VTA Bicycle Superhighway Implementation Plan

JUNE 2021

Valley Transportation Authority

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VTA Bicycle Superhighway Implementation Plan

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1. Introduction

Bicycle Superhighways

Over the last decade, Santa Clara County has seen a steady increase in bicycling and strong public support for better bikeways. There are now about 1,200 miles of bikeways in the county, including nearly 290 miles of bicycle paths that are entirely separated from motor vehicle traffic. Inspired by examples from the U.S. and internationally, VTA is proposing to develop a network of bicycle superhighways that connect Santa Clara County. The network will allow people to bicycle from Gilroy to Palo Alto, from East San José to Mountain View on connected, low-stress bikeways. Ultimately, the bicycle superhighways will serve as the backbone for the county bicycle network and become so useful and important they become part of people's mental map of Santa Clara County, on par with major roads, freeways, county expressways, and rail.

Bicycle superhighways are high quality, uninterrupted, long-distance bikeways separated from motor vehicles that traverse across the county. The bicycle superhighway network will allow people to travel quickly from city to city by bicycle in much the same way the County Expressway System allows people to travel quickly across the county by car. In practice, the bicycle superhighway network will consist of a network of high-quality, low-stress, on-street bikeways and trails. When properly designed, bicyclists using them typically experience less delay due to fewer at-grade crossings with the street network or due to signal priority at intersections.

The bicycle superhighway network is intended to serve "strong and fearless," "enthused and confident," and "interested but concerned" bicyclists. Most sections of the network, especially the trails, may be used by students and families but the bicycle superhighways are primarily focused on providing a high-quality transportation option for commuters, people who want to run errands by bike, and recreational or weekend bicycle riders. This network is not intended to replace or diminish the importance of local bicycle facilities. It is expected to connect to those local facilities to the extent possible and should support the goal of expanding the bicycle facility network across the county for all ages and abilities. The network will connect bicyclists to key destinations with few detours and stops. Overall, the bicycle superhighways will be a positive experience for riders to use and made of high-quality materials with exceptional maintenance.

Background

In 2018, Santa Clara Valley Transportation Authority (VTA) adopted the updated Countywide Bicycle Plan. The Bicycle Plan identifies a 950-mile network of Cross County Bicycle Corridors (CCBCs)—existing and planned bikeways that cross the county and connect across jurisdictions—and lists a subset of CCBC's that could potentially be upgraded to serve as bicycle superhighways. Since introducing this list of potential bicycle superhighways, VTA staff have been working with local jurisdictions, Caltrans, VTA's Bicycle and Pedestrian Advisory Committee, and other stakeholders to identify specific alignments and to understand the steps needed to implement the network.

Plan Purpose

This Implementation Plan (Plan) proposes specific alignments for a countywide network of 17 bicycle superhighways for Santa Clara County. It also describes the implementation status of each bicycle superhighway, summarizes active implementation efforts, and provides planning level cost estimates for building out remaining segments. The Plan will assist local agencies and VTA in funding, planning, designing, and building the superhighway network. This Plan will better position Member Agencies (local agencies in Santa Clara County) that intend to pursue grant funding by identifying high-priority projects and showing VTA's support. VTA can assist Member Agencies in implementing these projects by helping to coordinate or lead efforts that cross multiple jurisdictions. This Plan will also help VTA advocate for new and expanded funding sources to implement bicycle superhighways. Finally, it is hoped the plan will build public and political awareness and support for the network and inspire community members to shift from driving to riding bicycles.

Outreach

To move from the list of conceptual bicycle superhighway corridors identified in the Countywide Bicycle Plan to a map of specific alignments, VTA worked closely with Member Agency staff and the VTA Bicycle and Pedestrian Advisory Committee. In spring and summer 2020, VTA met individually with city and county staff to define alignments that support local plans. The draft bicycle superhighway map was presented to VTA's Technical Advisory Committee, Policy Advisory Committee, and Bicycle and Pedestrian Advisory Committee (BPAC) in August 2020 for comment. Staff revised the map based on comments and brought the revised map to a BPAC interactive workshop in December 2020 for further input. Staff again modified the map and confirmed the modifications with Member Agency staff. At the request of city staff, VTA also presented the bicycle superhighway map to the Palo Alto and Los Altos bicycle and pedestrian advisory committees.

During the same timeframe, VTA was leading its first feasibility study for a bicycle superhighway: the Central Bikeway Feasibility Study and Alternatives Analysis. This plan incorporates relevant public comment received during outreach for the Central Bikeway Study.

2. Existing Trail Network Relationship to Bicycle Superhighways

The exemplary bicycle paths in Santa Clara County, including the Guadalupe River Trail, Coyote Creek Trail, San Tomas Aquino/Saratoga Creek Trail, Stevens Creek Trail, and Bay Trail currently serve as high-quality bicycle commute routes. Counts have shown upwards of 2,000 daily weekday users on some segments. These paths provide long-distance, unbroken bicycle travel; pass over or under major roadways, freeways, and rail lines; and include wayfinding signage, informational kiosks, and amenities along the route. Many are supported by online or printed maps and dedicated social media accounts managed by city staff. Though cities have not branded these bikeways as "superhighways," they generally are serving this purpose during commute hours.

While many of Santa Clara County's multi-use paths act as "bicycle superhighways" and a connected countywide network requires their use, there are challenges that need to be addressed before they can be considered "bicycle superhighways." The most serious issue is conflicts between high-speed bicyclists and other trail users. Most trails have posted speeds of 15 miles per hour or less, yet fit bicyclists can easily travel 18 miles per hour on a standard bicycle and over 20 miles per hour on an electric-assist bicycle. This Plan supports maintaining safe, appropriate speed limits on multi-use paths and education and enforcement of these limits. It also supports physical upgrades to multi-use paths to provide wider trails or designated walking and biking paths to separate trail users. Finally, this Plan has not included some trails with very constrained conditions (e.g. Los Gatos Creek Trail) as part of the superhighway network even though they provide important bicycle connectivity because the ability to upgrade them is remote. In those cases, the Plan identifies potential on-street parallel routes.

3. Design Expectations[1]

Santa Clara County's bicycle superhighways are intended to provide an exemplary, uniform, and memorable riding experience whether through off-street trails and paths or on-street facilities. While each superhighway will be designed for the local context, the overall design should support low-stress riding, minimize conflicts with other users, prioritize bicyclists at intersections, provide highly legible wayfinding and high connectivity, and reduce or eliminate conflicts and wait time at major barriers.

