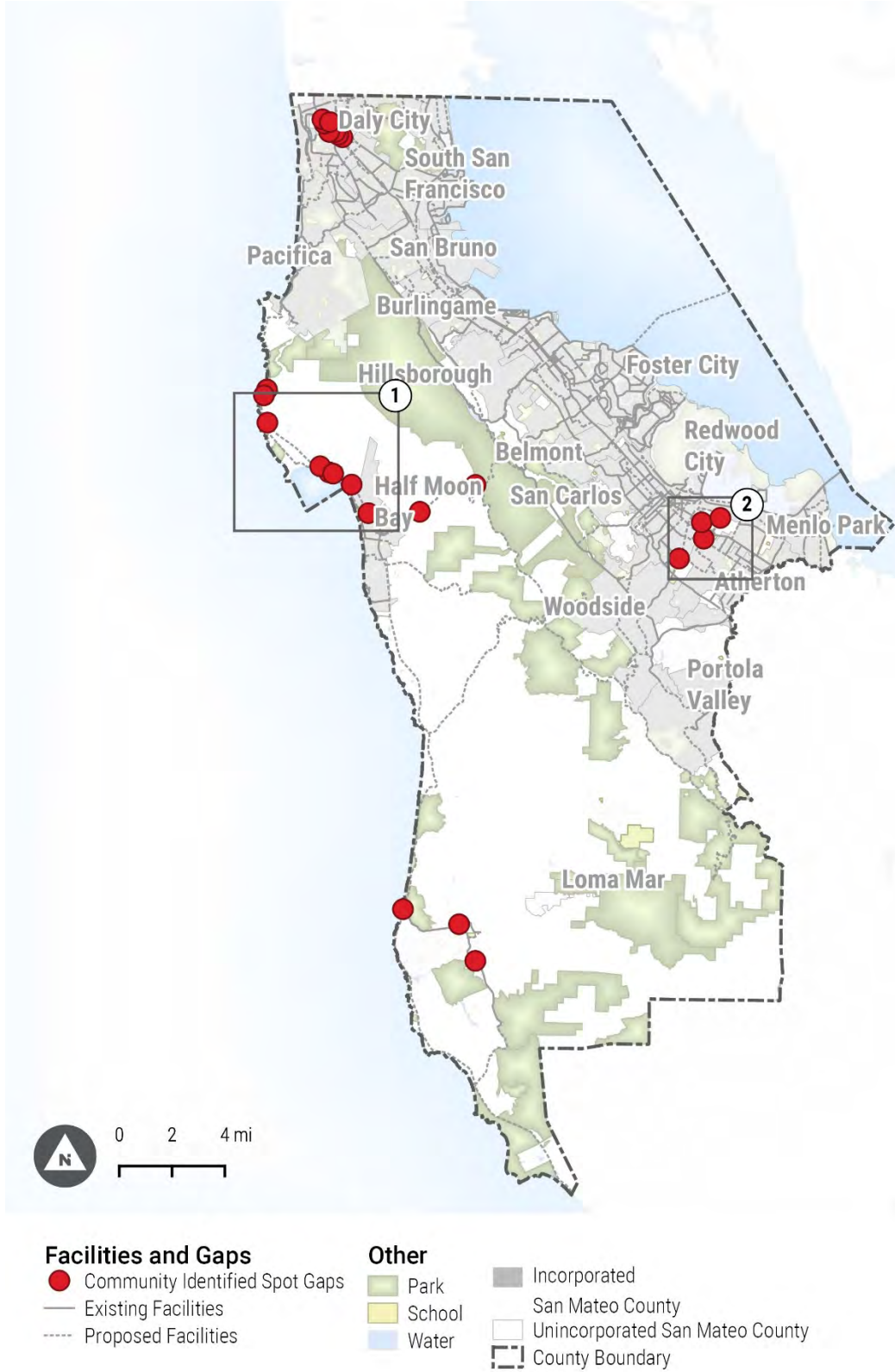
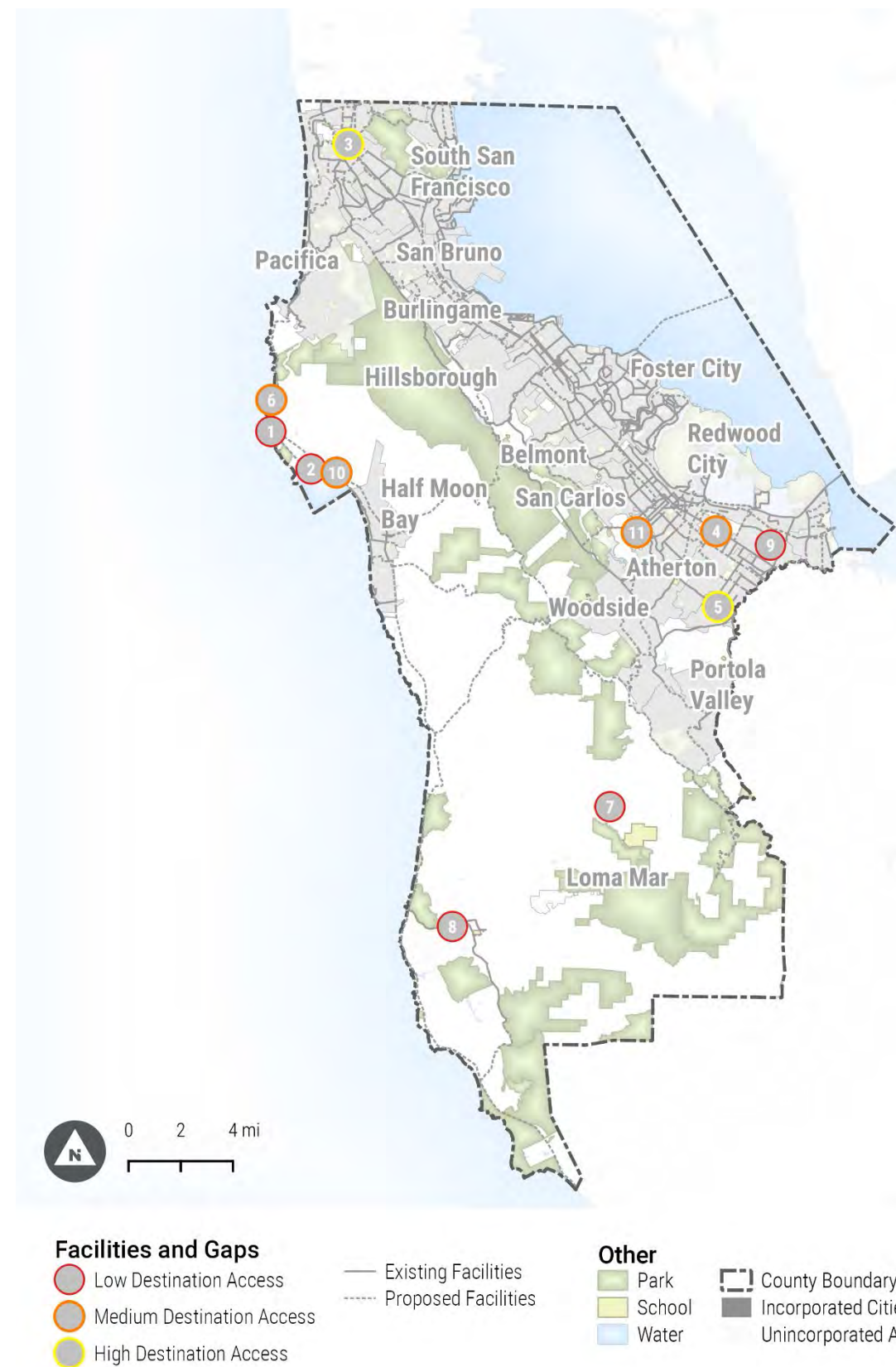


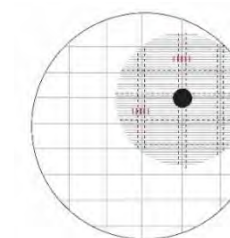
Figure 7. Community-Identified Spot Gaps





1 Fitzgerald Marine Reserve Ranger Station	2 Maverick's Event Center	3 Colma BART
Sidewalk Coverage Low Direct Access None Crossing Treatments Low Lighting None Pedestrian Amenities Low Overall Low	Sidewalk Coverage Low Direct Access None Crossing Treatments Low Lighting None Pedestrian Amenities Low Overall Low	Sidewalk Coverage Medium Direct Access Yes Crossing Treatments Medium Lighting Yes Pedestrian Amenities Medium Overall High
4 Everest Public High School	5 West Menlo Park Post Office	6 Highway 1 and 8th St Intersection, Montara
Sidewalk Coverage High Direct Access Yes Crossing Treatments Low Lighting None Pedestrian Amenities Low Overall Medium	Sidewalk Coverage High Direct Access Yes Crossing Treatments High Lighting Yes Pedestrian Amenities Low Overall High	Sidewalk Coverage Low Direct Access Yes Crossing Treatments Low Lighting None Pedestrian Amenities Low Overall Medium
7 La Honda Community Market	8 Pescadero Post Office	9 Peninsula School
Sidewalk Coverage Low Direct Access None Crossing Treatments Low Lighting None Pedestrian Amenities Low Overall Low	Sidewalk Coverage Low Direct Access None Crossing Treatments Low Lighting None Pedestrian Amenities Low Overall Low	Sidewalk Coverage Low Direct Access None Crossing Treatments Low Lighting None Pedestrian Amenities Low Overall Low
10 El Granada Post Office	11 Oak Knoll Dr and Canyon Rd Intersection	
Sidewalk Coverage Medium Direct Access Yes Crossing Treatments Low Lighting None Pedestrian Amenities Low Overall Medium	Sidewalk Coverage Medium Direct Access Yes Crossing Treatments Low Lighting None Pedestrian Amenities Low Overall Medium	

Pedestrian Access to Key Destinations

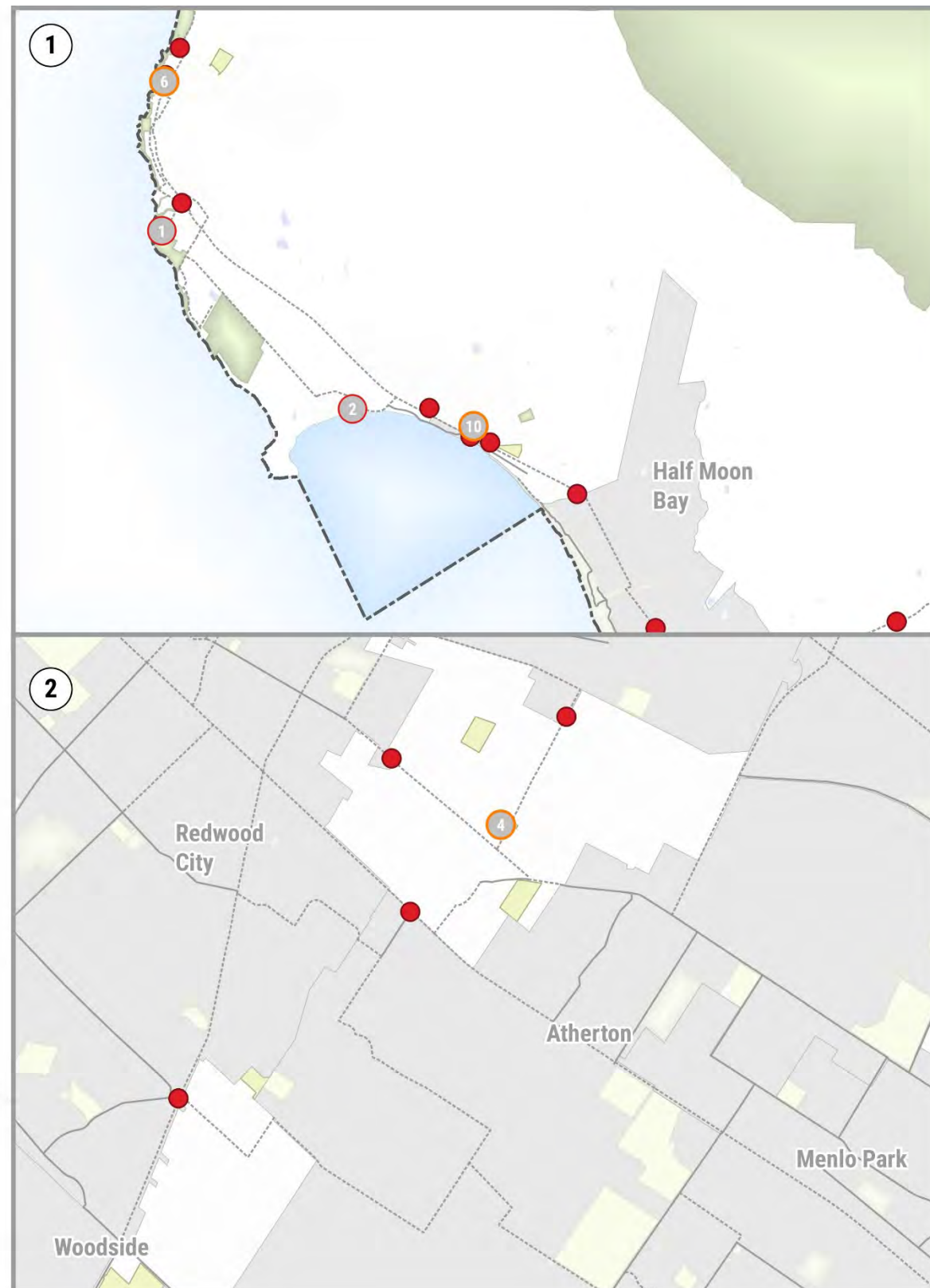
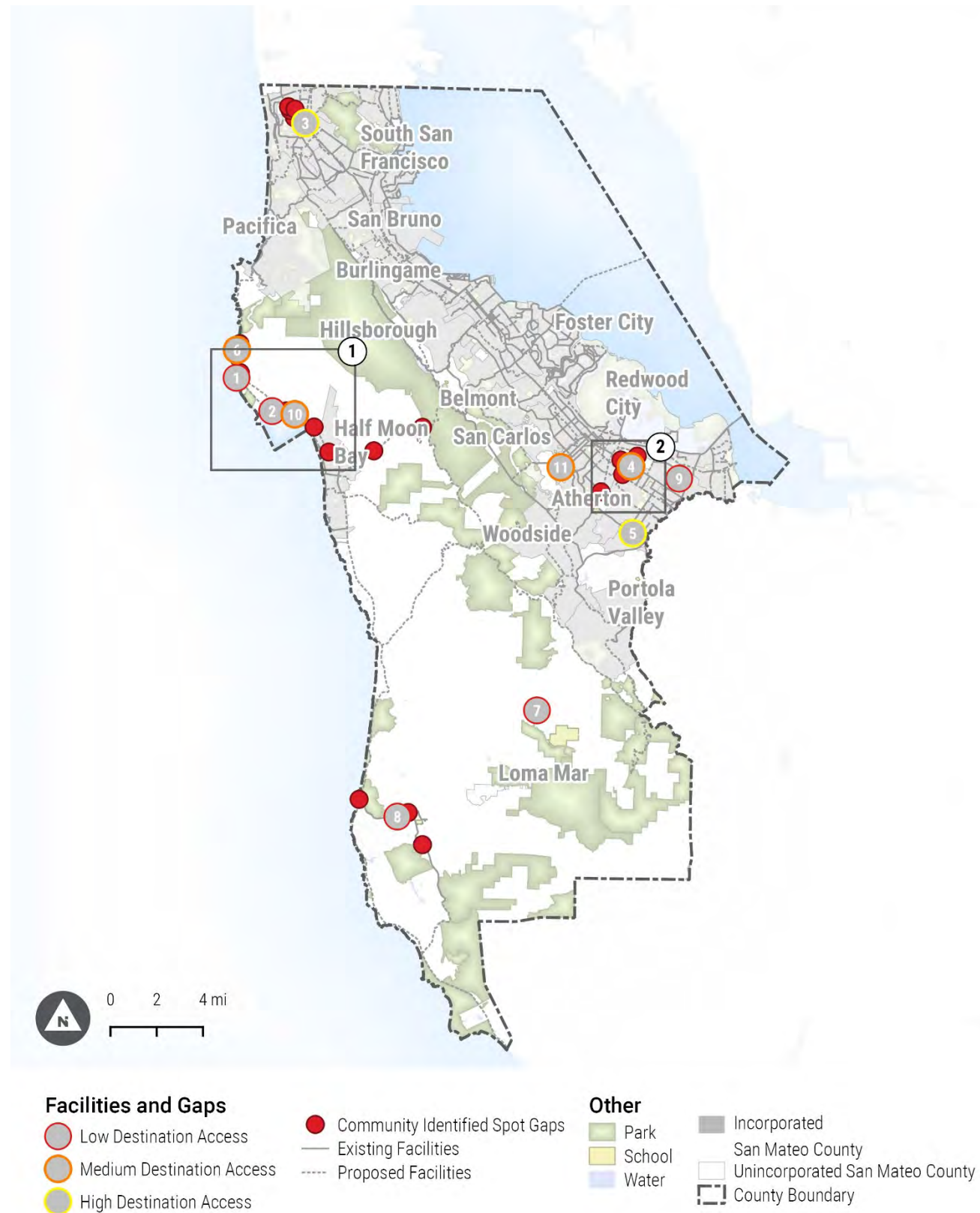


Eleven key destinations were identified by County staff and at public engagement events. Six criteria were used to assess pedestrian access:

- **Sidewalk Coverage:** Evaluates sidewalk coverage within 1/8 mile of the destination.
- **Direct Access:** Evaluates if there is direct pedestrian access to the key destination via a sidewalk.
- **Crossing Treatment Adequacy:** Evaluates if the nearest crossings have context-appropriate crossing treatments.
- **Lighting:** Assesses the presence of lighting within a 1/8 mile of the key destination.
- **Pedestrian Amenities:** Evaluates the presence of pedestrian amenities within 1/8 mile of the key destination. Amenities include seating, drinking fountains, trash receptacles, shade and signage.

As assessed, the Colma BART Station area and West Menlo Park Post Office have the highest overall pedestrian access. The remaining destinations were overall low and medium and were disbursed throughout the county.

Figure 8. Pedestrian Access to Key Destinations



Overall Pedestrian Gaps

Community-identified pedestrian spot gaps and key destinations with low pedestrian access are concentrated in four areas throughout the county: Coastsides, North Fair Oaks, Pescadero, and Broadmoor. These identified gaps and key themes around safe crossings, recreational access and school access will be the baseline for network improvements. These identified gaps do not necessarily capture all pedestrian needs but are rather a means to help understand and generate solutions to key pedestrian issues in the County.

Summary and Next Steps

This gap analysis identifies areas where the existing bicycle and pedestrian networks may not be meeting the needs of all users. These gaps are concentrated in urbanized areas like North Fair Oaks and midcoast communities as well as in more rural areas like Pescadero and Woodside. This range of gaps is indicative of the range of needs of bicyclists and pedestrians throughout the County, suggesting that recommendations will need to take these differences into consideration. Another key takeaway is that most pedestrian gaps are along roadways with existing or proposed bicycle facilities, showing that bicycle and pedestrian networks are very related, potentially necessitating larger complete streets projects. Addressing these projects together where possible can be an effective and efficient method for project implementation.

The gaps identified in this analysis will feed directly into the bicycle and pedestrian study networks, which will serve as the base for project recommendations.



APPENDIX C: DESIGN TOOLKIT





Bicycle and Pedestrian Facilities Toolkit

UNINCORPORATED SAN MATEO COUNTY
ACTIVE TRANSPORTATION PLAN



OFFICE OF
SUSTAINABILITY
COUNTY OF SAN MATEO



T'OOLE
DESIGN

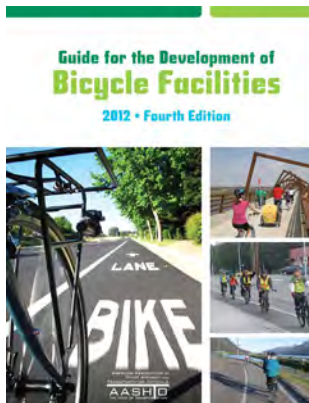
October 2020

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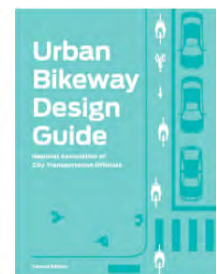
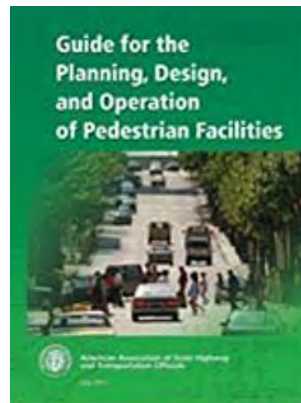
NATIONAL STANDARDS AND RESOURCES

The publications listed here are excellent resources for planning and design guidance in implementing safe, comfortable accommodations for pedestrians and bicyclists in a variety of environments. Many of these resources are available on-line at no cost.



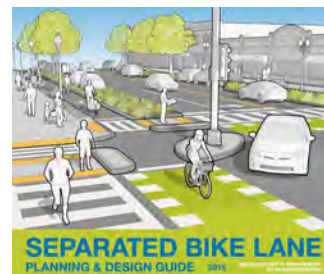
American Association of State Highway and Transportation Officials (AASHTO)

- + Guide for the Development of Bicycle Facilities (2012) (Updated anticipated in 2020)
- + Guide for the Planning, Design, and Operation of Pedestrian Facilities (2004)
- + A Policy on Geometric Design of Highways and Streets, 6th Edition (2011)



National Association of City Transportation Officials (NACTO)

- + Urban Street Design Guide (2013)
- + Transit Street Design Guide (2016)
- + Urban Bikeway Design Guide (2014)



Massachusetts Department of Transportation (MassDOT)

- + Separated Bike Lane Planning & Design Guide (2015)



Federal Highway Administration (FHWA)

- + Achieving Multimodal Networks: Applying Design Flexibility and Reducing Conflicts (2016)
- + Separated Bike Lane Planning and Design Guide (2015)
- + Bikeway Selection Guide (2019)



California Department of Transportation (Caltrans)

- + California Manual on Uniform Traffic Control Devices (CAMUTCD) (2014)



PEDESTRIAN FACILITIES

ELEMENTS OF A STREETScape

Sidewalks play a critical role in the character, function, enjoyment, and accessibility of neighborhoods, main streets, and other community destinations. In addition to providing space for pedestrians separated from motor vehicles, the space between property lines and curbs also accommodates street trees and other plantings, stormwater infrastructure, street lights, and bicycle racks. This section defines those zones and provides considerations for better activating the streetscape to enhance peoples' experiences.

ZONES

Frontage Zone:

The Frontage Zone is the area of sidewalk that immediately abuts buildings along the street. In residential areas, the Frontage Zone may be occupied by front porches, stoops, lawns, or other landscape elements that extend from the front door to the sidewalk edge. The Frontage Zone of commercial properties may include architectural features, outdoor displays, café seating, awnings, signage, etc. Frontage Zones may vary widely in width from just a few feet to several yards.

Pedestrian Zone:

Also known as the “walking zone,” the Pedestrian Zone is the portion of the sidewalk space used for active travel. For it to function, it must be kept clear of any obstacles and be wide enough to comfortably accommodate expected pedestrian volumes (as anticipated by density and adjacent land use) including those using mobility assistance devices, pushing strollers, or pulling carts.

Amenity Zone:

The Amenity Zone, or “landscape zone,” lies between the curb and the Pedestrian Zone. This area is occupied by fixtures such as street lights, trees, bicycle racks, parking meters, signposts, signal boxes, benches, trash and recycling receptacles, and other amenities. In commercial areas, it is typical for this zone to be hardscape pavement, pavers, or tree grates. In residential, or lower intensity areas, it is commonly a planted strip.

CONSIDERATIONS

- + Vibrant street walls with active uses adjacent to the sidewalk are particularly valuable and are essential to Main Street contexts. Where an active use adjacent to the sidewalk is not feasible, visually engaging walls should be provided adjacent to the street.
- + Outdoor dining opportunities contribute to a lively street environment and add economic value by enabling private commercial activity to spill into the public environment of the street. Sidewalk cafés are encouraged in Main Street contexts and other areas with commercial activity.
- + Planting in the public right-of-way typically occurs in the Amenity Zone; however, this is not the only place that can accommodate planting. Wherever there is an opportunity for landscape features,



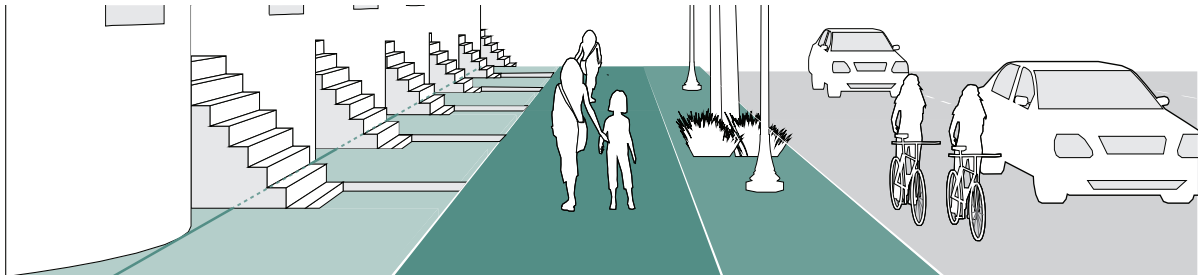
Frontage, Pedestrian and Amenity Zones

street or development projects should also look for opportunities to incorporate best management practices (BMPs), such as rain gardens. The preferred BMPs for use in the right-of-way are above-grade systems located within the sidewalk that treat stormwater runoff from adjacent roads and sidewalks.

- + While there are some exceptions, most street furniture is installed in the Amenity Zone. For example, bicycle parking may occasionally be installed in the frontage zone if it is sufficiently wide enough to accommodate it. Regardless, street furniture should not impede movement in the Pedestrian Zone.
- + Seating is most commonly located in the Amenity Zone of the street, but may also be placed in the Frontage Zone. Seating in the Amenity Zone should generally face away from the street and toward the sidewalk or be aligned perpendicular to the curb. Seating in the Frontage Zone should face the street.
- + Placement of micromobility devices such as bikeshare and scooters should not obstruct the pedestrian zone. These uses are best placed in the amenity zone.

SIDEWALK ZONE PREFERRED WIDTHS

The width of the various sidewalk zones will vary given the street type, the available right-of-way, scale of the adjoining buildings and the intensity and type of uses expected along a particular street segment. A balanced approach for determining the sidewalk width should consider the character of the surrounding area and the anticipated pedestrian activities. For example, is the street lined with retail that encourages window shopping or does it connect a residential neighborhood to a commercial area where pedestrians frequently need to pass one another? Does the scale of the buildings and the character of the street indicate a need for a wider sidewalk?



Street Type	Frontage Zone door swings, awnings, café seating, retail signage and displays, building projections	Pedestrian Zone zone should be clear of any and all fixed obstacles; clear space for pedestrian travel only.	Amenity Zone street lights and utility poles, street trees, bicycle racks, parking meters, transit stops, stormwater facilities, street furniture and signage	Preferred Total Width
Transit Station Areas	2 to 5 feet	6 to 15 feet	6 to 10 feet	14 to 30 feet
School Zones	2 to 6 feet	6 to 10 feet	6 to 10 feet	14 to 22 feet
Downtown/Urban Centers/Main Streets	2 to 6 feet	6 to 18 feet	6 to 10 feet	14 to 30 feet
Suburban Commercial	2 to 6 feet	6 to 8 feet	6 to 7 feet	14 to 17 feet
Suburban Areas/Residential Developments	2 to 6 feet	6 feet	5 to 7 feet	11 to 13 feet
Rural Areas	N/A	6 to 10 feet	5 to 10 feet	11 to 20 feet

CONSIDERATIONS

- + In locations with severely constrained rights-of-way, it is possible to provide a narrower Frontage Zone and Pedestrian Zone. Sidewalk width is based on local context. For example, 5-foot sidewalks may be adequate in a retrofit location where no development is occurring and existing buildings are anticipated to remain.
- + Frontage Zones used for sidewalk cafés are a special condition and should generally be no less than 6 feet in width.
- + Where on-street parking is not present, the wider dimensions in the above table should be provided.
- + The provision of tree wells or landscape strip within the Amenity Zone will be based on the existing or planned character of the neighborhood.
- + Tree plantings in the amenity zone should consider sufficient space for root growth, as well as location of existing utilities.
- + Sidewalk stormwater facilities (including rain gardens) require a minimum of 7 feet of width for the Amenity Zone. The final dimensions will be established based on the context of each landscape area. Where stormwater facilities are not provided in the Amenity Zone, this area may be at the lower end of the range.
- + Some rural areas may not have a dedicated pedestrian zone or amenity zone. When possible, a pedestrian zone should always be provided. The preferred total widths are often not feasible, particularly on County roads. However, these widths should be used as targets for design.

REFERENCES

NACTO Urban Street Design Guide (2013)

Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG) (2011)

CURB RAMPS

The transition for pedestrians from the sidewalk to the street is provided by a curb ramp. The designs of curb ramps are critical for all pedestrians, but particularly for people with disabilities. The ADA Standards require all pedestrian crossings be accessible to people with disabilities by providing curb ramps at intersections and midblock crossings as well as other locations where pedestrians can be expected to enter the street. Curb ramps also benefit people pushing strollers, grocery carts, suitcases, or bicycles.



CONSIDERATIONS

Amenity zones (the space between the curb and sidewalk) of 7' of width provide just enough space at intersections for curb ramps to gain sufficient elevation to a sidewalk.

Separate curb ramps should be provided for each crosswalk at an intersection rather than a single ramp at a corner for both crosswalks. The separate curb ramps improve orientation for visually impaired pedestrians by directing them toward the correct crosswalk.

Curb ramps are required to have landings. Landings provide a level area with a cross slope of 2% or less in any direction for wheelchair users to wait, maneuver into or out of a ramp, or bypass the ramp altogether. Landings should be 5' by 5' and shall, at a minimum, be 4' by 4'.

Consider providing wider curb ramps in areas of high pedestrian volumes and crossing activities.

Flares are required when the surface adjacent to the ramp's sides is walkable, however, they are unnecessary when this space is occupied by a landscaped buffer. Excluding flares can also increase the overall capacity of a ramp in high-pedestrian areas.

GUIDANCE

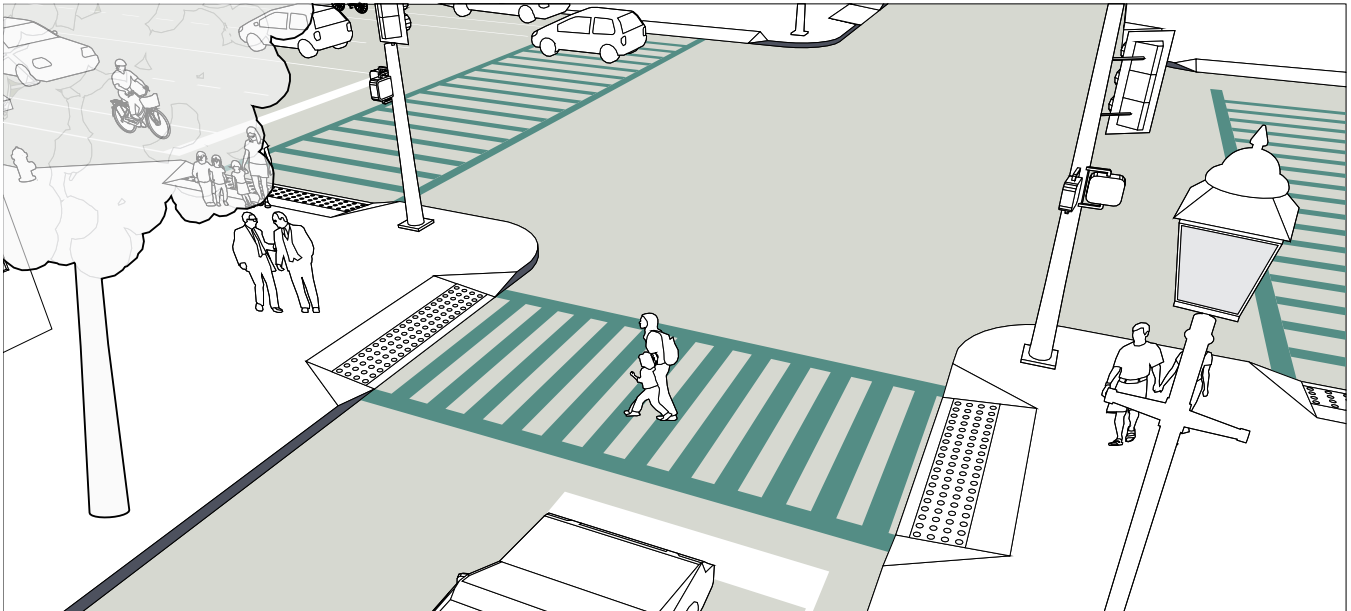
- + Maximum slope: 1:12 (8.33%).
- + Maximum slope of side flares: 1:10 (10%).
- + Maximum cross-slope: 2% (1–2% with tight tolerances recommended).
- + Should direct pedestrians into the crosswalk. The bottom of the ramp should lie within the area of the crosswalk.
- + Truncated domes (the only permitted detectable warning device) must be installed on all new curb ramps to alert pedestrians to the sidewalk and street edge.

REFERENCES

Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG). 2011.

MARKED CROSSWALKS

Legal crosswalks exist at all locations where sidewalks meet the roadway, regardless of whether pavement markings are present. Drivers are legally required to yield to pedestrians at intersections, even when there are no pavement markings. Providing marked crosswalks communicates to drivers that pedestrians may be present, and helps guide pedestrians to locations where they should cross the street. In addition to pavement markings, crosswalks may include signals/beacons, warning signs, and raised platforms.



CONSIDERATIONS

- + There are different styles of crosswalk striping with varying levels of effectiveness. High-visibility crosswalks with continental markings are recommended for increased visibility.
- + Signal phasing is very important. Pedestrian signal phases must be timed based on the length of the crossing. If pedestrians are forced to wait longer than 30 seconds, non-compliance is more likely.
- + Raised crossings can calm traffic and increase the visibility of pedestrians.
- + Curb extensions, also known as bulb-outs or bump-outs, reduce the distance pedestrians have to cross and calm traffic.

GUIDANCE

- + Place crosswalks on all legs of signalized intersections, in school zones, and across streets with more than minimal levels of traffic.
- + Crosswalks should be at least 10 feet wide or the width of the approaching sidewalk if it is greater. In areas of heavy pedestrian volumes (such as transit station areas, school zones, and main streets) crosswalks can be up to 25 feet wide.
- + Stop lines at stop-controlled and signalized intersection approaches should be striped no less than 4 feet and no more than 30 feet from the edge of crosswalks.
- + For enhanced crossing treatments, refer to the section of this guide addressing Rectangular Rapid Flashing Beacons and Pedestrian Hybrid Beacons.
- + Crosswalks should be oriented perpendicular to streets, minimizing crossing distances and therefore limiting the time that pedestrians are exposed.

REFERENCES

NACTO Urban Street Design Guide (2013)

ADA Accessibility Guidelines (2004)

California Manual on Uniform Traffic Control Devices (2014)

Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG) (2011)

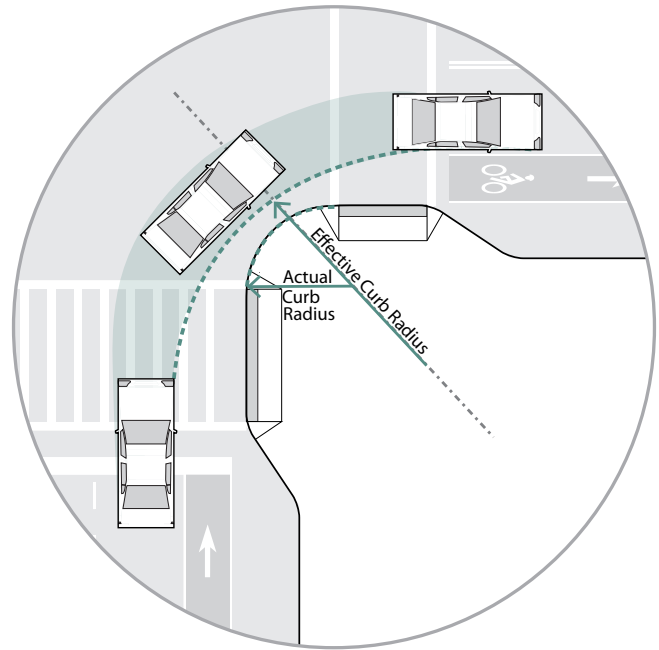
Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations: Final Report and Recommended Guidelines (2005)

CORNERS AND CURB RADII

Pedestrian safety and comfort is enhanced by smaller curb radii, which shorten crossing distances for pedestrians and reduce turning vehicle speeds. However, streets must accommodate large turning vehicles, including school buses and transit vehicles. One of the most challenging aspects of intersection design is to determine methods of accommodating large vehicles while keeping intersections as compact as possible. This requires a great deal of design flexibility and engineering judgment, as each intersection is unique in terms of the angles of the approach and departure, the number of travel lanes, the presence of a median, and a number of other features that fundamentally impact corner design.

CONSIDERATIONS

- + On-street parking and bicycle lanes may provide larger effective radii to accommodate the appropriate design vehicle.
- + At signalized intersections where additional space is needed to accommodate turning vehicles, consideration can be given to recessing the stop bar on the receiving street to enable the vehicle to use the entire width of the receiving roadway (encroaching on the opposing travel lane).
- + A compound curve can be used to vary the actual curb radius over the length of the turn so that the radius is smaller as vehicles approach a crosswalk and larger when making the turn.
- + In some cases where there are alternative access routes, it may be possible to restrict turning movements by large vehicles (via signage) at certain intersections and driveways to enable tighter curb radii. Turn restrictions and alternate access routes should be properly signed and locally approved.
- + On low-volume (less than 1,500 vehicles per day), two-lane streets, corner design should assume that a large vehicle will use the entire width of the departing and receiving travel lanes, including the oncoming traffic lane.
- + At signalized intersections, corner design should assume that a large vehicle will use the entire width of the receiving lanes on the intersecting street.
- + In some cases, it may be possible to allow a large turning vehicle to encroach on the adjacent travel lane on the departure side (on multi-lane roads) to make the turn.
- + For truck routes, bus routes, garbage routes, and emergency routes, consider the inner turning radius of larger vehicles. To make turns at its tightest radius, the vehicle must slow significantly. This can cause run-time delays for buses, especially if turns are frequent along a route.
- + Mountable truck aprons can be used to deter passenger vehicles from making higher-speed turns, but accommodate the occasional large vehicle without encroachment or off-tracking into pedestrian areas. Mountable truck aprons should be visually distinct from the adjacent travel lane and sidewalk.



GUIDANCE

- + The design vehicle should be selected according to the types of vehicles using the intersection with considerations to relative volumes and frequencies. In most cases, the curb radii are based on a Single Unit vehicle with a 42-foot turning radius. If accommodations are needed for a larger design vehicle, a radius evaluation based on this larger vehicle would be required. Examples of typical turning templates would include SU-30, WB-40, WB-50, WB-60 and WB-62.
- + Intersection design should strive for the minimum curb radius that accommodates a frequent design vehicle. The maximum curb radii are shown below.

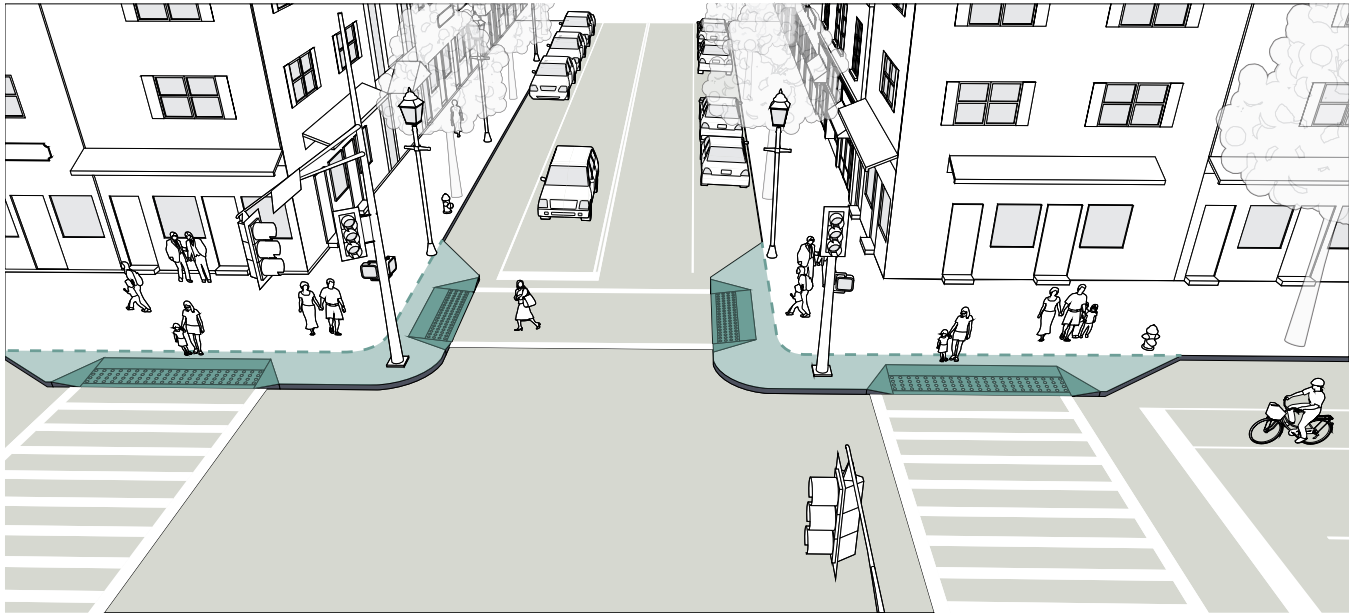
Functional Classification	Local	Collector	Arterial
Local	20 feet	30 feet	30 feet
Collector	30 feet	40 feet	40 feet
Arterial	30 feet	40 feet	50 feet

REFERENCES

[NACTO Urban Streets Design Guide \(2013\)](#)
[NACTO Transit Street Design Guide \(2016\)](#)

CURB EXTENSIONS

Curb extensions, also known as bulb-outs or bump-outs, are created by extending the sidewalk at intersections or mid-block. Curb extensions are intended to increase safety, calm traffic, and provide extra space along sidewalks for users and amenities. In addition to shortening crossing distances, curb extensions can be used to change the geometry of intersections resulting in smaller corner radii and slowing turning motor vehicles.



CONSIDERATIONS

- + The turning needs of emergency and larger vehicles should be considered in curb extension design.
- + Care should be taken to maintain direct routes across intersections by aligning pedestrian desire lines on either side of the sidewalk. Curb extensions often make this possible as they provide extra space for grade transitions.
- + Consider providing a 20' long curb extension to restrict parking within 20' of an intersection to enhance visibility.
- + When curb extensions conflict with turning movements, reducing the width and/or length of the curb extension should be prioritized over elimination.
- + Emergency access is often improved through the use of curb extensions because intersections are kept clear of parked cars.