Bicycle superhighways along local roadways and bicycle paths should meet the following basic design principles:

- The lowest stress bicycle facility that is appropriate for the local context and community needs should be provided.
- Facilities along local roads should strive to maintain a bicycle level of stress[2] (LTS) of 1 or LTS 2, where the mainstream adult population feels comfortable bicycling.
- Paths shared with pedestrians should not exceed bicycle speeds of 15 mph.
- The bicycle facilities/bicycling experience should remain consistent across jurisdictional boundaries, through intersections, and through interchanges.
- Bicycle wayfinding should be provided, such as on-street maps and signs at trail intersections. Maps and signs should identify the user's current location and major landmarks or destinations.
- All actuated signals along and across the facilities must detect bicyclists.
- Access should be provided 24 hours a day, 7 days a week, 365 days a year.
- Adequate lighting should be provided.
- Facilities should be maintained, free of debris and other obstacles. Facilities separated from the adjacent roadway should be designed to permit road sweeping equipment to access the bikeway.
- Sharp turns should be avoided as much as possible.

[1] *Design expectations have been taken from VTA's Countywide Bicycle Plan, Chapter 5.*

[2] *Level of stress (LTS) is a rating given to a road segment or crossing indicating the traffic stress it imposes on bicyclists. LTS analysis ranges from 1 to 4 with 1 being the least stressful (suitable for children) and 4 typically acceptable to those classified as "enthused and confident bicyclists" and equivalent to riding on a 35 mph road without bike lanes or a higher speed road with high traffic volumes and bike lanes.*

In addition to meeting the design principles, bicycle superhighways should meet these additional principles:

- Bicyclist delay at intersections should be minimized.
- Grade separation of major barriers should be considered.
- Widths of bicycle facilities should be greater than the minimum.
- Separation of bicycle and pedestrian traffic should be considered, where possible.
- Intelligent transportation systems should be deployed in order to collect data, provide feedback to bikeway users, and facilitate travel along the corridor.
- Wayside amenities should be provided as appropriate for the local context and needs of the community, including rest or gathering points adjacent to path of travel, for both on- and off-street facilities.
- Driveways and curb cuts should be minimized or removed.
- Branding and place making should be integrated into the bikeway as appropriate for the local context and needs of the community.
- For paths along riparian corridors, suitable parallel on-street bikeways should be identified as detour routes in the event of path closure due to maintenance or flooding.
- Bicyclists should feel joy as they travel along bicycle superhighways.

Recommended Design Features by Facility Type

This section describes recommended design features for different types of bicycle facilities. These were identified in collaboration with VTA Member Agencies as part of the 2018 Countywide Bicycle Plan and incorporate national and international best practices and innovative designs. Recommendations are consistent with or present higher standards than VTA's Bicycle Technical Guidelines.

In order to provide a low-stress bicycling experience, bicycle superhighways will most likely be built out as bicycle paths/trails or physically separated bikeways. Depending on roadway context or physical constraints, standard bike lanes, bike lanes with painted buffer, or bicycle boulevard treatments may be appropriate or necessary for bicycle superhighways.

Bicycle Paths

Bicycle paths, also known as shared-use paths or trails, provide bicycle access physically separated from motor vehicle traffic. Bicycle paths should be at least eight-feet wide for one-way travel and ten-feet wide for two-way travel and may be shared with pedestrians. Bicycle paths shared with pedestrians should be wider (12 to 15 feet) and include a 15-mph speed limit for bicyclists. Grade separation is preferred at major intersection crossings and bicycle-specific treatments are recommended wherever a bicycle path crosses a roadway. Examples include the Guadalupe River Trail and Stevens Creek Trail.

Simulation of an off-street bicycle superhighway

Separated Bikeways

Separated bikeways, also known as cycle tracks or protected bikeways, are on-street travel lanes designated for exclusive bicycle use, with a physical, vertical buffer used to separate bicyclists from adjacent vehicles and/or on-street parking. Separated bikeways are most appropriate on roadways with travel speeds 25 mph or above with moderate to high vehicle traffic volumes. Recommended width is six to seven feet with a three-foot minimum buffer for street-level facility or five feet bikeway and 1.5-foot buffer for bikeways at sidewalk level. Narrower widths can be accommodated under exceptional circumstances. Separated bikeways should be equipped with signal detection and other intersection enhancements with an especially thoughtful design approach to conflicts at intersections and driveways. Local examples of separated bikeways include Third and Fourth Street in San José near San José State University, Middlefield Road in Palo Alto in front of Greene Middle School, and Blossom Hill Road in Los Gatos. Other jurisdictions, including Mountain View and Cupertino, have installed or are proposing this type of facility. Some of these examples are narrower than what is recommended for a bicycle superhighway.

Simulations of on-street bicycle superhighways (left: one-way, sidewalk level; right: two-way, street level)

Bicycle Lanes

Bicycle lanes are on-street travel lanes designated for exclusive bicycle use, with striping to differentiate them from adjacent vehicle travel lanes. Bicycle lanes are appropriate on roadways with travel speeds of less than 35 mph and up to two vehicle travel lanes in each direction. They should be at least six feet wide and equipped with signal detection and other intersection enhancements. Bicycle lanes are prevalent throughout the County and Evelyn Avenue in Sunnyvale is one local example of bicycle lanes.

Buffered Bicycle Lanes

Buffered bicycle lanes are classified similarly to bicycle lanes but provide extra painted buffer space between the bicycle lane and a vehicle parking and/or vehicle travel lane. Welburn Avenue in Gilroy or Bird Avenue in San José are examples.

Bicycle Routes

Bicycle Routes are designated routes where the bicycle travel lane is shared with vehicles. They are designated by signage and sometimes by a shared lane marking on the roadway. Bicycle routes are best suited to roadways with speed limits of 25 mph or less and one vehicle travel lane in each direction. Bicycle routes should only be part of the bicycle superhighway network if traffic volumes are very low and the roadway is designed to only accommodate low vehicular speeds.

Bicycle Boulevards

Traffic calming measures can be used on designated bicycle routes to reduce traffic speeds and minimize vehicle volumes. This upgrades the "bicycle route" classification to a "bicycle boulevard." Intersection priority and vehicle speeds should play a major role in the design of a bicycle superhighway that is classified as a bicycle boulevard. The Amarillo-Moreno Bicycle Boulevard in Palo Alto is an example of a bicycle boulevard.

Wayfinding

A bicycle wayfinding system consists of comprehensive signing, pavement markings, kiosks, maps, and apps in the locally spoken languages to guide bicyclists to their destinations along preferred bicycle routes. Wayfinding for the bicycle superhighway network should be consistent and be branded in such a way to highlight the network as the backbone to the bicycle network across the county. Wayfinding signs are typically placed at decision points along bicycle routes and at key destinations. Local jurisdictions should also direct people to the network from up to a mile away.