GUIDANCE

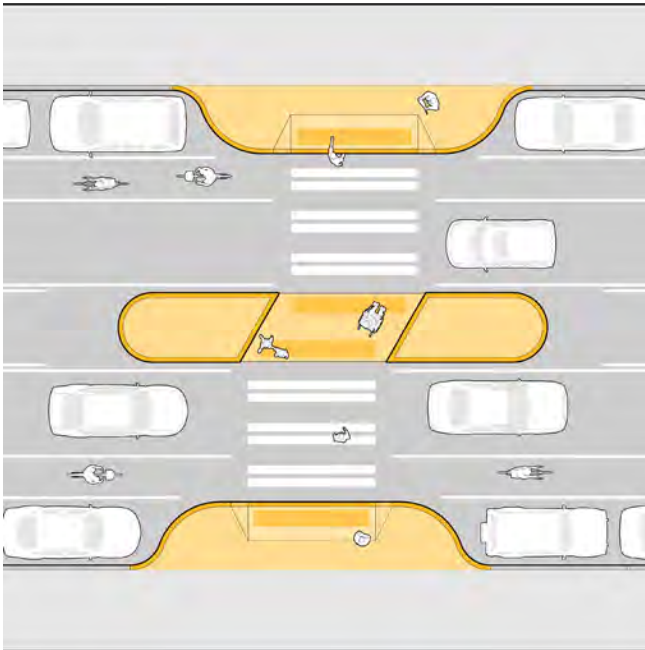
- + Curb extensions should be considered only where parking is present or where motor vehicle traffic deflection is provided through other curbside uses such as bicycle share stations or parklets.
- + Curb extensions are particularly valuable in locations with high volumes of pedestrian traffic, near schools, at unsignalized pedestrian crossings, or where there are demonstrated pedestrian safety issues.
- + A typical curb extension extends approximately the width of a parked car (or about 6' from the curb).
- + The minimum length of a curb extension is the width of the crosswalk, allowing the curvature of the curb extension to start after the crosswalk, which should deter parking; NO STOPPING signs should also be used to discourage parking. The length of a curb extension can vary depending on the intended use (i.e., stormwater management, transit stop waiting areas, parking restrictions).
- + Curb extensions should not reduce a travel lane or a bicycle lane below minimum design width.
- + Low-cost, quick-build "curb extensions" can be constructed with paint and vertical elements like posts or planters.

REFERENCES

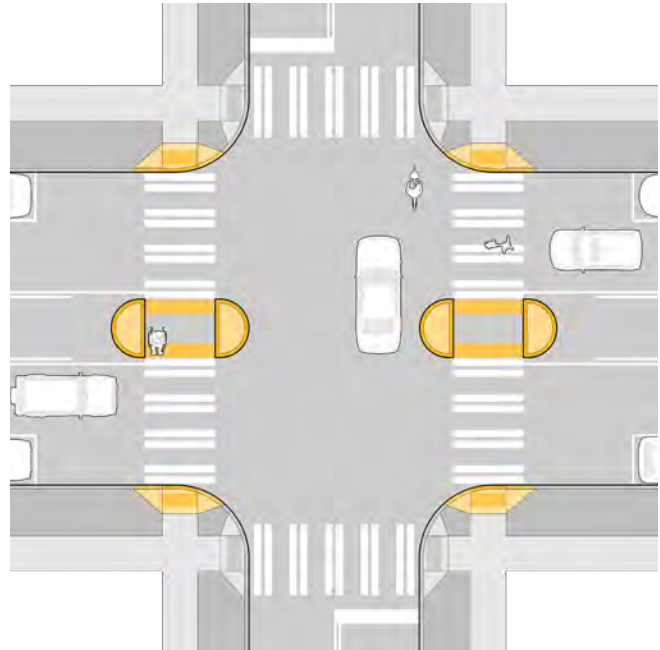
AASHTO Guide for the Development of Bicycle Facilities (2012)
NACTO Urban Street Design Guide (2013) - Curb Extensions

CROSSING ISLANDS

Crossing islands are raised islands that provide a pedestrian refuge and allow multi-stage crossings of wide streets. They can be located mid-block or at intersections and along the centerline of a street, as roundabout splitter islands, or as “pork chop” islands where right-turn slip lanes are present.



Mid-block Crossing Island with Curb Extensions



Intersection Crossing Islands (Left Turns Prohibited)

CONSIDERATIONS

- + There are two primary types of crossing islands. The first type provides a cut-through of the island, keeping pedestrians at street-grade. The second type ramps pedestrians up above street grade and may present challenges to constructing accessible curb ramps unless they are more than 17' wide (accommodating for ramp width and landing area).
- + Crossing islands should be considered where crossing distances are greater than 50 feet or traffic volumes exceed 15,000 vehicles per day. For long distances, islands can allow multi-stage crossings, which in turn allow shorter signal phases.
- + Crossing islands can be coupled with other traffic calming features, such as partial diverters and curb extensions at mid-block and intersection locations.
- + At mid-block crossings where width is available, islands should be designed with a stagger, or in a “Z” pattern, encouraging pedestrians within the median to face oncoming traffic before crossing.

GUIDANCE

- + Minimum width: 6 feet
- + Preferred Width: 10 feet (to accommodate bicyclists with trailers and wheelchair users)
- + Cut-through openings should equal the width of the crosswalk. Cut-throughs may be wider in order to allow the clearing of debris and snow, but should not encourage motor vehicles to use the space for U-turns.
- + Curb ramps with truncated dome detectable warnings and 5-foot by 5-foot landing areas are required when the pedestrians are taken above the street level. When pedestrians remain at street level but the crossing island is 6 feet or wider, two 2' by 5' truncated dome detectable warnings must be provided on each end of the refuge area.
- + A “nose” that extends past the crosswalk is not required, but is recommended to protect people waiting on the crossing island and to slow turning drivers.
- + Vegetation and other aesthetic treatments may be incorporated, but must not obscure visibility.

REFERENCES

NACTO Urban Street Design Guide (2013)

California Manual on Uniform Traffic Control Devices (2014)

PEDESTRIAN SIGNALS

Pedestrian signal heads display the three intervals of the pedestrian phase: (1) The Walk Interval, signified by the WALK indication (or the walking person symbol) alerts pedestrians to begin crossing the street. (2) The Pedestrian Change Interval, signified by the flashing DON'T WALK indication (or the flashing hand symbol accompanied by a countdown display) alerts pedestrians approaching the crosswalk that they should not begin crossing the street. (3) The Don't Walk Interval, signified by a steady DON'T WALK indication (or the steady upraised hand symbol) alerts pedestrians that they should not cross the street.

CONSIDERATIONS

One of primary challenges for traffic signal design is to minimize conflicts between motor vehicle and pedestrian movements. Intersection geometry and traffic controls should encourage turning vehicles to yield the right-of-way to pedestrians. Traffic movements should be analyzed at intersections in order to utilize non-conflicting phases to implement one or more WALK intervals per cycle.

Signal design should minimize the time that pedestrians must wait. Requiring pedestrians to wait for extended periods can encourage crossing against the signal. The 2010 Highway Capacity Manual states that pedestrians have an increased likelihood of risk-taking behavior (crossing against the signal) after waiting longer than 30 seconds for a WALK indication.

Free-flowing right-turn lanes are discouraged at signalized intersections. Where they are present, the pedestrian signal and pushbutton should be located on the channelization ("pork chop") island. A yield or crosswalk warning sign should then be placed in advance of the crosswalk.

GUIDANCE: TIMING & ACTIVATION

- + Pedestrian signals should allocate enough time for pedestrians of all abilities to safely cross the roadway. The MUTCD specifies a pedestrian walking speed of 3.5 feet per second to account for an aging population. The pedestrian clearance time, which is the total time for the pedestrian change interval plus the buffer interval, is calculated using the pedestrian walking speed and the distance a pedestrian has to cross the street.
- + Countdown pedestrian displays inform pedestrians of the amount of time in seconds that is available to safely cross during the flashing DON'T WALK (or upraised hand) interval. All new pedestrian signal heads should contain a countdown display provided with the DON'T WALK (or upraised hand) indication.
- + In areas with higher pedestrian activity, such as near transit stations, main streets, and school zones, push button actuators may not be appropriate. People should expect to get a pedestrian cycle on every signal cycle, rather than having to push a button to call for a pedestrian phase.
- + Where especially long crossing distances exist, particularly near locations with a large population of people using mobility devices, elderly people, or school children, consider putting push buttons in pedestrian refuge islands.

REFERENCES

NACTO Urban Street Design Guide (2013)
California Manual on Uniform Traffic Control Devices (2014)

GUIDANCE: ACCESSIBLE PEDESTRIAN SIGNALS (APS)

Accessible pedestrian signals and accessible detectors are devices that communicate information in non-visual formats about the pedestrian phase to pedestrians with visual and/or hearing disabilities. APS and detectors may include features such as audible tones, speech messages, detectable arrow indications and/or vibrating surfaces.

- + Pushbutton locator tones are used for locating the pedestrian pushbutton needed to actuate the WALK interval. Detectable arrows should be located on pushbuttons to point in the same direction as the crosswalk. At corners of signalized locations where two pushbuttons are present, they should be separated by at least 10'.
- + Audible walk indications should have the same duration as the pedestrian walk indication unless the pedestrian signal rests-in-walk (the parallel vehicle phase remains green until a vehicle approaching a conflicting movement is detected), in which case the audible indication should be provided in the first seven seconds of the Walk interval.
- + For automatically-called pedestrian phases, pushbuttons can be used to activate accessible pedestrian signal features such as detectable arrow indications and/or speech messages.
- + When new pedestrian signals are installed, APS with pushbuttons are required. For existing pedestrian signals, the APS and pedestrian pushbuttons should be provided when the signal controller and software are altered, or the signal head is replaced.

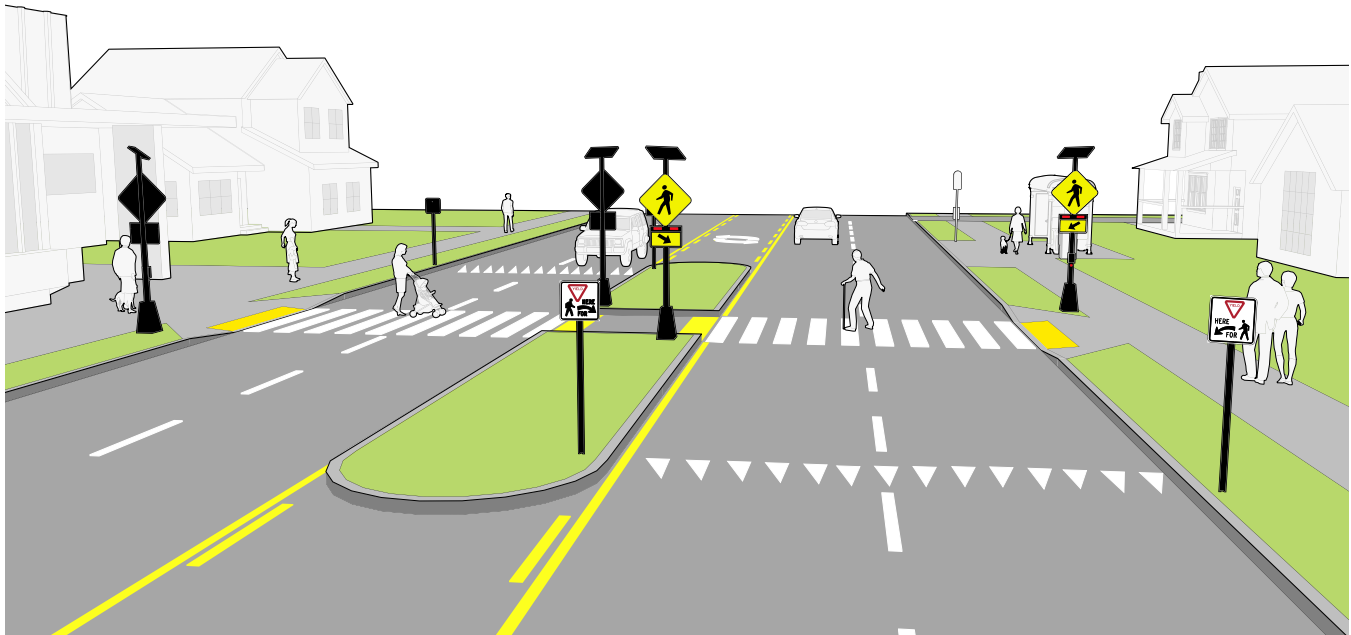
GUIDANCE: LEADING PEDESTRIAN INTERVAL (LPI)

The Leading Pedestrian Interval initiates the pedestrian WALK indication three to seven seconds before motor vehicles traveling in the same direction are given the green indication. This signal timing technique allows pedestrians to enter the intersection prior to turning vehicles, increasing visibility between all modes.

- + The LPI should be used at intersections with high volumes of pedestrians and conflicting turning vehicles or at locations with a large population of people using mobility devices, elderly people, or school children, who tend to walk slower.
- + A lagging protected left arrow for vehicles should be provided to accommodate the LPI.

RECTANGULAR RAPID FLASHING BEACON

At some uncontrolled crossings, particularly those with four or more lanes, it can be difficult to achieve compliance with laws that require motorists to yield to pedestrians. Vehicle speeds and poor pedestrian visibility combine to create conditions in which very few drivers are compelled to yield. One type of traffic control device proven to be successful in improving yielding compliance at these locations is the Rectangular Rapid Flash Beacon (RRFB). RRFBs combine a pedestrian crossing sign with a bright flashing beacon that is activated only when a pedestrian is present.



CONSIDERATIONS

- + RRFBs are usually implemented at high-volume pedestrian crossings, but may also be considered for priority bicycle route crossings or locations where bike facilities cross roads at mid-block locations.
- + RRFBs should be limited to locations with critical safety concerns, and should not be installed in locations with sight distance constraints that limit the driver's ability to view pedestrians on the approach to the crosswalk.
- + RRFBs can be used when a signal is not warranted at an unsignalized crossing. They are not appropriate at intersections with signals or STOP signs.
- + RRFBs are considerably less expensive to install than mast arm-mounted signals. They can also be installed with solar power panels to eliminate the need for an external power source.
- + RRFBs can be more effective and have less impact on street maintenance than in-ground flashing systems.

GUIDANCE

- + The design of RRFBs should be in accordance with FHWA's Interim Approval 21 for Operational Use of Pedestrian-Actuated Rectangular Rapid-Flashing Beacons at Uncontrolled Marked Crosswalks.
- + RRFBs should be used in conjunction with advance yield markings and "Yield Here to Pedestrians" signs.
- + RRFBs are installed on both sides of the roadway at the edge of the crosswalk. If there is a pedestrian refuge or other type of median on roadways with multi-lane approaches, an additional beacon should be installed in the median.
- + See FHWA's *Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations* and the *Manual of Uniform Traffic Control Devices* to determine warrants for traffic control at midblock crossings.

REFERENCES

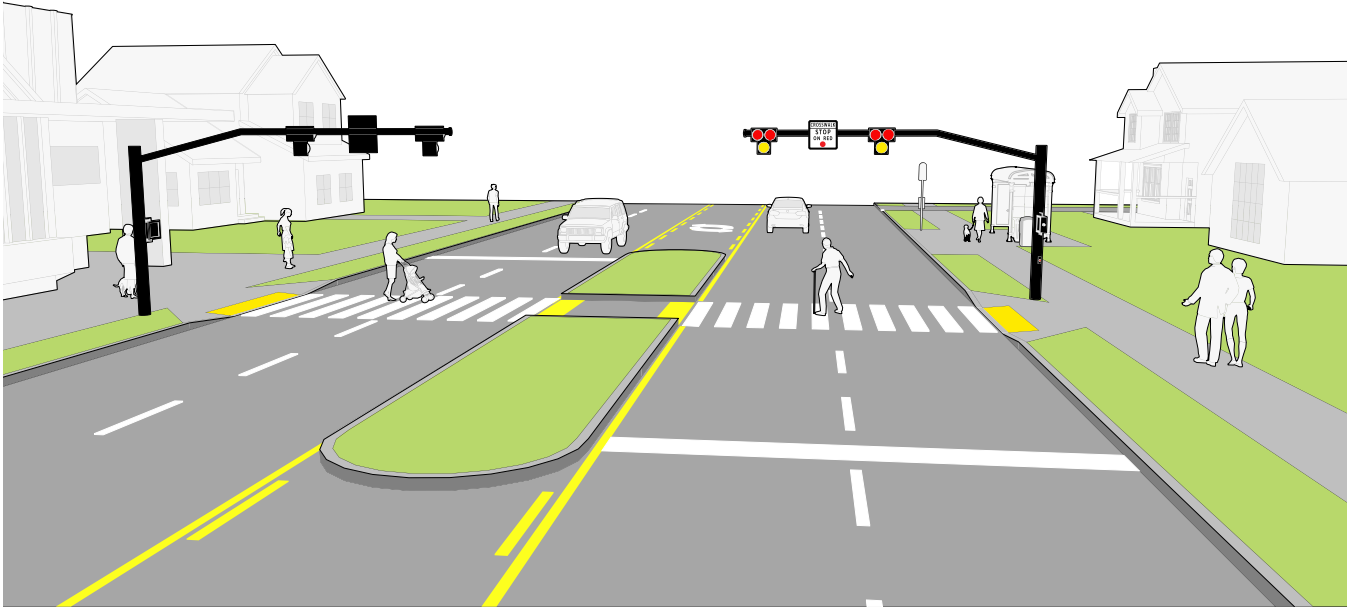
NACTO Urban Street Design Guide (2013)

California Manual on Uniform Traffic Control Devices (2014)

FHWA Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations (2018)

PEDESTRIAN HYBRID BEACON

Pedestrian hybrid beacons, including the High-intensity Activated Crosswalk Beacon (HAWK), are a type of traffic control device intended to allow pedestrians and bicyclists to stop traffic to cross high-volume arterial streets. This type of signal may be used when warrants are met as provided in the California MUTCD. The California MUTCD provides that “A conventional traffic control signal operation with a standard signal face displaying green, yellow and red (steady and/or flashing red) indications, at a mid-block crosswalk is an alternative to the pedestrian hybrid beacon.”



CONSIDERATIONS

- + While this type of device is intended for pedestrians, it may also benefit bicyclists.
- + This type of device should be considered for all arterial crossings in a bicycle network and for path crossings if other engineering measures are found inadequate to create safe crossings.

GUIDANCE

- + The MUTCD recommends minimum volumes of 20 pedestrians or bicyclists an hour for major arterial crossings (volumes exceeding 2,000 vehicles/hour).
- + Push button actuators should respond immediately when pressed, be placed in convenient locations for all users, and abide by other ADA standards. Passive signal activation, such as video or infrared detection, may also be considered.
- + See FHWA's *Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations* and the *Manual of Uniform Traffic Control Devices* to determine warrants for traffic control at midblock crossings.

REFERENCES

NACTO Urban Street Design Guide (2013)

California Manual on Uniform Traffic Control Devices (2014)

FHWA Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations (2018)

TRANSIT STOPS

Any marked or signed location where transit vehicles stop and service passenger boarding and alighting is a transit stop. The most basic transit stops have only a pole-mounted “header” sign indicating the transit provider and route(s). High frequency routes and higher volume stops generally have more passenger amenities such as benches, shelters, traveler information, trash receptacles, bicycle parking, and other features.

CONSIDERATIONS

Transit stops on urban streets are typically located at the natural curb line or on a bus bulb or transit island. Dedicated transit facilities may use medians. Transit operations, curbside uses, posted speed limits, traffic volumes, transit frequency and typical bus dwell time all influence location decisions for transit stops. See Transit Accommodations at Intersections for bus bulb design guidance.

Transit stops may be located on the near-side of an intersection before a signal or cross street, on the far-side after a bus has passed through an intersection, or at a mid-block location between intersections.

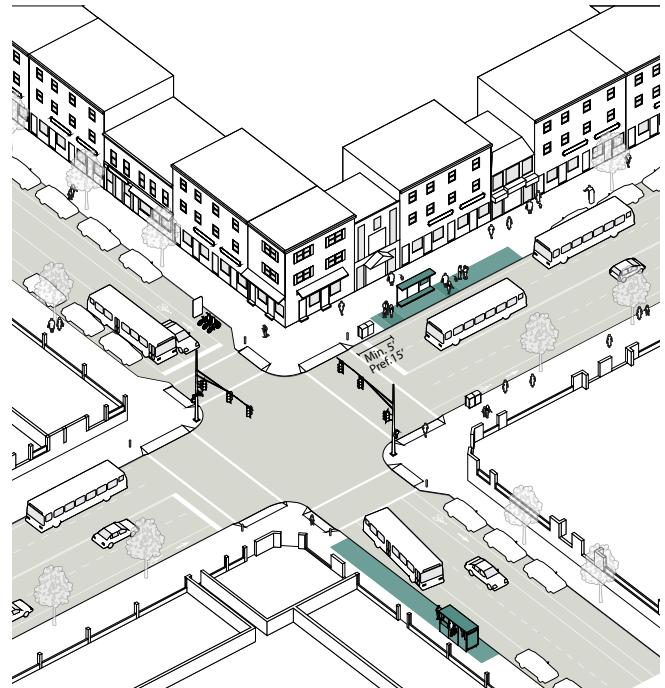
Transit stop locations are determined based on a number of factors including intersection operations, bus routing, curbside conditions, transfer points, intersection geometry and sightlines, consideration of other street users, and major generators or destinations. The location of a transit stop can affect transit travel time, passenger safety, and roadway operations.

Generally, transit agencies prefer far-side stops when traffic flows are heavy, where there are sight distance problems, and where buses turn left. Near-side located bus stops may be appropriate where traffic flow is lower or where transit riders can more easily transfer without crossing the street. Stops can also be placed mid-block where there are major passenger generators or where space next to an intersection is insufficient.

Regardless of location, all transit stops must be ADA compliant, and should be safe, convenient, well-illuminated, and clearly visible. Transit stops should be connected to the larger pedestrian network with continuous sidewalks, curb ramps, and safe pedestrian crossings. Mid-block stops should provide access to mid-block crosswalks.

Bus bulbs may be considered where additional pedestrian space is needed or where it is challenging for transit vehicles to re-enter traffic.

Seating at or near transit stops can improve passenger comfort, as can shade in the form of street trees or awnings. Seating need not be a unique and dedicated element, but may include leaning rails, planters, ledges, or other street elements.



GUIDANCE

- + The landing zone at each transit vehicle door should be a clear zone 5 feet long (parallel to the curb) by 8 feet deep (beginning immediately adjacent to the curb). Newly constructed sidewalks should have a 10-foot by 8-foot landing zone to provide an accessible space for loading and unloading. If the sidewalk is not wide enough to support an 8-foot landing zone and on-street parking is present, a curb extension (bus bulb) should be built to accommodate the minimum width. Bus bulbs should extend to within 1 to 2 feet of the edge of the travel lane.
- + Landing zones should be provided at all doors of the transit vehicle. For articulated buses, the distance between the front and rear landing zones is 18'. Buses can vary in length and will have different door configurations. Landing zones should be designed in coordination with all transit providers.

ALTERNATIVE WALKWAYS

Often, traditional sidewalks are either not feasible or may be undesirable, particularly in rural communities. In these cases, people are frequently left walking on the side of the road with little to no protection from fast moving vehicles. Alternative walkways aim to provide a more comfortable space for people walking and rolling where a sidewalk may not be feasible. These walkways typically cost less money to construct and preserve the rural character of a street.



CONSIDERATIONS

- + The method of separation should depend on motor vehicle speeds and volumes. For speeds below 25 mph, and volumes below 2,000 ADT, a striped edge line can be sufficient. For roadways with higher vehicle speeds and volumes, vertical elements such as wood, concrete, or asphalt curbing or flexible posts should be used to separate people walking and rolling from vehicle traffic.
- + Provide traffic calming elements to slow vehicle speeds when speed and volume thresholds cannot be met.
- + On streets where there are no bicycle facilities, bicyclists may be inclined to use the pedestrian walkway. Where bicyclists are expected to use the facility, provide wider walkways to accommodate people passing one another.
- + Consider drainage when constructing alternative walkways to ensure pooling doesn't occur within the path of the walkway.

GUIDANCE

- + Alternative walkways should be a minimum of 6 feet in width, with a preferred width of 8 feet. Facilities anticipated to be used by bicyclists should be a minimum of 8 feet, with a preferred width of 10 feet.
- + Walkways should be designed to be accessible for people using mobility devices, following guidance in the ADA Accessibility Guidelines and PROWAG. Paved surfaces with accessible slopes are preferred whenever possible.
- + If located adjacent to parallel parking, provide intermittent gaps in vertical barriers to provide unobstructed access for pedestrians.
- + Provide tactile warning indicators at all crossing locations to ensure that people with low or no vision can detect that they are about to enter the roadway.
- + On streets with vehicle speeds below 25mph and volumes below 2,000 ADT, bicyclists should be expected to travel in the roadway with vehicles. Shared lane markings should be provided to encourage bicyclists to ride outside of the walkway area.
- + Signage and pavement markings should be used to prohibit vehicles from parking in the walkway.

REFERENCES

ADA Accessibility Guidelines (2004)

California Manual on Uniform Traffic Control Devices (2014)

Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG) (2011)



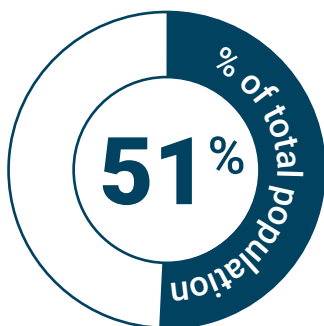
BICYCLE FACILITIES

POTENTIAL BICYCLE USERS

TYPES OF CYCLISTS

The figure below illustrates a typical range of cyclists, ranging from least to most comfortable sharing the road with motor vehicles. It is important to understand which type of cyclist is most likely or most desired to use any given facility, as this will affect the design and degree of separation from vehicle traffic necessary. See the Bikeway Facilities Selection Chart to determine which facility types best serve the different types of cyclists. All Ages and Abilities bikeway facilities are designed so all bicyclists, even the Interested but Concerned, can safely and comfortably travel in a given bikeway. Note that 37% of the population is either unwilling or unable to ride a bicycle.

Interested but Concerned



Who are they?

A mother and daughter who enjoy Saturday rides to the park along the trail that runs near their house. Concern over crossing a busy road prevents them from riding together to elementary school during the week.

Who are they?

A 45-year-old father of two who was just diagnosed with pre-diabetes. His doctor encouraged him to be more active, so he's been thinking about commuting to work by bike. As a motorist, he feels uncomfortable passing bicyclists, so he isn't sure he'd feel comfortable as a bicyclist sharing the road with cars.

Who are they?

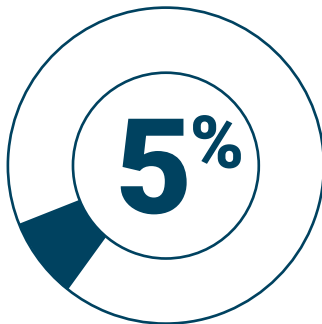
A worker who just started a new job. He enjoys riding as long as he stays on quiet streets or the sidewalk. He'd like to be able to ride to more destinations, but he's uncomfortable crossing busy roads and intersections along the way.



**LOWER STRESS
TOLERANCE**

POTENTIAL BICYCLE USERS

Enthusiastic and Confident



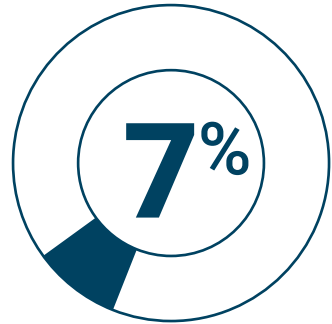
Who are they?

A North Fair Oaks resident who rides her bike in downtown Redwood City every morning to run errands. She prefers to ride on neighborhood streets, but doesn't mind riding a few blocks on a busy street since there's a bike lane.

Who are they?

A lower-income resident who rides a bicycle to save money for other household expenses. He's comfortable riding on streets as long as they have bike lanes.

Strong and Fearless



Who are they?

A recent Cal State East Bay grad who can't wait to hit the road this weekend for a 100-mile ride on his brand new road bike. He helped pay his way through college as a bike messenger, and loves the rush that he gets from racing.

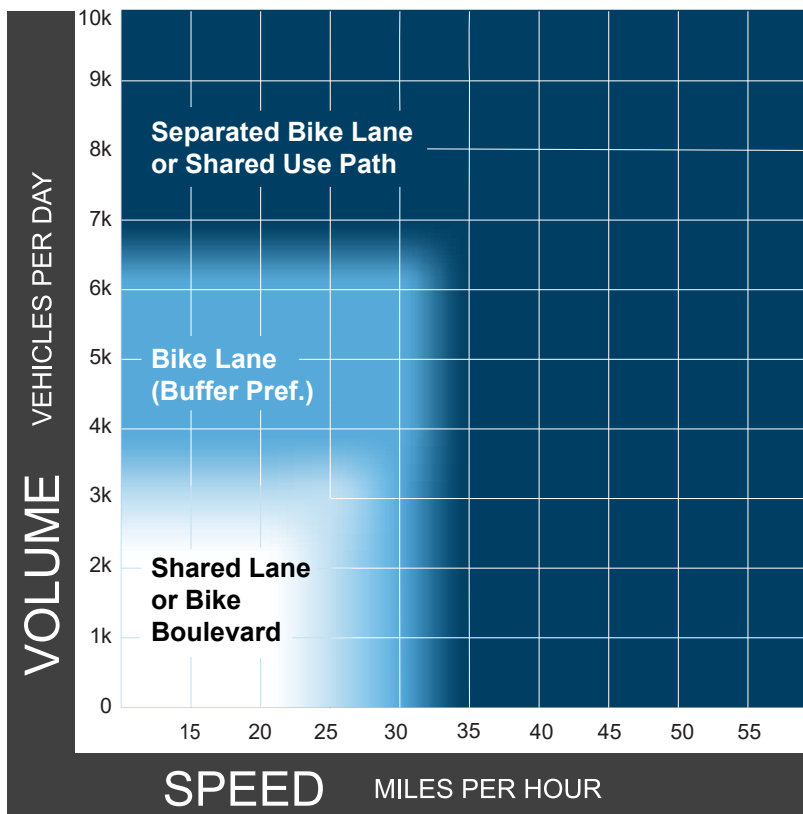


**HIGHER STRESS
TOLERANCE**

BICYCLE FACILITY SELECTION

Designing for Interested but Concerned and Enthusiastic and Confident Bicyclists

“Interested but Concerned” bicyclists prefer physical separation as traffic volumes and speeds increase. The bikeway facility selection chart below identifies bikeway facilities that improve the operating environment for this bicyclist type at different roadway speeds and traffic volumes. The “enthusiastic and confident” bicyclist will also prefer bikeway treatments noted in this chart. If a community’s goal is to attract new users to bicycling, it is appropriate to select facility types based on this chart.



Notes

- 1 Chart assumes operating speeds are similar to posted speeds. If they differ, use operating speed rather than posted speed.
- 2 Advisory bike lanes may be an option where traffic volume is <3K ADT.

Source: 2019 FHWA Bikeway Selection Guide

FACILITY DETAILS

Physically separated facility:

- + Separated bike lane or shared-use path, separated from traffic by parking, posts, curb, etc.
- + For two-way facility: 10 to 12 ft preferred, 8 ft minimum

Bike lane: 5 to 7 ft

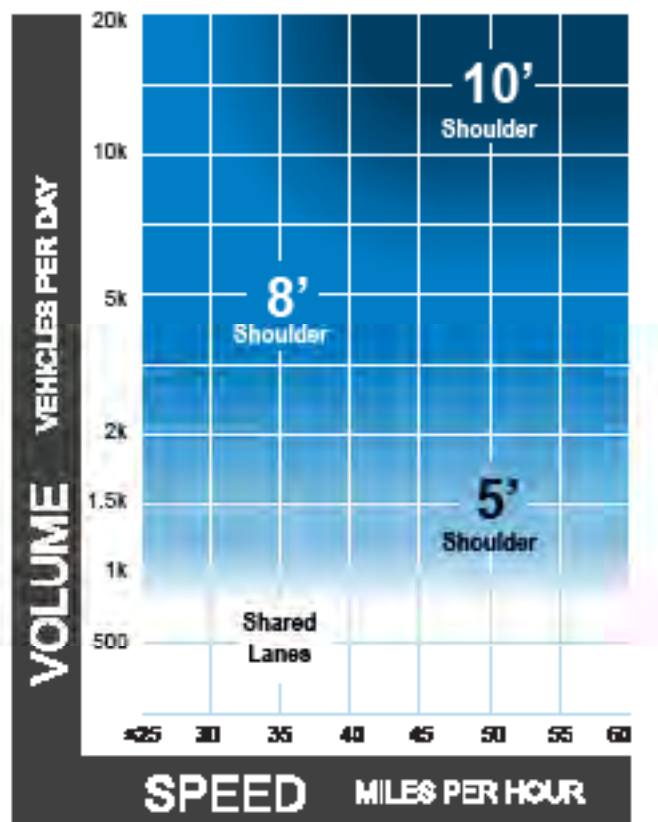
Buffered bike lane: 8 to 9 ft total

To determine whether to provide a shared-use path, separated bike lane, or buffered bike lane, consider pedestrian and bicycle volumes or, in the absence of volume, consider land use.

RURAL BICYCLE FACILITY SELECTION

Shoulder Widths for Rural Roadways

Often, the needs and constraints of rural roadways are very different from those of a more urban facility. Rural roadways most typically serve strong and confident riders, who can adequately be accommodated with narrower shoulders. Providing shoulders of the recommended width, and placing intermittent rumble strips between the travel lane and shoulder, helps accommodate less confident bicyclists. When selecting a minimum shoulder width to accommodate bicyclists, the decision should be based on traffic volumes and posted speeds in the rural context. For the purposes of determining the appropriate shoulder width, it is assumed that posted speeds are approximately the same as operating speeds. If operating speeds differ from posted speeds, then operating speed should be used instead of posted speed.



Notes

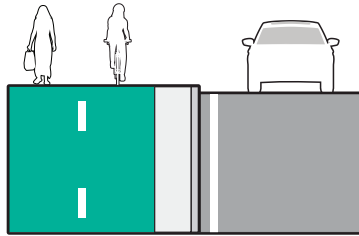
- 1 This chart assumes the project involves reconstruction or retrofit to constrained conditions. For new construction, follow recommended shoulder widths in the AASHTO Green Book.
- 2 A separated shared use pathway is a suitable alternative to providing paved shoulders.
- 3 Chart assumes operating speeds are similar to posted speeds. If they differ, use operating speed rather than posted speed.
- 4 If the percentage of heavy vehicles is greater than 10%, consider providing a wider shoulder or a separated pathway.

Source: 2019 FHWA Bikeway Selection Guide

BICYCLE FACILITY OVERVIEW

Multi-Use Path Class I

MUP



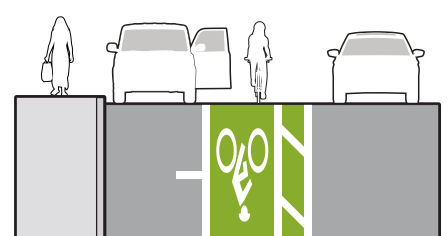
Separated Bike Lane Class IV

SBL



Buffered Bike Lane Class II

BBL



MOST SEPARATED

TYPICAL APPLICATION

Multi-use paths will generally be considered on any road with one or more of the following characteristics:

- + Total traffic lanes: 3 lanes or greater
- + Posted speed limit: 30 mph or greater
- + Average Daily Traffic: 9,000 vehicles or greater
- + Parking turnover: varies
- + Bike lane obstruction: likely to be frequent
- + Streets that are designated as truck or bus routes

Multi-use paths are shared with pedestrians and may be preferable to separated bike lanes in low density areas where pedestrians volumes are anticipated to be fewer than 200 people per hour on the path.

Separated bike lanes will generally be considered on any road with one or more of the following characteristics:

- + Total traffic lanes: 3 lanes or greater
- + Posted speed limit: 30 mph or more
- + Average Daily Traffic: 9,000 vehicles or greater
- + Parking turnover: frequent
- + Bike lane obstruction: likely to be frequent
- + Streets that are designated as truck or bus routes

Preferred in higher density areas, adjacent to commercial and mixed-use development, and near major transit stations or locations where observed or anticipated pedestrian volumes will be higher.

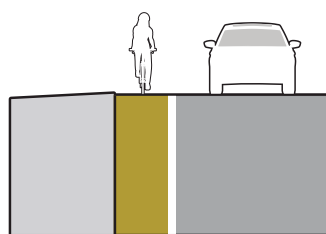
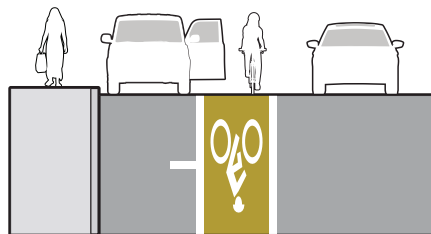
Buffered bike lanes will generally be considered on any road with one or more of the following characteristics:

- + Total traffic lanes: 3 lanes or fewer
- + Posted speed limit: 30 mph or lower
- + Average Daily Traffic: 9,000 vehicles or fewer
- + Parking turnover: infrequent.
- + Bike lane obstruction: likely to be infrequent
- + Where a separated bike lane or sidepath is infeasible or not desirable

BICYCLE FACILITY OVERVIEW

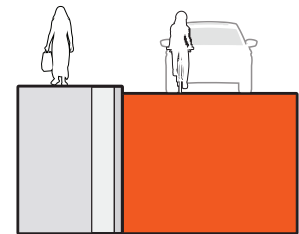
Bike Lane Class II

BL



Bicycle Route Class III

SR



LEAST SEPARATED

TYPICAL APPLICATION

Conventional bike lanes will generally be considered on any road with one or more of the following characteristics:

- + Total traffic lanes: 3 lanes or fewer
- + Posted speed limit: 30 mph or lower
- + Average Daily Traffic: 9,000 vehicles or fewer
- + Parking turnover: infrequent
- + Bike lane obstruction: likely to be infrequent
- + Where a separated bike lane or sidepath is infeasible or not desirable

Bicycle routes will generally be considered on any road with one or more of the following characteristics:

- + Total traffic lanes: 2 lanes or fewer
- + Posted speed limit 25 mph or lower
- + Average Daily Traffic: 3,000 vehicles or fewer
- + Parking turnover: very infrequent
- + Bike Lane Obstruction: N/A

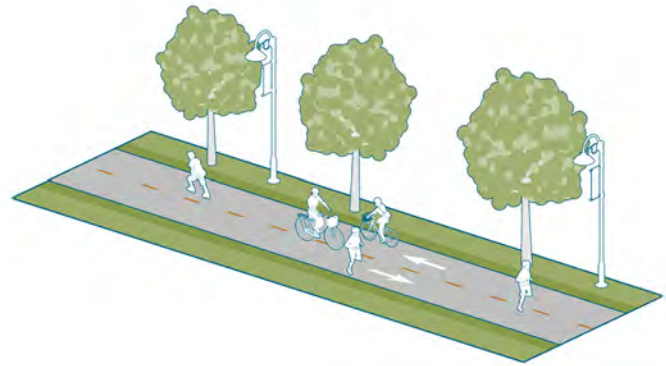
When paired with traffic calming measures this facility type is known as a bicycle boulevard and can provide a low stress environment.

MULTI-USE PATHS (CLASS I)

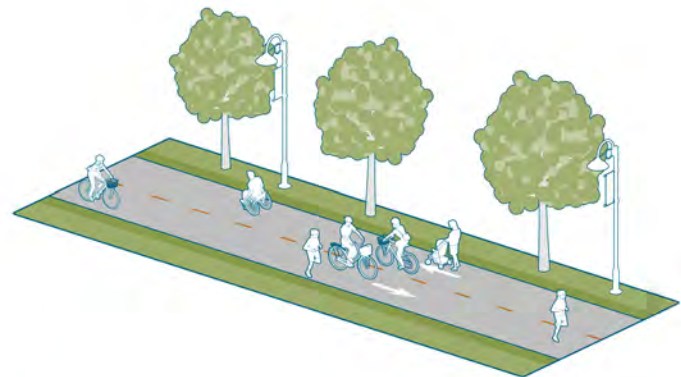
A multi-use path is a two-way facility physically separated from motor vehicle traffic and used by bicyclists, pedestrians, and other non-motorized users. Multi-use paths are often located in an independent alignment, such as a greenbelt or abandoned railroad. However, they are also regularly constructed along roadways; often bicyclists and pedestrians will have increased interactions with motor vehicles at driveways and intersections on these multi-use paths.

CONSIDERATIONS

- + According to the AASHTO, “multi-use paths should not be used to preclude on-road bicycle facilities, but rather to supplement a network of on-road bike lanes, bicycle boulevards, and paved shoulders.” In other words, in some situations it may be appropriate to provide an on-road bikeway in addition to a multi-use path along the same roadway.
- + Many people express a strong preference for the separation between bicycle and motor vehicle traffic provided by paths when compared to on-street bikeways. Multi-use paths may be desirable along high-volume or high-speed roadways, where accommodating the targeted type of bicyclist within the roadway in a safe and comfortable way is impractical. However, multi-use paths may present increased conflicts between path users and motor vehicles at intersections and driveway crossings. Conflicts can be reduced by minimizing the number of driveway and street crossings present along a path and otherwise providing high-visibility crossing treatments.
- + Paths typically have a lower design speed for bicyclists than on-street facilities and may not provide appropriate accommodation for more confident bicyclists who desire to travel at higher speeds. In addition, greater numbers of driveways or intersections along a multi-use path corridor can decrease bicycle travel speeds and traffic signals can increase delay for bicyclists on off-street paths compared to cyclists using in-street bicycle facilities such as bike lanes. Therefore, paths should not be considered a substitute to accommodating more confident bicyclists within the roadway.



Path Width for One-way Passing



Path Width for Two-way Passing

PATH WIDTH CONSIDERATION

Path width should be determined based on three main characteristics: the number of users, the types of users, and the differences in their speeds. For example, on a path that is used by higher-speed bicyclists and children walking to school, users may experience conflicts due to their speed differences. By widening the path to provide space to accommodate passing movements, conflicts can be reduced.



CONSIDERATIONS

- + Typical path width is 12 feet wide with 3 foot shoulders on each side. This width allows users to pass one another with minimal conflict.
- + Widths as narrow as 8 or 10 feet are acceptable for short distances under physical constraint or where volume is expected to be low.
- + If there is frequent conflict between bicyclists and other users, separate bicyclists from pedestrians by constructing separate paths for each mode. The separate facilities may include two hard surface paths, or one hard surface path and one soft surface path.
- + See above chart for path width recommendations based on volume. Soft surface paths are also preferred by some users, such as runners or equestrians.
- + MUTCD warning signs showing the path narrowing should be considered at locations where the path narrows.

GUIDANCE

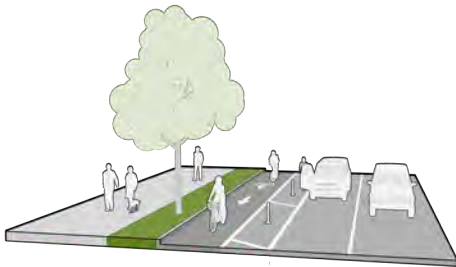
- + Multi-use paths should be designed according to state and national standards. This process includes establishing a design speed (typically 18 mph) and designing path geometry accordingly.