4. Bicycle Superhighway Network and Implementation Status

VTA has worked with our 16 Member Agencies to identify new projects that can be built or existing bikeways that can be upgraded into a bicycle superhighway.

Bicycle Superhighway Alignments

VTA has identified 17 potential bicycle superhighway alignments. They are divided into two categories based on their feasibility and timeline. In alphabetical order, they are:

Planning Work Done, Corridor Alignment Fairly Certain:

1. Bascom Avenue/Los Gatos Boulevard
2. Bay Trail
3. Blossom Hill Road
4. Cochrane Road/Madrone Channel Trail/Tennant Avenue
5. Coyote Creek Trail
6. El Camino Real
7. Guadalupe River Trail
8. Historic De Anza Trail/Union Pacific Railroad Trail
9. Story-Keyes Complete Streets Project

Requires Further Study to Determine Feasibility & Specific Alignments:

10. Central Bikeway Study (between the western Santa Clara border and Piedmont Avenue in San José)
11. East Channel Trail/Blaney Avenue
12. East San José North-South Alignment
13. Junipero Serra Boulevard/Foothill Expressway
14. Junipero Serra Trail/Pruneridge Avenue/Hedding Street/Berryessa Road
15. Monterey Road
16. San Tomas Aquino Creek Trail
17. Stevens Creek Trail/ Homestead Road/Mary Avenue

Figure 1 shows the map of these alignments. The alignments that make up

the superhighway network are in various stages of completion. The map shows four categories, described below:

Generally meets bicycle superhighway definition:

- Segment is an existing bikeway that provides physical separation from motor vehicles.
- Surface is paved or all-weather permeable surface.
- May require widening, intersection modifications, wayfinding, and other amenities to meet bicycle superhighway design recommendations.

Alignment established:

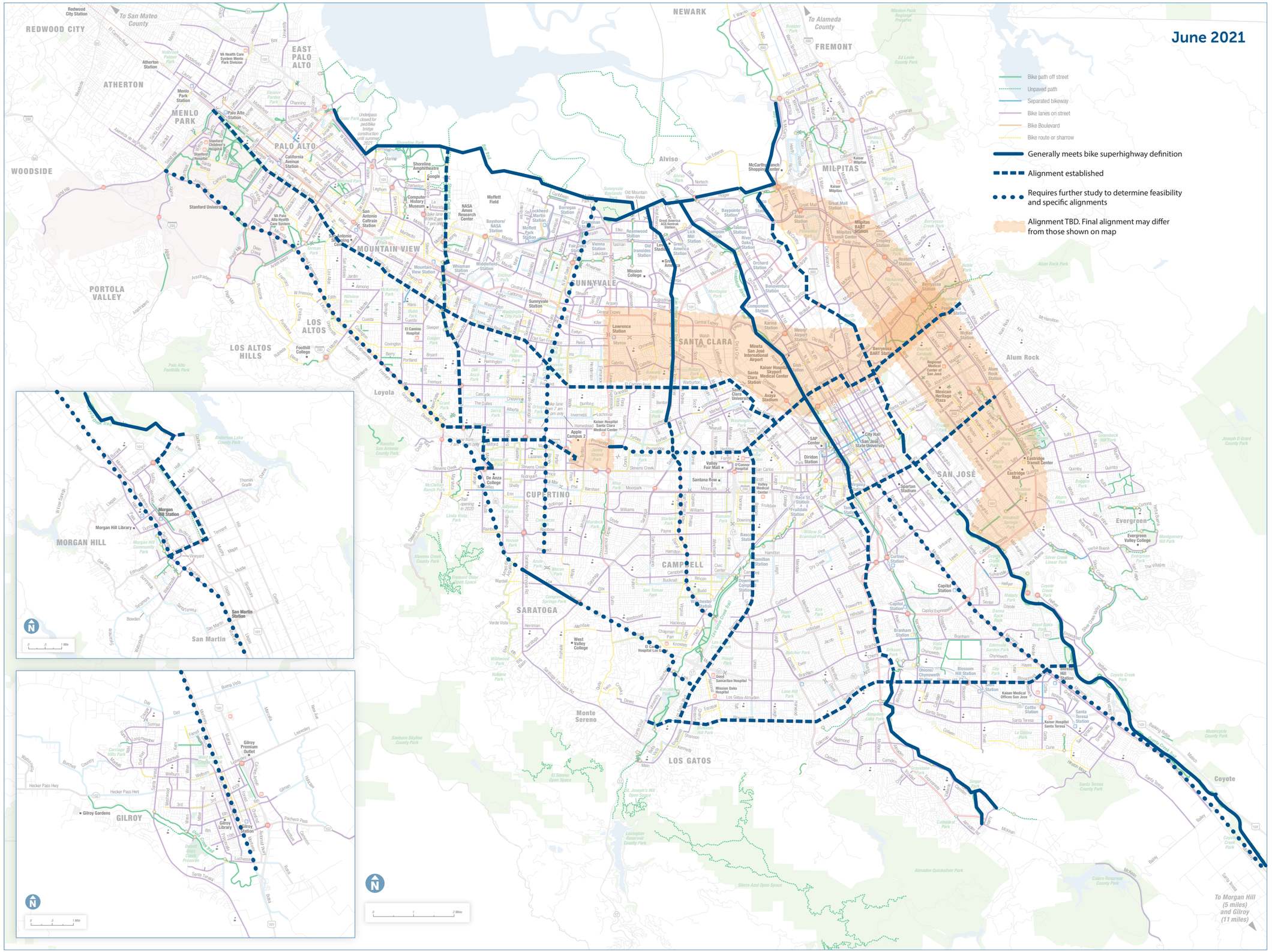
- Segment may or may not have an existing bikeway.
- Local plans support constructing low-stress bikeway along the segment.
- Planning, design, or construction is underway or a jurisdiction is seeking funds to support one or more phases.

Requires further study to determine feasibility or specific alignments:

- Segment may or may not have an existing bikeway.
- May or may not have been identified in a local plan for improved bicycle facilities.
- Significant additional planning, outreach, and/or feasibility study work is necessary before determining if bikeway meets bicycle superhighway design guidance and can be constructed.
- May have barriers that prevent near-term implementation.

Alignment to Be Determined (TBD):

- VTA and local jurisdictions have identified a need for a bicycle superhighway within the area, but a specific corridor has not yet been identified.
- Feasibility study or alternatives analysis may or may not be underway.