Minimizing user conflicts:

- + Vertical objects close to the path edge can endanger users and reduce the comfortable usable width of the path. Vertical objects should be set back at least three feet from the edge of the path, for a height of 8 feet.
- + 3 foot wide (minimum) shoulders provide space for users who step off the path to rest or to allow users to pass one another.
- + Equestrian users and bicyclists may be integrated on the same multi-use path route. Ideally, a separate bridle path is desirable as horses prefer a soft surface to walk on and the horizontal separation keeps the horse from being startled by bicyclists.
- + Include signage that dictates yielding responsibilities reduces conflict between equestrian users and other users.

SEPARATED BIKE LANES (CLASS IV)

Separated Bike Lanes are an exclusive bikeway facility type that combines the user experience of a multi-use path with the on-street infrastructure of a conventional bike lane. They are physically separated from motor vehicle traffic and distinct from the sidewalk. Two-way separated bike lanes are sometimes referred to as “cycle tracks”.



One-way street level with Flexible Delineator posts



One-way Raised with buffer



Two-way Street level with raised buffer



Two-way Raised with buffer

CONSIDERATIONS

Separated bike lanes are more attractive to a wider range of bicyclists than striped bikeways on higher volume and higher speed roads. They eliminate the risk of a bicyclist being hit by an opening car door and prevent motor vehicles from driving, stopping or waiting in the bikeway. They also provide greater comfort to pedestrians by separating them from bicyclists riding at higher speeds.

Separated bike lanes can provide different levels of separation:

- + Separated bike lanes with flexible delineator posts (“flex posts”) alone offer the least separation from traffic and are appropriate as an interim solution.
- + Separated bike lanes that are raised with a wider buffer from traffic provide the greatest level of separation from traffic, but will often require road reconstruction.
- + Separated bike lanes that are protected from traffic by a row of on-street parking offer a high-degree of separation.

GUIDANCE

Separated bike lanes can generally be considered on any road with one or more of the following characteristics:

- + Traffic lanes: 3 lanes or greater
- + Posted speed limit: 30 mph or more
- + Traffic: 9,000 vehicles per day or greater
- + On-street parking turnover: frequent
- + Bike lane obstruction: likely to be frequent
- + Streets that are designated as truck or bus routes

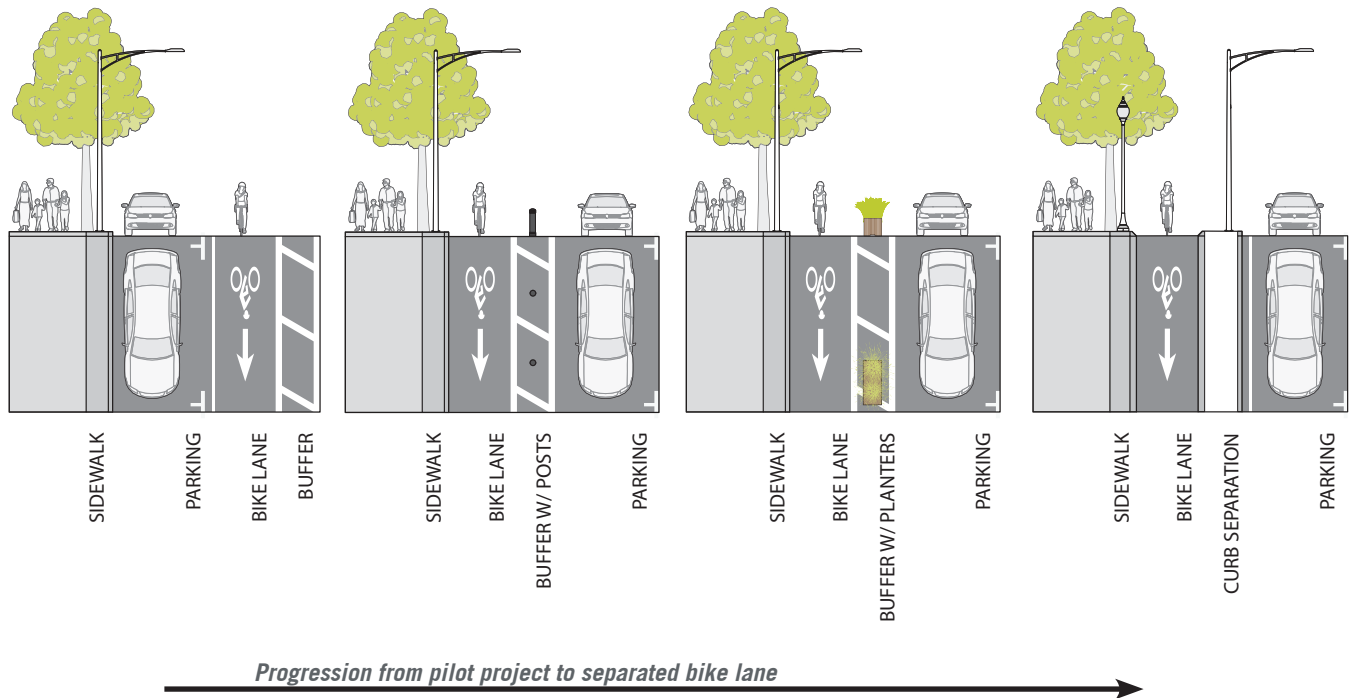
Separated bike lanes are preferred over multi-use paths in higher density areas, commercial and mixed-use development, and near major transit stations or locations where pedestrian volumes are anticipated to exceed 200 people per hour on a multi-use path. Parking removal may be required to construct separated bike lanes.

REFERENCES

- NACTO. Urban Bikeway Design Guide. 2nd Edition.*
- MassDOT. Separated Bike Lane Planning and Design Guide. 2015*
- Caltrans. Class IV Bikeway Guidance (Separated Bikeways/Cycle Tracks). 2015.*

LIFE OF A SEPARATED BIKE LANE

Separated bike lanes have been implemented in many cases as low-cost retrofit projects (e.g. using flex posts and paint within the existing right-of-way). More permanent forms of separation, such as curb-separated bike lanes, cost more and are less flexible once implemented. A phased implementation approach, where “pilot” projects transition to permanent separated bike lanes may solve both of these problems, by implementing the facility slowly and troubleshooting before permanent materials and high costs are necessary.



CONSIDERATIONS

Lower-cost retrofits or demonstration projects allow for quick implementation, responsiveness to public perception and ongoing evaluation. Separation types for short-term separated bike lane designs often include non-permanent separation, such as flexible delineator posts, planters or parking stops. Pilot projects allow the agency to:

- + Test the separated bike lane configuration for bicyclists and traffic operations
- + Evaluate public reaction, design performance, and safety effectiveness
- + Make changes if necessary
- + Transition to permanent design

GUIDANCE

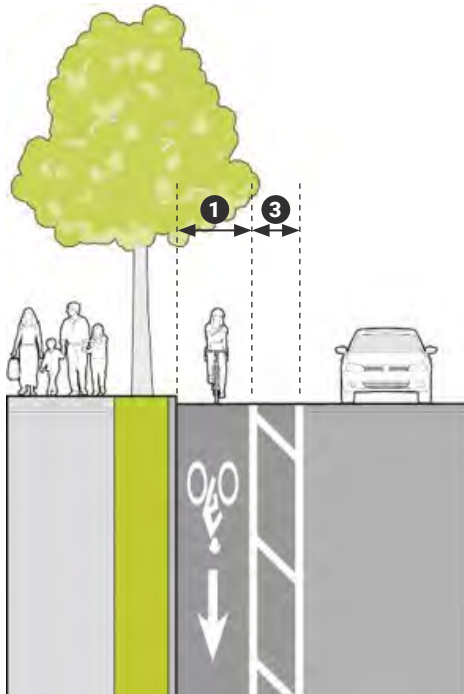
- + Permanent separation designs provide a high level of protection and often have greater potential for placemaking, quality aesthetics, and integration with features such as green stormwater infrastructure.
- + Agencies often implement permanent separation designs by leveraging private development (potentially through developer contribution), major capital construction, and including separated bike lanes in roadway reconstruction designs.
- + Examples of permanent separation materials include rigid bollards, raised medians and grade-separated bike lanes at an intermediate or sidewalk level.

REFERENCES

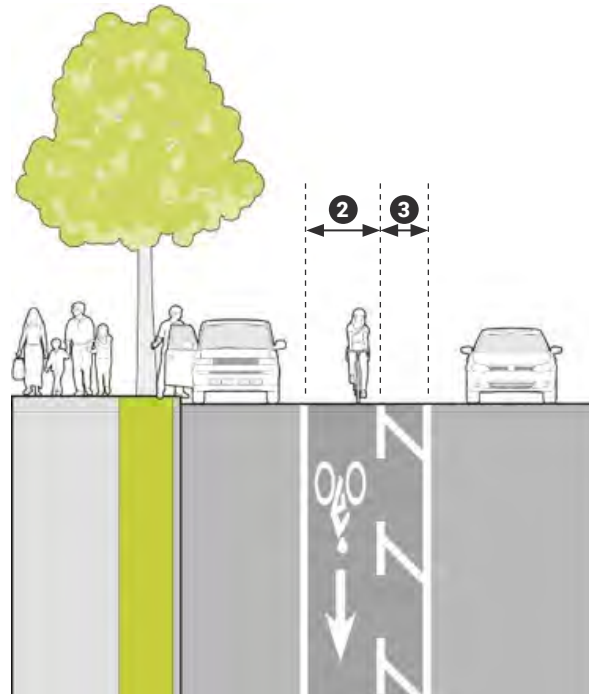
- NACTO Urban Street Design Guide. 2013.
- FHWA Protected Bike Lane Planning and Design Guide. 2015.
- Caltrans. Class IV Bikeway Guidance (Separated Bikeways/Cycle Tracks). 2015.

BUFFERED BIKE LANES (CLASS II)

Buffered bicycle lanes are created by painting or otherwise creating a flush buffer zone between a bicycle lane and the adjacent travel lane. While buffers are typically used between bicycle lanes and motor vehicle travel lanes to increase bicyclists' comfort, they can also be provided between bicycle lanes and parking lanes in locations with high parking turnover to discourage bicyclists from riding too close to parked vehicles.



Buffered Bike Lane Adjacent to a Curb



Buffered Bike Lane Adjacent to Parking

CONSIDERATIONS

- + Preferable to a conventional bicycle lane when used as a contra-flow bike lane on one-way streets.
- + Typically installed by reallocating existing street space.
- + Can be used on one-way or two-way streets.
- + Consider placing buffer next to parking lane where there is commercial or metered parking.
- + Consider placing buffer next to travel lane where speeds are 30 mph or greater or when traffic volume exceeds 6,000 vehicles per day.
- + Where there is 7 feet of roadway width available for a bicycle lane, a buffered bike lane should be installed instead of a conventional bike lane.
- + Buffered bike lanes allow bicyclists to ride side by side or to pass slower moving bicyclists.
- + Research has documented buffered bicycle lanes increase the perception of safety.

GUIDANCE

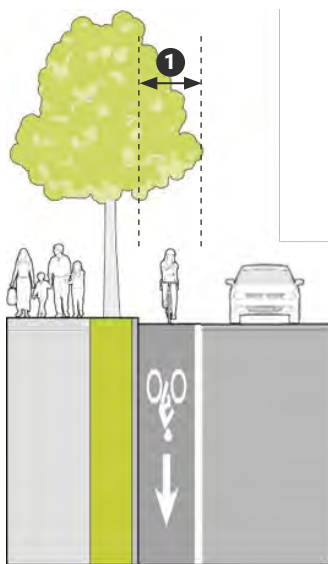
- 1 The minimum width of a buffered bike lane adjacent to parking is 5 feet, a desirable width is 6 feet.
- 2 Buffers are to be broken where curbside parking is present to allow cars to cross the bike lane.
- 3 The minimum buffer width is 18 inches. There is no maximum. For buffers less than two feet in width, no cross hatching should be used. For buffers between 2 and 4 feet in width, diagonal cross hatching should be used. For buffers over 4 feet in width, chevron cross hatching should be used.

REFERENCES

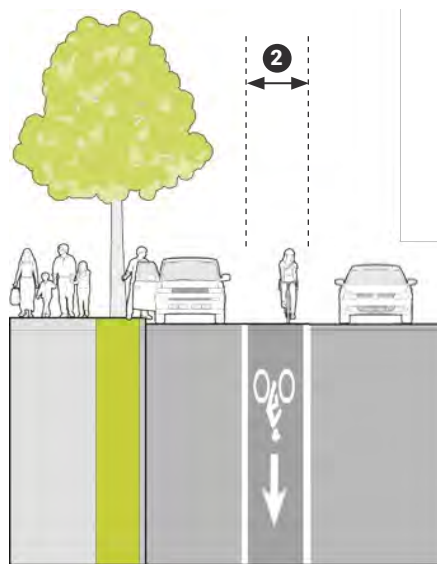
- AASHTO. *Guide for the Development of Bicycle Facilities*. 2012.
- NACTO. *Urban Bikeway Design Guide*. 2nd Edition.
- Portland State University, Center for Transportation Studies. *Evaluation of Innovative Bicycle Facilities: SW Broadway Cycle Track & SW Stark/Oak Street Buffered Bike Lanes FINAL REPORT*. 2011.

BIKE LANES (CLASS II)

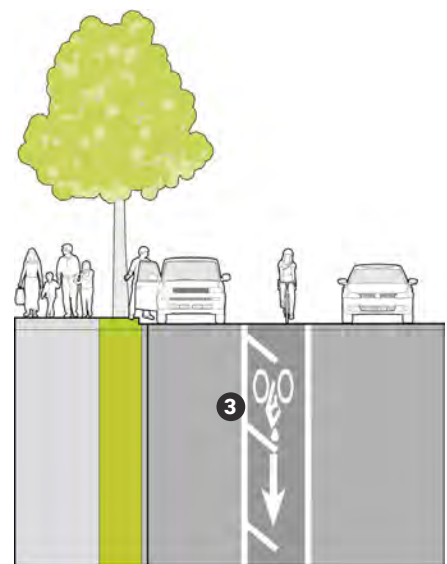
Bicycle lanes provide an exclusive space for bicyclists in the roadway. Bicycle lanes are established through the use of lines and symbols on the roadway surface. Bicycle lanes are for one-way travel and are normally provided in both directions on two-way streets and/or on one side of a one-way street. Bicyclists are not required to remain in a bicycle lane when traveling on a street and may leave the bicycle lane as necessary to make turns, pass other bicyclists, or to properly position themselves for other necessary movements. Bicycle lanes may only be used temporarily by vehicles accessing parking spaces and entering and exiting driveways and alleys. Stopping, standing and parking in bike lanes is prohibited.



Bike Lane Adjacent to a Curb



Bike Lane Adjacent to Parking



Bike Lane with Door Zone Marking

CONSIDERATIONS

- + Typically installed by reallocating existing street space.
- + Can be used on one-way or two-way streets.
- + Contra-flow bicycle lanes may be used to allow two-way bicycle travel on streets designated for one-way travel for motorists to improve bicycle network connectivity.
- + Stopping, standing and parking in bike lanes may be problematic in areas of high parking demand and deliveries, especially in commercial areas.
- + Wider bike lanes or buffered bike lanes are preferable at locations with high parking turnover.

GUIDANCE

- 1 The minimum width of a bike lane adjacent to a curb is 5 feet exclusive of a gutter; a desirable width is 6 feet.
- 2 The minimum width of a bike lane adjacent to parking is 5 feet; a desirable width is 6 feet. The minimum combined width of a parking lane and bicycle lane is 14 feet.
- 3 Parking T's or hatch marks can highlight the door zone on constrained corridors with high parking turnover to guide bicyclists away from doors.

REFERENCES

- AASHTO. *Guide for the Development of Bicycle Facilities*. 2012.
- NACTO. *Urban Bikeway Design Guide*. 2nd Edition.
- California Manual on Uniform Traffic Control Devices (2014)

BICYCLE BOULEVARD (CLASS III)

Bicycle boulevards are applied on quiet streets, often through residential neighborhoods. These treatments are designed to prioritize bicycle through-travel, while calming motor vehicle traffic and maintaining relatively low motor vehicle speeds. Treatments vary depending on context, but often include elements of traffic calming, including traffic diverters, speed attenuators such as speed humps or chicanes, pavement markings, and signs.

TREATMENT	VOLUME MANAGEMENT	SPEED MANAGEMENT
HORIZONTAL DEFLECTION		
Curb Extension	—	○
One-Lane Pinch Points	◐	◐
Chicanes	○	◐
Neighborhood Traffic Circles	—	◐
Median Islands	—	◐
VERTICAL DEFLECTION		
Speed Humps/Cushions	◐	●
Raised Crosswalks	◐	●
TRAFFIC DIVERTERS		
Signs and Markings	○	—
Diagonal Diverter	●	◐
Major Street Refuge Island	●	—
Forced Turn	●	◐

POTENTIAL EFFECTIVENESS

- High
- ◐ Medium
- Low
- None

Effectiveness of Bicycle Boulevard Treatments

CONSIDERATIONS

Many cities already have signed bike routes along neighborhood streets that provide an alternative to traveling on high-volume, high-speed arterials. Bicycle boulevard treatments make these streets more suitable for bicyclists of all abilities and can reduce crashes.

Stop signs or traffic signals should be placed along the bicycle boulevard to prioritize the bicycle movement, minimizing stops for bicyclists whenever possible.

Bicycle boulevard treatments include traffic calming measures such as street trees, traffic circles, chicanes, and speed humps. Traffic management devices such as diverters or semi-diverters can redirect cut-through vehicle traffic and reduce traffic volume while still enabling local access to the street.

Communities should begin by implementing bicycle boulevard treatments on one pilot corridor to measure the impacts and gain community support. The pilot program should include before-and-after crash studies, motor vehicle counts, and bicyclist counts on both the bicycle boulevard and parallel streets. Findings from the pilot program can be used to justify bicycle boulevard treatments on other neighborhood streets.

Additional treatments for major street crossings may be needed, such as median refuge islands, rectangular rapid flashing beacons, bicycle signals, and HAWK or half signals.

GUIDANCE

Bicycle boulevards can generally be considered on any road with one or more of the following characteristics:

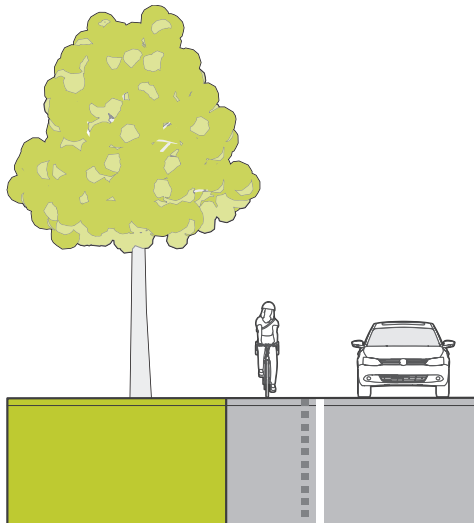
- + Maximum Average Daily Traffic (ADT): 3,000
- + Preferred ADT: up to 1,000
- + Target speeds for motor vehicle traffic are typically around 20 mph; there should be a maximum < 15 mph speed differential between bicyclists and vehicles.

REFERENCES

- AASHTO Guide for the Development of Bicycle Facilities. 2012.*
- NACTO Urban Bikeway Design Guide. 2012.*
- Manual on Uniform Traffic Control Devices. 2009.*
- Fundamentals of Bicycle Boulevard Planning & Design. 2009.*

RURAL BICYCLE ROUTE (CLASS III)

Paved shoulders are often the recommended bicycle facility on rural routes, except on low-volume streets where shared streets may be recommended. See the Rural Route Selection Chart for additional guidance. Paved shoulders provide a range of benefits: they reduce motor vehicle crashes, reduce long-term roadway maintenance, ease short-term maintenance such as snow plowing, and provide space for bicyclists and pedestrians (although paved shoulders typically do not meet accessibility requirements for pedestrians).



CONSIDERATIONS

- + For roads that are unable to provide consistent and standard size bikeable shoulders in both directions, prioritize:
 - + The uphill direction on hilly roads to reduce conflicts between slow-moving bicyclists and fast-moving motor vehicles.
 - + The inside of a horizontal curve and/or the downgrade of a vertical curve where sight distance is restricted.
- + Paved shoulders should be considered on roadways popular with recreational bicyclists that have significant motor vehicle traffic during periods when recreational bicycling is known to occur.
- + Bicyclists will not use a shoulder if it is covered in gravel, glass and other road debris, so regular street sweeping is important.
- + In rural areas, paved shoulders can also provide space for pedestrians on roadways without sidewalks. In situations where a shoulder is intended for pedestrian use, it must meet Americans with Disabilities Act requirements to the maximum extent possible.

GUIDANCE

- + Shoulder width should be at least 4 feet if the roadway is curbless and there are no vertical obstructions. If curbs or vertical obstructions are present, shoulder width should be 5 feet minimum exclusive of the gutter if present. See Rural Route Selection Chart for additional guidance.
- + Shoulders should be wider on roads with high levels of bicycle traffic to accommodate bicyclist passing and facilitate side-by-side bicycling.
- + When posted speed limits or 85th percentile speeds exceed 50 mph and/or if heavy vehicles frequently use the road, shoulders should exceed minimum widths to enhance bicyclist comfort.
- + Edge line rumble strips can provide additional bicyclist space on paved shoulders. The width of a shoulder with rumble strips should be measured from the rightmost side of the rumble strip to the edge of the roadway. Where rumble strips are present, gaps of at least 12' should be provided every 40-60'.



Photo: Castro Valley, CA

BICYCLE INTERSECTION DESIGN AND SPOT TREATMENTS

CROSSING TREATMENTS

While the street segments of a bicycle boulevard or other traffic-calmed street may be generally comfortable for bicyclists without significant improvement, major street crossings must be addressed to provide safe, convenient and comfortable travel along the entire route. Treatments provide waiting space for bicyclists, control cross traffic, or ease bicyclist use by removing traffic control for travel along the bicycle boulevard route.



Median Diverter



Bicycle Box with Lead-In Bike Lane



Pedestrian Hybrid Beacon



Offset Crossing Left Turn Box with Lead-In Bike Lane

CONSIDERATIONS

- + Adjustments to traffic control such as a Pedestrian Hybrid beacon or stop sign adjustments may necessitate a traffic study.
- + Median islands may be constructed to require right-in/right-out turns by motor vehicles while still allowing left turns by bicyclists at off-set intersections.
- + Numerous treatments exist to accommodate offset intersection crossings for bicyclists, and the full range of design treatments should be considered in these situations. These treatments include left turn queue boxes, two-way center left turn lanes (optionally designed solely for bicyclists), median left turn pockets and short sidepath segments.

GUIDANCE

Medians should be a minimum of 6 feet in width, though 8 feet is desirable to allow adequate space for a bicycle.

Intersections along a bicycle boulevard route may need treatment in the following situations:

- + Unsignalized crossings of arterial or collector streets with high traffic volumes and speeds.
- + Offset intersections where the bike route makes two turns in short succession.

REFERENCES

Fundamentals of Bicycle Boulevard Planning & Design (2009)
NACTO Urban Bikeway Design Guide (2014)
Portland's Neighborhood Greenway Assessment Report (2015)

BIKE BOXES

A bicycle box provides dedicated space between the crosswalk and vehicle stop line where bicyclists can wait during the red light at signalized intersections. The bicycle box allows a bicyclist to take a position in front of motor vehicles at the intersection, which improves visibility and motorist awareness, and allows bicyclists to “claim the lane” if desired. Bike boxes aid bicyclists in making turning maneuvers at the intersection, and provide more queuing space for multiple bicyclists than that provided by a typical bicycle lane.

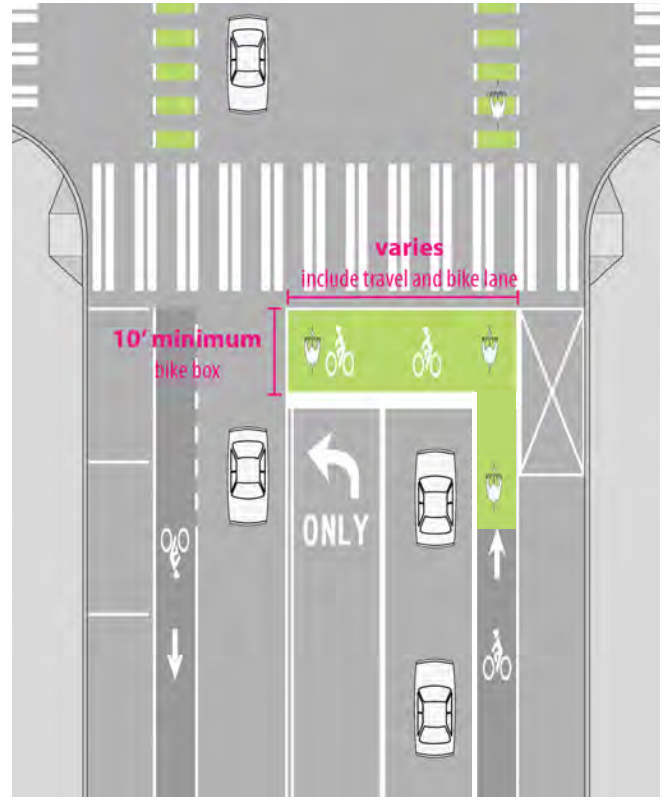
CONSIDERATIONS

In locations with high volumes of turning movements by bicyclists, a bicycle box should be used to allow bicyclists to shift towards the desired side of the travel way. Depending on the position of the bicycle lane, bicyclists can shift sides of the street to align themselves with vehicles making the same movement through the intersection.

In locations where motor vehicles can continue straight or cross through a right-side bicycle lane while turning right, the bicycle box allows bicyclists to move to the front of the traffic queue and make their movement first, minimizing conflicts with the turning vehicles. When a bicycle box is implemented in front of a vehicle lane that previously allowed right turn on red, the right turn on red movement must be restricted using signage and enforcement following installation of the bike box.

GUIDANCE

- + Bicycle boxes are typically painted green and are a minimum of 10 feet in depth and are the width of the entire travel lane(s).
- + Bicycle box design should be supplemented with appropriate signage according to the latest version of the California MUTCD.
- + Bicycle box design should include appropriate signalization adjustment in determining the minimum green time if needed.
- + Where right-turn lanes for motor vehicles exist, bicycle lanes should be designed to the left of the turn lane. If right turns on red are permitted, consider ending the bicycle box at the edge of the bicycle lane to allow motor vehicles to make this turning movement.



REFERENCES

- NACTO Urban Bikeway Design Guide - Bike Boxes (2014)*
- FHWA Separated Bike Lane Planning and Design Guide (2015)*
- MassDOT Separated Bike Lane Planning & Design Guide (2015)*

TWO-STAGE TURN QUEUE BOX

A two-stage turn queue box should be considered where bike lanes are continued up to an intersection and a protected intersection is not provided. The two-stage turn queue box designates a space for bicyclists to wait while performing a two-stage turn across a street at a location outside the path of traffic.

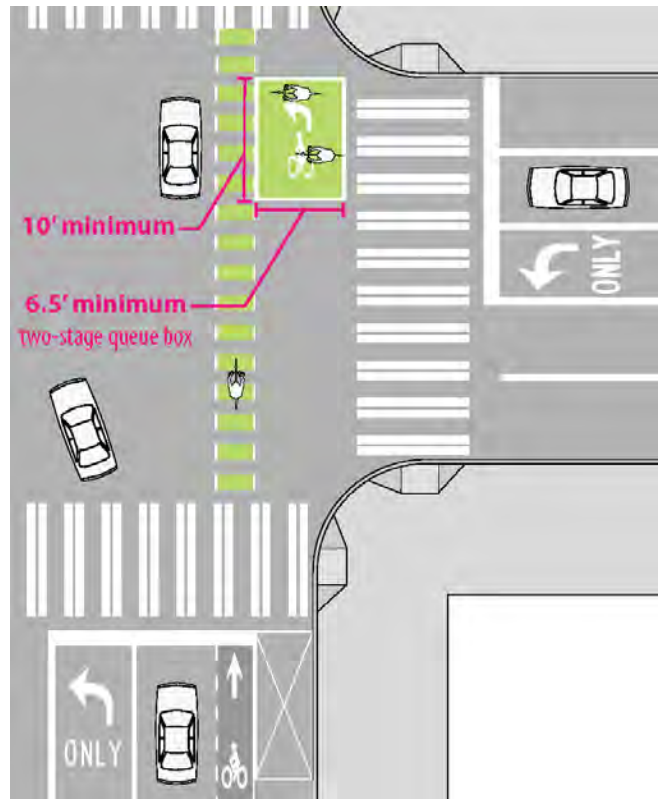
CONSIDERATIONS

FHWA granted interim approval to two-stage turn queue boxes on July 13, 2017.

Two-stage turn queue box dimensions will vary based on the street operating conditions, the presence or absence of a parking lane, traffic volumes and speeds, and available street space. The turn box may be placed in a variety of locations including in front of the pedestrian crossing (the crosswalk location may need to be adjusted), in a 'jug-handle' configuration within a sidewalk, or at the tail end of a parking lane or a median island.

GUIDANCE

- + A minimum width of 10 feet is recommended.
- + A minimum depth of 6.5 feet is recommended.
- + Dashed bike lane extension markings may be used to indicate the path of travel across the intersection.
- + NO TURN ON RED (R10-11) restrictions should be used to prevent vehicles from entering the queuing area.
- + The use of a supplemental sign instructing bicyclists how to use the box is optional.
- + The box should consist of a green box outlined with solid white lines supplemented with a bicycle symbol and a turn arrow to emphasize the crossing direction.
- + Two-stage turn queue boxes should only be used at signalized intersections.



REFERENCES

NACTO Urban Bikeway Design Guide (2014)

MassDOT Separated Bike Lane Planning and Design Guide (2015)

FHWA Separated Bike Lane Planning and Design Guide (2015)

FHWA Bicycle Facilities and the Manual on Uniform Traffic Control Devices - Two-Stage Turn Box (2015)

MIXING ZONES

A mixing zone requires turning motorists to merge across a separated bike lane at a defined location in advance of an intersection. Unlike a standard bike lane, where a motorist can merge across at any point, a mixing zone design limits bicyclists' exposure to motor vehicles by defining a limited merge area for the turning motorist. Mixing zones are compatible only with one-way separated bike lanes.

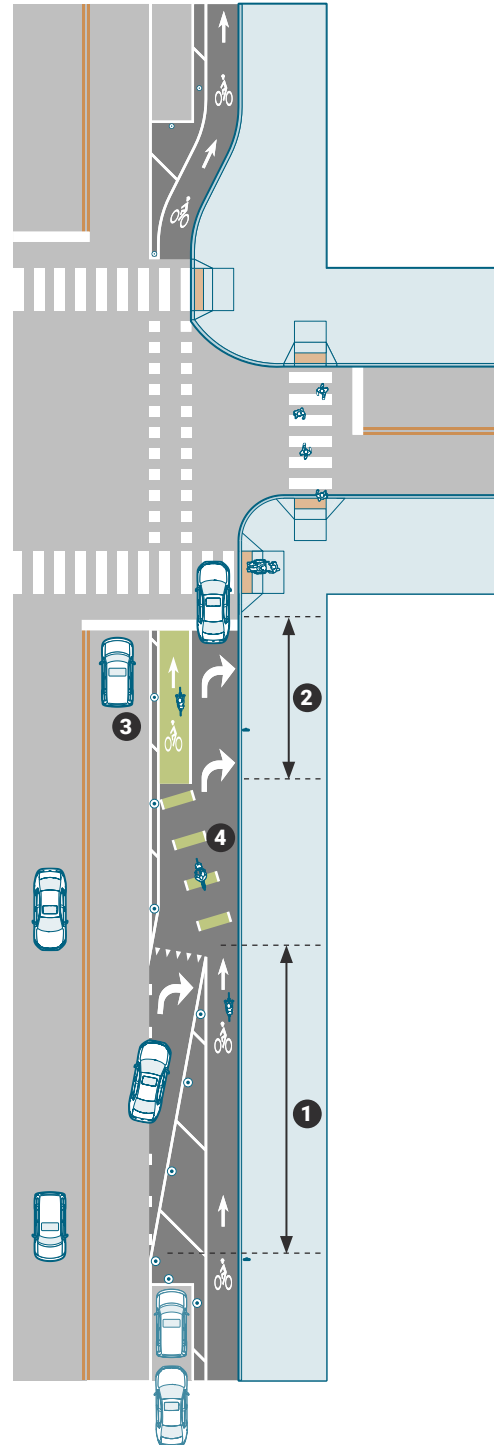
CONSIDERATIONS

Protected intersections are preferable to mixing zones. Mixing zones are generally appropriate as an interim solution or in situations where severe right-of-way constraints make it infeasible to provide a protected intersection.

Mixing zones are only appropriate on street segments with one-way separated bike lanes. They are not appropriate for two-way separated bike lanes due to the contra-flow bicycle movement.

GUIDANCE

- 1 Locate merge points where the entering speeds of motor vehicles will be 20 mph or less by minimizing the length of the merge area and locating the merge point as close as practical to the intersection.
 - 2 Minimize the length of the storage portion of the turn lane.
 - 3 Provide a buffer and physical separation (e.g. flexible delineator posts) from the adjacent through lane after the merge area, if feasible.
 - 4 Highlight the conflict area with green surface coloring and dashed bike lane markings, as necessary, or shared lane markings placed on a green box.
- + Provide a "Begin right (or left) turn lane yield to bikes" sign (R4-4) at the beginning of the merge area.
 - + Restrict parking within the merge area.
 - + At locations where raised separated bike lanes approach the intersection, the bike lane should transition to street elevation at the point where parking terminates.
 - + Where posted speeds are 35 mph or higher, or at locations where it is necessary to provide storage for queued vehicles, it may be necessary to provide a deceleration/storage lane in advance of the merge point.

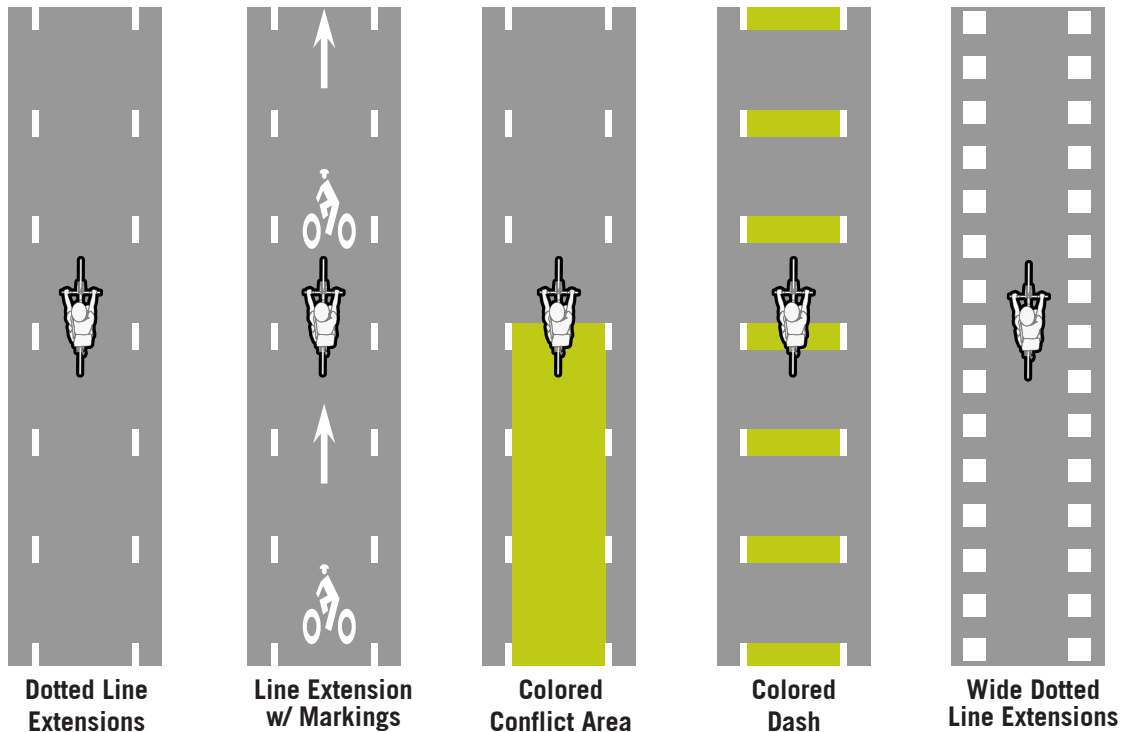


REFERENCES

- NACTO. *Urban Bikeway Design Guide*. 2012.
- MassDOT. *Separated Bike Lane Planning and Design Guide*. 2015.
- FHWA. *Separated Bike Lane Planning and Design Guide*. 2015.

CONFLICT AREA MARKING

Conflict area markings are intersection pavement markings designed to improve visibility, alert all roadway users of expected behaviors, and to reduce conflicts with turning vehicles.



CONSIDERATIONS

- + The appropriate treatment for conflict areas can depend on the desired emphasis and visibility. Dotted lane lines may be sufficient for guiding bicyclists through intersections; however, consider providing enhanced markings with green pavement and/or symbols at complex intersections or at intersections with safety concerns.
- + Symbol placement within intersections should consider vehicle wheel paths and minimize maintenance needs associated with wheel wear.
- + Driveways with higher volumes may require additional pavement markings and signage.
- + Consideration should be given to using intersection conflict markings as spot treatments or standard intersection treatments. A corridor-wide treatment can maintain consistency; however, spot treatments can be used to highlight conflict locations.

GUIDANCE

- + The width of conflict area markings should be as wide as the bike lanes on either side of the intersection.
- + Dotted white lane lines should conform to the latest edition of the California MUTCD. These markings can be used through different types of intersections based on engineering judgment.
- + Green pavement markings can be used along the length of a corridor or in select conflict locations. FHWA granted interim approval for green colored pavement for bike lanes in April of 2011.

REFERENCES

AASHTO *Guide for the Development of Bicycle Facilities* (2012)
NACTO *Urban Bikeway Design Guide* (2014)
California *Manual on Uniform Traffic Control Devices* (2014)

SEPARATED BIKE LANES AT INTERSECTIONS

Separated bicycle lanes provide an exclusive travel way for bicyclists alongside roadways that is separate from motor vehicle travel lanes, parking lanes, and sidewalks. Separated bike lane designs at intersections should manage conflicts with turning vehicles and increase visibility for all users.



CONSIDERATIONS

Separated bicycle lane designs at intersections should give consideration to signal operation and phasing in order to manage conflicts between turning vehicles and bicyclists. Bicycle signal heads also should be considered to separate conflicts.

Shared lane markings and/or colored pavement can supplement short dashed lines to demark the separated bike lane through intersections, where engineering judgment deems appropriate.

At non-signalized intersections, design treatments to increase visibility and safety include:

- + Warning signs
- + Raised intersections
- + Special pavement markings (including colored surface treatment)
- + Removal of parking prior to the intersection

REFERENCES

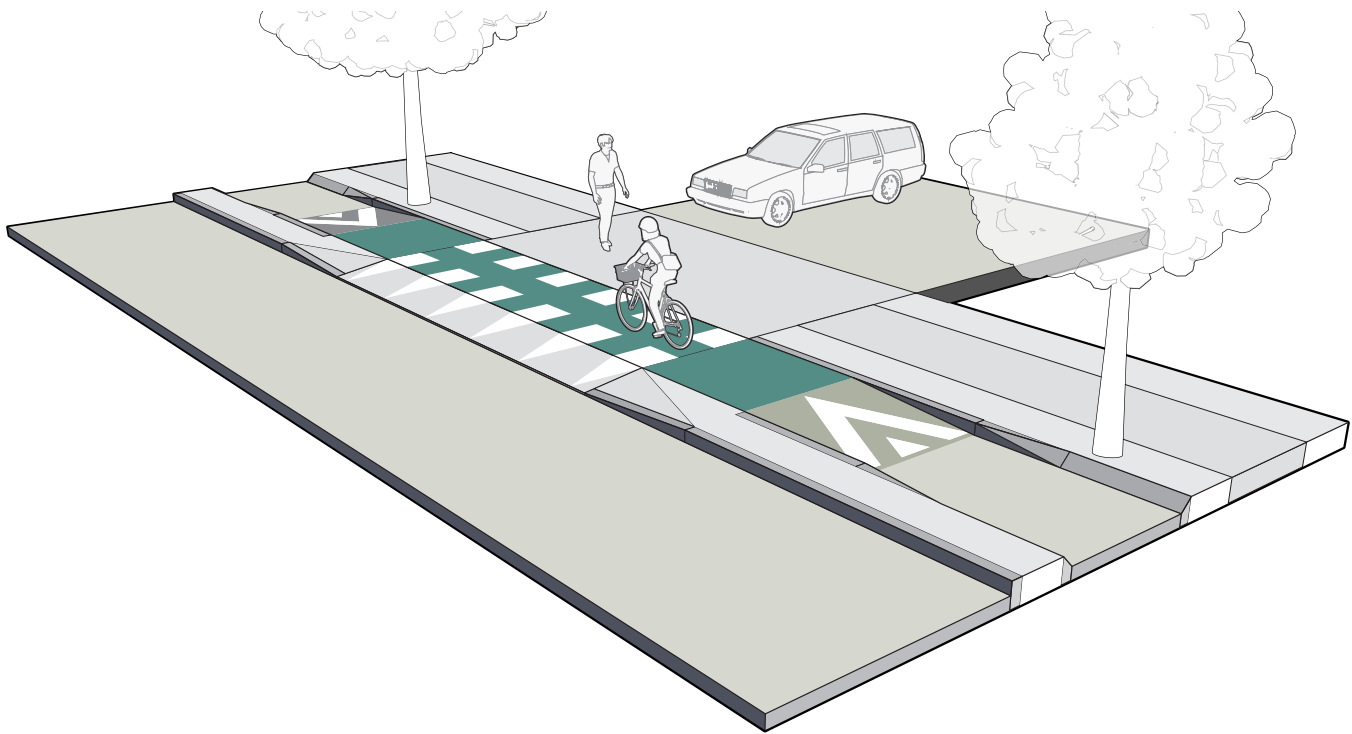
Bicycle Facilities and the Manual on Uniform Traffic Control Devices
NACTO Urban Bikeway Design Guide. 2012.
FHWA Separated Bike Lane Planning and Design Guide. 2015.

GUIDANCE

- + It is preferable to maintain the separation of the bike lane through the intersection rather than introduce the bicyclist into the street with a merge lane. Where this is not possible, see guidance on Mixing Zones.
- + Increasing visibility and awareness are two key design goals for separated bike lanes at intersections. In some cases, parking restrictions between 20' to 40' are needed to ensure the visibility of bicyclists at intersections.
- + Separated bike lanes should typically be routed behind transit stops (i.e., the transit stop should be between the bike lane and motor vehicle travel lanes). If this is not feasible, the separated bike lane should be designed to include treatments such as signage and pavement markings to alert the bicyclist to stop for buses and pedestrians accessing transit stops.
- + Markings and signage should be used at intersections to give priority to separated bicycle lanes.
- + For guidance regarding separated bike lanes at transit stops, refer to the AC Transit Multimodal Corridor Design Guidelines.

SEPARATED BIKE LANES AT DRIVEWAYS

Most bicycle facilities will need to cross streets, driveways, or alleys at multiple locations along a corridor. At these locations, the crossings should be designed to 1) delineate a preferred path for people bicycling through the intersection with the driveway and 2) to encourage driver yielding behavior, where applicable. Bicycle crossings may be supplemented with green pavement, yield lines, and/or regulatory signs.



CONSIDERATIONS

- + Supplemental yield lines, otherwise known as shark's teeth, can be used to indicate priority for people bicycling and may be used in advance of unsignalized crossings at driveways, at signalized intersections where motorists may turn across a bicycle crossing during a concurrent phase, and in advance of bicycle crossings located within roundabouts.
- + Raised bicycle crossings further promote driver yielding behavior by slowing their speed before the crossing and increasing visibility of people bicycling.

GUIDANCE

- + The bicycle crossing may be bounded by 12-inch (perpendicular) and 24-inch (parallel) white pavement dashes, otherwise known as elephant's feet. Spacing for these markings should be coordinated with zebra, continental, or ladder striping of the adjacent crosswalk.
- + The bicycle crossing should be at least 6 feet wide for one-way travel and at least 10 feet wide for two-way travel, as measured from the outer edge of the elephant's feet. Bicycle lane symbol markings should be avoided in bicycle crossings. Directional arrows are preferred within two-way bicycle crossings.
- + Dashed green colored pavement may be utilized within the bicycle crossing to increase the conspicuity of the crossing where permitted conflicts occur. Green color may be desirable at crossings where concurrent vehicle crossing movements are allowed and where sightlines are constrained, or where motor vehicle turning speeds exceed 10 mph.



ENHANCEMENTS AND SUPPORTING TREATMENTS FOR BICYCLE FACILITIES

TRAFFIC DIVERSION

Traffic diversion strategies are part of traffic calming and are used to reroute traffic from a bicycle boulevard or other intentionally low-traffic streets onto other adjacent streets by installing design treatments that allow access by bicyclists and pedestrians but restrict motorized traffic from passing through.



Partial closure - permanent, signalized



Diagonal diverter



Partial closure - interim, stop-control



Full closure

CONSIDERATIONS

- + Diverting motor vehicle traffic onto adjacent streets requires considering and addressing potential changes in traffic volume on other local streets during the planning, design and evaluation process.
- + Other traffic calming tools should be explored for their effectiveness before implementing traffic diversion measures. In suburban contexts and other neighborhoods where the street network is not a traditional grid, the impacts of diversion to the larger street network will be greater, due to the inability of traffic to easily disperse and find alternate routes.
- + Temporary materials may be used to test diversion impacts before permanent, curbed diverters are installed.
- + Consultation with emergency services will be necessary to understand their routing needs.
- + Traffic diversion requires community support from the surrounding neighborhood.

GUIDANCE

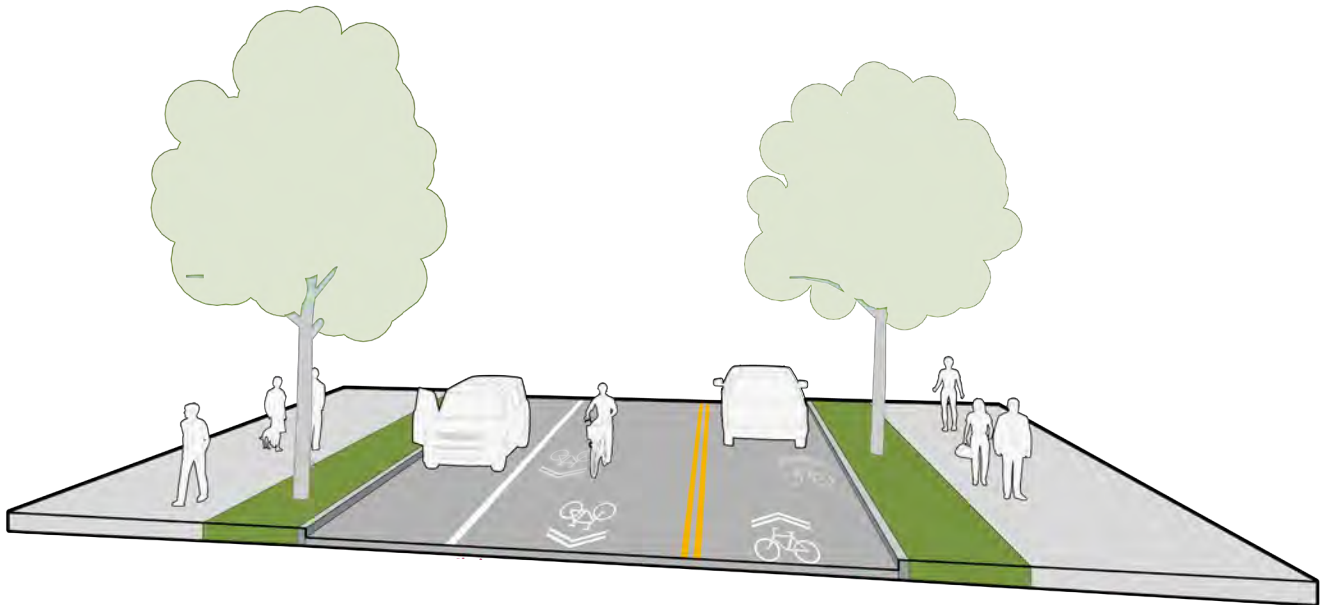
- + Preferred motor vehicle volumes for bicycle boulevards are in the range of 1,000 to 1,500 per day, while up to 3,000 automobiles is acceptable.
- + Diversion devices must be designed to provide a minimum clear width of 6 feet for a bicyclist to pass through.
- + Some treatments may require a separate pedestrian accommodation.

REFERENCES

Fundamentals of Bicycle Boulevard Planning & Design (2009)
NACTO Urban Bikeway Design Guide (2014)
Portland's Neighborhood Greenway Assessment Report (2015)

SHARED LANE MARKINGS

Shared lane markings (or “sharrows”) are pavement markings that denote shared bicycle and motor vehicle travel lanes. The markings are two chevrons positioned above a bicycle symbol, placed where the bicyclist is anticipated to operate. In general, this is a design solution that should only be used in locations with low traffic speeds and volumes as part of a signed route or bicycle boulevard. Shared lane markings are sometimes used as a temporary solution on constrained, higher-traffic streets (up to 10,000 vehicles per day) until additional right-of-way can be acquired, but should not be considered a permanent solution in these contexts.



CONSIDERATIONS

- + Typically used on local, collector, or minor arterial streets with low traffic volumes. Commonly used on bicycle boulevards to reinforce the priority for bicyclists.
- + Typically feasible within existing right-of-way and pavement width even in constrained situations that preclude dedicated facilities.
- + May be used as interim treatments to fill gaps between bike lanes or other dedicated facilities for short segments where there are space constraints.
- + May be used for downhill bicycle travel in conjunction with climbing lanes intended for uphill travel.
- + Typically supplemented by signs, especially Bikes May Use Full Lane (R4-11).

GUIDANCE

- + Intended for use only on streets with posted speed limits of up to 25 mph and traffic volumes of less than 4,000 vehicles per day. Maximum posted speed of street: 35 mph.
- + May be used as a temporary solution on constrained streets with up to 10,000 vehicles per day until a more appropriate bikeway facility can be implemented. Maximum posted speed of street: 35 mph.
- + Intended for use on lanes up to 14 feet wide (up to 13 feet preferred). For lanes 15 feet wide or greater, stripe a 4-foot bike lane instead of using shared lane markings.
- + The marking's centerline must be at least 4 feet from curb or edge of pavement where parking is prohibited.
- + The marking's centerline must be at least 11 feet from curb where parking is permitted, so that it is outside the door zone of parked vehicles.
- + For narrow lanes (11 feet or less), it may be desirable to center shared lane markings along the centerline of the outside travel lane.

REFERENCES

AASHTO *Guide for the Development of Bicycle Facilities* (2012)
NACTO *Urban Bikeway Design Guide* (2014)
California *Manual on Uniform Traffic Control Devices* (2014)

BICYCLE ROUTING / WAYFINDING

Wayfinding is a highly visible way to improve bicycling in an area because it helps identify the best routes to destinations, helps people overcome a barrier of not knowing where to ride, and reminds motorists to anticipate the presence of bicyclists. A wayfinding system typically combines signage and pavement markings to guide bicyclists along preferred routes to destinations across the community, county, or region. The routes may or may not be numbered, named, or color-coded. Signs may also indicate distances or travel time to destinations. Similar wayfinding systems can be devised for pedestrian travel.



D11-1



D1-3c

CONSIDERATIONS

A bicycle wayfinding protocol should coordinate with bicycle route maps and provide three general forms of guidance:

- + Decision assemblies, which consist of Bike Route identification and optional destination fingerboards, placed at decision points where routes intersect or on the approaches to a designated bike route.
- + Decision signs, which consist of Bike Route panels and arrow plaques, placed where a designated bike route turns from one street to another.
- + Confirmation assemblies, which consist of Bike Route panels and optional destination fingerboards, placed on the far side of intersections to confirm route choice and the distance (and optionally, time) to destinations.

Sign design can be customized to add distinct community branding, but the clarity and accuracy of the information must be the top priority.

GUIDANCE

- + Basic bicycle route signs consist of a MUTCD-style “Bike Route” sign (D11-1 shown above) placed every half mile on a major bike route and on the approach to major bike routes at decision points. Unique numbered routes can be designated and can incorporate a route name or agency logos.
- + Bike route signs can be supplemented with “fingerboard” panels showing destinations, directions, and distances (MUTCD D1 series).
- + Place directional signs on the near side of intersections and confirmation signs on the far side of intersections.

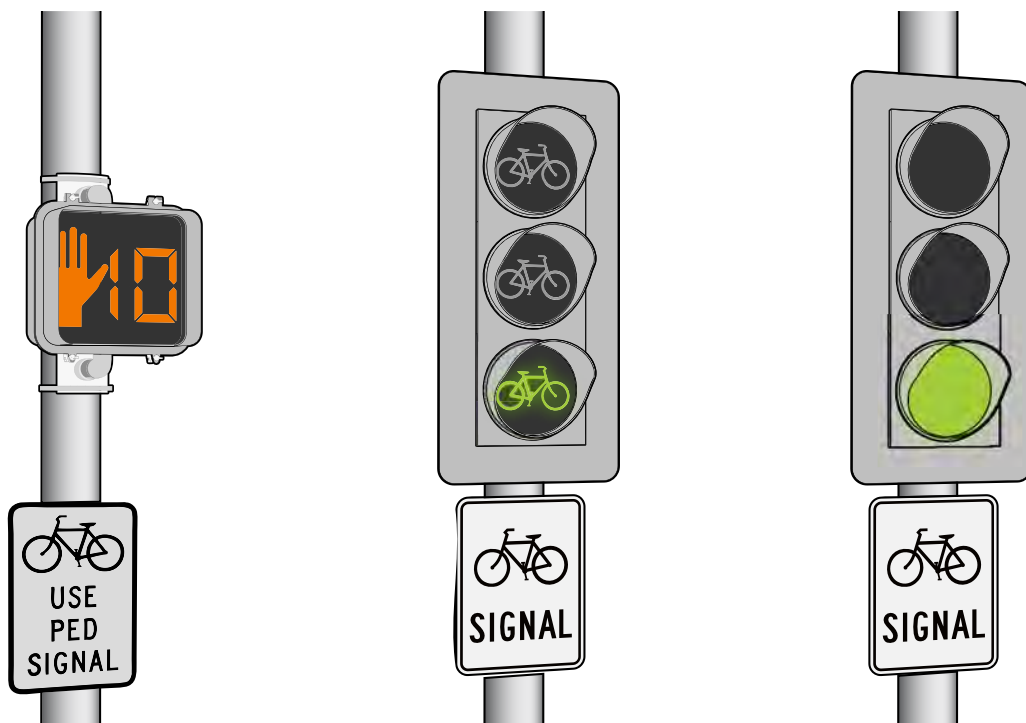
REFERENCES

NACTO Urban Bikeway Design Guide (2014)

California Manual on Uniform Traffic Control Devices (2014)

BICYCLE SIGNALS, DETECTION, ACTUATION

Bicyclists have unique needs at signalized intersections. Bicycle movements may be controlled by the same indications that control motor vehicle movements, by pedestrian signals, or by bicycle-specific traffic signals. The introduction of separated bike lanes creates situations that may require leading or protected phases for bicycle traffic, or place bicyclists outside the cone of vision of existing signal equipment. In these situations, provision of signals for bicycle traffic will be required.



CONSIDERATIONS

- + Bicycle-specific signals may be appropriate to provide additional guidance or separate phasing for bicyclists per the 2012 AASHTO Guide for the Development of Bicycle Facilities.
- + It may be desirable to install advanced bicycle detection on the intersection approach to extend the phase, or to prompt the phase and allow for continuous bicycle through movements.
- + Video detection, microwave and infrared detection can be an alternate to loop detectors.
- + Another strategy in signal timing is coordinating signals to provide a “green wave”, such that bicycles will receive a green indication and not be required to stop. Several cities including Portland, OR and San Francisco, CA have implemented “green waves” for bicycles.

GUIDANCE

- + A stationary, or “standing”, cyclist entering the intersection at the beginning of the green indication can typically be accommodated by increasing the minimum green time on an approach per the 2012 AASHTO Guide for the Development of Bicycle Facilities.
- + A moving, or “rolling”, bicyclist approaching the intersection towards the end of the phase can typically be accommodated by increases to the red times (change and clearance intervals) per the 2012 AASHTO Guide for the Development of Bicycle Facilities.
- + Set loop detectors to the highest sensitivity level possible without detecting vehicles in adjacent lanes and field check. Type D and type Q loops are preferred for detecting bicyclists.
- + Install bicycle detector pavement markings and signs per the MUTCD, 2012 AASHTO Guide for the Development of Bicycle Facilities, and the NACTO Urban Bikeway Design Guide.
- + FHWA granted interim approval for bicycle signal faces in December of 2013.

REFERENCES

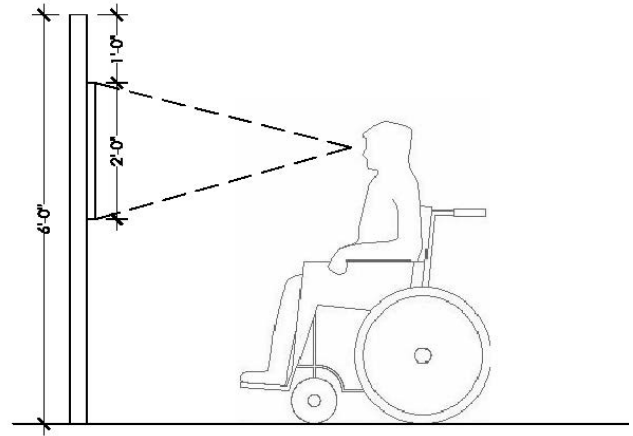
AASHTO Guide for the Development of Bicycle Facilities. 2012.
NACTO Urban Bikeway Design Guide. 2012.
Manual on Uniform Traffic Control Devices. 2009.

TRAILHEADS

Trailheads, parking areas, and rest stops provide access to the bikeway network, encourage more use of the paths and bikeways, and provide meeting and parking locations for groups. The number and type of amenities provided at a trailhead, parking area, or rest stop should be based on the number of users of the path or bikeway and the relative ease of finding services nearby.



Arapahoe Road Trailhead with amenities



Provide kiosk information at an appropriate height for all users

CONSIDERATIONS

- + The number and types of amenities provided depends on the number of users of the facility, amenities and services available nearby, and the type of user.
- + Trailheads located in a county, regional, or state park should provide a higher number of amenities because they serve more than just path users.
- + Trailheads are best located adjacent to a main roadway system.
- + They should also be spaced along a major trail to pick up users and traffic from various surrounding communities as well as connect users to other facilities and amenities through the trail system.
- + Trailhead amenities may include: restroom (either plumbed, vault, or San-o-let), potable water (for people and dogs), bike racks, a DIY bike service station, picnic tables, benches, small playground, and parking area. Based on the type of user and the volume of use at each trailhead, consider any or all of the above amenities.

GUIDANCE

- + All rest stops should be designed for accessibility according to the ADA.
- + At a minimum, provide a trailhead at each path terminus.
- + Preferred trailhead frequency would include all path intersections with major roadways or other major paths, where the path traverses a business district, or every 10 miles.
- + The number of users at each trailhead will lead to decisions about including restrooms, potable water, picnic areas, and parking.
- + Consider installing a counter to determine the volume of trail traffic at various days and times.
- + Plan for expansion at trailheads. Design that allows for future expansion allows for easy modifications without detriment to the existing facilities.
- + Map kiosks should be sited and placed so that the information is visible to someone in a wheelchair.
- + Place map kiosks and seating areas a minimum of 5 feet off the path, to prevent people from blocking the path.

REST STOPS

Rest stops along major trails improve the comfort of the trail for users. In particular, active adults (65 and older) and families with young children need frequent breaks during their trail experience. Ideal locations for a rest stop include: landmarks, areas with good views, areas with substantial shade, areas at the top of a steep incline, or areas where users access other amenities.



Rest stop along Richmil Ranch Trail



Rest stop along the Centennial Link Trail at East Caley Avenue and South Steele Street with benches, shade, and trash receptacles

CONSIDERATIONS

- + All rest stops should be designed for accessibility according to the current ADA.
- + Active adults (65 years and older) need at least 2 hours and 30 minutes of moderate intensity aerobic activity a week (like brisk walking) according to the Centers for Disease Control and Prevention. Path networks provide an easy opportunity to achieve this requirement.
- + Multi-use paths that provide regular rest stops and other amenities increase the likelihood of frequent use.
- + Amenities at rest stops may include one or more benches, picnic tables with shade, trash receptacles, restrooms, access to interpretive or wayfinding signage, waste receptacles, and/or potable water. The site, the path route, and existing adjacent amenities all may be factors when deciding which amenities to include.
- + Trailheads, parking areas, and especially rest stops are great opportunities for corporate sponsorship, donations, and “adoption” by clubs or other organizations. Public agencies would likely acquire the land and oversee construction, whereas businesses and non-profits could donate funds to purchase the amenities.

GUIDANCE

- + At a minimum, locate rest stops on paths at parks and at intersections with major roadways or other paths.
- + Preferred placement of rest stops would include intermediate locations along paths and on-road bikeways as well.
- + In areas with more pedestrians or high use by active adults or families with young children, rest stops can be provided every 1 to 2 miles.
- + In more remote areas on paths or on-road bikeways, they can be spaced at 3 to 5 miles.



ADDITIONAL CONSIDERATIONS

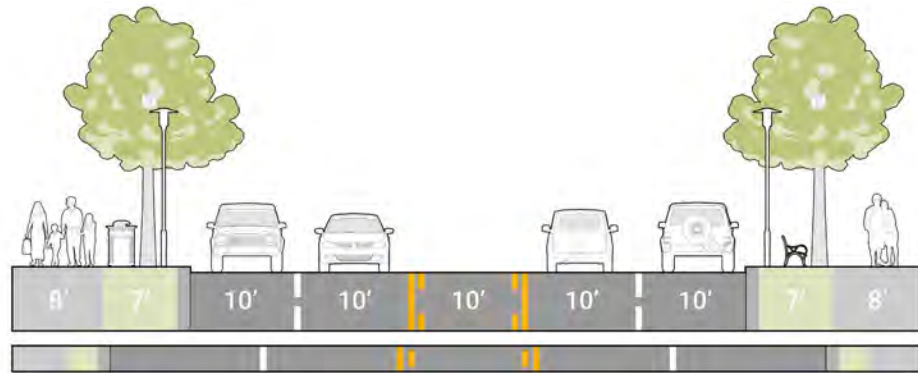
LANE NARROWING

Lane narrowing can improve comfort and safety for vulnerable road users. Narrowing lanes creates space that can be reallocated to other modes, in the form of wider shoulders, sidewalks, bike lanes, and buffers between cyclists, pedestrians and motor vehicles. Space can also be dedicated to plantings and amenity zones, and reduces crossing distances at intersections.

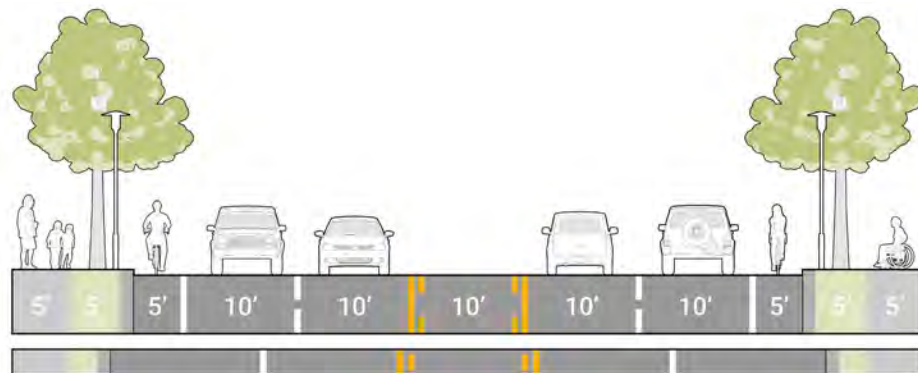
Roadway Before Narrowing



Narrowing Motor Vehicle Lanes to increase Side-walk and Amenity Zones



Narrowing Motor Vehicle Lanes to increase Amen-ity Zone and add Bicycle Lanes



CONSIDERATIONS

- + Narrowing existing motor vehicle lanes may result in enough space to create separated bicycle lanes, widened shoulders, sidewalks, and buffers, or a combination of on-street bike lanes and enhancements to the pedestrian corridor.
- + Narrower lanes can contribute to lower operating speeds along the roadway, which may be appropriate in dense, walkable corridors.
- + Ensure support from local emergency service providers before narrowing lanes

GUIDANCE

- + Motor vehicle travel lanes as narrow as 10 feet are allowed in low-speed environments (45 mph or less) according to the AASHTO Green Book.
- + 10-foot travel lanes are not appropriate on 4-lane undivided arterial roadways.

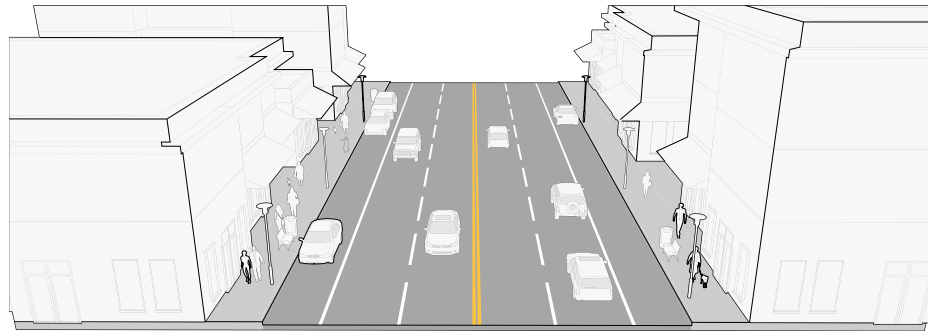
REFERENCES

FHWA *Achieving Multi-modal Networks: Applying Design Flexibility and Reducing Conflicts*. 2016.
AASHTO *Green Book*. 2011.

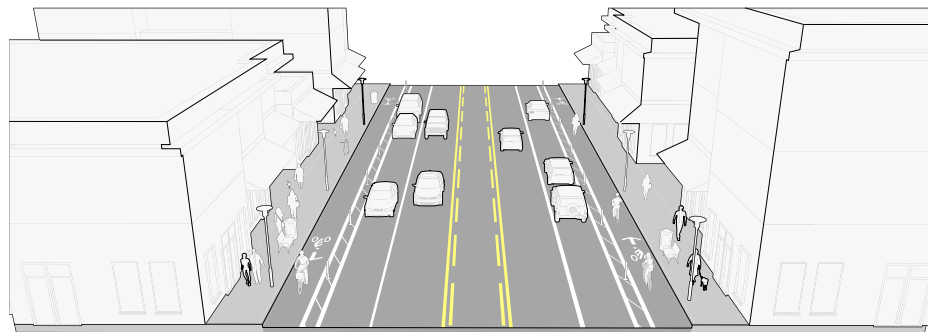
LANE RECONFIGURATION

The reconfiguration of one or more travel lanes to calm traffic and provide space for bicycle lanes, turn lanes, streetscapes, wider sidewalks, and other purposes is called a road diet. Four- to three-lane conversions are the most common type of road diet, however, there are numerous types (e.g., three- to two-lanes, or five- to three-lanes).

Typical 4-lane road with on-street parking



Three-lane road diet (with center two-way left-turn lane), with on-street parking and separated bicycle lanes



CONSIDERATIONS

Lane reconfigurations are a great tool for reducing collisions and injuries, improving pedestrian crossings and providing designated space for bicyclists. They can improve safety and efficiency for people driving, bicycling, and walking, as they reduce conflict points and lead to fewer and less severe collisions.

Lane reconfigurations are possible under the following capacities:

- + 3 lane road (one through lane in each direction with a center turn lane): 15,000 or fewer ADT
- + 3 lane road (one through lane in each direction with a center turn lane): 20,000 or fewer ADT, traffic study suggested
- + 5 lane road (two through lanes in each direction with a center turn lane): 35,000 or fewer ADT, traffic study suggested
- + 7 lane road (three through lanes in each direction with a center turn lane): 50,000 or fewer ADT, traffic study suggested

GUIDANCE

Lanes greater than 11 feet in width should not be used as they may encourage higher speeds.

The following lane widths are recommended for each lane type:

- + 10 foot wide travel lanes (11 feet for the curb lane is acceptable when on a designated truck or bus route)
- + 7-9 foot wide parking lanes

REFERENCES

FHWA Road Diet Guide. 2014.
NACTO Urban Street Design Guide .2013.
Dr. Ata M. Kahn, P.E., ITE Journal, Washington, D.C.

MAINTENANCE OF MULTI-USE PATHS

Once constructed, multi-use paths require regular maintenance to ensure a safe and usable experience for the life of the path system.

CONSIDERATIONS

- + The width of the path should allow maintenance vehicles to travel along and provide areas where they may turn around.
- + The pavement section should also provide enough stability to prevent substantial wear and cracking with regular maintenance vehicle traffic. Typically, 6-inch thick concrete or asphalt provides stability to withstand maintenance traffic.
- + Regular sweeping and trash removal of multi-use paths enhance the user experience and minimize opportunities for conflict or injury.
- + Provide surface repairs such as crack repair, concrete stone replacement, and/or joint sealing as soon as the issue is identified. These problems grow worse over time and can continue to provide opportunity for conflict or injury.
- + Cut back vegetation that is encroaching on multi-use paths. Cut back tree roots and/or install root barriers where appropriate.
- + Cut back vegetation that is encroaching on signage along the path systems.
- + Inspect signs and markings regularly, replacing and repairing them as soon as possible. Consider upgrading old signs or markings with newer materials, if available.
- + Ensure drainage swales and structures are kept free of silt and debris and are functioning appropriately.
- + For any construction project that may impact an existing multi-use path, an appropriate detour and signage plan should be proposed by the contractor to ensure continuous and safe service of the multi-use paths.
- + Check, repair, and maintain all lights and lighting systems, particularly underpass lighting.
- + Natural surface paths may need regrading, weeding, or the repair of ruts.



Mown shoulders



High Line Canal Trail - a crusher fines path free of ruts and weeds

MAINTENANCE OF SEPARATED BIKE LANES

Separated bike lanes require routine maintenance to ensure they provide safe bicycling conditions. Because of their location on the edge of the roadway, separated bike lanes are more likely to accumulate debris. As bicyclists are typically inhibited from exiting separated bike lanes, they may have no opportunity to avoid obstacles such as debris, obstructions, slippery surfaces, and pavement damage and defects.



CONSIDERATIONS

A separated bike lane should be maintained in a similar manner as the adjacent roadway, regardless of whether the separated bike lane is at street level or sidewalk level. Maintenance of separated bike lanes is therefore the responsibility of the public or private agency that is responsible for maintaining the adjacent roadway. This practice may contrast with responsibility for maintaining the adjacent sidewalk, which in some cases will be that of the abutting landowner.

Generally, separated bike lane widths of 8 feet or more are compatible with smaller sweepers, but responsible parties may have larger and incompatible maintenance fleets. Narrower sweepers (approximately 4 feet to 5 feet minimum operating width) may be required to clear one-way separated bike lanes.

Trash Collection

Where separated bike lanes are introduced, the general public, public works staff and contractors should be trained to place garbage bins in the street buffer zone to avoid obstructing the bike lane. Sidewalk buffers may be used to store bins where street buffers are too narrow. Special consideration may be required in separated bike lane design for access to large dumpsters which require the use of automated arms. This may require spot restrictions of on-street parking or curb cuts to dumpster storage in order to accommodate access.

Sweeping and Debris Removal

For street-level separated bike lanes without raised medians, debris can collect in the street buffer area between vertical objects and can migrate into the bike lane if not routinely collected. Landscaped areas, including green stormwater infrastructure, can also collect debris and require regular attention. Fine debris can settle into permeable pavement and inhibit surface infiltration unless vacuumed on a routine basis. At a minimum, permeable pavement should be vacuumed several times per year, depending on material type.

REFERENCES

NACTO Urban Street Design Guide (2013)

MassDOT Separated Bicycle Lane Planning & Design (2015)

SHORT-TERM BICYCLE PARKING

Bicycle parking enhances the effectiveness of bicycle networks by providing locations for the secure storage of bicycles during a trip. Bicycle parking enables bicyclists to secure their bicycles while patronizing businesses, recreating, and going to work. Bicycle parking requires far less space than automobile parking-- in fact, 10 bicycles can typically park in the area needed for a single car.



CONSIDERATIONS

Bicycle parking consists of a rack that supports the bicycle upright and provides a secure place for locking. Bicycle racks should be permanently affixed to a paved surface. Movable bicycle racks are only appropriate for temporary use, such as at major community gatherings. On-street bicycle parking is intended for short term use.

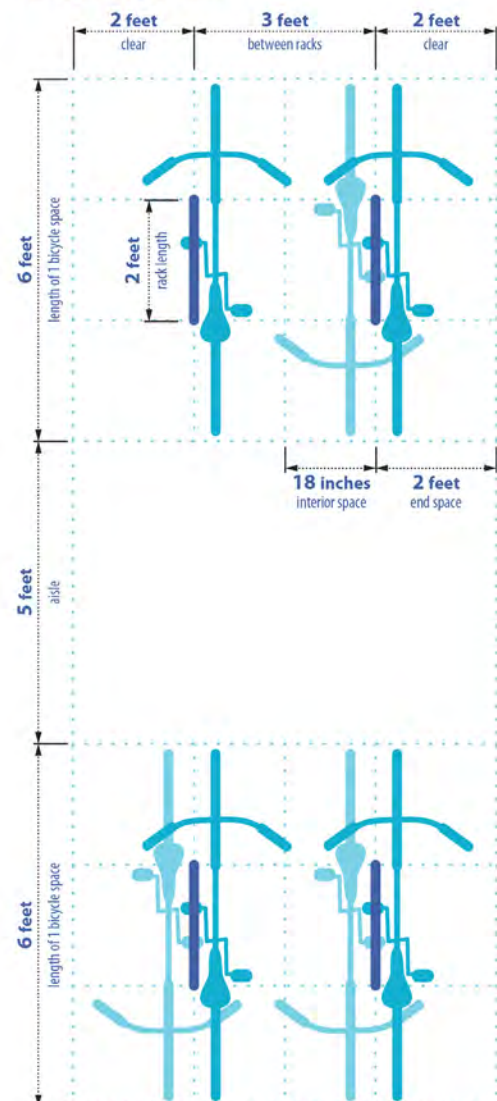
GUIDANCE

- + Bicycle parking facility should not obstruct pedestrian traffic or interfering with the use of the pedestrian areas.
- + Each parked bicycle should be accessible without moving another bicycle.
- + Any sidewalk rack that is parallel to the curb should be located 2 feet from the curb face.
- + Any sidewalk rack aligned perpendicular to the curb should be located so that the nearest vertical component of the rack is a minimum of 4 feet from the curb.

REFERENCES

NACTO Urban Street Design Guide. 2013.
Manual on Uniform Traffic Control Devices. 2009.

Two spaces per rack



LONG-TERM BICYCLE PARKING

Long-term bicycle parking is intended to provide sheltered and secure bicycle storage for residents, employees and long-term visitors who are leaving their bicycles in a residential or commercial building for several hours or longer and therefore need their bicycles to be protected from vandalism, theft and the elements.



CONSIDERATIONS

A bicycle locker is a secure, locked box that stores a single bicycle and provides:

- + Highly secure bicycle storage in an enclosed box.
- + Direct or indirect access to the street or sidewalk depending on whether it is located in a parking garage or at street level.
- + Varying amount of conflict with automobiles depending on whether it is located in a parking garage or at street level.
- + Electronic bicycle lockers allow for greater capacity and perforated lockers are preferred as they provide greater safety and security.

GUIDANCE

Lockers should be:

- + Clearly marked as a long-term bicycle parking space
- + Located no lower than the first complete parking level below grade, and no higher than the first complete parking level above grade
- + Available and accessible to all building tenants during the buildings hours of operation and at all times for residents in residential contexts
- + Located in a well-lit, visible location near the main entrance or elevators
- + Separated from vehicle parking by a barrier that minimizes the possibility of a parked bicycle being hit by a car
- + Securely anchored
- + Well-maintained and well-lit

REFERENCES

NACTO Urban Street Design Guide. 2013.

Manual on Uniform Traffic Control Devices. 2009.



TOOLE
DESIGN





APPENDIX D: DETAILED INFRASTRUCTURE RECOMMENDATIONS



CONTENTS

Detailed Bicycle Network Project List

Pedestrian Priority Destination Recommendations

Cut Sheets for Priority Bicycle Projects

Compiled Safe Routes to School Recommendations

Facility Cost Estimates

Appendix D-1

Unincorporated San Mateo County

Active Transportation Plan

Bicycle Network Recommendations

As a first step in considering which projects should be implemented over the short and long term, on-street bikeway projects (projects located within a street right of way) were prioritized based on a set of criteria to help determine which projects may provide the greatest benefit as identified in Chapter 6 in the Plan. The prioritization criteria align with the Plan goals of access, safety, equity, mode share, and flexibility.

This list is intended to be used as a starting point; all projects listed below are subject to change. Other considerations that should be taken into account but may not be fully known until further study is conducted may include, but are not limited to community support, cost, and feasibility.

Location			Project Extents		Existing Bicycle Facility	Recommended Bicycle Facility	Tier	Cost Estimate	
Side	Community	Street Name	From	To				Miles	Cost
Bayside									
Bayside	Incorporated	Middlefield Rd	Charter St	Flynn Ave		Class III Bicycle Route	Tier I	0.08	\$ 5,595
Bayside	North Fair Oaks	Middlefield Rd	Flynn Ave	Pacific Ave		Class II Bicycle Lane	Tier I	0.30	\$ 85,559
Bayside	North Fair Oaks	Middlefield Rd	Pacific Ave	5th Ave		Class II Bicycle Lane	Tier I	0.44	\$ 127,031
Bayside	North Fair Oaks	Middlefield Rd	5th Ave	8th Ave		Class II Bicycle Lane	Tier I	0.17	\$ 50,665
Bayside	North Fair Oaks	Middlefield Rd	8th Ave	Encina Ave		Class II Buffered Bicycle Lane	Tier I	0.14	\$ 48,781
Bayside	North Fair Oaks	Semicircular Rd	5th Ave	Middlefield Rd	Class III Bicycle Route	Class IV Separated Bicycle Lane	Tier I	0.04	\$ 16,623
Bayside	North Fair Oaks	State Hwy 82	Center St	Wilburn Ave		Class IV Separated Bicycle Lane	Tier I	0.93	\$ 370,471
Bayside	North Fair Oaks	Pacific Ave	Westside Ave	Middlefield Rd		Class III Bicycle Boulevard	Tier I	0.19	\$ 45,401
Bayside	Colma	A St	Hillside Blvd	Reiner St		Class III Bicycle Boulevard	Tier I	0.39	\$ 92,466
Bayside	North Fair Oaks	Calvin Ave	Pacific Ave	Berkshire Ave		Class III Bicycle Boulevard	Tier I	0.17	\$ 41,520
Bayside	North Fair Oaks	William Ave	5th Ave	Berkshire Ave		Class III Bicycle Boulevard	Tier I	0.33	\$ 79,388
Bayside	North Fair Oaks	5th Ave	Waverly Ave			Class III Bicycle Boulevard	Tier I	0.04	\$ 10,302
Bayside	North Fair Oaks	5th Ave		Glendale Ave		Class III Bicycle Boulevard	Tier I	0.03	\$ 7,773
Bayside	North Fair Oaks	Glendale Ave	5th ave	Berkshire Ave		Class III Bicycle Boulevard	Tier I	0.23	\$ 56,142
Bayside	North Fair Oaks	Berkshire Ave	Westermoreland Ave	State Hwy 82		Class III Bicycle Boulevard	Tier I	0.22	\$ 52,265
Bayside	North Fair Oaks	Westmoreland Ave	Berkshire Ave	Northumberland Ave		Class III Bicycle Boulevard	Tier I	0.37	\$ 87,693
Bayside	North Fair Oaks	Northumberland Ave	Westmoreland Ave	State Hwy 82		Class III Bicycle Boulevard	Tier I	0.19	\$ 45,910
Bayside	North Fair Oaks	Marlborough Ave	Berkshire Ave	Northumberland Ave		Class III Bicycle Boulevard	Tier I	0.36	\$ 87,581
Bayside	Colma	State Hwy 82	Valley St	F St		Class IV Separated Bicycle Lane	Tier I	0.49	\$ 197,612
Bayside	North Fair Oaks	5th Ave	Bay Rd	Fair Oaks Ave		Class II Bicycle Lane	Tier I	0.27	\$ 79,681
Bayside	North Fair Oaks	5th Ave	Semicircular Rd	Fair Oaks Ave		Class II Buffered Bicycle Lane	Tier I	0.58	\$ 197,871
Bayside	North Fair Oaks	5th Ave	Waverly Ave	Semicircular Rd		Class II Buffered Bicycle Lane	Tier I	0.17	\$ 58,209
Bayside	North Fair Oaks	5th Ave	State Hwy 82	Waverly Ave		Class II Bicycle Lane	Tier I	0.13	\$ 37,877
Bayside	North Fair Oaks	5th Ave	5th Ave	Semicircular Rd	Class III Bicycle Route	Class II Bicycle Lane	Tier I	0.04	\$ 10,313
Bayside	Colma	Reiner St	San Pedro Rd	(end)		Class III Bicycle Boulevard	Tier I	0.25	\$ 60,999
Bayside	North Fair Oaks	(no name)	Westmoreland Ave	Pacific Ave		Class I Shared Use Path	Tier I	0.02	\$ 39,192
Bayside	North Fair Oaks	Bay Rd	Douglas Ave	State Hwy 84		Class IV Separated Bicycle Lane	Tier I	0.36	\$ 143,224
Bayside	North Fair Oaks	Bay Rd	Florence St	Douglas Ave		Class IV Separated Bicycle Lane	Tier I	1.06	\$ 423,564
Bayside	North Fair Oaks	Fair Oaks Ave	Hurlingame Ave	5th Ave		Class III Bicycle Boulevard	Tier I	0.47	\$ 113,271
Bayside	Colma	Albert M Teglia Blvd	State Hwy 82	Colma Bart Busway		Class III Bicycle Boulevard	Tier I	0.28	\$ 66,555
Bayside	Colma	Albert M Teglia Blvd	Colma Bart Busway	Hill St		Class III Bicycle Boulevard	Tier I	0.05	\$ 12,873
Bayside	Menlo Oaks	Coleman Ave	Ringwood Ave	College Ave		Class III Bicycle Boulevard	Tier I	0.37	\$ 88,011
Bayside	North Fair Oaks	2nd Ave	William Ave	Bay Rd		Class III Bicycle Boulevard	Tier I	0.86	\$ 205,230
Bayside	Colma	(no name)	Albert M Teglia Blvd	Reiner St		Class I Shared Use Path	Tier I	0.05	\$ 90,210
Bayside	Colma	Hillside Blvd	Sylvan St	Hoffman St		Class II Buffered Bicycle Lane	Tier I	0.27	\$ 90,729
Bayside	North Fair Oaks	Hurlingame Ave	Middlefield Rd	Fair Oaks Ave		Class III Bicycle Boulevard	Tier I	0.34	\$ 81,373