June 2021
Bike path off street
Unpaved path
Separated bikeway
Bike lanes on street
Bike Boulevard
Bike route or sharrow
Generally meets bike superhighway definition
Alignment established
Requires further study to determine feasibility and specific alignments
Alignment TBD. Final alignment may differ from those shown on map
REDWOOD CITY
EAST PALO ALTO
ATHERTON
MENLO PARK
PALO ALTO
WOODSIDE
PORTOLA VALLEY
LOS ALTOS
LOS ALTOS HILLS
MOUNTAIN VIEW
NEWARK
FREMONT
Alviso
MILPITAS
SUNNYVALE
SANTA CLARA
Alum Rock
SAN JOSÉ
CUPERTINO
CAMPBELL
SARATOGA
Monte Sereno
LOS GATOS
Loyola
MORGAN HILL
San Martin
GILROY
Gilroy Premium Outlet
Coyote
To Morgan Hill (5 miles) and Gilroy (11 miles)

Implementation Status

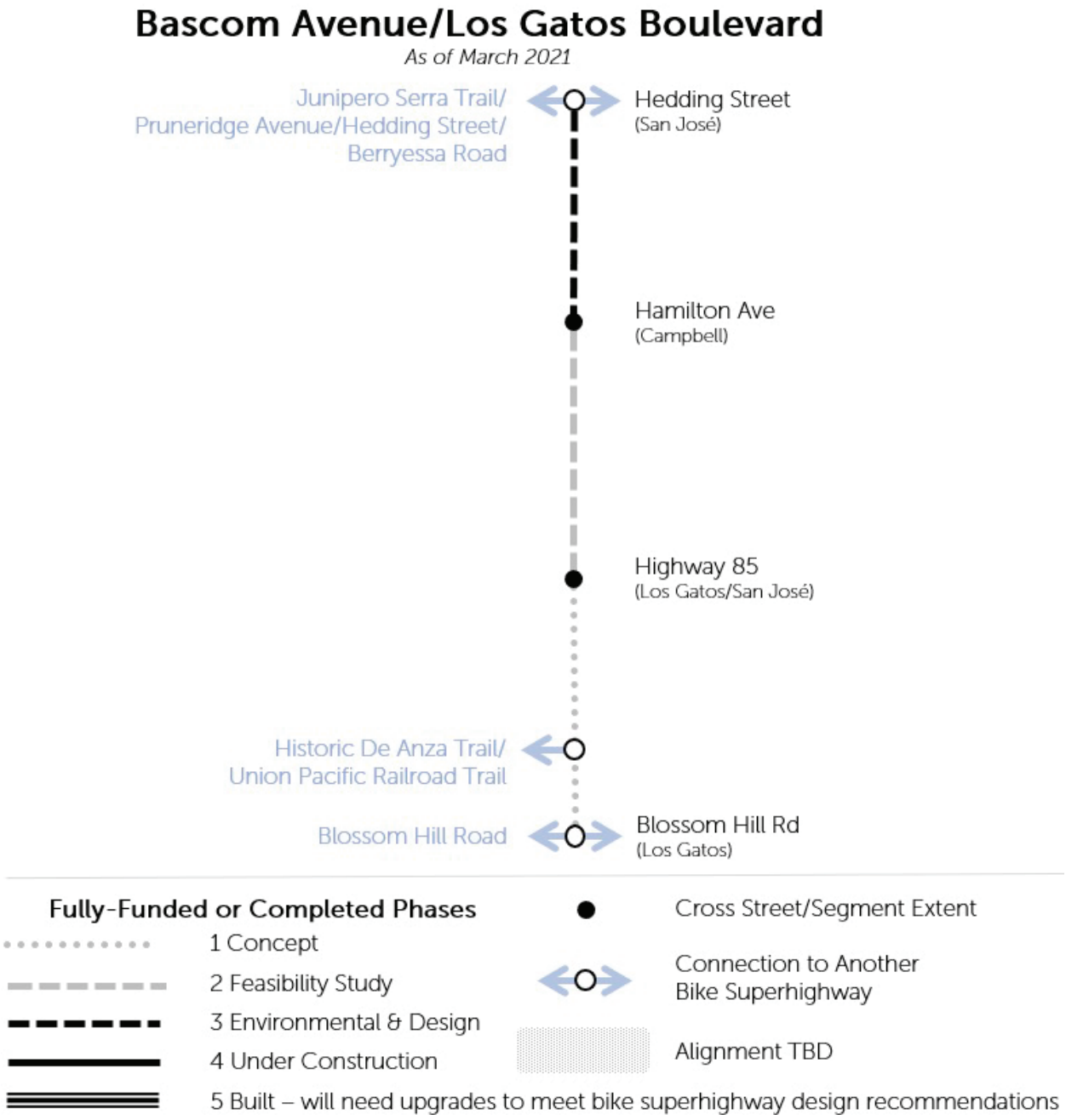
The following sections describe each of the 17 bicycle superhighways and provides a status update.

Bascom Avenue/Los Gatos Boulevard

Proposed on-street bikeway between Hedding Street (San José) and Blossom Hill Road (Los Gatos). The project builds on the Bascom Avenue Complete Streets Corridor Study, which proposes separated bikeways along Bascom Avenue between I-880 and Highway 85. Los Gatos Boulevard south of Lark Avenue has existing bike lanes that could be upgraded.

Agencies	San José, Campbell, County, Los Gatos
Destinations	Rose Garden, O'Connor Hospital, Valley Medical Center, San José City College, Bascom Community Center, Del Mar High School, Bascom Light Rail Station, Los Gatos Creek Trail, Hamilton Shopping Center, Pruneyard Shopping Center
VTA Involvement	Lead
Length	7.0 miles total 0 miles currently built as trail or protected bikeway
VMT Reduction Per Weekday (2040)	-2,560
Planning-Level Cost Estimate	$82,561,800 (based on Complete Streets Study)
Active Implementation Efforts *(as of March 2021)*	• VTA completed Bascom Avenue Complete Streets Corridor Study (Highway 85 to I-880) in 2021 • VTA began design of Complete Streets corridor from Hamilton Ave to I-880 using 2016 Measure B funds in 2021 • City of San José to repave and install protected bikeway on Bascom Ave between Fruitdale Ave and Hamilton Ave in 2022, funded by MTC Safe and Seamless Quick Strike program in June 2021

Los Gatos Boulevard


Bascom Avenue/Los Gatos Boulevard
As of March 2021
Junipero Serra Trail/
Pruneridge Avenue/Hedding Street/
Berryessa Road
Hedding Street
(San José)
Hamilton Ave
(Campbell)
Highway 85
(Los Gatos/San José)
Historic De Anza Trail/
Union Pacific Railroad Trail
Blossom Hill Road
Blossom Hill Rd
(Los Gatos)
Fully-Funded or Completed Phases
1 Concept
2 Feasibility Study
3 Environmental & Design
4 Under Construction
5 Built – will need upgrades to meet bike superhighway design recommendations
Cross Street/Segment Extent
Connection to Another
Bike Superhighway
Alignment TBD