Location			Project Extents		Existing Bicycle Facility	Recommended Bicycle Facility	Tier	Cost Estimate	
Side	Community	Street Name	From	To				Miles	Cost
Bayside	North Fair Oaks	Hurlingame Ave	Fair Oaks Ave	Bay Rd		Class III Bicycle Boulevard	Tier I	0.22	\$ 53,769
Bayside	Incorporated	State Hwy 82	Chestnut St	Maple St		Class IV Separated Bicycle Lane	Tier I	0.16	\$ 63,796
Bayside	Menlo Oaks	Ringwood Ave	Arlington Way	Bay Rd	Class II Bicycle Lane	Class I Shared Use Path	Tier I	0.79	\$ 1,332,894
Bayside	North Fair Oaks	Edison Way	2nd Ave	12th Ave		Class III Bicycle Boulevard	Tier I	0.65	\$ 155,363
Bayside	North Fair Oaks	(no name)	Edison Way	Athlone Way		Class I Shared Use Path	Tier I	0.08	\$ 128,242
Bayside	North Fair Oaks	Athlone Way	(end)	Bay Rd		Class III Bicycle Boulevard	Tier I	0.06	\$ 13,423
Bayside	North Fair Oaks	14th Ave	Athlone Way	Bay Rd		Class III Bicycle Boulevard	Tier I	0.18	\$ 43,596
Bayside	North Fair Oaks	Bay Rd	14th Ave	Marsh Rd		Class III Bicycle Boulevard	Tier I	0.10	\$ 25,105
Bayside	Broadmoor	Park Plaza Dr	87th St	Palmcrest Dr		Class III Bicycle Boulevard	Tier I	0.19	\$ 45,540
Bayside	Menlo Oaks	Menlo Oaks Dr	Ringwood Ave	Bay Rd		Class III Bicycle Boulevard	Tier I	0.84	\$ 201,449
Bayside	West Menlo Park	Avy Ave	Santa Cruz Ave	Altschul Ave		Class III Bicycle Boulevard	Tier I	0.42	\$ 101,347
Bayside	Incorporated	Marsh Rd	Middlefield Rd	Fair Oaks Ave		Class I Shared Use Path	Tier II	0.36	\$ 604,125
Bayside	North Fair Oaks	Marsh Rd	Fair Oaks Ave	Bay Rd		Class IV Separated Bicycle Lane	Tier II	0.27	\$ 107,929
Bayside	Broadmoor	87th St	Maddux Dr	Junipero Serra Blvd		Class III Bicycle Boulevard	Tier II	0.58	\$ 139,998
Bayside	Broadmoor	87th St	Southgate Ave	Maddux Dr		Class III Bicycle Boulevard	Tier II	0.55	\$ 130,842
Bayside	Broadmoor	Washington St	Annie St	87th St		Class III Bicycle Boulevard	Tier II	0.49	\$ 118,184
Bayside	North Fair Oaks	Fair Oaks Ave	Marsh Rd	Edison Way		Class III Bicycle Boulevard	Tier II	0.51	\$ 121,397
Bayside	West Menlo Park	Alameda De Las Pulgas	Avy Ave	Liberty Park Ave	Class II Bicycle Lane	Class II Buffered Bicycle Lane	Tier II	0.08	\$ 28,588
Bayside	West Menlo Park	Alameda De Las Pulgas	Liberty Park Ave	Santa Cruz Ave	Class III Bicycle Route	Class II Buffered Bicycle Lane	Tier II	0.28	\$ 96,245
Bayside	West Menlo Park	Santa Cruz Ave	Alameda De Las Pulgas	Sand Hill Rd	Class III Bicycle Route	Class II Buffered Bicycle Lane	Tier II	0.29	\$ 97,654
Bayside	Sequoia Tract	San Carlos Ave	State Hwy 84	W Selby Ln	Class III Bicycle Route	Class III Bicycle Boulevard	Tier II	0.37	\$ 88,050
Bayside	San Bruno Mtn Park	Hillside Blvd	Chestnut Ave	Lincoln St		Class II Bicycle Lane	Tier II	0.22	\$ 63,602
Bayside	San Bruno Mtn Park	Hillside Blvd	Chestnut Ave	Evergreen Dr	Class II Bicycle Lane	Class IV Separated Bicycle Lane	Tier II	0.59	\$ 237,654
Bayside	California Golf Club	Westborough Blvd	Junipero Serra Blvd	Camaritas Ave	Class II Bicycle Lane	Class IV Separated Bicycle Lane	Tier II	1.10	\$ 440,744
Bayside	Harbor/Industrial	Industrial Way	Harbor Blvd	Belmont Creek		Class II Bicycle Lane	Tier II	0.08	\$ 23,098
Bayside	Harbor/Industrial	Old County Rd	Oneill Ave	Belmont Creek	Class III Bicycle Route	Class II Buffered Bicycle Lane	Tier II	0.23	\$ 78,254
Bayside	Incorporated	Oak Knoll Dr	Upland Rd	Canyon Rd		Class III Bicycle Boulevard	Tier II	0.10	\$ 24,139
Bayside	Emerald Lake Hills	Oak Knoll Dr	Upland Rd (North)	Upland Rd (South)		Class III Bicycle Boulevard	Tier II	0.33	\$ 78,266
Bayside	Emerald Lake Hills	Upland Ct	Oak Knoll Dr	Whipple Ave		Class III Bicycle Boulevard	Tier II	0.11	\$ 26,074
Bayside	Sequoia Tract	Hull Ave	Santa Clara Ave	Alameda De Las Pulgas		Class III Bicycle Boulevard	Tier II	0.38	\$ 90,230
Bayside	Harbor/Industrial	Harbor Blvd	Old County Rd	Industrial Rd		Class II Buffered Bicycle Lane	Tier II	0.31	\$ 106,991
Bayside	Ladera	La Cuesta Dr, La Mesa Dr	Alpine Rd	Alpine Rd		Class III Rural Bicycle Route - Shared Lane	Tier II	0.84	\$ 58,865
Bayside	Kensington Square	Alameda De Las Pulgas	Jefferson Ave	Harding Ave	Class III Bicycle Route	Class III Bicycle Boulevard	Tier II	0.25	\$ 59,641
Bayside	Incorporated	Alameda De Las Pulgas	Harding Ave	Brewster Ave	Class III Bicycle Route	Class III Bicycle Boulevard	Tier II	0.20	\$ 48,503
Bayside	San Mateo Highlands	Polhemus Rd	Bunker Hill Dr	De Anza Blvd	Class II Bicycle Lane	Class II Buffered Bicycle Lane	Tier II	0.14	\$ 49,192
Bayside	San Mateo Highlands	Ralston Ave	Lakewood Cir	Christian Dr	Class II Bicycle Lane	Class II Buffered Bicycle Lane	Tier II	0.40	\$ 136,215
Bayside	Sequoia Tract	Selby Ln	W Selby Ln	Stockbridge Ave	Class III Bicycle Route	Class III Bicycle Boulevard	Tier II	0.25	\$ 60,285
Bayside	Ladera	Alpine Rd	Golf Ln	Alpine Rd		Class I Shared Use Path	Tier II	0.61	\$ 1,032,371
Bayside	Devonshire	Devonshire Blvd	San Carlos Ave	Lynton Ave		Class III Bicycle Boulevard	Tier II	0.86	\$ 207,331
Bayside	Sequoia Tract	W Selby Ln	Selby Ln	Santa Clara Ave	Class III Bicycle Route	Class III Bicycle Boulevard	Tier II	0.48	\$ 114,924
Bayside	Sequoia Tract	Nimitz Ave	State Hwy 84	Himmel ave	Class III Bicycle Route	Class III Bicycle Boulevard	Tier II	0.27	\$ 65,434
Bayside	Sequoia Tract	Nimitz Ave	Himmel Ave	W Selby Ln		Class III Bicycle Boulevard	Tier II	0.12	\$ 29,132
Bayside	San Mateo Highlands	Bunker Hill Dr	Polhemus Rd	(Baywood Park edge)		Class II Buffered Bicycle Lane	Tier III	0.18	\$ 62,899
Bayside	San Mateo Highlands	Bunker Hill Dr	(Baywood Park edge)	Yorktown Rd		Class III Bicycle Boulevard	Tier III	0.55	\$ 132,169

Location			Project Extents		Existing Bicycle Facility	Recommended Bicycle Facility	Tier	Cost Estimate	
Side	Community	Street Name	From	To				Miles	Cost
Bayside	San Mateo Highlands	Bunker Hill Dr	Yorktown Rd	Lexington Ave		Class III Bicycle Boulevard	Tier III	0.19	\$ 45,105
Bayside	San Mateo Highlands	Bunker Hill Dr	Lexington Ave	State HWY 35		Class IV Separated Bicycle Lane	Tier III	0.28	\$ 112,315
Bayside	Stanford Lands	Alpine Rd	Alpine Rd Path	Wildwood Ln		Class I Shared Use Path	Tier III	0.14	\$ 238,195
Bayside	Stanford Lands	Wildwood Ln	Alpine Rd (North)	Alpine Rd (South)		Class III Rural Bicycle Route - Shared Lane	Tier III	0.08	\$ 5,709
Bayside	Stanford Lands	Alpine Rd	Wildwood Ln	Bishop Ln		Class I Shared Use Path	Tier III	0.15	\$ 252,909
Bayside	Stanford Lands	Alpine Rd	Bishop Ln	Alpine Rd		Class III Rural Bicycle Route - Shared Lane	Tier III	0.08	\$ 5,569
Bayside	Stanford Lands	Alpine Rd	Alpine Rd	Piers Ln		Class I Shared Use Path	Tier III	0.18	\$ 308,112
Bayside	Stanford Lands	Piers Ln	Alpine Rd	Alpine Rd		Class III Rural Bicycle Route - Shared Lane	Tier III	0.07	\$ 4,638
Bayside	Stanford Lands	Alpine Rd	Piers Ln	Golf Ln		Class I Shared Use Path	Tier III	0.57	\$ 968,340
Bayside	San Bruno Mtn Park	Guadalupe Canyon Pkwy	Carter St	Price St		Class IV Separated Bicycle Lane	Tier III	2.54	\$ 1,017,321
Bayside	Unincorporated	Edgewood Rd	Canada Rd	Crestview Dr		Class III Rural Bicycle Route - Wide Shoulders	Tier III	1.27	\$ 1,899,428
Bayside	Unincorporated	Scannel Dr	Loop Rd	Polhemus Rd		Class II Bicycle Lane	Tier III	0.48	\$ 140,411
Bayside	West Menlo Park	Camino A Los Cerros	Altaschul Ave	Alameda de las Pulgas		Class III Bicycle Boulevard	Tier III	0.13	\$ 31,131
Bayside	Sequoia Tract	Santa Clara Ave	Stockbridge Ave	State Hwy 84		Class III Bicycle Boulevard	Tier III	0.56	\$ 134,183
Bayside	Palomar Park	Scenic Dr	Clifford Ave	Edgewood Rd		Class III Bicycle Boulevard	Tier III	0.23	\$ 56,218
Bayside	Sequoia Tract	State Hwy 84	Alameda De Las Pulgas	Churchill Ave	Class II Bicycle Lane	Class IV Separated Bicycle Lane	Tier III	0.33	\$ 132,755
Bayside	San Mateo Highlands	Ticonderoga Dr	Polhemus Rd	Lexington Ave		Class III Bicycle Boulevard	Tier III	0.78	\$ 186,052
Bayside	Unincorporated	Crestview Dr	Edgewood Rd	Edmonds Rd		Class II Buffered Bicycle Lane	Tier III	0.09	\$ 31,633
Bayside	West Menlo Park	Altschul Ave	Camino Al Los Cerros	Valparaiso Ave		Class III Bicycle Boulevard	Tier III	0.28	\$ 68,014
Bayside	San Mateo Highlands	Lexington Ave	Bunker Hill Dr	Ticonderoga Dr		Class III Bicycle Boulevard	Tier III	0.61	\$ 146,673
Bayside	Palomar Park	Clifford Ave	Lenmoore Dr	Belle Roche Ave		Class III Bicycle Boulevard	Tier III	0.11	\$ 27,418
Bayside	Palomar Park	Palomar Dr	Belle Roche Ave	Montalvo Rd		Class III Bicycle Boulevard	Tier III	0.92	\$ 221,199
Bayside	Palomar Park	Loma Rd	Montalvo Rd	La Mesa Dr		Class III Bicycle Boulevard	Tier III	0.27	\$ 64,758
Bayside	Palomar Park	S Palomar Dr	Palomar Dr (East)	Hermosa Rd		Class III Bicycle Boulevard	Tier III	0.55	\$ 131,672
Bayside	Emerald Lake Hills	Cordilleras Rd	Canyon Rd	Edgewood Rd		Class III Bicycle Boulevard	Tier III	0.71	\$ 169,235
Bayside	Incorporated	Cordilleras Rd	Edgewood Rd	Oak Knoll Dr		Class III Bicycle Boulevard	Tier III	0.34	\$ 80,473
Bayside	Emerald Lake Hills	Lakeview Way	Jefferson Ave	Cordilleras Rd		Class III Bicycle Boulevard	Tier III	2.39	\$ 572,700
Bayside	Emerald Lake Hills	Upland Rd	Brewster Ave	Hopkins Ave		Class III Bicycle Boulevard	Tier III	0.35	\$ 83,024
Bayside	Emerald Lake Hills	Brewster Ave	Alameda De Las Pulgas	Upland Rd		Class III Bicycle Boulevard	Tier III	0.13	\$ 30,784
Bayside	West Menlo Park	Santa Cruz Ave	Sharon Rd	Alameda De Las Pulgas	Class III Bicycle Route	Class II Bicycle Lane	Tier III	0.27	\$ 77,430
Bayside	Unincorporated	State Hwy 92	State Hwy 35 (North)	Canada Rd		Class III Rural Bicycle Route - Wide Shoulders	Tier III	0.64	\$ 948,271
Bayside	Unincorporated	State Hwy 92	State Hwy 35 (North)	Canada Rd		Class I Shared Use Path	Tier III	0.69	\$ 1,169,544
Bayside	Burlingame Hills	Hillside Dr	Hillside Ln	Alvarado Ave	Class III Bicycle Route	Class III Bicycle Boulevard	Tier III	1.09	\$ 262,351
Bayside	Unincorporated	Kings Mountain Rd	State Hwy 35	State Hwy 84		Class III Rural Bicycle Route - Shared Lane	Tier III	4.88	\$ 341,881
Bayside	Emerald Lake Hills	Jefferson Ave	Emerald Hill Rd	California Way		Class III Bicycle Boulevard	Tier III	0.86	\$ 206,798
Coastside									
Coastside	Miramar	Magellan Ave	Mirada Rd	State Hwy 1		Class III Bicycle Boulevard	Tier I	0.14	\$ 33,678
Coastside	El Granada	Coronado St	Avenida Alhambra	State Hwy 1		Class II Buffered Bicycle Lane	Tier I	0.06	\$ 19,345
Coastside	Unincorporated	Capistrano Rd	Prospect Way	State Hwy 1 (South)		Class III Bicycle Boulevard	Tier I	0.39	\$ 93,061
Coastside	Unincorporated	Capistrano Rd	State Hwy 1 (North)	Prospect Way		Class III Rural Bicycle Route - Wide Shoulders	Tier I	0.37	\$ 554,123

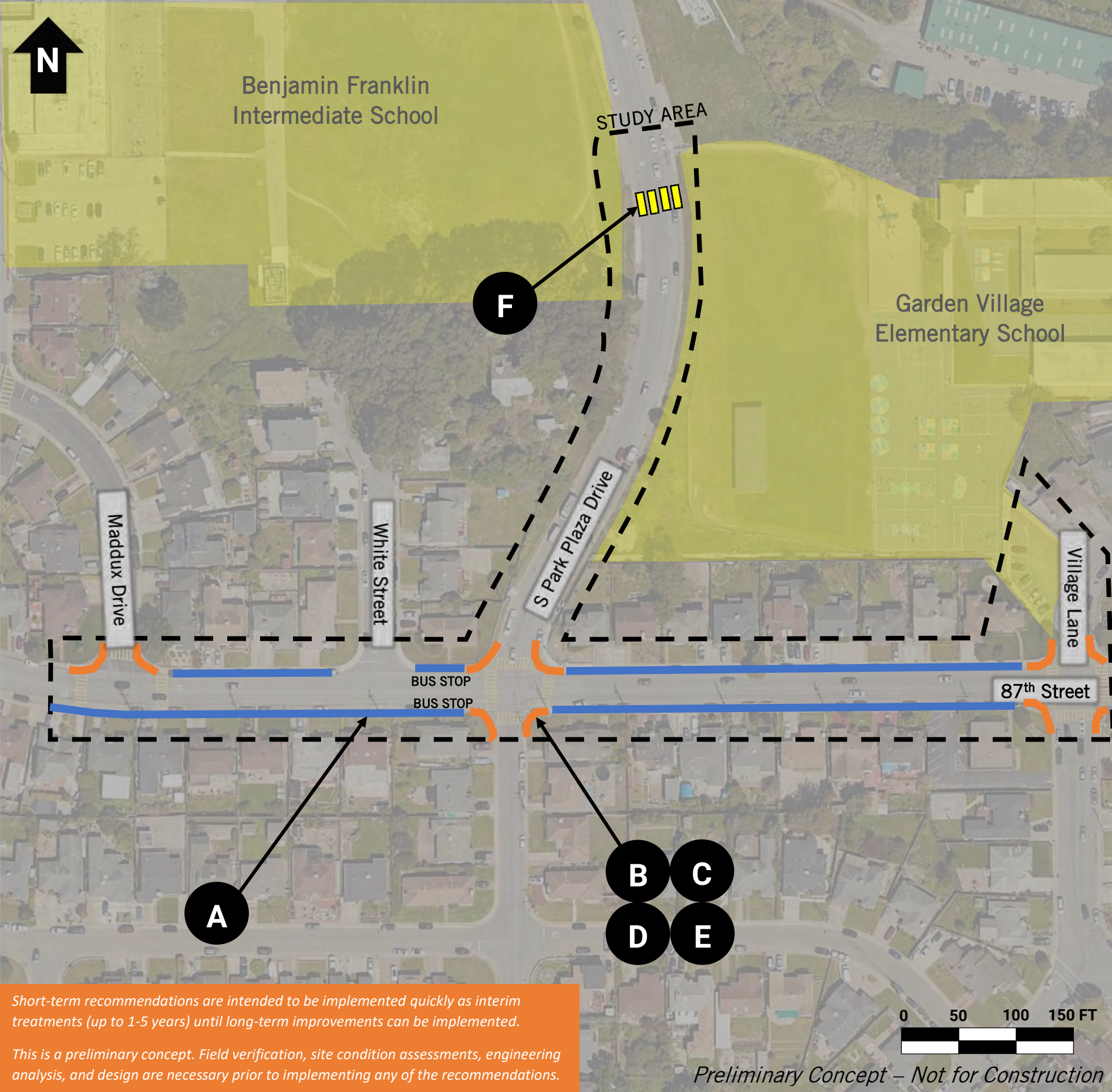
Location			Project Extents		Existing Bicycle Facility	Recommended Bicycle Facility	Tier	Cost Estimate	
Side	Community	Street Name	From	To				Miles	Cost
Coastside	Princeton	Broadway	California Ave	Princeton Ave		Class III Bicycle Boulevard	Tier I	0.07	\$ 16,646
Coastside	Incorporated	State Hwy 92	Hilltop Mobile Home Park	Main St		Class IV Separated Bicycle Lane	Tier I	0.27	\$ 107,768
Coastside	Moss Beach	Etheldore St	State Hwy 1 (North)	State Hwy 1 (South)		Class III Bicycle Boulevard	Tier I	0.78	\$ 186,408
Coastside	Princeton	Princeton Ave	Broadway	West Point Ave		Class III Bicycle Boulevard	Tier I	0.35	\$ 83,691
Coastside	El Granada	Avenida Alhambra	Avenue Granada	Obispo Rd		Class II Bicycle Lane	Tier I	0.49	\$ 142,472
Coastside	El Granada	Avenida Alhambra	Obispo Rd	Santiago Ave		Class II Bicycle Lane	Tier I	0.46	\$ 134,726
Coastside	El Granada	Capistrano Rd	Avenue Alhambra	State Hwy 1		Class II Bicycle Lane	Tier I	0.04	\$ 12,823
Coastside	El Granada	Avenue Granada	Avenue Alhambra	Paloma Ave		Class III Bicycle Boulevard	Tier I	0.12	\$ 28,600
Coastside	El Granada	Paloma Ave	Avenue Balboa	Avenue Granada		Class III Bicycle Boulevard	Tier I	0.24	\$ 56,972
Coastside	El Granada	Avenue Portola	Obispo Rd	The Alameda		Class III Bicycle Boulevard	Tier I	0.07	\$ 16,373
Coastside	El Granada	Avenue Portola	Obispo Rd	The Alameda		Class III Bicycle Boulevard	Tier I	0.11	\$ 25,944
Coastside	Moss Beach	Valleamar St	Juliana Ave	(end)		Class III Bicycle Boulevard	Tier I	0.31	\$ 75,116
Coastside	Moss Beach	Julianna Ave, Wienke Way	Valleamar St	California Ave		Class III Bicycle Boulevard	Tier I	0.28	\$ 67,774
Coastside	El Granada	Obispo Rd	Avenida Alhambra	Obispo Rd		Class III Bicycle Boulevard	Tier I	0.37	\$ 87,862
Coastside	Moss Beach	California Ave	Tierra Alta St	N Lake St		Class III Bicycle Boulevard	Tier I	0.62	\$ 147,825
Coastside	Montara	5th St	Main St	Le Conte Ave		Class III Bicycle Boulevard	Tier I	0.32	\$ 76,659
Coastside	El Granada	Avenue Balboa	Avenue Alhambra	Paloma Ave		Class III Bicycle Boulevard	Tier I	0.49	\$ 118,369
Coastside	El Granada	The Alameda	Avenue Alhambra	Santiago Ave		Class II Buffered Bicycle Lane	Tier I	0.71	\$ 239,720
Coastside	Miramar	State Hwy 1	Magellan Ave	Mirada Rd		Class I Shared Use Path	Tier I	0.46	\$ 773,414
Coastside	Incorporated	State Hwy 1	Mirada Rd	Roosevelt Ave		Class I Shared Use Path	Tier I	0.26	\$ 433,349
Coastside	Miramar	Mirada Rd	Magellan Ave	(end)		Class I Shared Use Path	Tier I	0.07	\$ 125,381
Coastside	Princeton	Prospect Way	Capistrano Rd	Broadway		Class III Bicycle Boulevard	Tier I	0.07	\$ 16,091
Coastside	Moss Beach	Carlos St, Vermont Ave	16th St	State Hwy 1		Class III Bicycle Boulevard	Tier I	0.75	\$ 179,273
Coastside	Montara	2nd St	State Hwy 1	2nd St		Class III Bicycle Boulevard	Tier I	0.04	\$ 9,321
Coastside	Montara	Main St	9th St	2nd St		Class III Bicycle Boulevard	Tier I	0.35	\$ 82,971
Coastside	Montara	Main St, 11th St, Farrallone Ave, 14th St	9th St	Hwy 1		Class III Bicycle Boulevard	Tier I	0.33	\$ 78,980
Coastside	El Granada	Santiago Ave	The Alameda	Moro Ave		Class III Bicycle Boulevard	Tier I	0.42	\$ 99,759
Coastside	Unincorporated	Pillar Point Harbor Blvd	Capistrano Rd	(no name)		Class III Rural Bicycle Route - Shared Lane	Tier I	0.29	\$ 20,407
Coastside	Miramar	Mirada Rd	Magellan Ave	Miramar Beach Bridge		Class III Bicycle Boulevard	Tier I	0.23	\$ 54,086
Coastside	Miramar	Miramar Beach Bridge	Mirada Rd	Half Moon Bay Coastal Trail		Class I Shared Use Path	Tier I	0.04	\$ 66,071
Coastside	Montara	Main St	11th St	14th St		Class I Shared Use Path	Tier I	0.16	\$ 262,219
Coastside	Unincorporated	State Hwy 1	Coronado St	Magellan Ave		Class I Shared Use Path	Tier I	0.40	\$ 670,679
Coastside	Montara	State Hwy 1	14th St	16th St		Class I Shared Use Path	Tier I	0.11	\$ 181,919
Coastside	El Granada	State Hwy 1	Capistrano Rd (North)	Capistrano Rd (South)		Class I Shared Use Path	Tier I	0.50	\$ 840,537
Coastside	El Granada	State Hwy 1	Capistrano Rd	Coronado St		Class I Shared Use Path	Tier I	0.84	\$ 1,427,724
Coastside	Moss Beach	State Hwy 1	16th St	Etheldore St		Class I Shared Use Path	Tier I	0.74	\$ 1,247,489
Coastside	Moss Beach	State Hwy 1	16th St	Etheldore St		Class I Shared Use Path	Tier I	0.49	\$ 827,665
Coastside	Unincorporated	Airport St	Cypress Ave	Cornell Ave		Class I Shared Use Path	Tier I	1.56	\$ 2,633,444
Coastside	Miramar	State Hwy 1	Magellan Ave	Mirada Rd		Class II Bicycle Lane	Tier II	0.43	\$ 123,530
Coastside	Unincorporated	State Hwy 1	Coronado St	Magellan Ave		Class II Bicycle Lane	Tier II	0.39	\$ 113,840
Coastside	Unincorporated	Arroyo Trl	San Pedro Ave	State HWY 1		Class I Shared Use Path	Tier II	0.89	\$ 1,507,231
Coastside	Unincorporated	Higgins Canyon Rd	State Hwy 1	Purisima Creek Rd		Class III Rural Bicycle Route - Shared Lane	Tier II	4.43	\$ 310,209

Location			Project Extents		Existing Bicycle Facility	Recommended Bicycle Facility	Tier	Cost Estimate	
Side	Community	Street Name	From	To				Miles	Cost
Coastside	Moss Beach	Cypress Ave	State Hwy 1	Etheldore St		Class III Bicycle Boulevard	Tier II	0.11	\$ 25,224
Coastside	Moss Beach	Cypress Ave	Airport St	State Hwy 1		Class III Bicycle Boulevard	Tier II	0.25	\$ 59,358
Coastside	Montara	Cedar St	Drake St	Harte St		Class III Bicycle Boulevard	Tier II	0.49	\$ 117,994
Coastside	Montara	(no name)	State Hwy 1	Vallemar St		Class I Shared Use Path	Tier II	0.30	\$ 501,215
Coastside	Montara	Harte St	Le Conte Ave	Sunshine Valley Rd		Class III Bicycle Boulevard	Tier II	0.57	\$ 137,066
Coastside	Burlingame Hills	State Hwy 35	La Strada	Summit Dr		Class III Rural Bicycle Route - Wide Shoulders	Tier II	0.39	\$ 580,504
Coastside	Unincorporated	State Hwy 35	Black Mountain Rd	Golf Course Dr		Class II Bicycle Lane	Tier II	0.20	\$ 56,571
Coastside	Unincorporated	State Hwy 35	Golf Course Rd	State Hwy 92		Class III Rural Bicycle Route - Wide Shoulders	Tier II	2.90	\$ 4,321,446
Coastside	Unincorporated	State Hwy 35	Sawyer Camp Trail (southern terminus)	State Hwy 92		Class I Shared Use Path	Tier II	0.47	\$ 791,409
Coastside	Princeton	California Ave	Cornell Ave	Broadway		Class III Bicycle Boulevard	Tier II	0.14	\$ 32,549
Coastside	Princeton	Cornell Ave	Vassar St	California Ave		Class III Bicycle Boulevard	Tier II	0.16	\$ 37,687
Coastside	Princeton	Airport Rd	Harvard Ave	Princeton Ave		Class III Bicycle Boulevard	Tier II	0.05	\$ 11,366
Coastside	Princeton	Airport Rd	Cornell Ave	Harvard Ave		Class III Bicycle Boulevard	Tier II	0.10	\$ 24,214
Coastside	Unincorporated	Skyline Blvd Trl	Bunker Hill Dr	(no name)		Class I Shared Use Path	Tier II	0.34	\$ 569,596
Coastside	Montara	State Hwy 1	2nd St	16th St		Class II Bicycle Lane	Tier II	0.76	\$ 220,740
Coastside	Unincorporated	State Hwy 1	Etheldore St	Capistrano Rd		Class I Shared Use Path	Tier II	1.26	\$ 2,132,554
Coastside	Unincorporated	State Hwy 1	Etheldore St	Capistrano Rd		Class II Bicycle Lane	Tier II	1.26	\$ 365,580
Coastside	Pescadero	Stage Rd	North St	Pescadero Creek Rd		Class III Bicycle Boulevard	Tier II	0.25	\$ 60,105
Coastside	La Honda	Pescadero Creek Rd	State Hwy 84	Alpine Rd		Class III Rural Bicycle Route - Wide Shoulders	Tier II	1.13	\$ 1,688,787
Coastside	Unincorporated	State Hwy 1	San Pedro Terrace Rd	Devil's Slide Trl		Class II Bicycle Lane	Tier II	0.89	\$ 257,742
Coastside	El Granada	State Hwy 1	Capistrano Rd (North)	Capistrano Rd (South)		Class II Bicycle Lane	Tier II	0.50	\$ 144,959
Coastside	El Granada	State Hwy 1	Capistrano Rd	Coronado St		Class II Bicycle Lane	Tier II	0.85	\$ 245,521
Coastside	Pescadero	Pescadero Creek Rd	State Hwy 1	Butano Cut Off	Class II Bicycle Lane	Class I Shared Use Path	Tier II	2.02	\$ 3,409,592
Coastside	Unincorporated	Tunitas Creek Rd	State Hwy 1	State Hwy 35		Class III Rural Bicycle Route - Shared Lane	Tier II	9.55	\$ 668,547
Coastside	La Honda	Entrada Way	State Hwy 84	Cuesta Real		Class III Rural Bicycle Route - Shared Lane	Tier II	0.16	\$ 11,463
Coastside	Moss Beach	State Hwy 1	16th St	Etheldore St		Class II Bicycle Lane	Tier II	1.24	\$ 358,923
Coastside	Unincorporated	State Hwy 92	State Hwy 35 (North)	State Hwy 35 (South)		Class III Rural Bicycle Route - Wide Shoulders	Tier II	2.01	\$ 3,001,700
Coastside	Unincorporated	Sunshine Valley Rd	Etheldore St	Harte St		Class III Rural Bicycle Route - Shared Lane	Tier II	1.05	\$ 73,689
Coastside	Montara	3rd St, George St	Main St	Cedar St		Class III Bicycle Boulevard	Tier II	0.57	\$ 136,562
Coastside	Unincorporated	Miramontes Point Rd	State Hwy 1	Higgins Canyon Rd		Class III Rural Bicycle Route - Shared Lane	Tier II	0.87	\$ 60,665
Coastside	Unincorporated	Airport St	Cypress Ave	Cornell Ave		Class II Bicycle Lane	Tier II	1.56	\$ 452,009
Coastside	Unincorporated	State Hwy 92	State Hwy 35 (South)	Hilltop Mobile Home Park		Class III Rural Bicycle Route - Wide Shoulders	Tier III	4.68	\$ 6,970,196
Coastside	Unincorporated	State Hwy 84	Stage Rd	Pescadero Creek Rd		Class III Rural Bicycle Route - Wide Shoulders	Tier III	7.50	\$ 11,176,290
Coastside	Loma Mar	Pescadero Creek Rd	Dearborn Park Rd	Burns Valley Rd		Class III Rural Bicycle Route - Shared Lane	Tier III	3.98	\$ 278,614
Coastside	Pescadero	North St	Stage Rd	Pescadero Creek Rd		Class III Bicycle Boulevard	Tier III	0.93	\$ 222,107
Coastside	Unincorporated	State Hwy 1	Miramontes Point Rd	State Hwy 84		Class I Shared Use Path	Tier III	8.21	\$ 13,876,057
Coastside	Unincorporated	State Hwy 1	State Hwy 84	Pescadero State Beach		Class I Shared Use Path	Tier III	4.32	\$ 7,302,434

Location			Project Extents		Existing Bicycle Facility	Recommended Bicycle Facility	Tier	Cost Estimate	
Side	Community	Street Name	From	To				Miles	Cost
Coastside	Unincorporated	Cloverdale Rd	Butano State Park Rd	Gazos Creek Rd		Class III Rural Bicycle Route - Shared Lane	Tier III	1.09	\$ 76,087
Coastside	Unincorporated	Gazos Creek Rd	Cloverdale Rd	State Hwy 1		Class III Rural Bicycle Route - Shared Lane	Tier III	2.15	\$ 150,760
Coastside	Pescadero	Cloverdale Rd	Ranch Rd W	Pescadero Creek Rd	Class II Bicycle Lane	Class II Buffered Bicycle Lane	Tier III	0.62	\$ 212,391
Coastside	Unincorporated	Purisima Creek Rd	Higgins Canyon Rd	Verde Rd		Class III Rural Bicycle Route - Shared Lane	Tier III	3.55	\$ 248,180
Coastside	Pescadero	State Hwy 1	Pescadero State Beach	Pescadero Creek Rd		Class I Shared Use Path	Tier III	0.30	\$ 512,198
Coastside	Pescadero	State Hwy 1	Pescadero Creek Rd	Bean Hollow Rd		Class I Shared Use Path	Tier III	2.75	\$ 4,648,941
Coastside	Unincorporated	Pescadero Creek Rd	Alpine Rd	Burns Valley Rd		Class III Rural Bicycle Route - Shared Lane	Tier III	3.90	\$ 273,313
Coastside	Unincorporated	State Hwy 35	State HWY 92	Morse Ln		Class III Rural Bicycle Route - Wide Shoulders	Tier III	12.15	\$ 18,107,506
Coastside	Sky Londa	State Hwy 35	Morse Ln	State Hwy 84		Class III Rural Bicycle Route - Shared Lane	Tier III	0.35	\$ 24,760
Coastside	Sky Londa	State Hwy 35	State HWY 84	Old La Honda Rd		Class III Rural Bicycle Route - Wide Shoulders	Tier III	1.47	\$ 2,196,004
Coastside	Unincorporated	State Hwy 35	Old La Honda Rd	Old Page Mill Rd		Class III Rural Bicycle Route - Wide Shoulders	Tier III	5.81	\$ 8,659,176
Coastside	Sky Londa	State Hwy 84	Old La Honda Rd	State Hwy 35		Class III Rural Bicycle Route - Wide Shoulders	Tier III	2.82	\$ 4,202,674
Coastside	La Honda	State Hwy 84	Hildebrand Rd	Pescadero Creek Rd		Class III Rural Bicycle Route - Wide Shoulders	Tier III	0.69	\$ 1,034,406
Coastside	Unincorporated	State HWY 1	Bean Hollow Rd	(Santa Cruz County border)		Class I Shared Use Path	Tier III	9.95	\$ 16,807,756
Coastside	Unincorporated	Stage Rd	State Hwy 84	North St		Class III Rural Bicycle Route - Shared Lane	Tier III	7.12	\$ 498,603
Coastside	Pescadero	Bean Hollow Rd	Pescadero Creek Rd	State Hwy 1		Class III Rural Bicycle Route - Shared Lane	Tier III	2.42	\$ 169,601
Coastside	Montara	Le Conte Ave	6th St	(end)		Class III Bicycle Boulevard	Tier III	0.36	\$ 86,047
Coastside	Unincorporated	Pescadero Creek Rd	Dearborn Park Rd	Butano Cut Off		Class III Rural Bicycle Route - Shared Lane	Tier III	2.40	\$ 167,891
Coastside	Unincorporated	State Hwy 1	1st St	Devil's Slide Trl		Class I Shared Use Path	Tier III	1.84	\$ 3,111,854
Coastside	Unincorporated	State Hwy 1	1st St	Devil's Slide Trl		Class II Bicycle Lane	Tier III	0.41	\$ 117,987
Coastside	Unincorporated	State Hwy 84	State Hwy 1	Stage Rd		Class III Rural Bicycle Route - Wide Shoulders	Tier III	0.77	\$ 1,142,480
Coastside	Unincorporated	State Hwy 84	Old La Honda Rd	La Honda Fire Brigade		Class III Rural Bicycle Route - Shared Lane	Tier III	3.29	\$ 230,610
Coastside	Unincorporated	Purisima Creek Rd	Verde Rd	State Hwy 1		Class III Rural Bicycle Route - Shared Lane	Tier III	0.37	\$ 26,125
Coastside	Unincorporated	Verde Rd	Purissima Creek Rd	State Hwy 1		Class III Rural Bicycle Route - Shared Lane	Tier III	2.03	\$ 142,354
Coastside	Unincorporated	Meyn Rd	Verde Rd	State Hwy 1		Class III Rural Bicycle Route - Shared Lane	Tier III	0.02	\$ 1,478
Coastside	Unincorporated	Alpine Rd	State Hwy 35	Pescadero Creek Rd		Class III Rural Bicycle Route - Shared Lane	Tier III	7.52	\$ 526,424
Coastside	Sky Londa	Old La Honda	State Hwy 84	Williams Ranch Rd		Class III Rural Bicycle Route - Shared Lane	Tier III	0.56	\$ 39,076
Coastside	Sky Londa	Old La Honda	Williams Ranch Rd	State Hwy 35		Class III Rural Bicycle Route - Shared Lane	Tier III	1.95	\$ 136,536
Coastside	Unincorporated	Lobitos Creek Cut-off	Tunitas Creek Rd	Verde Rd		Class III Rural Bicycle Route - Shared Lane	Tier III	1.70	\$ 118,828

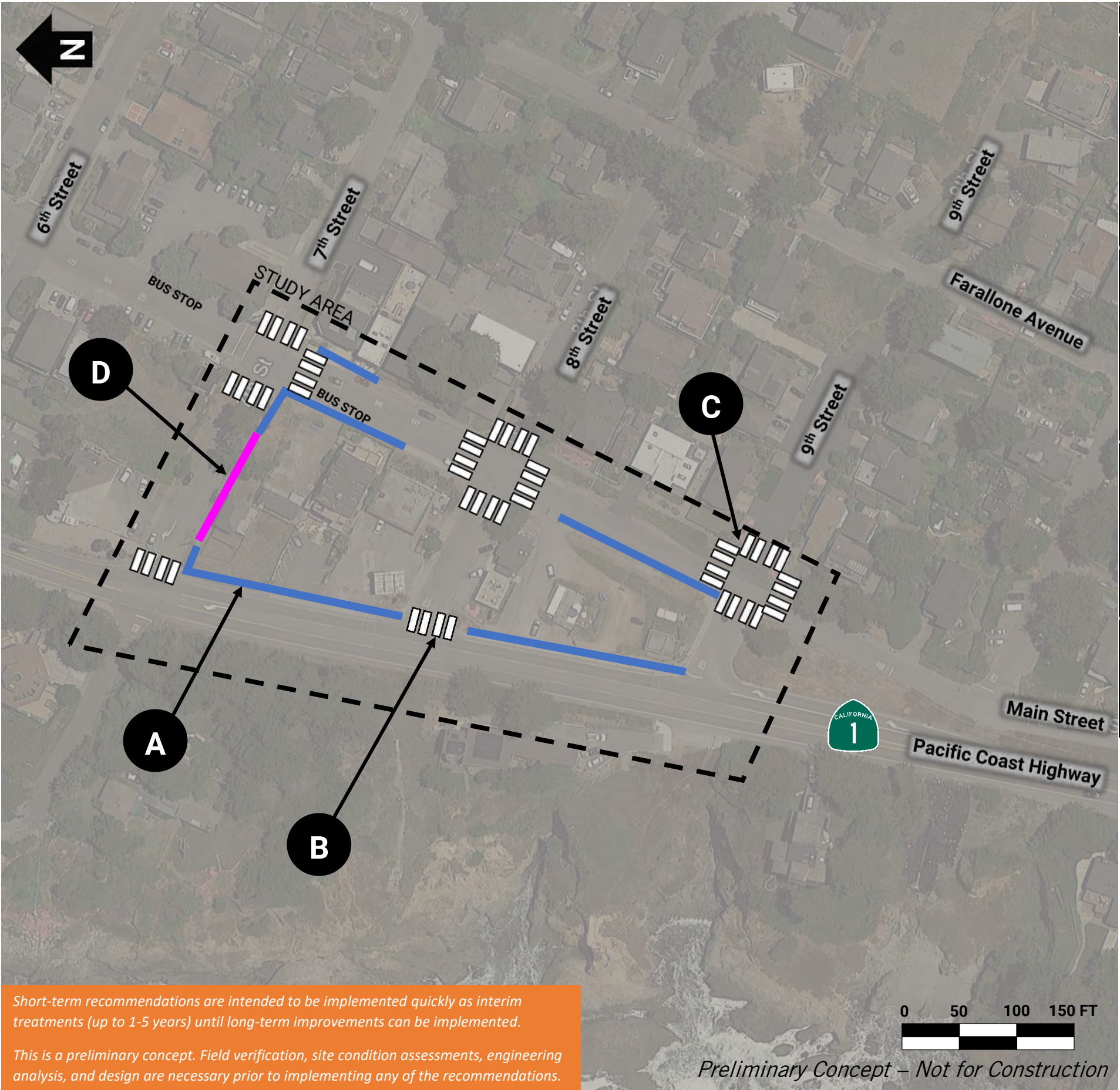
Pedestrian Priority Destination Recommendations

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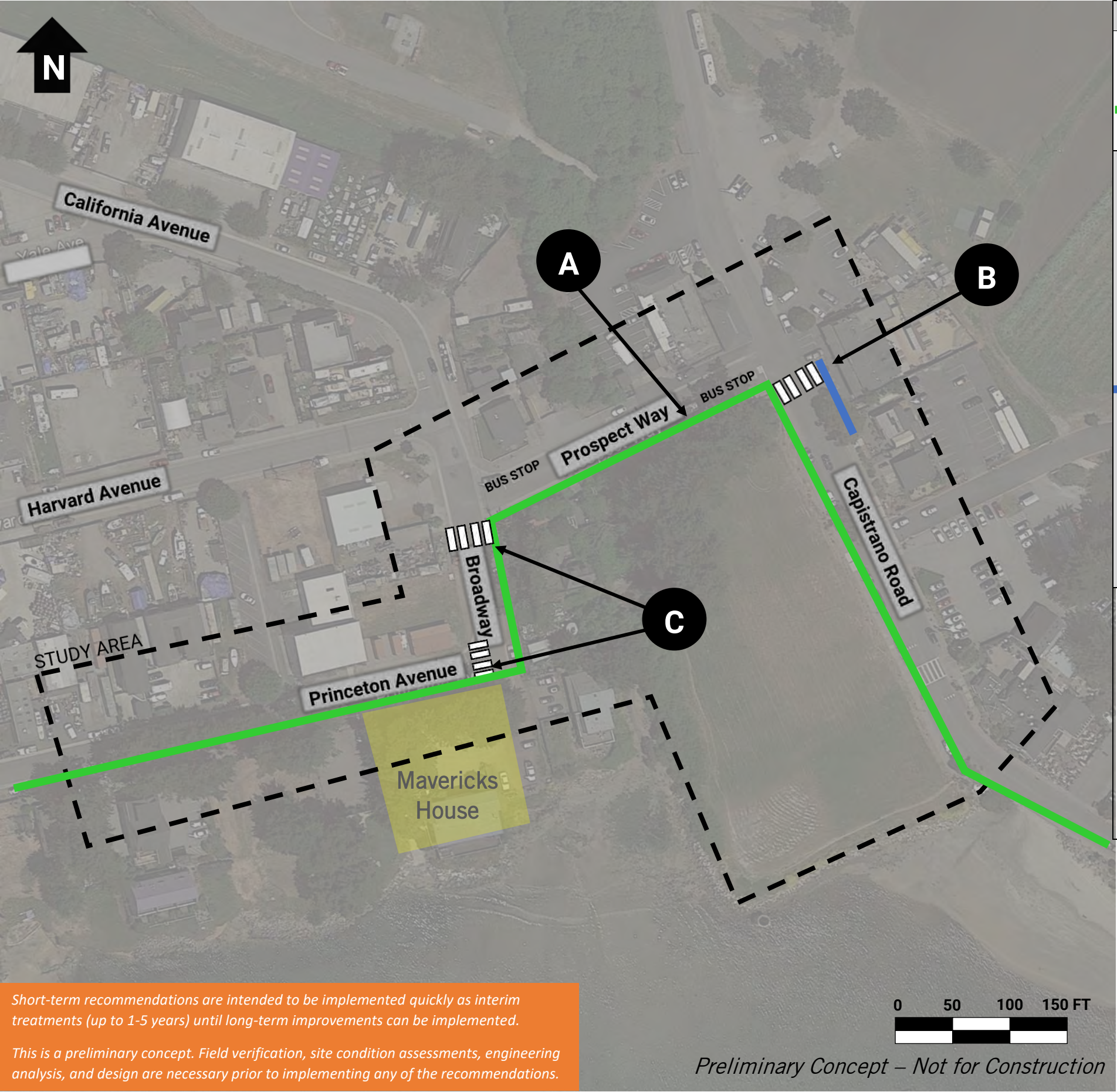
	Existing Condition	Treatment Goal	Recommendation
A	Rolled curbs; parking observed on sidewalk, preventing pedestrian access. Parking on sidewalk may result in pedestrians walking in street.	<ul style="list-style-type: none">Discourage parking on sidewalkImprove pedestrian access and safety	Short-Term <ul style="list-style-type: none">Stripe edge lines in roadway to delineate parking lanes from travel lanesConduct neighborhood educational campaign (e.g., windshield flyers) on good parking habits Long-Term <ul style="list-style-type: none">Retrofit rolled curbs to vertical curbs
B	Additional curb ramps are needed in some quadrants of the intersections.	<ul style="list-style-type: none">Increase ease of crossing for pedestrians with mobility and vision impairments	Long-Term <ul style="list-style-type: none">Install ADA-compliant bi-directional curb ramps with detectable warning surfaces that align with crosswalks at intersections on 87th Street with marked crossings
C	Large corner radii; observed vehicles making higher speed turns, decreased yielding to pedestrians. Higher vehicle speeds can increase severity of potential crashes.	<ul style="list-style-type: none">Slow vehicular turning speedsIncrease visibility of pedestriansIncrease pedestrian safetyShorten pedestrian crossing distances / time spent in crosswalk	Short-Term <ul style="list-style-type: none">Install quick-build curb extensions with smaller radii constructed from temporary materials like paint and flexible delineators Long-Term <ul style="list-style-type: none">Install concrete curb extensions with smaller radii (must account for existing drainage infrastructure). Consider truck aprons to accommodate heavier vehicles.
D	Parked cars at intersections result in obstructed sight lines for drivers , reducing the visibility of pedestrians and other vehicles.	<ul style="list-style-type: none">Increase visibility for drivers at intersections	Short-Term <ul style="list-style-type: none">Where possible, establish “no parking” zones within 20 feet of intersections with red paint and/or signage Long-Term <ul style="list-style-type: none">Where possible, install concrete curb extensions at intersections
E	Observed vehicles yielding infrequently to pedestrians , necessitating the use of crossing guards during school hours.	<ul style="list-style-type: none">Increase visibility of crossing pedestrians to turning vehiclesHelp pedestrians establish priority when crossing	Short-Term <ul style="list-style-type: none">Install Leading Pedestrian Intervals (LPIs) at signalized intersections, which provide pedestrians with a walk signal 3 to 7 seconds before vehicles traveling in the same direction receive a green indication.If right turns on red are allowed, install signs restricting right turns on red.
F	Pedestrian desire line exists at mid-block location with no marked crosswalk.	<ul style="list-style-type: none">Provide crossing infrastructure at a desired crossing locationIncrease accessibility for pedestrians	Long-Term* <ul style="list-style-type: none">Install high-visibility yellow crosswalk, Rapid Rectangular Flashing Beacon (RRFB), curb extensions, and curb ramps with detectable warning surfaces, taking into consideration desire line, drainage infrastructure, and vertical and horizontal sight lines. Consider a raised crossing. <i>*Further engineering study will be required.</i>