Bay Trail

Off-street trail between Oregon Expressway (Palo Alto) and McCarthy Boulevard (Milpitas). The Bay Trail is a planned 500-mile biking and walking trail that surrounds the San Francisco Bay. In Santa Clara County, most of the Bay Trail is constructed and spans from Palo Alto to Milpitas along the shoreline and on top of levies. The Bay Trail continues across county lines, connecting to East Palo Alto and Fremont. There is one gap between North 1st Street and Zanker Road in San José, which the City plans to close. The trail includes paved and decomposed granite segments, which are suitable for all-weather commuting, and one unpaved segment behind the Sunnyvale Athletic Fields, which is not suitable for commuting in rainy conditions. The unpaved segment will be upgraded to all-weather permeable surface after the Valley Water District completes flood control work on the levy.

Agencies	San José (to close existing gap), Metropolitan Transportation Commission (Association of Bay Area Governments)
Destinations	City of East Palo Alto, Palo Alto Baylands Shoreline Park, North Bayshore business NASA-Ames Research Center, M Moffet Park businesses, Lockhe Transit Center, VTA Light Rail Bo and Crossman Stations, Sunnyv Complex and Baylands Park, bu in North Santa Clara and North S McCarthy Ranch, City of Fremor
VTA Involvement	Provide planning support to leac
Length	15.6 miles total 14.6 miles existing trail or separa
VMT Reduction Per Weekday (2040)	-6,640
Planning-Level Cost Estimate	$3,300,000
Active Implementation Efforts *(as of March 2021)*	Plans underway to upgrade the behind Sunnyvale Sports Compl all-weather permeable surface

Bay Trail, with decomposed granite

Bay Trail

As of March 2021

Fully-Funded or Completed Phases

- 1 Concept
- 2 Feasibility Study
- 3 Environmental & Design
- 4 Under Construction
- 5 Built – will need upgrades to meet bike superhighway design recommendations

- Cross Street/Segment Extent
- Connection to Another Bike Superhighway
- Alignment TBD

Blossom Hill Road

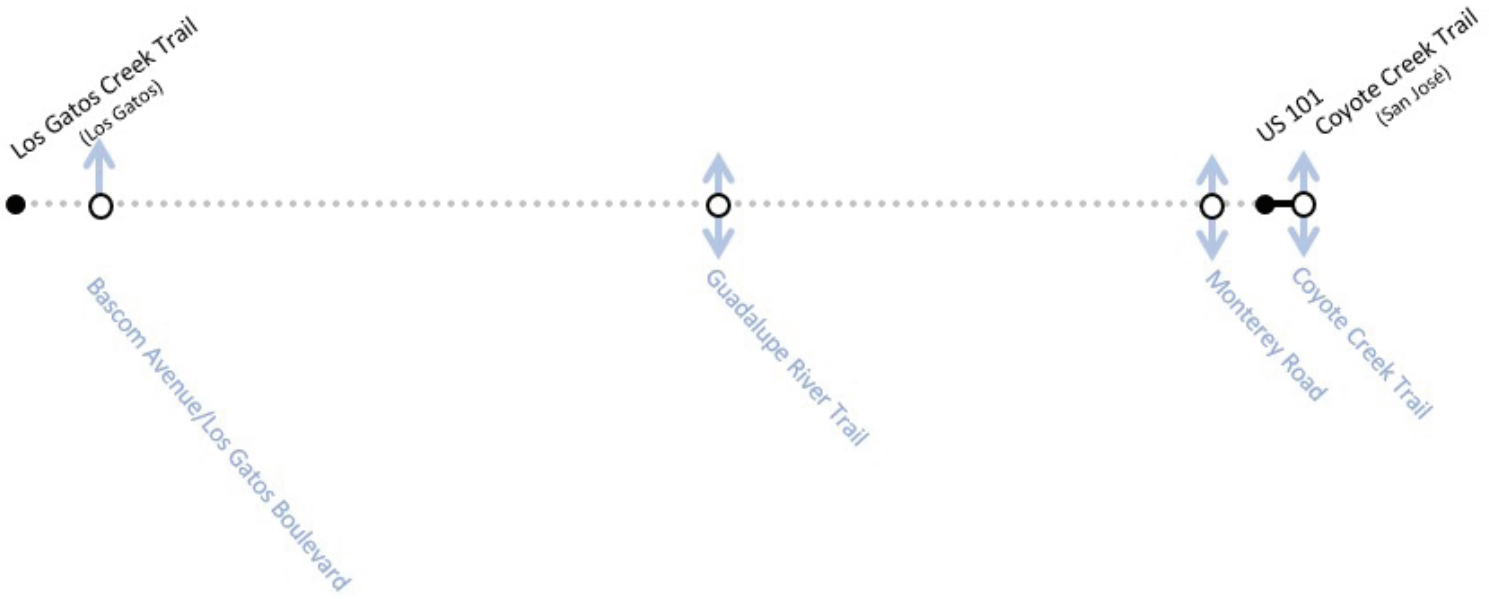
Proposed on-street bikeway between Los Gatos Creek Trail and Coyote Creek Trail (San José). There are bike lanes already installed on Blossom Hill Road between Winchester Boulevard and Camino Del Cerro in Los Gatos and between Almaden Expressway and Snell Avenue in San José. The San José Better Bike Plan 2025 proposes separated facilities along the entire length of Blossom Hill Road within San José.