Study Area 1: Benjamin Franklin & Garden Village Schools | Broadmoor, CA



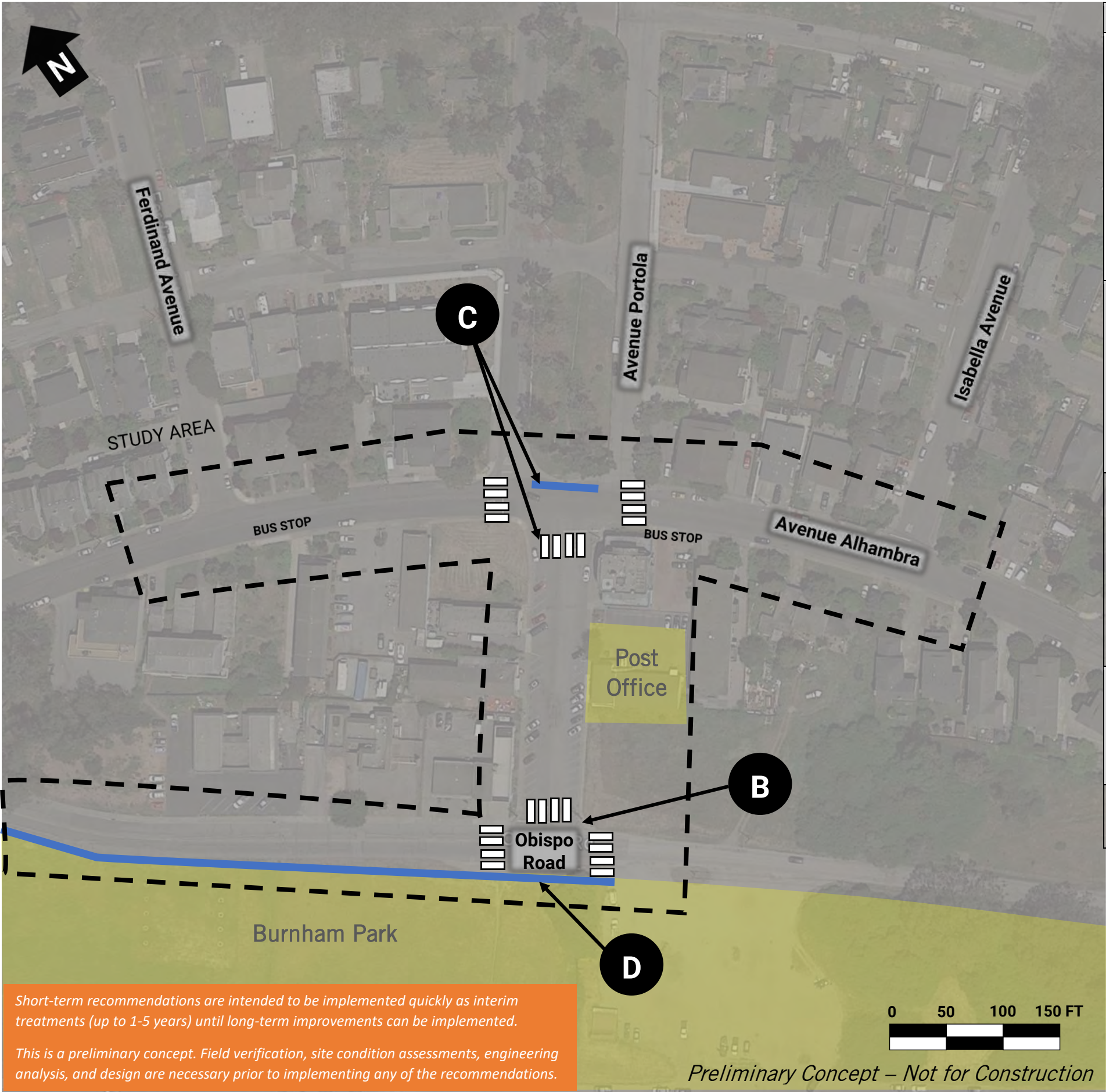
	Existing Condition	Treatment Goal	Recommendation
A	Sidewalk gaps exist in downtown Montara pedestrian network	<ul style="list-style-type: none">Improve access and safety for pedestrians	Short-Term <ul style="list-style-type: none">Delineate travel lane from paved shoulder in areas without existing sidewalk infrastructure. Install detectable warning surfaces in walkways adjacent to crossing locations Long-Term <ul style="list-style-type: none">Install concrete sidewalks in areas without existing sidewalk infrastructure that abut existing concrete sidewalks. Install curb ramps with detectable warning surfaces adjacent to marked crosswalks
B	No marked pedestrian crossings adjacent to SR-1	<ul style="list-style-type: none">Provide crossing infrastructure at desired crossing locationsIncrease visibility of pedestrians crossing 7th Street and 8th Street adjacent to SR-1	Long-Term <ul style="list-style-type: none">Install marked crosswalks across 7th Street and 8th Street at SR-1Install curb ramps with detectable warning surfaces at ends of marked crosswalks
C	Few marked pedestrian crossings along Main Street, and long crossing distances	<ul style="list-style-type: none">Provide crossing infrastructure at desired crossing locationsIncrease visibility of pedestrians along Main StreetReduce crossing distances	Long-Term <ul style="list-style-type: none">Install curb extensions at the intersections of Main Street and 7th, 8th, and 9th StreetsInstall marked crosswalks at the intersections of Main Street and 7th, 8th, and 9th StreetsInstall curb ramps with detectable warning surfaces at ends of marked crosswalks
D	Damaged sidewalks with overgrown vegetation are a barrier to pedestrian access.	<ul style="list-style-type: none">Provide a dedicated, unobstructed path for pedestrian access	Short-Term (and ongoing) <ul style="list-style-type: none">Conduct regular sidewalk maintenance Long-Term <ul style="list-style-type: none">Repair damaged sidewalks and construct curb ramps with detectable warning surfaces at intersections

Study Area 2: Downtown Montara | Montara, CA



	Existing Condition	Treatment Goal	Recommendation
A	Lack of lighting and clear wayfinding along California Coastal Trail through Princeton	<ul style="list-style-type: none">Make the California Coastal Trail more comfortable and intuitive to navigate	Short-Term <ul style="list-style-type: none">Install wayfinding signage along trail Long-Term <ul style="list-style-type: none">Add pedestrian-scale lighting along the California Coastal Trail in Princeton and in vicinity of Event Center
B	Pedestrian desire lines exist to cross Capistrano Road at Prospect Way	<ul style="list-style-type: none">Provide a dedicated crossing and path for pedestrians crossing Capistrano Road at Prospect Way	Short-Term <ul style="list-style-type: none">Consider installing stop signs and stop bars on Capistrano Road at Prospect Way to create three-way stop-controlled intersectionConvert parking spaces in front of the Old Princeton Landing Pub & Grill into outdoor dining (requires coordination with property owner) Long-Term <ul style="list-style-type: none">Install a high-visibility crosswalk on the southern leg of the Prospect/Capistrano intersection to provide connectivity across Capistrano (requires coordination with property owner)Formalize walkway adjacent to outdoor dining between proposed high-visibility crosswalk and existing sidewalk terminus (requires coordination with property owner)Install curb ramp with detectable warning surface on sidewalk on west side of crosswalk. Install accessible landing with detectable warning surface in walkway on east side of crosswalk
C	Pedestrian desire lines exist at Broadway/Princeton and Broadway/Prospect intersections to access Mavericks House and forthcoming development north of Princeton Avenue, respectively	<ul style="list-style-type: none">Provide dedicated crossings at pedestrian desire lines	Short-Term <ul style="list-style-type: none">Install a high-visibility crosswalk across Princeton Avenue at Broadway, east of the existing gutterInstall a high-visibility crosswalk across Broadway at Prospect Way, on the south side of the intersectionInstall curb ramps with detectable warning surfaces at the new crosswalks Long-Term <ul style="list-style-type: none">Consider constructing a pedestrian walkway on south side of Princeton Avenue

Study Area 3: Mavericks House Event Center | Princeton, CA

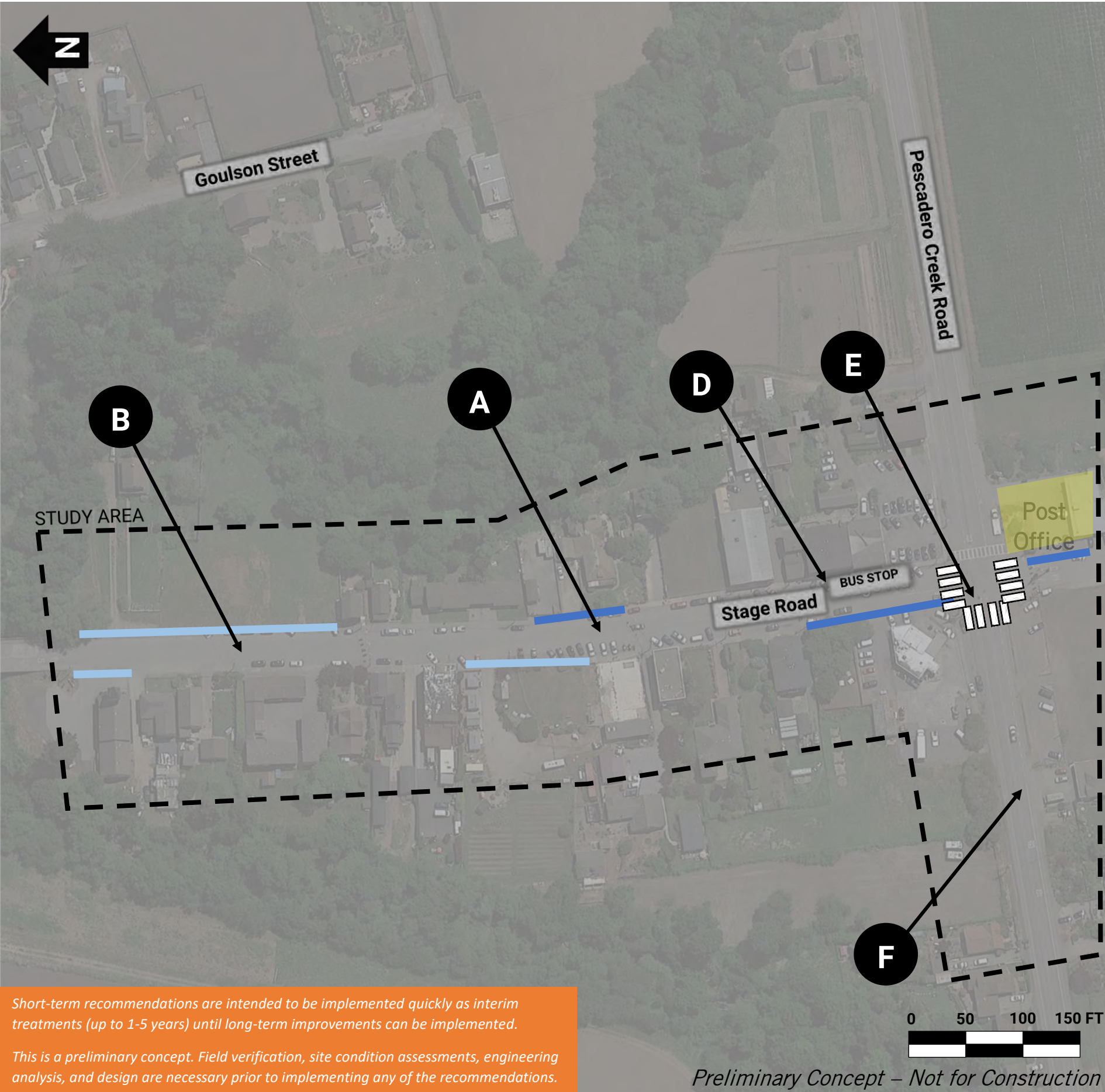


	Existing Condition	Treatment Goal	Recommendation
A	Downtown El Granada is currently automobile-focused (area-wide)	<ul style="list-style-type: none">• Activate downtown area for all users	Short-Term <ul style="list-style-type: none">• Seal coat existing parking lanes on Avenue Portola from Avenue Alhambra to Obispo Road with a neutral tan or concrete color to visually narrow roadway and delineate parking lanes from travel lanes• Convert several parking spaces to planters or parklets Long-Term <ul style="list-style-type: none">• Reconstruct Avenue Portola from Avenue Alhambra to Obispo Road with wider sidewalks, street trees, and a narrower curb-to-curb street width
B	Pedestrian desire lines exist to cross at intersection of Obispo Road and Avenue Portola	<ul style="list-style-type: none">• Provide crossing infrastructure at desired crossing locations• Connect southern parking lot and proposed Burnham Park* to downtown businesses	Short-Term <ul style="list-style-type: none">• Install high-visibility crosswalks on all legs of Obispo/Portola intersection
C	Pedestrian network gaps at intersection of Avenue Portola and Avenue Alhambra	<ul style="list-style-type: none">• Provide a dedicated place for pedestrians to continue through the intersection of Avenue Portola and Avenue Alhambra	Short-Term <ul style="list-style-type: none">• Install high-visibility crosswalk across Avenue Portola at Avenue Alhambra• Installing high-visibility crosswalks across Avenue Alhambra at Avenue Portola Long-Term <ul style="list-style-type: none">• Install concrete sidewalk and curb ramps with detectable warning surfaces• Install raised crossing across Avenue Portola at Avenue Alhambra
D	Lack of sidewalks on south side of Obispo Road	<ul style="list-style-type: none">• Provide a dedicated place for pedestrians walking on the southside of Obispo Road	Long-Term <ul style="list-style-type: none">• Install delineated walking path or concrete sidewalk and curb ramps with detectable warning surfaces on the south side of Obispo Road from Avenue Portola to Coronado Street
*Burnham Park is a proposed development in El Granada between Obispo Road and Highway 1 that will provide spaces for active recreation, landscaped areas, parking, and shared use paths for pedestrian and bicycle use.			

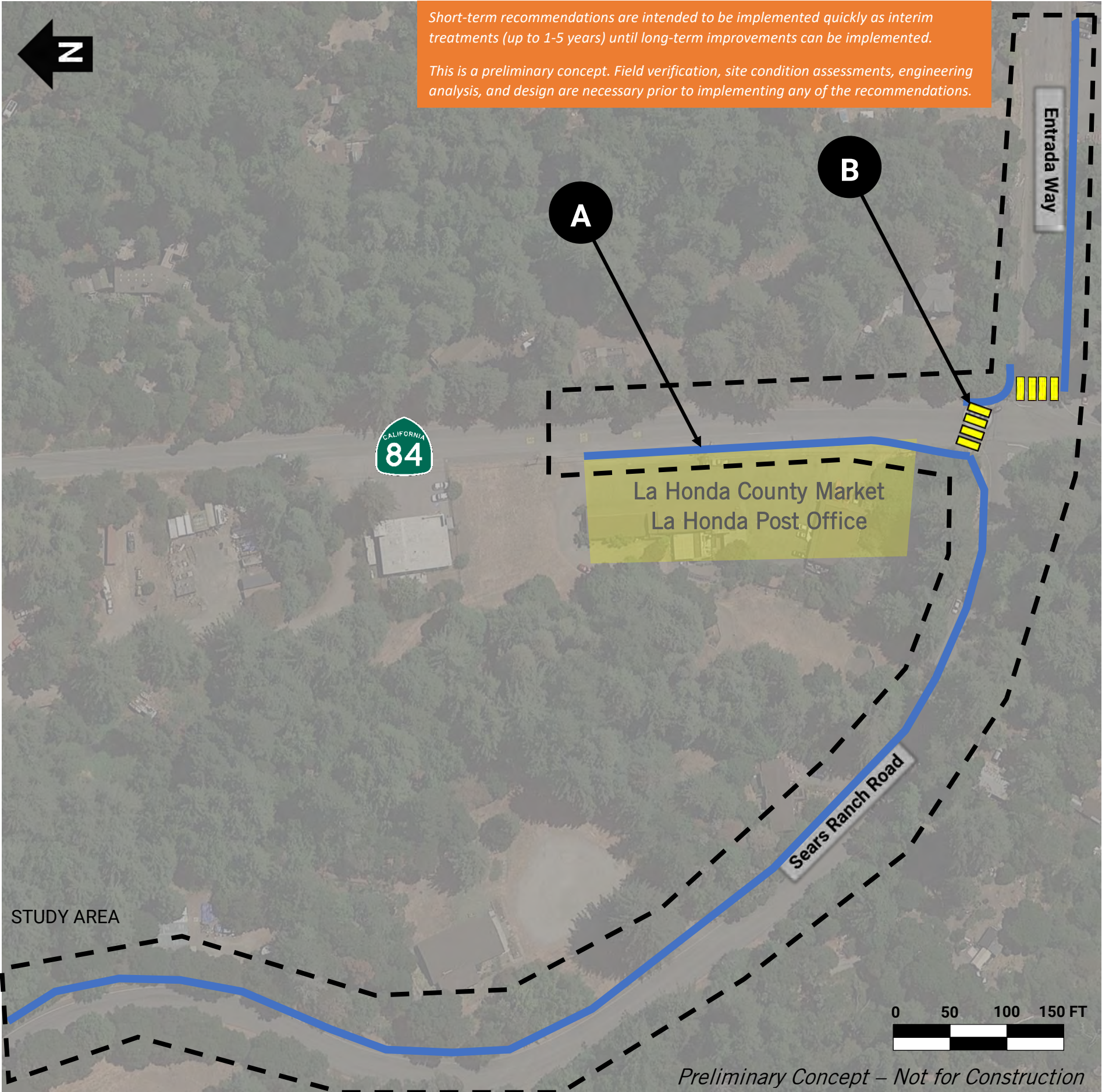
Short-term recommendations are intended to be implemented quickly as interim treatments (up to 1-5 years) until long-term improvements can be implemented.

This is a preliminary concept. Field verification, site condition assessments, engineering analysis, and design are necessary prior to implementing any of the recommendations.

Study Area 4: Downtown El Granada | El Granada, CA

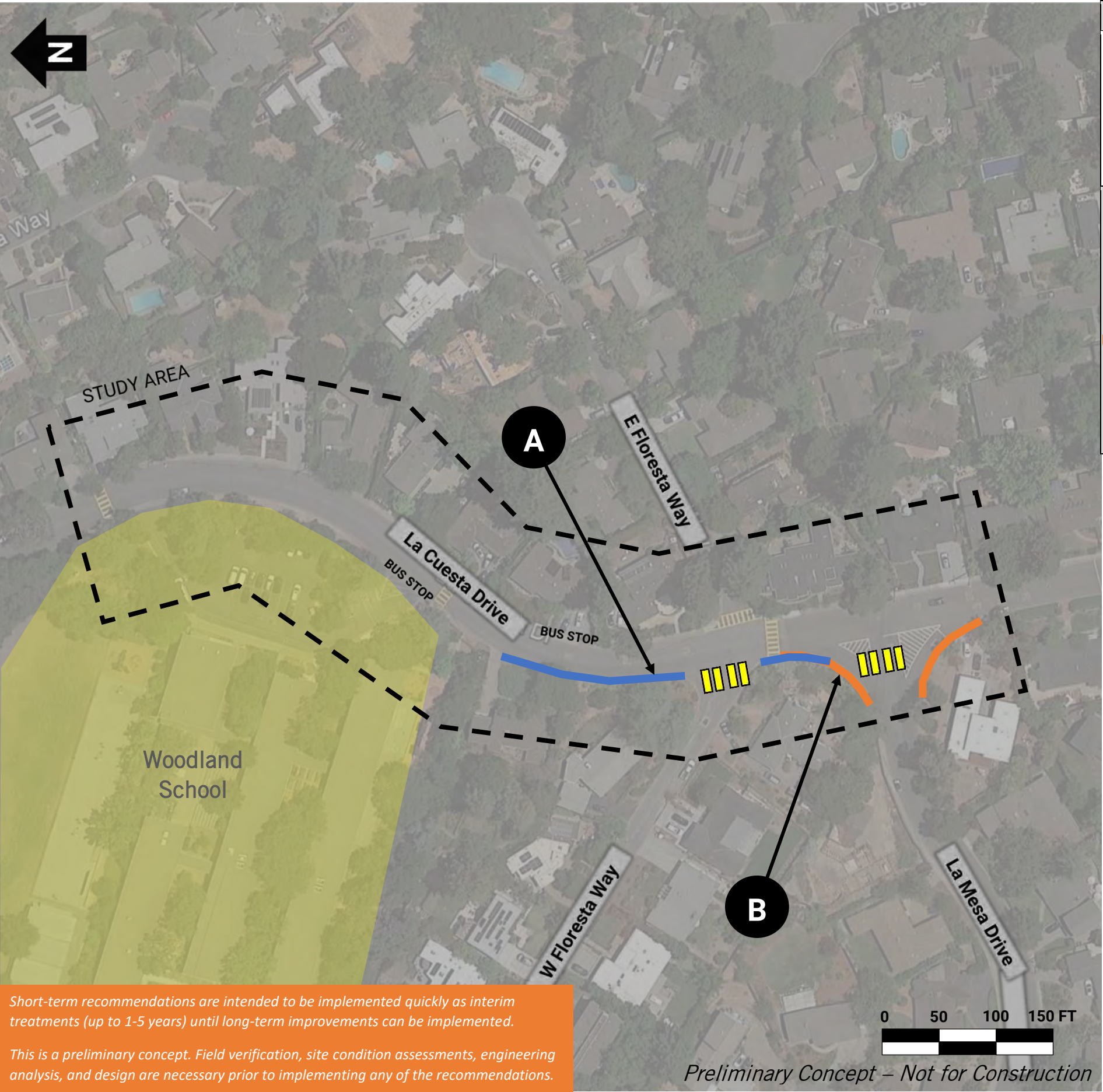


	Existing Condition	Treatment Goal	Recommendation
A	Gaps in downtown walking network limit pedestrian connectivity in downtown Pescadero.	<ul style="list-style-type: none">Provide a dedicated path for connected pedestrian access	Short-Term <ul style="list-style-type: none">Install a delineated walkway at indicated locationsExtend sidepath from Stage/Pescadero Creek intersection to Post Office Long-Term <ul style="list-style-type: none">Install concrete sidewalks in front of Topia Antiques and gas station (areas without existing sidewalk infrastructure that abut existing concrete sidewalks)
B	Drainage issues on unpaved sidewalks after rain events.	<ul style="list-style-type: none">Eliminate low points where water pools in pedestrian walkways to provide an obstacle-free path for pedestrians	Short-Term <ul style="list-style-type: none">Conduct regular maintenance of pedestrian walkways and sidewalks (i.e., fill depressions with new soil) Long-Term <ul style="list-style-type: none">Install concrete sidewalk to close existing sidewalk gaps
C	Inconsistent parking types on Stage Road result in parked vehicles encroaching in pedestrian space and travel lanes.	<ul style="list-style-type: none">Clearly distinguish vehicle parking spaces from pedestrian spaces and travel lanesImplement a consistent (and therefore predictable) approach to parking along Stage Road	Short-Term: <ul style="list-style-type: none">Reconfigure parking on each side of Stage Road to be consistent (i.e., all parallel or all diagonal) by striping parking spaces
D	Lighting gaps on Stage Road reduce pedestrian comfort and safety	<ul style="list-style-type: none">Eliminate dark zones along Stage Road	Long-Term <ul style="list-style-type: none">Install street lighting in areas with lighting gaps (e.g., in front of Duarte's Tavern)
E	Pedestrian desire lines exist to cross at all four legs of the Pescadero Creek Road / Stage Road intersection	<ul style="list-style-type: none">Increase visibility of pedestriansProvide crossing infrastructure at desired crossing locationsIncrease accessibility for pedestrians at intersection	Short-Term <ul style="list-style-type: none">Install high-visibility crosswalks with accessible landings (curb ramps on sidewalks) and detectable warning surfaces on all four legs of the intersection Long-Term <ul style="list-style-type: none">Install lighting at intersection to illuminate crosswalks
F	Stop Ahead signage needed on Pescadero Creek Road on eastbound approach to Stage Road.	<ul style="list-style-type: none">Provide advanced warning for eastbound vehicles on Pescadero Creek Road to stop at the upcoming intersection	Short-Term <ul style="list-style-type: none">Install Stop Ahead signage to augment existing Stop Ahead pavement markings

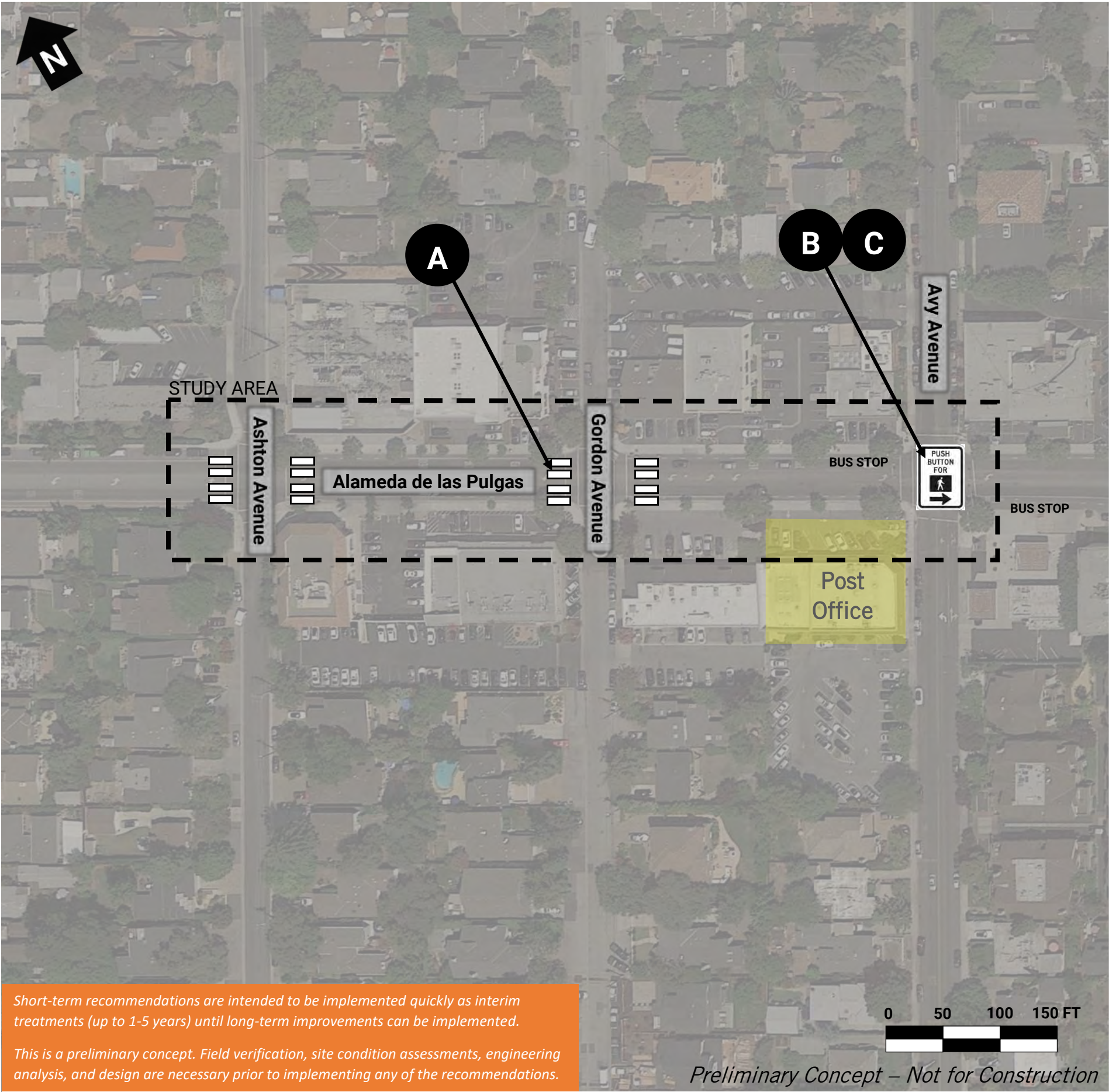


	Existing Condition	Treatment Goal	Recommendation
A	Pedestrian network gaps result in a disconnected walking network.	<ul style="list-style-type: none">Provide a dedicated path for pedestrian access along SR-84, Entrada Way, and Sears Ranch RoadIncrease comfort and accessibility for pedestrians	Short-Term <ul style="list-style-type: none">Install a delineated walkway on the east side of Entrada Way from Cuesta Road to SR-84Delineate a space for crossing pedestrians to wait on the northeast corner of Entrada Way and SR-84Install a delineated walkway on south side of SR-84 from Country Market to Sears Ranch RoadInstall a delineated walkway on east side of Sears Ranch Road from school to SR-84. This is also a recommendation from a San Mateo County Safe Routes to School walking audit conducted at La Honda Elementary School, and would facilitate access to the La Honda Creek Open Space Preserve.Install detectable warning surfaces in delineated walkways adjacent to crossing locations.
B	Observed vehicles yielding infrequently to pedestrians crossing SR-84 at Sears Ranch Road.	<ul style="list-style-type: none">Increase visibility of crossing pedestrians	Short-Term <ul style="list-style-type: none">Install a high-visibility yellow crosswalk across Entrada Way at SR-84 to connect proposed walkways. The Caltrans District 4 Bike Plan proposes crossing improvements at this intersection. Long-Term <ul style="list-style-type: none">Install pedestrian-activated rectangular rapid flashing beacons (RRFBs) at existing marked crossing. This is also a recommendation from the San Mateo County Safe Routes to School walking audit conducted at La Honda Elementary School. The Caltrans District 4 Bike Plan proposes crossing improvements at this intersection.
All recommendations on SR-84 require coordination with Caltrans.			

Study Area 6: Downtown La Honda | La Honda, CA

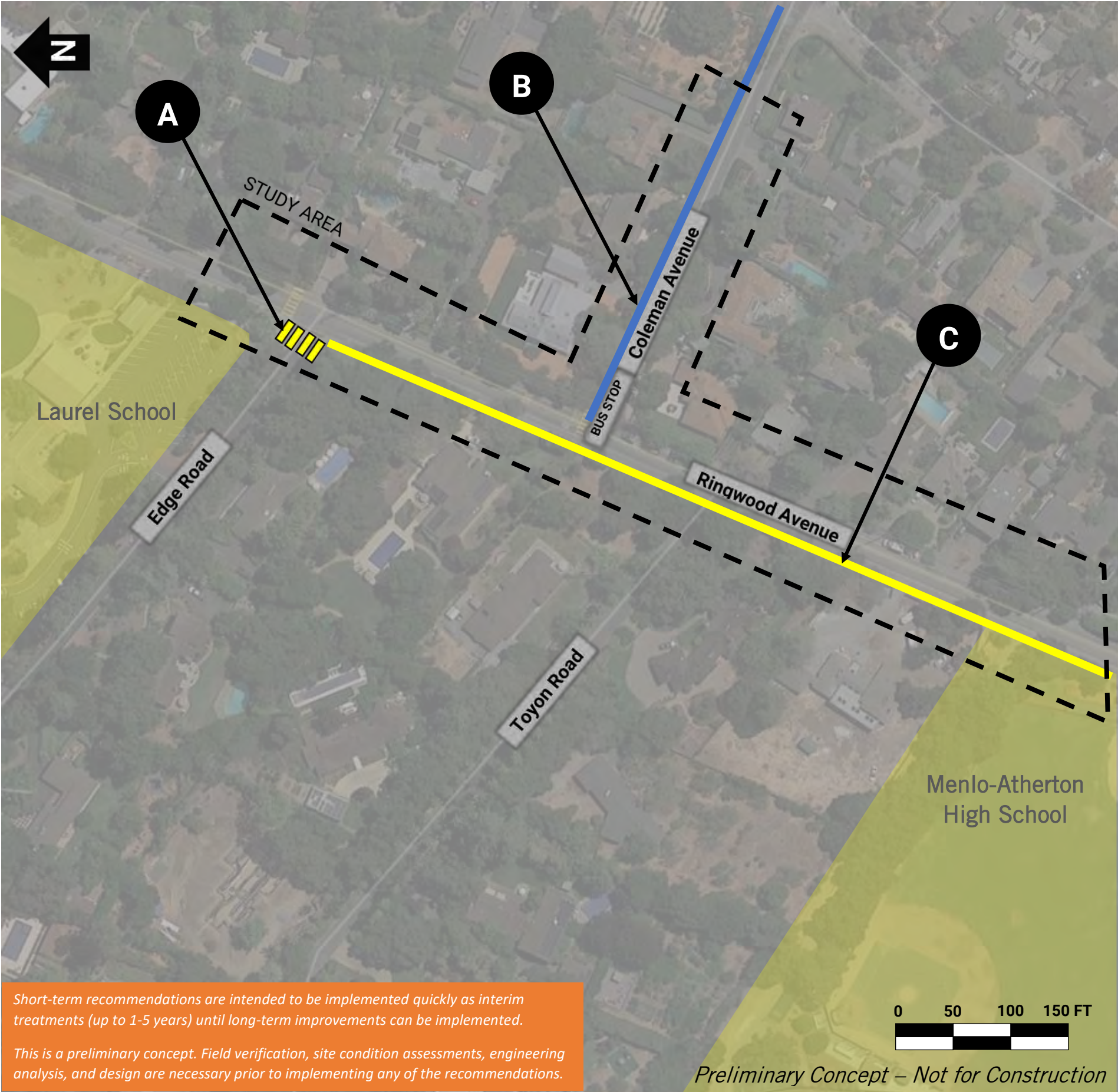





	Existing Condition	Treatment Goal	Recommendation
A	Sidewalk gaps exist for pedestrians accessing Woodland School from the south.	<ul style="list-style-type: none">Provide a dedicated, unobstructed path for pedestrian access from La Mesa Drive to Woodland School	Long-Term <ul style="list-style-type: none">Install sidewalk on west side of La Cuesta Drive from West Floresta Way to existing sidewalk south of school entranceInstall high-visibility yellow crosswalk and curb ramps with detectable warning surfaces across West Floresta Way
B	Large corner radii and right turn slip lanes at the intersection of La Cuesta Drive and La Mesa Drive result in a long crossing distance for pedestrians	<ul style="list-style-type: none">Shorten pedestrian crossing distances / time spent in crosswalkSlow the speed of turning vehicles	Short-Term <ul style="list-style-type: none">Reduce intersection footprint by closing slip lanes and reducing corner radii, using quick-build temporary materials like paint and flexible delineators Long-Term <ul style="list-style-type: none">Reduce intersection footprint, close slip lanes, and reduce corner radii by reconstructing curblines.When reconstructing curblines, install high-visibility yellow crosswalk across La Mesa Drive and construct curb ramp with detectable warning surfaces at northwest corner, adjacent to sidewalk (see Recommendation A).



	Existing Condition	Treatment Goal	Recommendation
A [Crosswalk Icon]	Observed vehicles yielding infrequently to pedestrians crossing Alameda de las Pulgas at Ashton Avenue and Gordon Avenue.	<ul style="list-style-type: none">Increase visibility of crossing pedestrians	Short-Term <ul style="list-style-type: none">Upgrade existing marked crossings to high-visibility markingsInstall pedestrian warning signage at crossings
B	Observed right-turning vehicles yielding infrequently to pedestrians at the signalized intersection of Alameda de las Pulgas and Avy Avenue.	<ul style="list-style-type: none">Increase visibility of crossing pedestrians to turning vehicles	<ul style="list-style-type: none">Short-TermInstall Leading Pedestrian Intervals (LPIs) at signalized intersections, which provide pedestrians with a walk signal 3 to 7 seconds before vehicles traveling in the same direction receive a green indication.If right turns on red are allowed, install signs restricting right turns on red.
C	Push buttons are often over 5' from crosswalk at the intersection of Alameda de las Pulgas and Avy Avenue.	<ul style="list-style-type: none">Increase ease of navigation for pedestrians, particularly for disabilities or those using mobility devices	Long-Term <ul style="list-style-type: none">Relocate all push buttons via the replacement of signal poles
D	Minimal pedestrian-scale lighting along Alameda de las Pulgas (area-wide)	<ul style="list-style-type: none">Increase comfort for pedestrians walking after darkIncrease visibility of pedestrians	Long-Term <ul style="list-style-type: none">Install pedestrian-scale lighting along Alameda de las PulgasConsider adding intersection lighting, placing light between crosswalk and oncoming vehicles to front-light the crosswalk

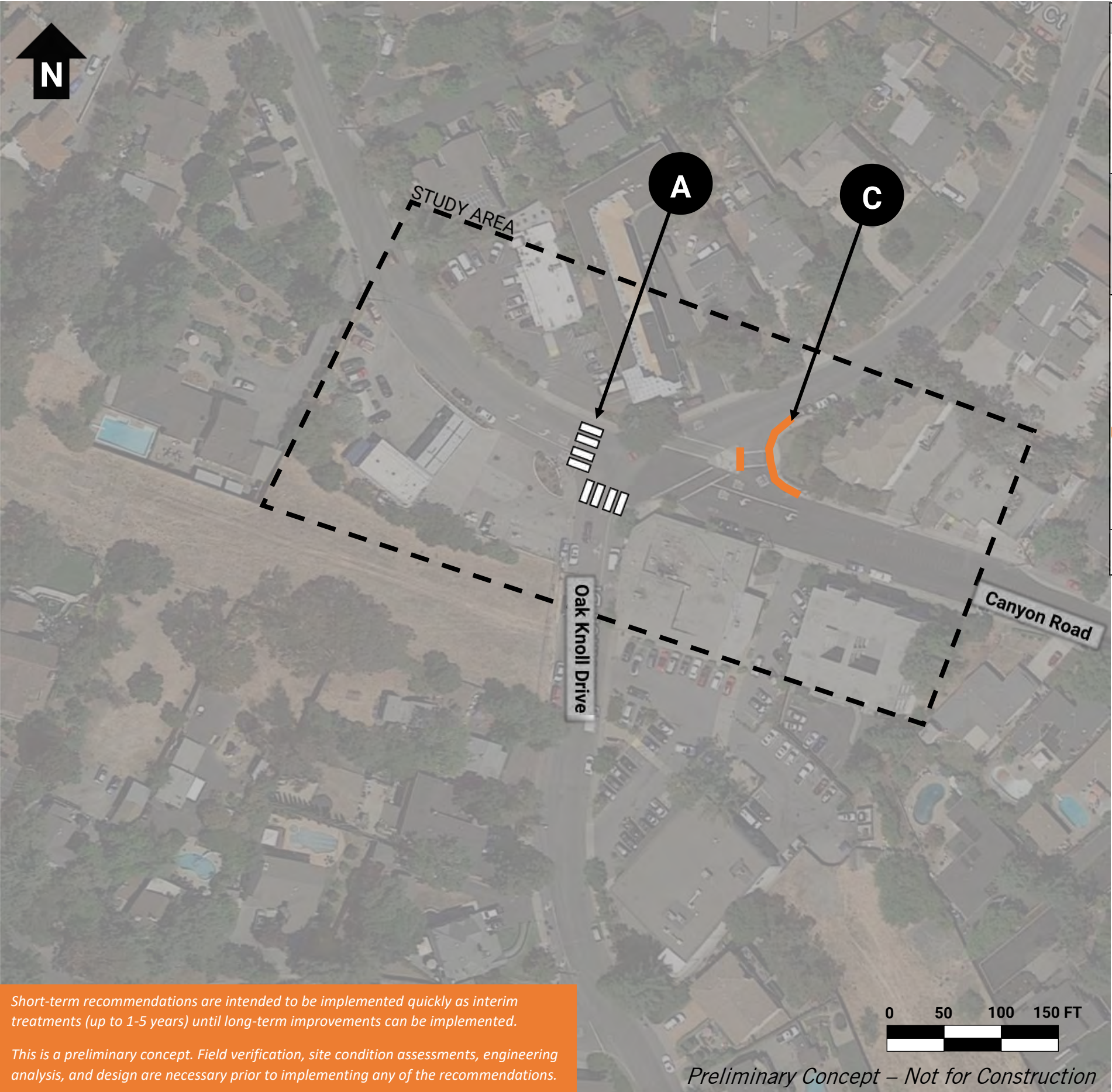
Study Area 8: Downtown West Menlo Park | West Menlo Park, CA



	Existing Condition	Treatment Goal	Recommendation
A 	Unmarked pedestrian crossing at Edge Road, reducing pedestrian conspicuity for drivers.	<ul style="list-style-type: none">• Provide crossing infrastructure at desired crossing locations• Increase visibility of crossing pedestrians	Short-Term <ul style="list-style-type: none">• Restripe crosswalk over Edge Road
B 	Informal walkway on Coleman Avenue , resulting in pedestrian comfort and access issues.	<ul style="list-style-type: none">• Provide a dedicated path for pedestrian access	Short-Term <ul style="list-style-type: none">• Formalize walkway on north side of Coleman Avenue by delineating walkway from travel lane with vertical elements (e.g., curbing) and widening walkway
C 	No designated walkways and separated bikeways along Ringwood Avenue	<ul style="list-style-type: none">• Provide a comfortable facility for pedestrians and bicyclists to travel	Short-Term <ul style="list-style-type: none">• Install shared use path on west side of Ringwood Avenue using low cost materials like thermoplastic striping and curb stops or flexposts to delineate it from the roadway (requires further study to determine impacts to existing infrastructure)

Short-term recommendations are intended to be implemented quickly as interim treatments (up to 1-5 years) until long-term improvements can be implemented.