Agencies	Los Gatos and San José
Destinations	Downtown Los Gatos, Blossom Hill Elementary, Leigh High School, Noddin Elementary, Dartmouth Middle School, Pioneer High School, numerous retail outlets and medical services along Blossom Hill Road, VTA Light Rail Blossom Hill Station, Oak Grove High School, Blossom Hill Caltrain Station
VTA Involvement	Provide planning support or funding opportunities to lead agencies
Length	12.9 miles total 0.25 miles existing trail or separated bikeway
VMT Reduction Per Weekday (2040)	-3,970
Planning-Level Cost Estimate	$6,450,000
Active Implementation Efforts *(as of March 2021)*	VTA reconstructing the Blossom Hill Rd/US 101 freeway interchange using 2016 Measure B funds. The redesigned interchange includes a new two-way shared use path on the north side of the roadway, with full grade separation of the US 101 ramps

Blossom Hill Road

Blossom Hill Road

As of March 2021



Fully-Funded or Completed Phases

- 1 Concept
- 2 Feasibility Study
- 3 Environmental & Design
- 4 Under Construction
- 5 Built – will need upgrades to meet bike superhighway design recommendations

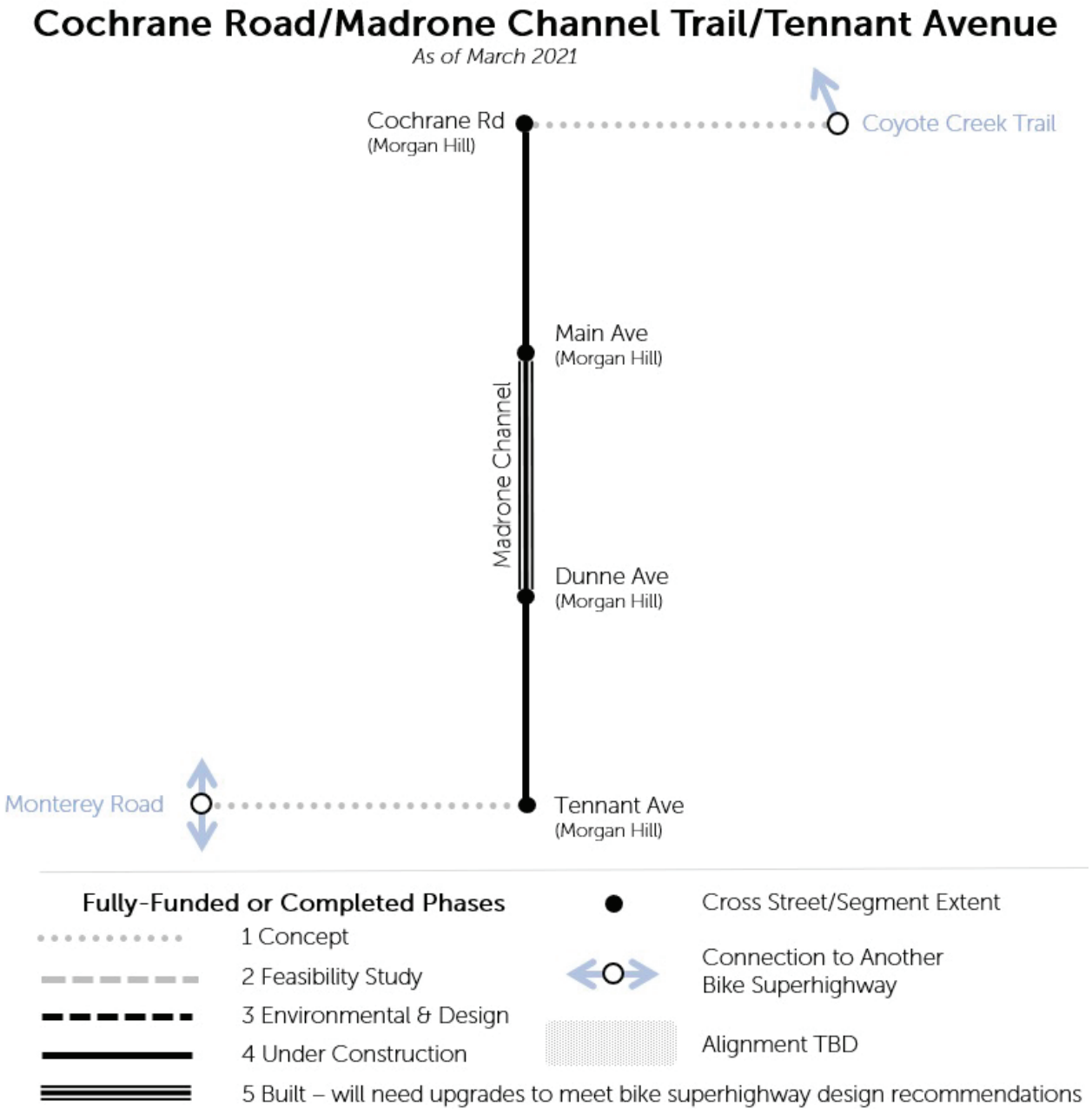
- Cross Street/Segment Extent
- Connection to Another Bike Superhighway
- Alignment TBD

Cochrane Road/Madrone Channel Trail/Tennant Avenue

Proposed on- and off-street bikeway between the Coyote Creek Trail and Monterey Road (Morgan Hill). This project would involve paving and extending the existing Madrone Channel Trail to create a shared-use path from Cochrane Road to Tennant Avenue in Morgan Hill. It would also include upgrading the on-street facilities on Cochrane Road between the Coyote Creek Trail and the Madrone Channel Trail and upgrading the facilities on Tennant Avenue to connect to Monterey Road.

Agencies	Morgan Hill
Destinations	Shopping centers, Rancho Grande de Morgan Hill, South Valley Mushroom Farm, Morgan Hill Outdoor Sports Center, office parks
VTA Involvement	Help lead agency seek funding
Length	6.7 miles total 0.85 miles existing trail or separated bikeway
VMT Reduction Per Weekday (2040)	-270
Planning-Level Cost Estimate	$9,730,000
Active Implementation Efforts *(as of March 2021)*	Morgan Hill paving the existing dirt trail along the Madrone Channel between Main Ave and Tenant Ave using 2016 Measure B funds. Project will include trailside amenities and crossing improvements

Cochrane Road


Cochrane Road/Madrone Channel Trail/Tennant Avenue
As of March 2021
Cochrane Rd
(Morgan Hill)
Coyote Creek Trail
Main Ave
(Morgan Hill)
Madrone Channel
Dunne Ave
(Morgan Hill)
Monterey Road
Tennant Ave
(Morgan Hill)
Fully-Funded or Completed Phases
1 Concept
2 Feasibility Study
3 Environmental & Design
4 Under Construction
5 Built – will need upgrades to meet bike superhighway design recommendations
Cross Street/Segment Extent
Connection to Another Bike Superhighway
Alignment TBD

Coyote Creek Trail

Off-street trail between the Bay Trail (San José) and Cochrane Road (Morgan Hill). The Coyote Creek Trail is planned and partially developed as one of San José's longest trail systems, ultimately extending from the Bay to the southern city boundary. The existing trail is built out in three disconnected segments:

1. Northern Reach: Gravel – Highway 237 to Montague Expressway (1.4 miles)
2. Central Reach: Paved – William Street to I-280, in Selma Olinder Park (0.5 miles)
3. Southern Reach: Paved - Tully Road to Morgan Hill, near Anderson County Park (17.8 miles)

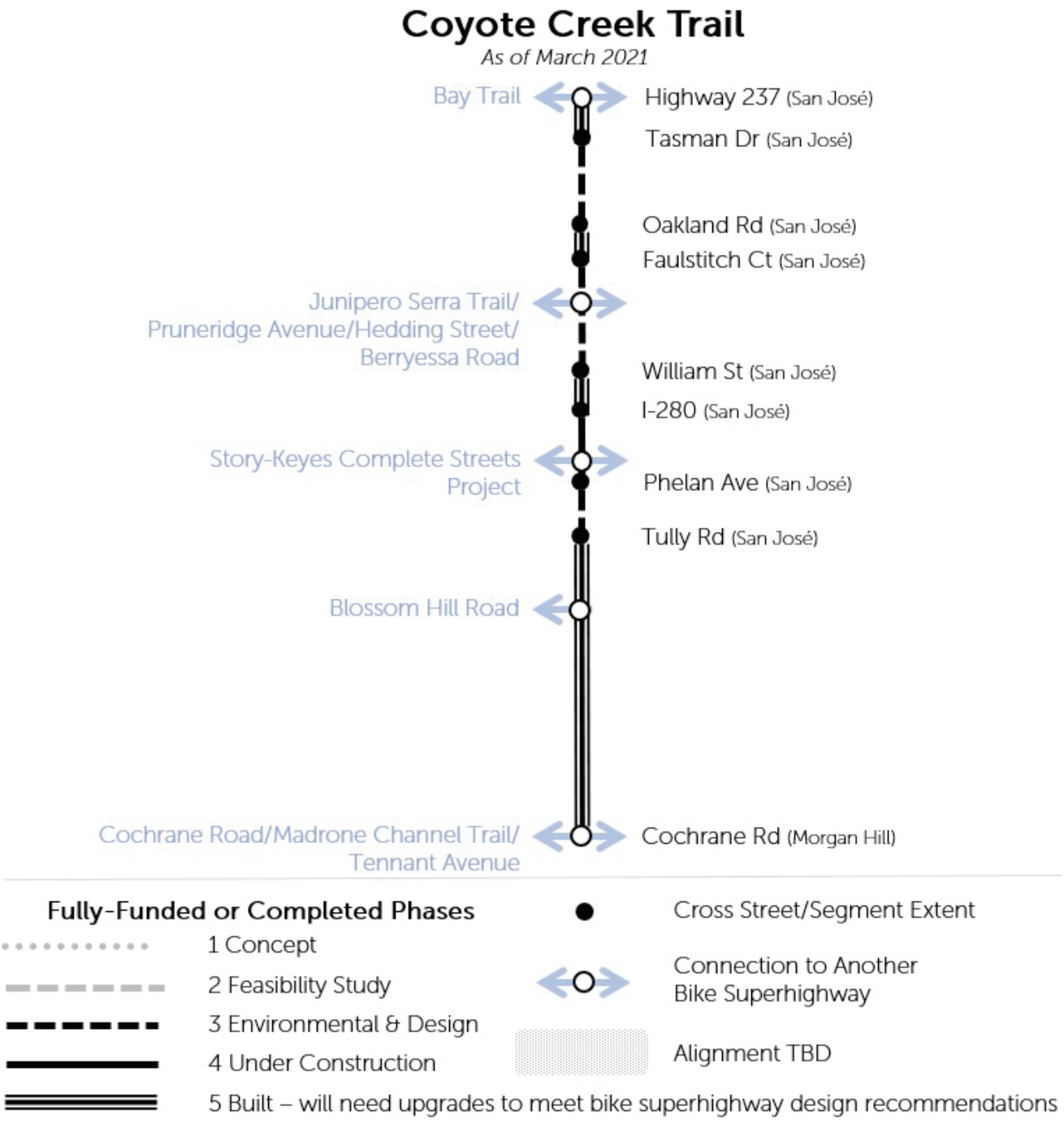
South of Metcalf Road, the trail is managed by the County of Santa Clara and runs to Morning Star Drive/Cochrane Road in Morgan Hill.

Agencies	San José and County of Santa Clara
Destinations	North San José businesses, Berryessa BART Station, San José High School, Happy Hollow Park and Zoo, Japanese Friendship Garden, History Park, Stonegate Elementary School, Hellyer Velodrome, Hellyer County Park, Charter School of Morgan Hill, Anderson Lake County Park
VTA Involvement	Help lead agency seek funding
Length	28.7 miles total 19.7 miles existing trail
VMT Reduction Per Weekday (2040)	-8,580
Planning-Level Cost Estimate	$20,400,000
Active Implementation Efforts *(as of March 2021)*	• City of San José awarded 2016 Measure B funds to design four trail segments: Montague Expy to Brokaw Rd, Old Oakland Rd to Berryessa Rd, Empire St to Santa Clara St, Singleton Crossing near Tuers Rd • The City of San José Trails Program is actively working on closing the remaining trail gaps. Funding from Active Transportation Program, Affordable Housing and Sustainable Communities grants, 2016 Measure B, earmarks, and others

i. From north to south:

- Brokaw Rd to UPRR Bridge: in design, city negotiating with UPRR
- Mabury Rd to Empire St: Design at 95%, city coordinating with Valley Water, construction funded by Active Transportation Program grant
- Phelan Ave to Tully Rd: design complete, city in right-of-way negotiations
- Story Rd to Phelan Ave: under construction
- Story Rd/Remillard Ct intersection: in design, implementation by December 2021
- William St/Selma Olinder Park: improvements to existing trail will begin construction 2021
- Singleton Bridge: environmental in progress, construction anticipated by October 2021

Coyote Creek Trail


Coyote Creek Trail
As of March 2021
Bay Trail
Highway 237 (San José)
Tasman Dr (San José)
Oakland Rd (San José)
Faulstitch Ct (San José)
Junipero Serra Trail/ Pruneridge Avenue/Hedding Street/ Berryessa Road
William St (San José)
I-280 (San José)
Story-Keyes Complete Streets Project
Phelan Ave (San José)
Tully Rd (San José)
Blossom Hill Road
Cochrane Road/Madrone Channel Trail/ Tennant Avenue
Cochrane Rd (Morgan Hill)
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Cross Street/Segment Extent
Connection to Another Bike Superhighway
Alignment TBD

El Camino Real

Proposed on-street bikeway between Palo Alto Avenue (Palo Alto) and Benton Street (Santa Clara). Several cities in San Mateo and Santa Clara Counties have made significant planning efforts for implementing high-quality bike facilities along El Camino Real. These efforts are underway by (in alphabetical order):

- Atherton (Atherton El Camino Complete Streets Plan)
- Caltrans (Caltrans District 4 Bike Highway Study, underway)
- Menlo Park (El Camino Real and Downtown Specific Plan)
- Mountain View (El Camino Real Precise Plan and Streetscape Plan)
- Redwood City (El Camino Real Corridor Plan)
- Santa Clara (Draft EIR for El Camino Real Specific Plan)
- Sunnyvale (El Camino Real Corridor Specific Plan)

The cities of Redwood City, Menlo Park, Palo Alto, and Mountain View are also developing the Peninsula Bikeway Study, a joint effort determining the feasibility for several possible continuous bicycle routes that traverse the four partner cities. This study has not yet been completed, although planners developed a 16-mile interim route by linking existing bikeways and residential streets while the final alignment could be decided. El Camino Real is one alternative under consideration.