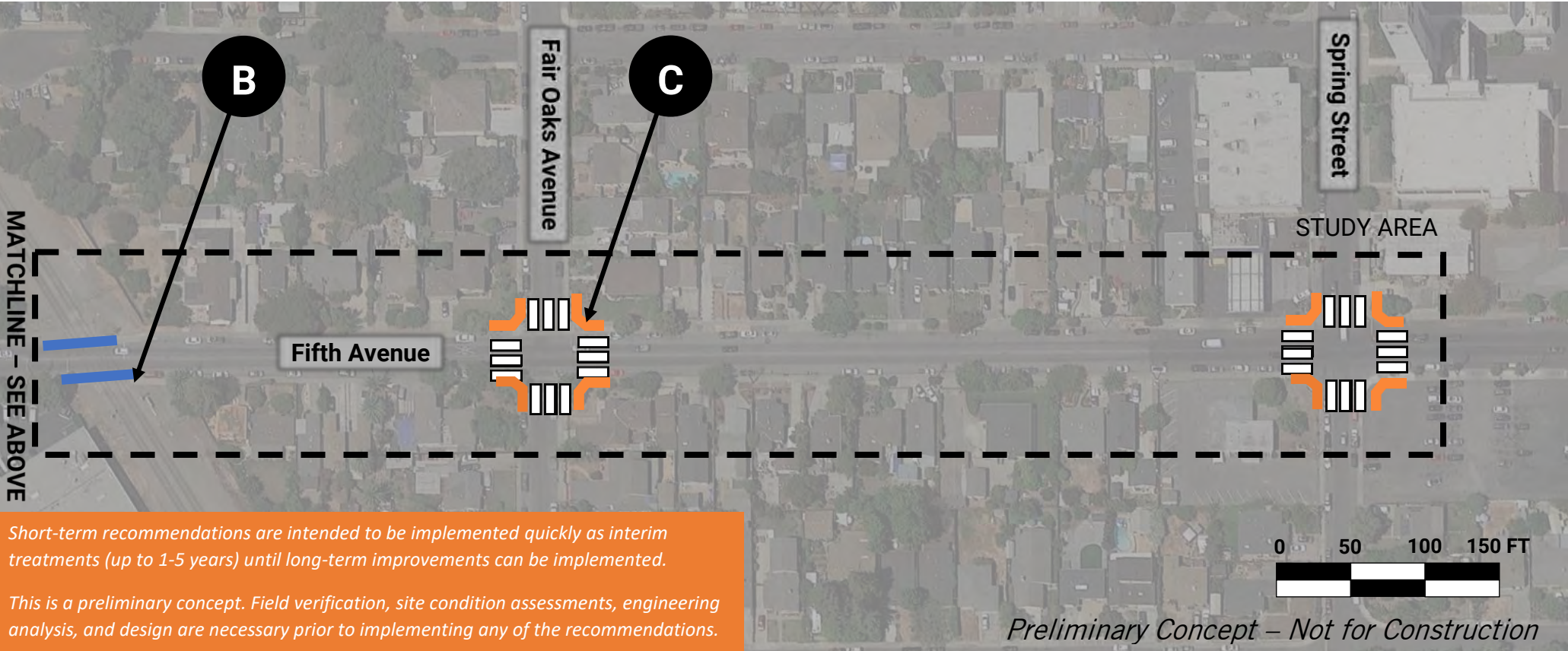
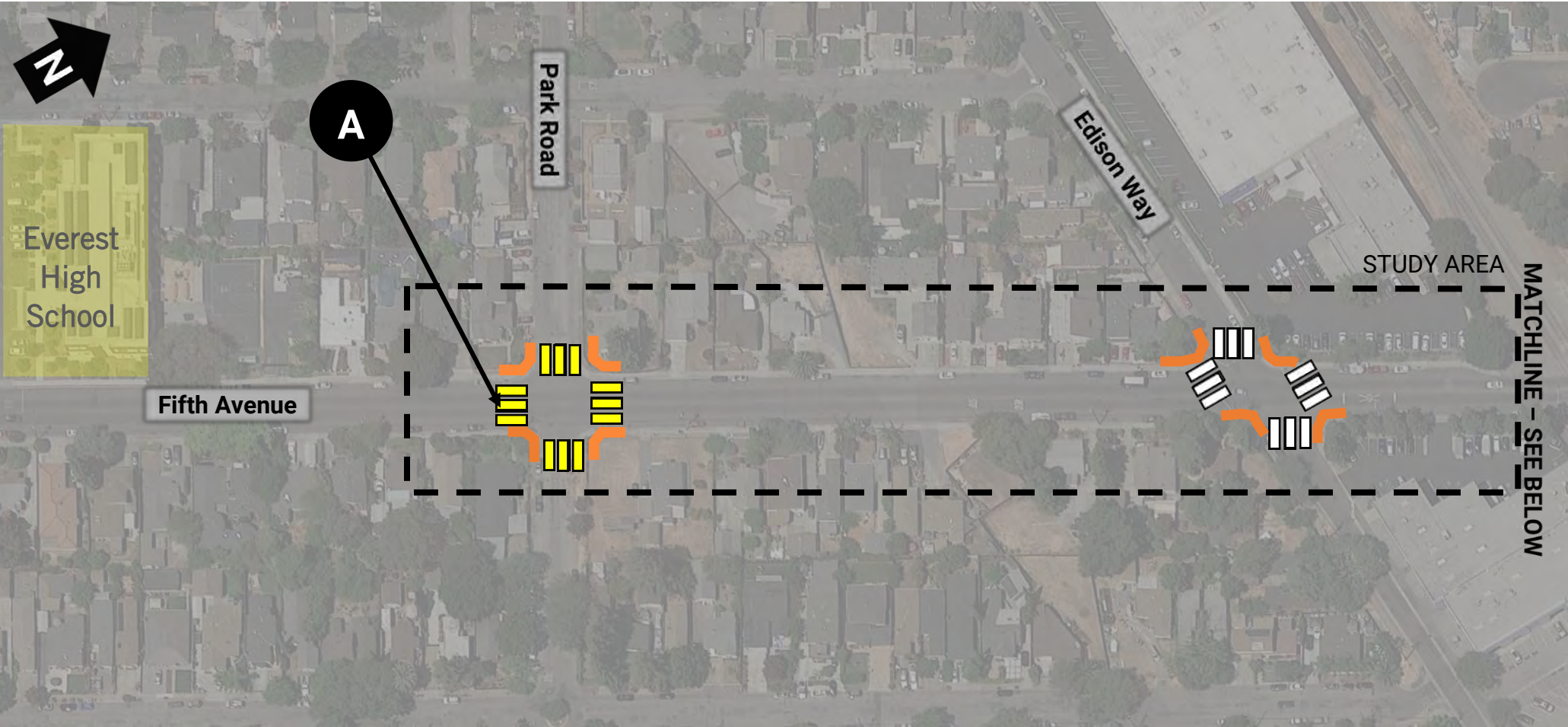
This is a preliminary concept. Field verification, site condition assessments, engineering analysis, and design are necessary prior to implementing any of the recommendations.



	Existing Condition	Treatment Goal	Recommendation
A 	Unmarked crossings on northwest and southwest legs of intersection	<ul style="list-style-type: none">• Provide crossing infrastructure at desired crossing locations	Long-Term <ul style="list-style-type: none">• Stripe high-visibility crosswalks along western and southern legs of intersection and upgrade existing crosswalks on eastern and northern legs to high-visibility crosswalks• When striping crosswalks, construct curb ramps with detectable warning surfaces
B	Lighting needed at intersection	<ul style="list-style-type: none">• Increase comfort for pedestrians• Increase visibility of crossing pedestrians	Long-Term <ul style="list-style-type: none">• Install intersection lighting to illuminate crosswalks
C 	Eastern corner right turn slip lane has large radius	<ul style="list-style-type: none">• Increase comfort for pedestrians crossing slip lane• Shorten pedestrian crossing distances / time spent in crosswalk• Slow the speed of turning vehicles	Short-Term <ul style="list-style-type: none">• Narrow slip lane to reduce turning traffic speeds by using quick-build temporary materials like paint and flexible delineators Long-Term <ul style="list-style-type: none">• Eliminate slip lane and reconstruct curbline of eastern corner with truck apron to accommodate heavy vehicles making right turn

Improvements at the intersection of Oak Knoll Drive and Canyon Road require coordination with Redwood City.




Study Area 10: Oak Knoll Drive and Canyon Road Intersection | Emerald Hills, CA



Short-term recommendations are intended to be implemented quickly as interim treatments (up to 1-5 years) until long-term improvements can be implemented.

This is a preliminary concept. Field verification, site condition assessments, engineering analysis, and design are necessary prior to implementing any of the recommendations.

Preliminary Concept – Not for Construction

	Existing Condition	Treatment Goal	Recommendation
A 	Unmarked crossings on all legs of intersections of Fifth Avenue and Park Road; uncontrolled crossings across Fifth Avenue	<ul style="list-style-type: none">• Increase visibility of pedestrians at desired crossing locations	Short-Term <ul style="list-style-type: none">• Install high-visibility yellow crosswalks on all intersection legs Long-Term <ul style="list-style-type: none">• Install pedestrian warning signage and RRFBs on both legs of Fifth Avenue
B 	No delineation between walkways and vehicle travel lanes at railroad crossing.*	<ul style="list-style-type: none">• Provide a dedicated path for pedestrian access	Short-Term <ul style="list-style-type: none">• Delineate walkways on both sides of Fifth Avenue Long-Term <ul style="list-style-type: none">• Extend concrete sidewalks to railroad tracks
C 	Unmarked crossings at intersections along corridor. No parking restrictions adjacent to intersections. At Edison Way and Fifth Avenue, intersection geometry and pavement markings result in two effective approach lanes and long crossing distances.	<ul style="list-style-type: none">• Increase visibility of crossing pedestrians• Shorten pedestrian crossing distances / time spent in crosswalk• Increase accessibility for pedestrians at intersections• At Edison Way and Fifth Avenue, slow the speeds of turning vehicles	Short-Term <ul style="list-style-type: none">• Install high-visibility crosswalks on all intersection legs• Install curb extensions, using quick-build temporary materials like paint and flexible delineators• Retrofit existing curb ramps to include detectable warning surfaces• Restrict parking for 20' approaching to intersections• Remove second stop bar on both legs of Edison Way at Fifth Avenue Long-Term <ul style="list-style-type: none">• Install curb extensions with curb ramps and detectable warning surfaces by reconstructing curblines. Consider truck aprons to accommodate heavy vehicles.• Spring Street only: install curb ramps on west side of street and stripe crosswalks once curb ramps installed
D	Sparse pedestrian-scale lighting along Fifth Avenue (area-wide)	<ul style="list-style-type: none">• Increase comfort for pedestrians• Increase visibility of pedestrians	Long-Term <ul style="list-style-type: none">• Install pedestrian-scale lighting along Fifth Avenue, especially at crosswalks.
E	Sidewalk gaps exist along Edison Way and Park Road adjacent to Fifth Avenue	<ul style="list-style-type: none">• Improve access and safety for pedestrians	Long-Term <ul style="list-style-type: none">• Install sidewalks to close sidewalk gaps
<p>*The Dumbarton Transportation Corridor Study proposes a shared use path along the Dumbarton rail right of way from Redwood City to East Palo Alto. If implemented, the project would cross Fifth Avenue at this location.</p> <p>Improvements at the intersection of Fifth Avenue and Spring Street require coordination with Redwood City.</p>			

Study Area 11: Fifth Avenue from Park Road to Spring Street | North Fair Oaks, CA

BIKE PROJECT FACT SHEETS

This section presents five illustrative examples of different bikeway treatments recommended in differing County geographies that demonstrate how bicycling conditions can be improved. Further study and community outreach will be required prior to implementing each project.

The five projects include:

1. Fifth Avenue in North Fair Oaks
2. Hillside Boulevard in San Bruno Mountain Park
3. Coleman Avenue in Menlo Oaks
4. Main Street in Montara
5. Avenida Alhambra in El Granada

FIFTH AVENUE (PROJECT ID 1702B & 1072C)

Fills a
Network
Connectivity
Gap

OVERVIEW

The Fifth Avenue bikeway project will install Class II Buffered Bicycle Lanes between Fair Oaks Avenue and Waverly Avenue in North Fair Oaks. Fifth Avenue is a critical route through the community and the only crossing of the Caltrain Corridor in North Fair Oaks. This project will make it easier and safer for people bicycling to access the residences, businesses, and schools located along this corridor. The recommendation helps implement the North Fair Oaks Community Plan, which prioritizes a bikeway on Fifth Avenue.

ISSUES AND OPPORTUNITIES

Currently, there is no bikeway along Fifth Avenue and people bicycling must ride in mixed traffic with motor vehicles, which results in high-stress bicycling conditions. Several collisions involving people bicycling have occurred along Fifth Avenue within the project area. The Class II Buffered Bicycle Lanes recommended for this project will fill an important bicycle network connectivity gap and provides a safer, more comfortable route for people bicycling. Students and school staff can use this route to connect to the schools that are located along Fifth Avenue or in close proximity to it, including Everest High School and Garfield Elementary School.



Fifth Avenue Project Extents

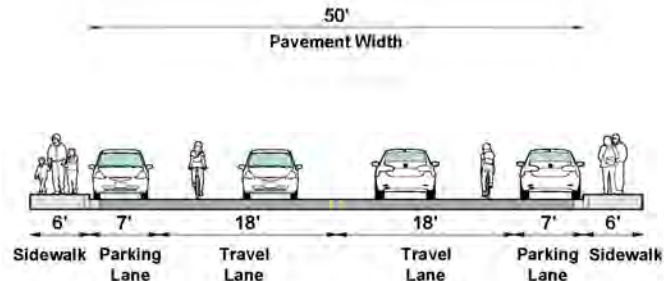
Parts of this project are located in a Community of Concern, as defined by the Metropolitan Transportation Commission. This project will improve bicycling access to communities that may be more dependent on walking, bicycling, and transit to run errands, access jobs, or visit friends and family. While this project is not currently located along a transit route, it improves access to transit and key destinations along Middlefield Road, El Camino Real, and the Stanford campus adjacent to Bay Road.

PROJECT DETAILS

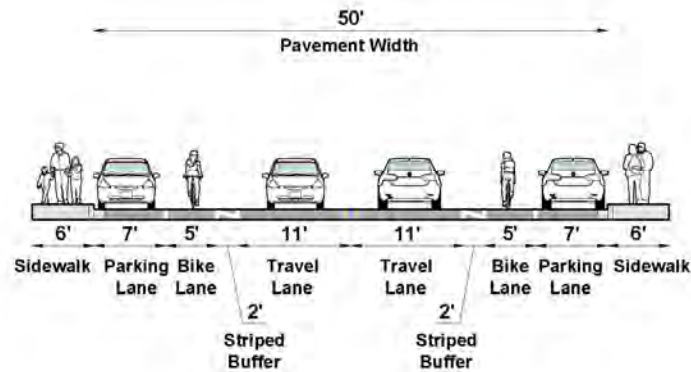
This project received strong public support and faces relatively few implementation constraints, as it would require travel lane narrowing and roadway re-striping, which could be implemented as part of roadway repaving. Project 1702B extends from Fair Oaks Avenue to Semicircular Road and Project 1702C extends from Semicircular Road to Waverly Avenue.

Project Number	Recommended Facility	Major Implementation Action	Length (miles)	Planning-Level Cost
1702B	Class II Buffered Bicycle Lane	Lane narrowing	0.58	\$197,914
1702C	Class II Buffered Bicycle Lane	Lane narrowing	0.17	\$58,222

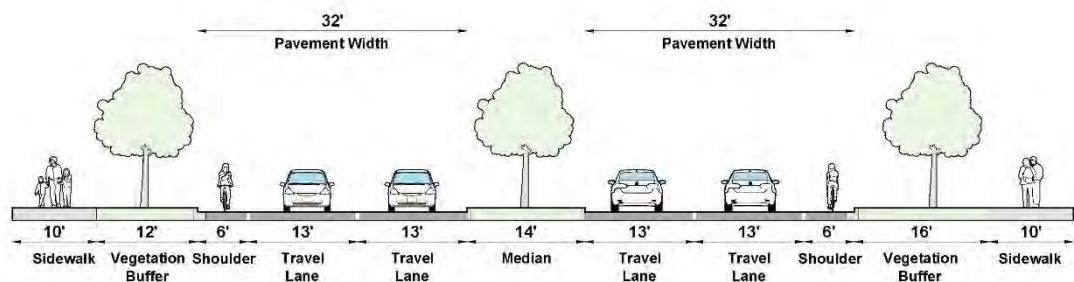
Existing
Cross Section
1702B



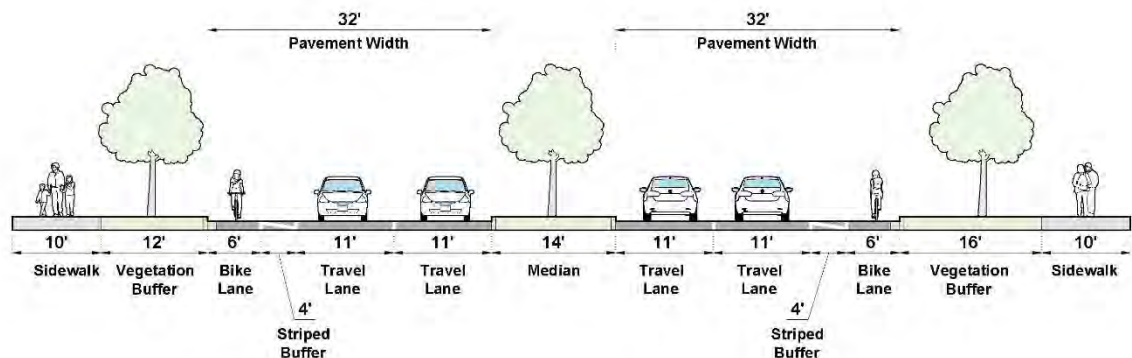
Recommended
Cross Section
1702B



Existing
Cross Section
1702C



Recommended
Cross Section
1702C



All Ages
& Abilities
Bikeway

HILLSIDE BOULEVARD (PROJECT ID 402B)

OVERVIEW

The Hillside Boulevard bikeway project will upgrade the existing Class II Bicycle Lanes to Class IV Separated Bicycle Lanes between Lawndale Boulevard and Chestnut Avenue in the community of San Bruno Mountain Park. This connection will provide an all ages and abilities bikeway along a key segment of Hillside Boulevard that will improve safety and comfort for people bicycling to access schools, transit, recreation opportunities, and commercial areas near this corridor.

ISSUES AND OPPORTUNITIES

Based on existing traffic volume and motor vehicle speeds, the existing bike lanes on Hillside Boulevard are considered high-stress. By upgrading this segment of Hillside Boulevard to a separated bike lane, it will become an all ages and abilities bikeway.

This project also serves as an alternate route to El Camino Real between Daly City and South San Francisco and it improves bicycle access to several important destinations, including the Colma and South San Francisco BART stations, recreational trails in San Bruno Mountain Park and Sign Hill Park, and employment centers including biotech campuses located east of Highway 101. This project will also create a safer and more comfortable connection to multiple schools, including Mills Montessori School, Hillside Christian Academy, Sunshine Gardens Elementary School, and El Camino High School.



Hillside Boulevard Project Extents

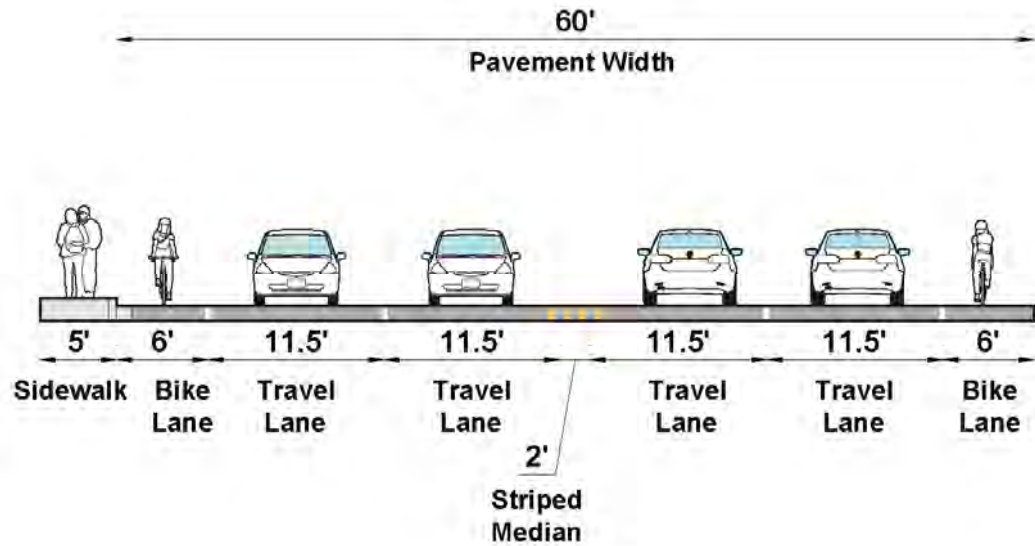
While this project is not located along a transit route, it connects to other recommended all ages and abilities bikeways and it improves access to transit and key destinations along Middlefield Road and El Camino Real.

PROJECT DETAILS

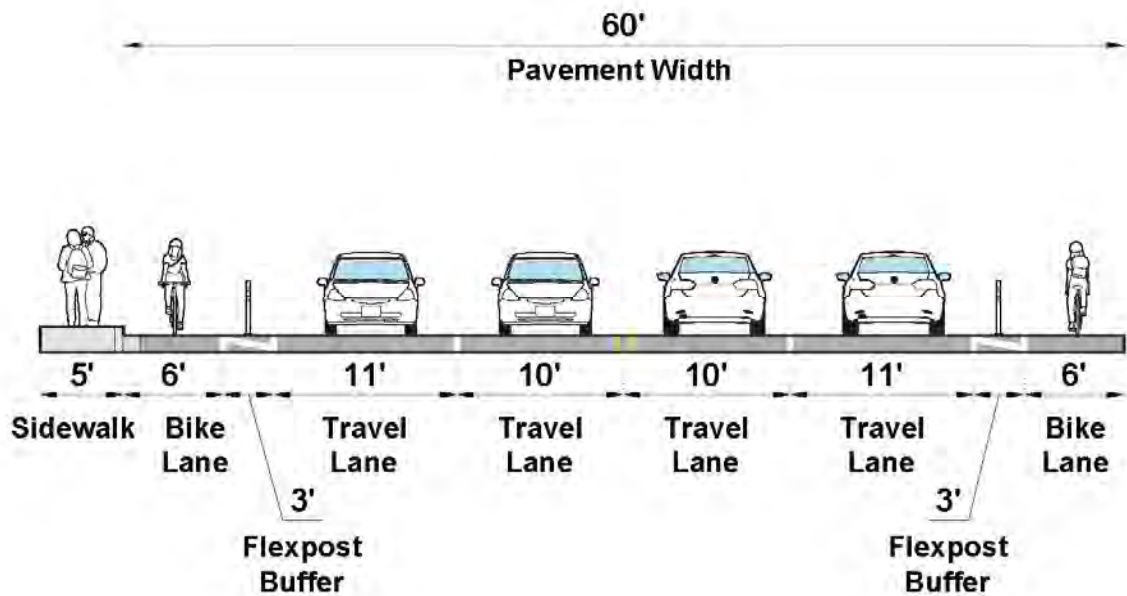
This project will add Class IV Separated Bicycle Lanes on Hillside Boulevard. This project faces relatively minor implementation restraints as it requires minor lane narrowing, re-striping, and the addition of a vertical barrier, such as bollards or curb strips (flexible plastic delineators could be used as an interim treatment).

Project Number	Recommended Facility	Major Implementation Action	Length (miles)	Planning-Level Cost
402B	Class IV Separated Bicycle Lane	Lane Narrowing	0.59	\$237,705

Existing
Cross Section
402B



Recommended
Cross Section
402B



COLEMAN AVENUE (PROJECT ID 1901A)

Fills a
Network
Connectivity
Gap

All Ages
& Abilities
Bikeway

OVERVIEW

The Coleman Avenue bikeway project will add a Class III Bicycle Boulevard along Coleman Avenue in the community of Menlo Oaks. This project will provide a safer and more comfortable bicycling connection for people of all ages and abilities along one of the community's few east-west corridors.

ISSUES AND OPPORTUNITIES

Currently, there is no designated bikeway along Coleman Avenue and people bicycling must ride in mixed traffic with motor vehicles, resulting in high-stress bicycling conditions. Several collisions involving people bicycling have occurred along Coleman Avenue within the project area. The proposed bicycle boulevard may contain traffic calming elements, such as speed cushions and/or chicanes, and it will fill an important bicycle network connectivity gap. Students and school staff can use this route to more comfortably connect to the schools that are located within close proximity to this project, including Peninsula School, Laurel Elementary School, and Menlo-Atherton High School.

This project will improve access for students traveling to Menlo-Atherton High School from nearby Communities of Concern in East Menlo Park and East Palo Alto. The Coleman Avenue bikeway will also improve access to transit, specifically the transit stops located along Coleman Avenue and Ringwood Avenue.



Coleman Avenue Project Extents

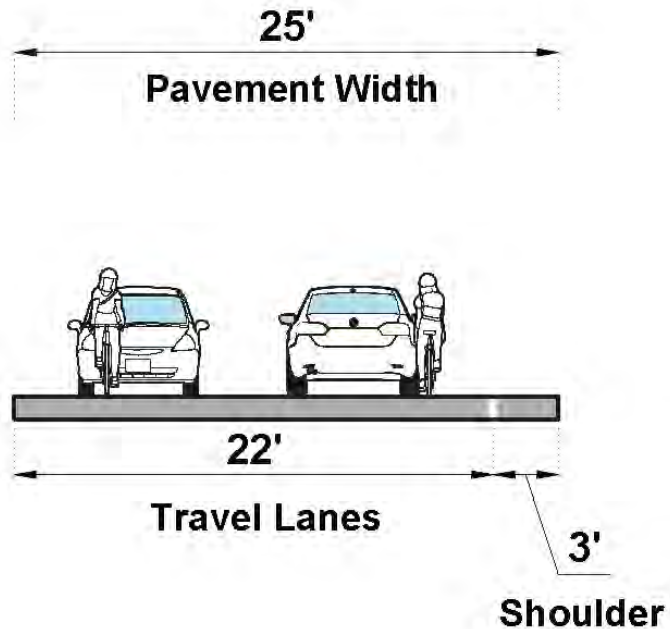
PROJECT DETAILS

This project will add a bicycle boulevard on Coleman Ave from Ringwood Avenue to College Avenue. The project requires the addition of wayfinding signage and traffic calming treatments. This project received strong support during the public engagement completed for this Plan. Note that this project recommendation is not finalized; it is just one option presented for consideration as the community begins to reenvision Coleman Avenue. This project will require further study and additional community engagement before it is finalized.

Project Number	Recommended Facility	Major Implementation Action*	Length (miles)	Planning-Level Cost
1901A	Class III Bicycle Boulevard	Wayfinding and Traffic Calming	0.37	\$88,029

*Coleman Avenue is a transit route, so traffic calming treatments must accommodate transit vehicles. For example, speed cushions can be designed to allow transit vehicles to proceed without reducing speed.

Existing and
Recommended
Cross Section
1091A



BICYCLE BOULEVARD TREATMENTS

Bicycle boulevards are streets that prioritize bicyclist travel. These streets use a variety of treatments to reduce vehicular speeding and volumes to make bicycling more comfortable for people of all ages and abilities. Bicycle boulevards may include the following treatments to improve comfort along the roadway:

Along the route:

- Traffic calming (e.g., speed cushions and chicanes)
- Pavement markings
- Wayfinding Signs

At key intersections:

- High-visibility crossings
- Traffic circles
- Bike boxes

Refer to the *Unincorporated San Mateo County Active Transportation Design Toolkit* for more details about bicycle boulevard treatments.

MAIN STREET (PROJECT ID 3602A, 3602B, AND 3602C)

Fills a
Network
Connectivity
Gap

All Ages
& Abilities
Bikeway

OVERVIEW

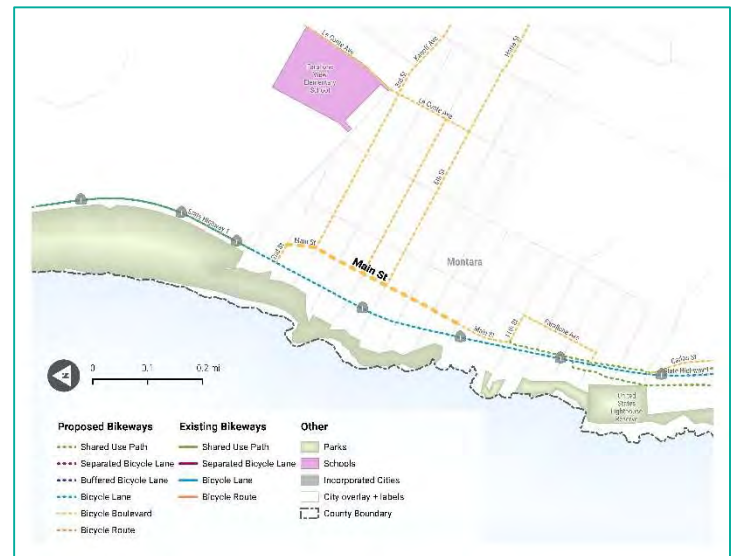
The Main Street bikeway project consists of Class III Bicycle Boulevards along Main Street and several adjacent streets, including Second, Eleventh and Fourteenth Streets and Farallone Avenue. This project will provide a safer and more comfortable bicycling connection for people of all ages and abilities along one of the community's most prominent streets. This project will also provide an important alternative route to Highway 1 and is envisioned to be the extension of the Midcoast Multimodal Trail that will connect Montara, Moss Beach, El Granada, Miramar and Half Moon Bay. The project is consistent with the draft Connect the Coastside Plan.

ISSUES AND OPPORTUNITIES

There are no existing bikeways along Main Street or any of the adjacent streets included in this project. People bicycling must ride in mixed traffic with motor vehicles, resulting in a high-stress experience. The bicycle boulevard network recommended for this project will fill an important bicycle network connectivity gap. This project improves access to transit stops, and commercial and retail areas along, and adjacent to, Main Street and ultimately between midcoast communities,

PROJECT DETAILS

This project will add a bicycle boulevard on Main Street from Second Street to Highway 1. This project does not require any changes to the roadway cross section, however, it will require the addition of wayfinding signage, and traffic calming treatments. Project segment 3602A extends from Highway 1 to Main Street (along Second Street), project segment 3602B extends from Second Street to Ninth Street (along Main Street), and project segment 3602C extends from Ninth Street to Highway 1 (along Main Street, Eleventh Street, Farallone Avenue, and Fourteenth Street).

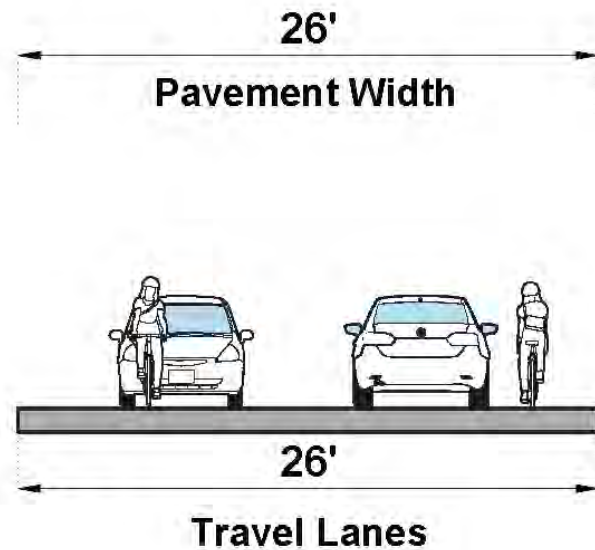


Main Street Project Extents

Project Number	Recommended Facility	Major Implementation Action*	Length (miles)	Planning-Level Cost
3602A	Class III Bicycle Boulevard	Wayfinding and Traffic Calming	0.04	\$9,323
3602B	Class III Bicycle Boulevard	Wayfinding and Traffic Calming	0.35	\$82,989
3602C	Class III Bicycle Boulevard	Wayfinding and Traffic Calming	0.33	\$78,997

*Main Street is a transit route, so traffic calming treatments must accommodate transit vehicles. For example, speed cushions can be designed to allow transit vehicles to proceed without reducing speed.

Existing and
Recommended
Cross Section
3602B and 3602C



BICYCLE BOULEVARD TREATMENTS

Bicycle boulevards are streets that prioritize bicyclist travel. These streets use a variety of treatments to reduce vehicular speeding and volumes to make bicycling more comfortable for people of all ages and abilities. Bicycle boulevards should include the following treatments to improve comfort along the roadway. Bicycle boulevards may include the following treatments to improve comfort along the roadway:

Along the route:

- Traffic calming (e.g., speed cushions and chicanes)
- Pavement markings
- Wayfinding Signs

At key intersections:

- High-visibility crossings
- Rectangular Rapid Flashing Beacons
- Bike boxes

Refer to the *Unincorporated San Mateo County Active Transportation Design Toolkit* for more details about bicycle boulevard treatments.

AVENIDA ALHAMBRA (PROJECT ID 3001A & 3001B)

OVERVIEW

The Avenida Alhambra bikeway project will install Class II Bicycle Lanes from Capistrano Road to Santiago Avenue in El Granada. Avenida Alhambra is an important route for the community and alternative route to Highway 1. This project will fill a gap in El Granada's bicycle network and make it safer for people bicycling to access the residences, businesses, and community destinations located along this corridor.

Fills a
Network
Connectivity
Gap

All Ages
& Abilities
Bikeway

ISSUES AND OPPORTUNITIES

There is currently no bikeway along Avenida Alhambra and people bicycling must ride in mixed traffic with motor vehicles, resulting in high-stress bicycling. The proposed bicycle lanes recommended for this project will fill an important bicycle network connectivity gap. This project also provides a safer and more comfortable route for people bicycling of all ages and abilities.

Students and school staff can use this route to connect to El Granada Elementary School and Wilkinson School. The bikeway project will also improve access to transit stops in the area, and it serves as an alternate bikeway to the Parallel Trail, east of Highway 1.

PROJECT DETAILS

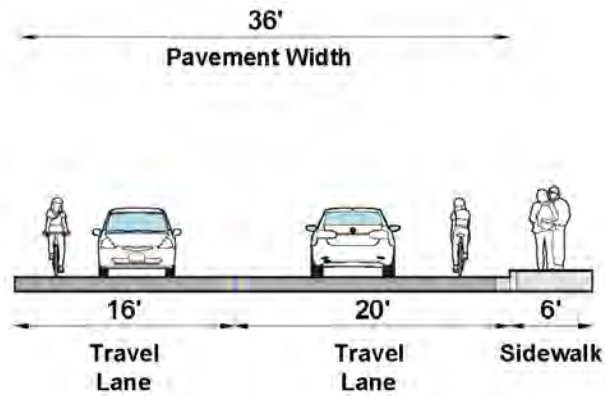
Two segments (3001A and 3001B) make up the project corridor that will add bicycle lanes to Avenida Alhambra. This project received strong public support during the engagement activities completed for this Plan. Project 3001A extends from Capistrano Road to Obispo Avenue and Project 3001B extends from Obispo Avenue to Santiago Avenue.



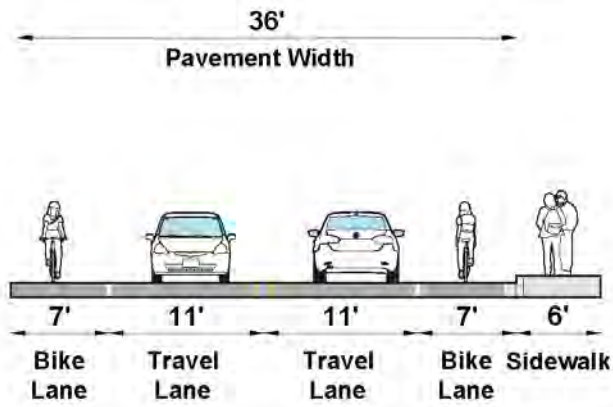
Avenida Alhambra Project Extents

Project Number	Recommended Facility	Implementation Action	Length (miles)	Planning-Level Cost
3001A	Class II Bicycle Lane	None	0.49	\$142,502
3001B	Class II Bicycle Lane	Remove parking on one side of street	0.46	\$134,754

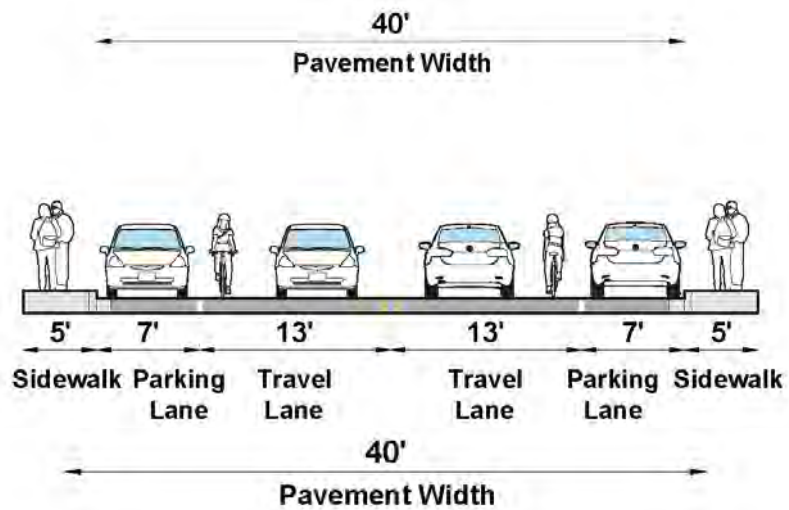
Existing
Cross Section
3001A



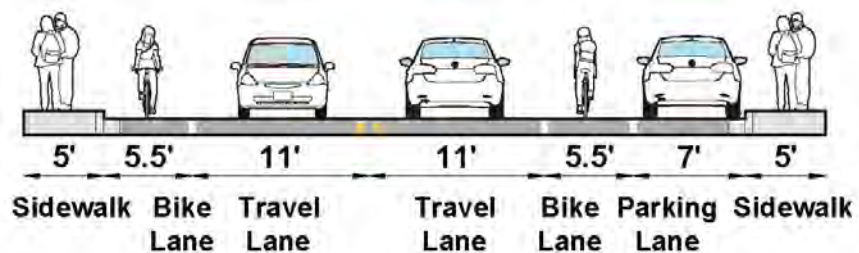
Recommended
Cross Section
3001A



Existing
Cross Section
3001B



Recommended
Cross Section
3001B



COMPILED SAFE ROUTES TO SCHOOL RECOMMENDATIONS

Below is a table that includes a list of Safe Routes to School recommendations compiled from previously published Safe Routes to School audits and reports corresponding to schools in unincorporated San Mateo County. Projects listed below include those identified by County staff from the audits that have yet to be implemented, are located on public street right of way, and meet Caltrans minimum design standards. Further study, community outreach and education may be required, in addition to coordination with the schools, the County, adjacent jurisdictions, and Caltrans where appropriate.

School	School District	Address	Name of SRTS Report	Year Published	Recommendations within Public street ROW yet to be implemented	Responsible Agency
La Honda E.S.	La Honda-Pescadero Unified School District	450 Sears Ranch Rd, La Honda, CA 94020	La Honda Safe Routes to School Report	2012	Install sidewalk along East Side of Entrada Way	San Mateo County
					Construct sidewalk adjacent to school on Sears Ranch Rd	Caltrans
					Install New Rectangular Rapid Flashing Beacon (RRFB) crossing to replace existing transverse crossing	
Farallone View E.S.	Cabrillo Unified School District	1100 Le Conte Ave, Montara, CA 94037	Farallone View Walk and Bike Audit Link to report: http://www.cabrillo.k12.ca.us/CUSD_file/SR2S_FV-Walk-Audit_3-17-14.pdf	2014	Improve walking path on 5th Ave from Le Conte to Main Street	San Mateo County
Garfield C.S.	Redwood City School District	3600 Middlefield Rd, Menlo Park, CA 94025	Garfield Community School Walk/Bike Audit and Field Review Link to report: https://www.rwc2020.org/wp-content/uploads/2018/01/Garfield-Walk-and-Bike-Audit_FINAL.pdf	2018	Semicircular Road/Arrowhead Lane/Fifth Avenue: * Paint curb red near the corners of the intersection to increase visibility * Install curb extensions on both sides of the Arrowhead Lane approach * Install high visibility crosswalk on the southern leg of the fork in Semicircular Road	San Mateo County
					Glendale Avenue: Install a Class III bike route from Fifth Avenue to Berkshire Avenue	
					Columbia Avenue: Install a Class III bike route from Glendale Avenue to El Camino Real	
					Fifth Avenue: Install Class II bike lanes from Middlefield Road to Edison Avenue	
					Address issue of parents parking at the Chavez Supermarket parking lot for drop off/pick up	
Hoover E.S.	Redwood City School District	701 Charter St, Redwood City, CA 94063	Hoover Community School Walk/Bike Audit and Field Review Link to report: https://www.rwc2020.org/wp-content/uploads/2018/01/Hoover-Walk-and-Bike-Audit_FINAL.pdf	2018	Install high visibility crossings at Spring and Charter	San Mateo County and Redwood City
					Stambaugh Street/Buckeye Street: Install curb ramps and crosswalks on all four legs of the intersection	Redwood City
					Stambaugh Street/Manzanita Street: Install high visibility crosswalks across Manzanita Street	
					Stambaugh Street/Laurel Street: Install high visibility crosswalks across Laurel and install curb extension at all four corners	
					Stambaugh Street/Willow Street: * Install curb extensions or raised intersections * Install high visibility crosswalks on all legs * Conduct a warrant study for the installation of all-way stop control * Consider adding intersection artwork that does not detract from the effectiveness of traffic control markings	
					Middlefield Road/Willow Street: * Install high visibility crosswalk on all legs * Consider signal improvements to add a push button on the west side * Extend bike lanes along Middlefield Road	
					Middlefield Road/Charter Street: * Install high visibility crosswalks * Consider installation of Leading Pedestrian Intervals (LPI) into the cycle of the traffic signal	
					Stambaugh Street/Charter Street: Install high visibility crosswalks across Stambaugh Street and Charter Street	
					Page Street/Eighth Avenue: * Conduct a four-way stop warrant; install red curbs at corners * Install high visibility crossings at North and South crosswalks * Install advance stop legend * Install curb extensions on all corners of the intersection	Redwood City
					Page Street/Tenth Avenue: * Install high visibility crossings on all legs * Install curb extensions on all corners of the intersection	
Taft E.S.	Redwood City School District	903 Tenth Ave, Redwood City, CA 94063	Taft Community School Walk/Bike Audit and Field Review Link to report: https://www.rwc2020.org/wp-content/uploads/2018/01/Taft-Walk-and-Bike-Audit_FINAL.pdf	2018	Tenth Avenue/Michael Drive: * Install high visibility crossing across Michael Drive * Install curb extensions on all four corners of the intersection	San Mateo County and Redwood City
					Bay Road/Ninth Avenue: * Install crosswalk on Ninth Avenue * Install curb extensions on Ninth Avenue * Install use crosswalk sign on Ninth Avenue	
					Bay Road/Eighth Avenue: * Install high visibility crosswalks accross north and south legs * Install curb extensions at proposed and existing high visibility crossings * Install Rectangular Rapid Flashing Beacon (RRFB) on Bay Road crossing	San Mateo County and Redwood City
					Bay Road/Fifth Avenue: Install traffic signal when warranted	Redwood City
Fair Oaks C.S. (now KIPP Excelencia Community Prep and Connect Charter)	Redwood City School District	2950 Fair Oaks Ave, Redwood City, CA 94063	Redwood City Safe Routes to School Report Link to report: https://www.rwc2020.org/wp-content/uploads/2015/12/RWC-SRTS-Summary-Report-August-2013-small-for-email.pdf	2013	Fair Oaks Avenue/Barron Ave: * Update school crossing assembly signage (Assembly D) in advance of crosswalk in both directions on Fair Oaks Avenue * Ensure all curb ramps are ADA compliant * Stripe red curb for SamTrans bus stop on Fair Oaks Avenue. Restripe yellow curb along school frontage as white curb loading zone * Consider a pilot closure of the school parking lot during drop-off	San Mateo County
					East of Barron Ave: Ensure all curb ramps are ADA compliant	San Mateo County
					Hampshire Ave: * Replace existing green curb along school frontage with white curb loading zone (School needs to apply to County to establish demand) * Consider constructing a mid-block crosswalk south of the teacher parking lot entrance, including curb ramps, Assembly B & D signage and advance red curb * Upgrade existing yellow transverse crosswalk at Halsey Ave to high visibility. Consider additional measures such as curb extensions or in-pavement yield paddles. Update school crossing assembly signage (Assembly D, in advance of the crosswalk, and Assembly B, at the crosswalk).	San Mateo County
					Second Avenue crossing of the Dumbarton Rail Corridor: * Work w/ SamTrans to pave sidewalks across rail tracks and install pedestrian gates at crossing * Stripe white transverse crosswalk in the western leg of Second Ave at Northside Avenue * Ensure all curb ramos are ADA compliant	San Mateo County and SamTrans
Pescadero E.S.	La Honda-Pescadero Unified School District	620 North St, Pescadero, CA 94060	Pescadero Safe Routes to School Report	2013	Feasible recommended improvements on County right of way completed as part of prior work conducted including painted yellow ladder crosswalk and Rectangular Rapid Flashing Beacon (RRFB) on North Street west and east of school, pedestrian warning signs where North Street crosses the creek,	San Mateo County
Pescadero H.S.	La Honda-Pescadero Unified School District	360 Butano Cutoff, Pescadero, CA 94060	Pescadero Safe Routes to School Report	2013	Feasible recommended improvements on County right of way completed as part of prior work conducted on Butano Cutoff Road including painted bike lanes and signs on Butano Cutoff Road and Cloverdale Road to Pescadero Creek Road, and school Assembly signage on Butano Cutoff Road and Cloverdale Road.	San Mateo County
Highlands E.S.	San Mateo-Foster City School District	2320 Newport St, San Mateo, CA 94402	Highlands Elementary School Walk and Bike Audit	2014	Lexington Avenue and Newport Street: Install Rectangular Rapid Flashing Beacon (RRFB) and high visibility crossing	San Mateo County
					Bunker Hill Drive between Broadway and Yorktown Road: Install Rectangular Rapid Flashing Beacon (RRFB) and high visibility crossing	
Adelante Selby Lane E.S.	Redwood City School District	170 Selby Ln, Atherton, CA 94027	Redwood City Safe Routes to School Report Link to report: https://www.rwc2020.org/wp-content/uploads/2018/01/Selby-Lane-Walk-and-Bike-Audit_FINAL.pdf	2013	Himmel Avenue and Nimitz Avenue: Install high visibility crossings and ADA curb ramps at all four corners of the intersection	San Mateo County
					Himmel Avenue and Alexander Avenue: Install high visibility crossings and ADA curb ramps at all 4 corners of the intersection	
					Rutherford Avenue: Trim vegetation in median to improve sight distance	
					Marlborough Avenue and Northumberland Avenue and Dumbarton Avenue: Install curb extensions for bus stops	
					Atherwood Avenue at the school entrance: * Improve sidewalk in front of path entrance * Install lighting	City of Atherton
					Selby Lane/School driveway: * Install right turn only signs, extend crosswalk, and install yield signs to address narrow driveway	City of Atherton
El Granada E.S.	Cabrillo Unified School District	400 Santiago Ave, Half Moon Bay, CA 94019	El Granada Elementary School Audit	2021 (forthcoming)	Install recreational path along Selby Lane	City of Atherton
					Recommendations to be determined based on results of walk audit forthcoming at the time of publishing this Plan.	To be determined

Unincorporated San Mateo County Bicycle & Pedestrian Master Plan
Pedestrian/Bicycle Per Mile Cost Estimates & Pedestrian Spot Treatment Cost Estimates
June 2020

Table 1 shows planning-level pedestrian and bicycle facility per mile cost estimates, and Table 2 shows planning-level pedestrian spot treatment cost estimates. Costs estimates are based on the unit cost and soft cost values provided in the Master Unit & Soft Costs tab. The following green tabs provide more detailed breakdowns of the per mile cost estimates, and orange tabs provide more detailed breakdowns of the spot treatment cost estimates. When applicable to a particular facility, low-end and high-end costs are provided to account for the various implementation methods and/or materials used.

Table 1: Planning-Level Pedestrian and Bicycle Facility Per-Mile Costs

Facility Types	Rounded Per-Mile Cost
Sidewalk (including ramp upgrades)	\$1,080,000
Alternative Walkway	\$200,000
Class I Shared-Use Path	\$1,690,000
Class II Bike Lanes (part of repaving project)	\$90,000
Class II Bike Lanes (part of lane reconfiguration project)	\$290,000
Class II Buffered Bike Lanes (part of repaving project)	\$130,000
Class II Buffered Bike Lanes (part of lane reconfiguration project)	\$340,000
Class III Bike Boulevards (shared lanes)	\$240,000
Class III Rural Bike Routes (widened shoulders)	\$1,490,000
Class III Urban Bike Routes (shared lanes)	\$70,000
Class IV Separated Bike Lanes (paint/post buffers)	\$400,000
Class IV Separated Bike Lanes (curb/landscaping buffers)	\$3,650,000

Table 2: Planning-Level Pedestrian Spot Treatment Costs

Facility Types	Rounded Cost
Curb Ramp (1 ramp)	\$5,000
Curb Extensions/Bulb-Outs (paint/post, 4 corners of intersection)	\$25,000
Curb Extensions/Bulb-Outs (concrete, 4 corners of intersection)	\$66,000
Crossing Islands (paint/post, 1 island)	\$4,000
Crossing Islands (concrete, 1 island)	\$10,000
Marked Crosswalks (4 legs of intersection)	\$8,000
Rectangular Rapid Flashing Beacons (1 set of 2)	\$43,000
Pedestrian Hybrid Beacons (1 set of 2)	\$210,000
Leading Pedestrian Interval (1 intersection)	\$4,000
Pedestrian Lighting (1 lighting standard)	\$20,000
Parking Restrictions (daylighting 1 intersection)	\$2,000



APPENDIX E: DETAILED PROGRAM AND POLICY RECOMMENDATIONS



PLANNING, DESIGN, AND MANAGEMENT PROGRAMS AND POLICIES

Topic	Existing Approach	Recommended Support Program or Policy	Responsible Department/ Agency ¹
Complete Streets	The County formally adopted a Complete Streets resolution in 2013, and the County’s General Plan includes several goals related to integrating Complete Streets practices into projects and plans. County staff consider elements of Complete Streets during road planning projects and review strategies and designs on a case-by-case basis.	Adopt and implement a Complete Streets Design Toolkit. Building on the existing resolution, adopting standard design details that promote pedestrian and bicyclist safety and comfort as well as integrate green infrastructure practices would ensure that active transportation improvements, to the extent feasible, are implemented systematically throughout the County during new construction and street retrofits. The County should ensure that staff are familiar with the toolkit and understand how to integrate it into their work, for instance when drafting construction plans or updating zoning codes and long-range planning documents, and revise the toolkit based on evolving best practices as needed.	Department of Public Works Supported by: Office of Sustainability, Planning and Building
Traffic Calming	The Department of Public Works has a residential speed control device program whereby residential streets that meet certain criteria (including a validated speeding issue and demonstrated neighborhood support) can qualify for speed humps. The traffic calming program is funded through general road project funds. Traffic calming requests are generally addressed on a first come, first serve basis, with priority typically given to roads with higher volumes of vehicular, bicycle and pedestrian traffic streets. An average of two traffic calming projects are implemented each year.	Employ traffic calming strategies in locations where traffic speeds are too high for pedestrian or bicyclist comfort and areas where anticipated active transportation demand is high. Review the County’s current Traffic Calming Program (Residential Speed Control Program) and consider updating it to ensure the equitable distribution of traffic calming measures, and to include a wide variety of context-sensitive traffic calming treatments. The County should prioritize and implement traffic calming on streets near parks, trails, and schools with risk factors for speeding, such as excess roadway width and long, straight viewsheds, streets with a history of bicycle and pedestrian collisions, or in areas with high concentrations of vulnerable populations including low-income and transit-dependent communities. Education and outreach in neighborhoods along roadways with traffic calming treatments can increase public acceptance and support for traffic calming treatments and ensure that road users know how to navigate new or uncommon treatments. Consider establishing 15 mph school zones and other slow zones near parks, community facilities, or senior housing. To protect the most vulnerable members of society, the County should consider reducing speed limits in school zones or other slow zones. Lower speeds in such zones would greatly reduce the chance of a fatality or serious injury if a pedestrian or bicyclist is hit by a motor vehicle.	Office of Sustainability in collaboration with Department of Public Works
Maintenance Practices	The County follows specifications and details outlined by Caltrans and the Manual of Uniform Traffic Control Devices to establish standards and practices for construction within its rights of way. Sidewalks are inspected by County crews and property owners are notified of trip hazards and/or damaged sidewalks so repairs could be addressed by property owners. The County also has a street sweeping program with an enforced sweeping schedule at locations with curbs and gutters; areas without this infrastructure do not have parking restrictions and generally do not follow the sweeping schedule as strictly. The County Planning and Building Department can impose requirements for provision of pedestrian and bicycle facilities and can require maintenance of any required improvements when authorizing land subdivisions or development.	Develop a clear process for identifying and addressing active transportation facility maintenance needs. The process should enable the equitable distribution of maintenance needs throughout the community, and the County could consider utilizing maintenance management programs to solicit public input on maintenance needs. Maintenance and operation needs should be considered in facility design decisions. Identify policy solutions to mitigate garbage can or other obstructions in bikeways. Work with waste contractors to explore the feasibility of widening bikeways and/or requiring garbage cans to be placed on side streets or in driveways in locations where garbage can placement obstructs bikeways. Provide education to residents and property owners along streets with on-street bikeways to encourage proper placement and prompt removal of obstructions in bikeways. Work with maintenance staff to mitigate other obstructions in bikeways such as fallen tree branches and debris.	Office of Sustainability in collaboration with Department of Public Works, Planning, Health
Connections to Transit	The County’s General Plan includes several goals related to improving ease of travel between modes, increasing transit ridership, promoting bicycle storage facilities at transit stops, and allowing bicycles on transit vehicles during off-peak times and in off-peak directions.	Work with BART, SamTrans and Caltrain, and neighboring jurisdictions to identify infrastructure and programmatic improvements to increase pedestrian, bicycle, and micromobility access to transit. Participate in audits conducted by transit agencies to ensure the transit stops and stations, and nearby County-maintained streets meet current ADA best practices, and coordinate with transit agencies to ensure walking and cycling are considered in current and future transit projects.	Office of Sustainability in collaboration with Planning and Building Supported by: Health, Department of Public Works
Recreational Bicycling Amenities	-	Provide amenities for recreational bicyclists at key locations, for instance on the coastside. The County should work to provide amenities such as restrooms, parking, fix-it stations, drinking fountains, and trash receptacles to accommodate bicyclists at key locations. A map should be created to highlight preferred parking areas and amenities along major cycling routes.	Office of Sustainability Supported by Department of Public Works, Planning, Parks

¹ Suggested roles and responsibilities are subject to change.

Topic	Existing Approach	Recommended Support Program or Policy	Responsible Department/ Agency ¹
Equity	The County’s Office of Sustainability 2018 Strategic Plan references equity and empowerment as two core values that guide their work. For example, the Sustainable Transportation Encouragement Program was designed to serve a traditionally underserved community and address equity. However, the County does not have a formal goal or policy to implement these values nor a formal mechanism for evaluating the equitable distribution of projects or evaluation of projects with an equity lens. The County’s Department of Public Works uses the same standard forms of outreach in underserved communities as in all other communities.	Ensure that public involvement follows best practices for engaging with traditionally underserved communities. The County should consider adjusting public involvement practices to ensure appropriate and best-practice outreach methods are used to inform and engage with traditionally underserved populations. These populations may be unable to attend standing County meetings so outreach methods and events should be modified to increase access for these populations. Examples of best-practice engagement strategies for traditionally underserved communities include directing funding to and partnering with community-based organizations to conduct community engagement, build coalitions, and/or host events, providing transit tickets (or other forms travel compensation), childcare, serving food, or providing other benefits or means of compensation to help participants access outreach events, and soliciting participation from community members on established feedback channels such as advisory committees. Typically, it is more effective to conduct outreach at established events rather than holding separate or additional engagement events.	Office of Sustainability in collaboration with Planning and Building, Health, Supported by Department of Public Works, Sheriff’s Office
		Develop and implement an equity framework for current and future transportation planning and practices. Transportation planning efforts and services should be evaluated to ensure the equitable distribution of transportation services and benefits. The equity framework should prioritize the allocation of funding and investment toward communities that are historically underserved. Since traditionally underserved populations may be especially dependent on public transit and active transportation facilities, it is important to ensure that these populations have equal or better access to active transportation networks suitable for people of all ages and abilities. Public services such as enforcement should be examined to assess their impact on people of color and programs and policies should be implemented to reduce any disparities or harmful impacts resulting from such services. For example, programs like the County’s ticket diversion program can reduce disproportionate financial impacts that may arise from enforcement practices.	
		Develop a strategy to mitigate the potential impacts of active transportation improvements on displacement in historically underserved communities. The strategy could include partnering with community-based organizations to conduct in-depth engagement with traditionally underserved populations to better understand the needs, concerns, and resources for these populations, developing a strong understanding of the historical inequities and social context of the unincorporated areas, and researching and implementing best practices for anti-displacement strategies. Hiring community-based organizations and community members can increase local employment opportunities and inform Staff’s understanding of and help to address historical inequities through the implementation of this plan.	
		Develop a strategy to address potential disproportionate impacts of enforcement on people of color and safety and security concerns among vulnerable populations. This strategy should include communication and outreach to vulnerable populations and the Sheriff’s Department to better understand safety and security concerns. Officers should receive training on an ongoing basis on best practices for conducting traffic safety enforcement and review data on citations to determine if certain communities are being disproportionately targeted. Conduct community outreach to better understand community issues and determine how to best adjust policies related to alternative enforcement and public safety. This could include community ambassador programs and actions to improve relationships between community members and enforcement officers.	
Bicycle Parking	The County encourages the provision of bicycle storage facilities at common. The County’s Zoning Ordinance requires public and private bike parking in the C-1/WMP, CMU-1, CMU-2, CMU-3, NMU-ECR, M-1/NFO, PC, Chapter 29 (NFO Design Guidelines) and M-1/Edison/NFO zoning districts (several other zones don’t require bicycle parking). Subdivision regulations also allow the County to require bicycle parking as an improvement as part of approval of a tentative map.	Incorporate bicycle parking standards as a component of updates to the County’s parking ordinance and zoning districts. Providing bicycle parking is an easy and low-cost way to enhance bicycle networks by providing locations for the secure storage of bicycles during a trip. At such time when the County makes updates to the parking ordinance and zoning districts, the County should require new developments in certain locations to provide bicycle parking that meets best practices or the County’s standards, as well as address any ordinances that do not allow bicycles to be brought into buildings. There are two primary categories of bike parking, short-term and long-term parking, each has its own unique purpose and design considerations. In general, short-term bike parking should be convenient, easy to use, and visible. The most important characteristics of long-term bike parking are that it’s secure and shelters bikes from weather. Long-term parking will typically be used by bicyclists for all-day or overnight parking. Refer to the Association of Bicycle and Pedestrian Professional’s Bicycle Parking Guidelines for more information.	Planning and Building Supported by Office of Sustainability
Americans with Disabilities Act (ADA) Design Standards	In the public right of way, the County’s Department of Public Works evaluates opportunities for improved ADA access during the design phase of its road projects. Access ramps are routinely constructed or reconstructed in conjunction with road improvements. The County upgrades existing ADA ramps or facilities, as required when conditions are met for capital projects to meet current standards.	Explore opportunities to upgrade existing facilities. As funding and resources permit, engage in a program to upgrade existing bicycle and pedestrian infrastructure in the public Right of Way to ensure compliance with current ADA standards.	Department of Public Works Supported by Office of Sustainability

Topic	Existing Approach	Recommended Support Program or Policy	Responsible Department/ Agency ¹
Pedestrian and Bicycle Accommodations during Construction	The County does not have a set of adopted standards or guidance for accommodating pedestrians and bicyclists during construction beyond those outlined in the MUTCD guidance regarding accommodating access for all users through a construction zone.	Explore the creation of clear guidelines for accommodating bicyclists and pedestrians in construction zones to build upon MUTCD guidance. Construction zones and other traffic control changes which require temporary lane or sidewalk closures, or detours should be designed to accommodate pedestrian and bicycle travel. Specific accommodations for pedestrians and bicyclists are needed because these populations travel at slower speeds than motor vehicles and are more exposed to the physical impacts of construction zones. Guidelines that establish clear criteria and standards for pedestrian and bicycle construction zone accommodations would provide a useful resource for developers, construction managers, and their employees.	Department of Public Works Supported by Office of Sustainability, Planning and Building

EDUCATION AND ENCOURAGEMENT PROGRAMS AND POLICIES


Topic	Existing Approach	Recommended Support Program or Policy	Responsible Department/ Agency ¹
Safe Routes to School	The County Office of Education (SMCOE) currently operates a countywide Safe Routes to School (SRTS) program. The program includes education and encouragement programs for students, such as bicycle rodeos and participation in International Walk and Roll to School Day, as well as walk audits to identify possible active transportation infrastructure improvements around schools. While there is currently some collaboration between the COE's SRTS program and the Office of Sustainability and Department of Public Works, there is suggested room for improvement.	Improve coordination between the County's Department of Public Works, Office of Education, Office of Sustainability, and Sheriff's Department to expand the existing Safe Routes to School Program. The County should encourage all schools in the county to participate and coordinate efforts between departments to identify and mitigate participation barriers. The Department of Public Works should work with the County's Office of Education and Office of Sustainability to implement recommendations to County-maintained roads that result from school safety walking audits and site evaluations at all schools in the county, and consider these as priority improvements. The County should explore working with the Department of Education to develop maps that highlight preferred school walking and bicycling routes and consider design treatments to encourage drivers to travel at the posted speed.	Department of Public Works, Office of Sustainability, and Office of Education Supported by Health, Sherriff's Office
Encourage-ment Events	The County hosts a few annual encouragement activities focused on commute trips, such as the International Walk and Roll to School Day hosted by the Office of Education and Bike to Work Day which is supported by the Office of Sustainability, as well as weekly Bicycle Sundays, an Open Streets event during which Cañada Road is closed to motor vehicles and open only to non-motorized traffic like walking, bicycling, jogging, and roller staking.	Coordinate with County departments and other agencies to support and expand encouragement events. The County should continue its existing efforts and work with the Office of Education, Silicon Valley Bicycle Coalition, and other groups to hold community rides, learn to ride courses, and bike rodeos. The County should continue the Sustainable Transportation Encouragement Program (STEP) activities in North Fair Oaks and expand the program throughout the County as well as provide bicycle education and active transportation communications and educational materials. The County could consider hosting a larger Open Streets event each year, in addition to the weekly Cañada Road event. Events like these provide opportunities for people to discover what biking looks like on streets that may not be bicycle friendly today. More importantly, they provide positive experiences for all types of riders, especially the Interested but Concerned, and demonstrate the potential benefits of reconfiguring public space.	Office of Sustainability Supported by Parks, Health
Transportation System Management Programs	The County adopted a Transportation System Management (TSM) ordinance in 1995, which states the County's commitment to the implementation of a Transportation Demand Management Program. The ordinance states that annual fees on employers can be used to contribute to the cost of the program and includes a goal of 25% participation by public- and private-sector employees.	Explore opportunities to strengthen the existing Transportation Systems Management (TSM) program and incorporate bicycle and pedestrian facilities or amenities: 1) Participation in the San Mateo City/County Association of Governments (C/CAG) efforts to update the land use component of its Congestion Management Program (CMP), collaboratively working to include improvements and funding for active transportation as part of a suite of potential mitigation strategies for transportation impact analysis, and 2) Updates to the County's TSM policies and the adoption of a TSM strategy.	Planning and Building Supported by Office of Sustainability and Department of Public Works
Diversión Program	The County does not have a bicycle ticket diversion program, however, the County has sought to promote education over fines when bicyclists are observed carrying out traffic violations through various grant-funded activities.	Implement a bike ticket diversion program. The Bicycle Traffic School Bill (AB 902) was passed in 2015. This legislation allows people ticketed for a vehicle code violation while bicycling in California to attend a class and have the fine reduced or removed. To participate in the program, jurisdictions must opt-in to the program and local law enforcement must approve the materials for programs to be officially sanctioned. The County should work with the Sherriff's Department and local police departments to implement a bike ticket diversion program. The League of American Bicyclists has certified instructors and materials to help establish formal programs.	Sherriff's Office in collaboration with Office of Sustainability
Outreach	The County has a Biking in San Mateo County Brochure that contains tips on how to make bicycling in the county easier and safer. They also maintain an online interactive map at smcbikeways.org, through which anyone can provide feedback on current and desired walking and bicycling conditions in the county.	Develop materials such as neighborhood walking/bicycling maps to promote active transportation. Work with community members to develop artistic and engaging materials to encourage people to walk and bike to local destinations and transit stops. Implement short-term interim, high-visibility bicycle demonstration or 'pop-up' projects to serve as models that can be applied throughout the county. These events can be used to highlight new innovative facility designs and if successfully demonstrated, show the public how to safely navigate the facility before permanent implementation. On the County's website and in communication campaigns, include information about how to use and drive around new bicycle facilities.	Office of Sustainability Supported by Department of Public Works, Parks

FUNDING AND IMPLEMENTATION PROGRAMS AND POLICIES


Topic	Existing Approach	Recommended Support Program or Policy	Responsible Department/ Agency ¹
Active Transportation Project Funding	<p>The County's Engineering and Road Divisions meet annually to review maintenance and improvement needs along the entire County road maintenance system and then jointly determine the highest priorities in a given year. Currently, the Department of Public Works does not have a specific budget set aside for pedestrian and bicycle improvements.</p> <p>The County's Office of Sustainability has received State funding for several active transportation programs, including the Sustainable Transportation Encouragement Program (ATP), this Plan (Sustainable Communities Grant), the San Mateo County Bikeways map (TDA Article 3), and the Mid-coast Parallel Trail (TDA Article 3).</p>	<p>Develop an active transportation project funding and implementation strategy. Active Transportation projects can be funded in a variety of ways. Communities that have well-established active transportation networks use a wide variety of funding sources. There is not one standard source that communities can draw from – funding should come from all different levels of government and the private sector.</p> <ul style="list-style-type: none">• Develop work plans for prioritized projects identified in the ATP that summarize project purpose and benefits, scope, schedule, costs and potential impacts/issues to be addressed.• Create a line item in the CIP for implementation of the Active Transportation Plan recommendations.• Pursue grant funding for active transportation projects. Refer to the Funding chapter of the Plan for a list of potential funding sources for active transportation projects at the time of publishing of this plan.• Establish a policy that requires new developments to build, or contribute fees toward, active transportation facilities, or consider the inclusion of these requirements as a part of zoning district updates.• Coordinate County- and other agency-led bicycle and pedestrian infrastructure improvements with maintenance and street improvements projects, such as repaving, green infrastructure projects, bridge replacement, or lane reconfiguration.	<p>Office of Sustainability and Department of Public Works</p> <p>Supported by Planning and Building, Health, Parks</p>
Active Transportation Team	<p>The County currently retains one full-time Active Transportation Resource Conservation Specialist and one Senior Sustainability Specialist working part time on Active Transportation in the Office of Sustainability to coordinate Active Transportation efforts at a programmatic level.</p> <p>Staff from other County departments typically work on active transportation on an as-needed, project-by-project basis. Currently, the County does not benefit from a formalized inter-departmental active transportation planning and implementation team.</p>	<p>Evaluate staffing and staff capacity needed to establish and maintain an inter-departmental active transportation team to implement this Plan. The County should consider the formation of an inter-departmental active transportation team led by representatives with dedicated staff hours from the Office of Sustainability, the Department of Public Works, the Planning and Building Department, County Health, and others as appropriate, to formalize and improve coordination efforts surrounding the implementation of this Plan. The team's efforts may include project development, workplans for active transportation projects, programs and policies, review of funding opportunities and development of grant applications to help fund projects. A key step in the formation of the team includes the evaluation and dedication of resources and staff time needed from each department for participation in the team's efforts and the implementation of the Plan. The County should also provide staff with resources and capacity-building opportunities to ensure consistent and modern, best-practice based implementation approaches to active transportation programs and infrastructure.</p>	<p>Office of Sustainability in collaboration with Department of Public Works, Planning and Building, Parks, Health</p>
Rapid Implementation and Pilot Projects	<p>In early 2020, the County established an internal Transportation Workgroup to facilitate learning and coordination amongst departments on multi-modal transportation-related efforts.</p> <p>The County currently does not have a rapid implementation or pilot project program.</p>	<p>Develop strategies for rapid network implementation treatments. Rapid network implementation projects can take many forms, but the primary goal is to build out comfortable bikeway and pedestrian networks using lower cost installation options. Rapid implementation projects can be used as a final design, or also as an interim treatment while a more complex final design solution is developed. These types of programs can be implemented with support from non-profits, cities, or as part of repaving strategies. Even facilities such as Class IV Separated Bikeways or curb extensions can be implemented rapidly with paint and bollards, depending on context. Determine which facilities can be implemented with primarily signing and striping (e.g., Class II Bike Lanes) to create a simplified connected bicycle network.</p> <p>Identify funding for rapid network implementation treatments. Identify a funding source or apply for grant funding with the network as a complete or partial package of low-cost facilities. Grouping projects together can be an effective strategy for receiving funding because it can highlight the County's work to close network gaps and prioritize cost-effective projects, especially in identified disadvantaged communities.</p>	<p>Department of Public Works</p> <p>Supported by Office of Sustainability</p>

ADDITIONAL POLICIES AND PRACTICES

Topic	Existing Approach	Recommended Support Program or Policy	Responsible Department/ Agency ¹
Vision Zero	The County does not have a Vision Zero policy, however, several cities within the county have adopted such policies. The County tracks its most collision-prone road sections and road intersections on an annual basis. Separately, the County requests reporting data on any collisions that may be considered “severe” to better understand the contributing factors.	<p>Develop a Vision Zero policy and program. Vision Zero is a systemic approach to improving roadway safety. Identify opportunities to fund Vision Zero implementation efforts and conduct a comprehensive analysis to understand collision patterns and determine where to focus safety improvements and education, for instance through the development and assessment of high-injury networks.</p> <p>Develop a systematic practice for reviewing collisions involving active transportation users and publish an annual report. Consider developing a database and/or dashboard to inventory collision data and environmental factors to support comprehensive analyses and improve understanding of collision patterns in unincorporated areas.</p> <p>Review best practices for bicycle intersection treatments and develop a strategy to systematically improve bicycle and pedestrian crossings. Review best practice planning, design, and implementation guidance, including guidance from the National Association of City Transportation Officials, American Association of State Highway Transportation Officials, and the National Cooperative Highway Research Program for implementing bicycle intersection treatments and identify locations where treatments could improve bicycling and walking conditions.</p>	<p>Office of Sustainability</p> <p>Supported by Department of Public Works, Health, Planning and Building</p>
Micromobility	Micromobility programs include programs like bikeshare and short-term electric-scooter rentals. There are currently no micromobility programs serving the unincorporated areas of the county, and the County does not have a formal micromobility policy.	<p>Communicate with C/CAG and other local jurisdictions to gauge interest in and develop micromobility programs. The County should maintain communication with local jurisdictions and transit agencies interested in developing micromobility programs and explore opportunities to include unincorporated areas in local micromobility service areas. Consideration for operation and maintenance costs should be factored into any proposals. Micromobility programs have historically been more successful in dense urban environments where sufficient demand exists, and ongoing public subsidies may be required.</p>	<p>Office of Sustainability</p> <p>Supported by Health, Planning and Building, Department of Public Works</p>
Bicycle and Pedestrian Count Program	San Mateo County participates in the National Bicycle and Pedestrian Documentation (NBPD) Project to collect bicycle and pedestrian count data for planning and for public use. Bicycle and pedestrian counts, using standardized NBPD guidelines, are collected annually throughout the county.	<p>Update the existing bicycle and pedestrian count program. Best practice count programs seek to collect counts at a variety of locations and in a variety of contexts. As such, the County should consider integrating the following count strategies into their existing program:</p> <ul style="list-style-type: none">• Collect pedestrian and bicycle volumes as part of every traffic count, both for private development transportation impact studies and County-led data collection.• Conduct pedestrian and bicycle volume counts at five focus areas annually, to be informed by areas with high pedestrian and bicycle crash locations.• Collect pedestrian and bicycle volume data before and after installation of new pedestrian and bicycle facilities.• Follow the Metropolitan Transportation Commission’s count program guidance and participate in regional count efforts.	<p>Office of Sustainability</p> <p>in collaboration with Department of Public Works</p>



APPENDIX F: FUNDING PROGRAMS AND SOURCES



The following table provides an overview of Federal, State, Regional, and County funds and grant opportunities that can be used for bicycle and pedestrian projects and programs.

Funding Sources	Administering Agency	Availability of Funding	Description	Eligible Improvements	Link
Federal Funding Sources					
Better Utilizing Investments to Leverage Development (BUILD) Transportation Discretionary Grants	U.S. Department of Transportation (USDOT)	Annually	BUILD (formerly TIGER) is a nationally competitive grant for capital investments on surface transportation projects that achieve a significant impact for a metropolitan area, region, or the nation. Selection criteria encompass safety, economic competitiveness, quality of life, state of good repair, innovation and partnerships with a broad range of stakeholders.	Roads, bridges, transit, rail, ports or intermodal transportation	transportation.gov/BUILDgrants
Congestion Mitigation and Air Quality Improvement (CMAQ) Program	Federal Highway Administration (FHWA)	Annually	CMAQ provides funding for state and local governments for transportation programs and projects that support the Clean Air Act, improving air quality and providing congestion relief.	Bicycle infrastructure	fhwa.dot.gov/environment/air_quality/cmaq/
State Funding Programs					
California Active Transportation Program (ATP)	California Transportation Commission (CTC)	Biennially; last call for projects was in March 2020	The ATP program resulted from the consolidation of many former federal State programs and funds a wide range of capital and non-capital projects. A strong preference is given to projects in disadvantaged communities.	Bicycle and pedestrian capital infrastructure and non-infrastructure projects (e.g., encouragement, education, and enforcement), and plans (including active transportation and Safe Routes to School plans)	dot.ca.gov/hq/LocalPrograms/atp
California Sustainable Transportation Equity Project (STEP)	California Air Resources Board (CARB)	Currently a pilot project; eligible funding source if continued	STEP is a transportation equity pilot project for Fiscal Year 2019-20 that aims to address community residents' transportation needs, increase access to key destinations, and reduce greenhouse gas emissions by funding planning, clean transportation, and supporting projects.	Active transportation subsidies, construction of new pedestrian facilities, new bike routes and networks (Class I, II, or IV) and supporting infrastructure	arb.ca.gov/msprog/lt/opportunitiesgov/step.htm
Clean Mobility Options (CMO)	CARB	Annually (based on cap-and-trade dollars)	The Clean Mobility Options Voucher Pilot Program provides voucher-based funding for zero-emission carsharing, car- and van-pooling, bike- and scooter-sharing, innovative transit services, and ride-on-demand services in California's historically underserved communities.	Eligible projects must be in a community that: (1) is on the Disadvantaged Communities List for Climate Investments in accordance with CalEPA's designation (2) is a tribal land or tribal property within AB 1550 designated low-income communities, or (3) serves a deed-restricted affordable housing facility with at least five units and located within an AB 1550 designated low-income community.	cleanmobilityoptions.org/eligibility/
California Office of Traffic Safety Grants	California Office of Traffic Safety (OTS)	Annually	For traffic-safety education, awareness and enforcement programs aimed at drivers, pedestrians and cyclists.	Certain activities under the SRTS, safety/education and enforcement programs.	ots.ca.gov/Grants/default.asp

Funding Sources	Administering Agency	Availability of Funding	Description	Eligible Improvements	Link
Highway Safety Improvement Program (HSIP)	California Department of Transportation (Caltrans)	Varies; Generally, every one to two years	For projects and programs that reduce traffic fatalities and serious injuries by correcting or improving a specific problem. Highly competitive at the state level.	Safety-related pedestrian, bikeway and crossing projects. Certain activities under the SRTS, safety/education and enforcement programs; also, certain spot improvements. Bike lanes, paved shoulders, crosswalks, intersection improvements and signage	dot.ca.gov/hq/LocalPrograms/hsip.html
Affordable Housing and Sustainable Communities Program (AHSC)	California Strategic Growth Council (SGC)	Annually	Projects that facilitate compact development, including bicycle infrastructure and amenities, with neighborhood scale impacts. Available to government agencies and institutions (including local government, transit agencies and school districts), developers and non-profit organizations.	Bicycle and pedestrian corridor and crossing improvements, particularly those in the area covered in specific plans	sgc.ca.gov/Grant-Programs/AHSCProgram.html
Sustainable Transportation Planning Grants	Caltrans	Annually	Funds for communities to do planning, studies, and design work to identify and evaluate projects, including conducting outreach or implementing pilot projects.	Planning, community engagement, studies to improve bicycle and pedestrian connections	dot.ca.gov/program/s/transportation-planning/regional-planning/sustainable-transportation-planning-grants
Recreational Trails Program	California Department of Parks and Recreation	Program is currently being updated; last cycle was in 2016	Funds for recreational trails for active transportation.	Trail maintenance, restoration, trailhead facilities, new trail construction, and maintenance equipment.	parks.ca.gov/?page_id=24324
Urban Greening Grants	California Natural Resources Agency	Annually	A statewide program that allocate cap-and-trade dollars to projects that reduce greenhouse gas emissions	Projects that reduce commute vehicle miles traveled by constructing bicycle paths, bicycle lanes or pedestrian facilities that provide safe routes for travel between residences, workplaces, commercial centers, and schools	resources.ca.gov/grants/urban-greening/
State Transportation Improvement Program (STIP)	CTC	Biennially	Projects need to be nominated in the Regional Transportation Improvement Program (RTIP), but MTC may nominate fund categories. C/CAG submits projects from San Mateo County to MTC for proposed inclusion in the RTIP to the State.	Any transportation project eligible for State Highway Account or Federal Funds	dot.ca.gov/program/s/local-assistance/fed-and-state-programs/state-transportation-improvement-program
State Highway Operation and Protection Program (SHOPP)	Caltrans	Biennially	SHOPP is the State Highway System's "fix-it-first" program that funds the repair and preservation, emergency repairs, safety improvements, and some highway operational improvements on the State Highway System (SHS).	Pavement, bridges, culverts, and transportation management systems	dot.ca.gov/hq/transprog/SHOPP/2018shopp/2018-shop-adopted-by-ctc.pdf
California Gas Tax	CTC	Annually	The California Gas Tax funds the Road Maintenance and Rehabilitation Program,	Construction, engineering, and maintenance	sco.ca.gov/Files-AUD/gas_tax_guidelines31219.pdf

Funding Sources	Administering Agency	Availability of Funding	Description	Eligible Improvements	Link
Infill Infrastructure Grant Program (IIG)	California Department of Housing and Community Development	Varies; every 1-2 years	IIG provides grant assistance for infrastructure projects that are an integral part of, of necessary for the development of a Qualifying Infill Project or housing within a Qualifying Infill Area.	Construction, rehabilitation, demolition, relocation, preservation, and acquisition of infrastructure.	hcd.ca.gov/grants-funding/active-funding/iigp.shtml
Transformative Climate Communities (TCC)	Strategic Growth Council and Department of Conservation	Varies	TCC funds community-led development and infrastructure projects with economic, environmental, and health benefits to disadvantaged communities in California.	Bicycle and pedestrian corridor and crossing improvements, bike share programs	sgc.ca.gov/program/s/tcc/
Office of Traffic Safety Grant Program	Office of Traffic Safety (OTS)	Annually	The OTS Grant Program funds education, encouragement, and safety programs and campaigns to prevent serious and fatal injuries resulting from collisions with motor vehicles.	Bicycle and pedestrian safety education and encouragement programs and campaigns	ots.ca.gov/Grants/
Local Streets and Roads (LSR) Program	CTC	Annually	The LSR program provides funding to cities and counties for road maintenance and rehabilitation as well as for safety projects.	Bicycle and pedestrian corridor and crossing improvements (emphasis on safety), maintenance and rehabilitation	catc.ca.gov/programs/sb1/local-streets-roads-program
Solutions for Congested Corridors (SCCP)	CTC	Annually	SCCP provides funding with an ultimate goal of reducing congestion throughout California. The program focuses on multimodal corridor improvements that maintain and enhance community character. Competitive throughout the state.	Multimodal corridor improvements	catc.ca.gov/programs/sb1/solutions-for-congested-corridors-program
Regional and County Funding Sources					
Regional Active Transportation Program (ATP)	Metropolitan Transportation Commission (MTC)	Biennially; the last round due in July 2019	The ATP program resulted from the consolidation of many former federal State programs and funds a wide range of capital and non-capital projects. A strong preference is given to projects in disadvantaged communities. MTC considers additional criteria beyond the State ATP criteria.	Bicycle and pedestrian capital infrastructure and non-infrastructure projects (e.g., encouragement, education, and enforcement), and plans (including active transportation plans and Safe Routes to School plans)	mtc.ca.gov/funding/ATP
Transportation Fund for Clean Air (TFCA) Regional Fund	Bay Area Air Quality Management District (BAAQMD)	Annually	The TFCA Regional Fund provides grants to Bay Area county agencies to fund projects that improve that reduce motor vehicle emissions and air quality within the Bay Area. The Regional Fund is competitive among Bay Area jurisdictions.	Bicycle and pedestrian corridor and crossing improvements, and bicycle parking	baaqmd.gov/funding-and-incentives/funding-sources/regional-fund
Vehicle Trip Reduction Grant Program	BAAQMD	Annually	This program, funded through BAAQMD's TFCA Regional Fund, provides incentive funding for transportation service and bicycle facility projects that reduce single-occupancy vehicle trips	Bikeways, including pilot projects, programs, end-of-trip facilities	baaqmd.gov/funding-and-incentives/public-agencies/vehicle-trip-reduction-grant-program
One Bay Area Grant Program (OBAG)	MTC	Every five years; latest round covers 2017-2021	OBAG funds infrastructure projects that reduce vehicle trips, including pedestrian and bicycle facilities. Next round of funding dependent on the next Federal Surface Transportation Act.	Bikeways and crossing improvements, road maintenance, and transportation planning. Eligible activities subject to change.	mtc.ca.gov/our-work/fund-invest/investment-strategies-commitments/focused-growth/one-bay-area-grants

Funding Sources	Administering Agency	Availability of Funding	Description	Eligible Improvements	Link
Transportation Development Act Article 3 (TDA 3)	City/County Association of Governments of San Mateo County (C/CAG)	Annually	TDA 3 is competitive among San Mateo County jurisdictions and funds plans, programs, and projects that eliminate congestion, make regional connections, and improve safety.	Bikeways, crossing improvements and safety/ education/ training programs for school children and the general population	ccag.ca.gov/opportunities/call-for-projects
Measure A and W Pedestrian and Bicycle Program	San Mateo County Transportation Authority (SMCTA)	Every 2–3 years; last call for projects in 2017	Competitive among San Mateo County jurisdictions. Measure A funds are available for capital projects. Measure W funds are available for capital, planning and promotion and for the County Office of Education's competitive Safe Routes to Schools Program	Bicycle and pedestrian projects and programs	smcta.com/Projects/Call for Projects.html
San Mateo County Safe Routes to School	C/CAG and San Mateo County Office of Education (COE)	Annually	Available to school districts for education, enforcement and promotion/ encouragement activities, evaluation and project coordination; and for small capital projects. Competitive among San Mateo County school districts and individual schools.	Certain activities under the Safe Routes to School, safety, education, and enforcement programs	smcoe.org/schools/safe-and-supportive-schools/safe-routes-to-school/
San Mateo County Bicycle Parking Reimbursement Program	Commute.org	Ongoing (reviewed on a first-come-first-served basis)	Reimburses 50% of the cost of purchasing and installing bicycle parking facilities up to \$500 per unit. Available to businesses, public agencies and non-profit organizations in San Mateo County.	Bicycle parking racks and lockers	commute.org/employer-services/179-bike-parking-at-half-cost
Measure M Motor Vehicle Registration Fee	C/CAG	Ongoing	50% of the net proceeds are allocated to cities/County for local streets and roads and 50% are used for countywide transportation programs such as transit operations, regional traffic congestion management, water pollution prevention, and safe routes to school.	Road resurfacing/reconstruction, roadway restriping, signal timing, signage, Safe Routes to School, senior mobility education. C/CAG has historically allocated Measure M funds to the COE's competitive Safe Routes to School Program, which is listed as a source above.	ccag.ca.gov/funding/measure-m/
Measure K	County of San Mateo	Ongoing (details under description)	Measure K is a countywide half-cent sales tax extension passed by local voters in November 2016 to support essential County services and to maintain or replace critical facilities. Measure K funds are allocated in three ways: 1) through the County's two-year budget cycle, 2) through mid-year adjustments to address emerging needs not anticipated at the time the budget was adopted, and 3) for one-time loans or grants to fill specific needs as recommended by a member of the Board of Supervisors.	Bikeways, sidewalks, crossing improvements, and end-of-trip facilities, as well as program and staff time, outreach and education, and maintenance.	cmo.smcgov.org/measure-k-frequently-asked-questions
New Development or Redevelopment	County of San Mateo	Ongoing	The County can ensure the development review process adequately addresses bicycle and pedestrian facilities, and that all new roads meet the County's standards and guidelines. This can include turnkey improvements or fees.	Bikeways, sidewalks, crossing improvements, and end-of-trip facilities	uli.org/wp-content/uploads/ULI-Documents/Active-Transportation-and-Real-Estate-The-Next-Frontier.pdf
General Fund	County of San Mateo	Annually	A component of general funds can be dedicated to transportation improvements through allocations to the	Operating expenses such as staff time, outreach and education materials,	controller.smcgov.org/comprehensive-

Funding Sources	Administering Agency	Availability of Funding	Description	Eligible Improvements	Link
			County's Public Works or Parks Departments. There are generally few restrictions on these funds.	facility maintenance and other capital expenses	annual-financial-report-cafr
Municipal Bonds	County of San Mateo	n/a	Counties have the authority to issue municipal bonds to finance large infrastructure projects, which could include active transportation infrastructure improvements.	Bikeways, sidewalks, crossing improvements, and end-of-trip facilities	bikeleague.org/sites/default/files/PayingForInnovativeInfrastructure.pdf
Assessment Districts	County of San Mateo	n/a	Assessment districts can be defined by the County to collect payment from property owners, on agreement, to finance improvements constructed by the County. Parking Benefit Districts are a type of assessment district that can finance infrastructure improvements in popular employment or commercial centers by dedicating parking fee and ticket revenue to bicycle and pedestrian enhancements. Within a parking benefit district, public parking spaces (on- and off-street) are charged hourly rates to aid turnover of spaces for customers.	Bikeways, sidewalks, crossing improvements, and end-of-trip facilities	urban-regeneration.worldbank.org/node/19 metro.net/projects/tod-toolkit/parking-benefit-districts/