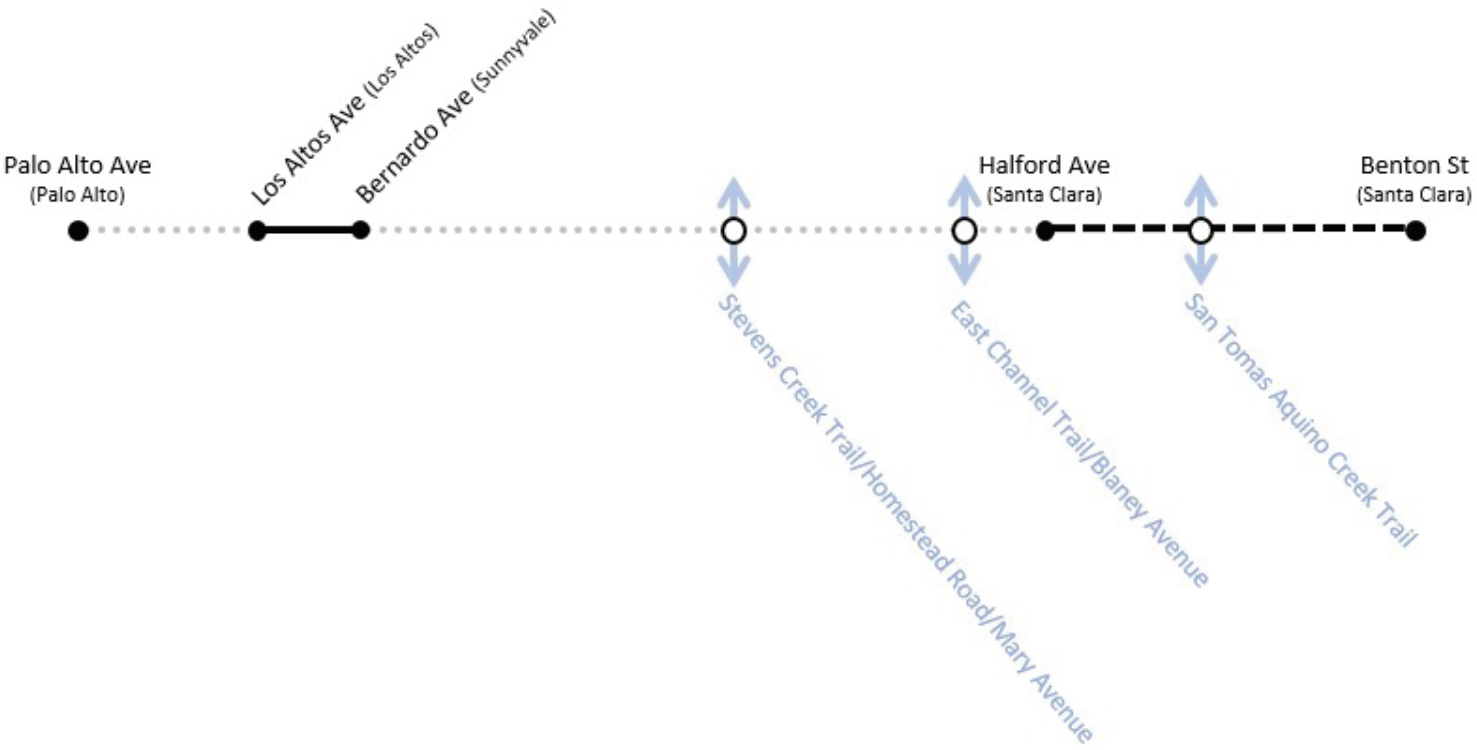
Member Agencies will need to make tradeoffs for determining roadway priority in some segments of El Camino Real. El Camino Real is VTA's highest ridership corridor so any project should be compatible with fast, frequent, and reliable transit. Road space will need to be reallocated to provide a physically separated bikeway, with additional space required at transit stops to accommodate bus boarding islands. In many locations, there are segments where on-street parking could be removed to accommodate a bicycle superhighway facility. For locations where the removal of on-street parking is determined to be infeasible, Member Agencies could attempt to squeeze in standard bike lanes or implement a shared bike/pedestrian path on either side of the street. However, the shared path concept could only be implemented as properties redeveloped.

Agencies	Palo Alto, Los Altos, Mountain View, Sunnyvale, Santa Clara
Destinations	Stanford Shopping Center, El Camino Park, Stanford University, Mayfield Soccer Complex, Sutter Health Palo Alto Medical Foundation - Mountain View Center, shopping centers, Santa Clara Caltrain Station
VTA Involvement	Lead or provide planning support to lead agencies
Length	15.8 miles total 0 miles existing trail or separated bikeway
VMT Reduction Per Weekday (2040)	-13,830
Planning-Level Cost Estimate	$50,746,000 (includes costs from Mountain View Streetscape Plan; does not include any additional feasibility studies or environmental clearance that may be required)
Active Implementation Efforts *(as of March 2021)*	• Numerous planning efforts for El Camino have been completed or are nearing completion. Most plans recommend physically separated bikeways: o Caltrans (Caltrans District 4 Bike Highway Study, underway) o Mountain View (El Camino Real Precise Plan and Streetscape Plan) o Redwood City (El Camino Real Corridor Plan) o Santa Clara (Draft EIR for El Camino Real Specific Plan) o Sunnyvale (El Camino Real Corridor Specific Plan) o Peninsula Bikeway Study • Mountain View awarded 2016 Measure B funds to construct bikeway, pedestrian, and transit improvements on El Camino Real. Project will construct separated bikeway between Castro St and Sylvan Ave and stripe bike lanes that can be converted to separated bikeway between Castro St and Del Medio Ave. City is coordinating with Caltrans' plans to repave El Camino Real in 2022.

El Camino Real

El Camino Real

As of March 2021



Fully-Funded or Completed Phases

- 1 Concept
- 2 Feasibility Study
- 3 Environmental & Design
- 4 Under Construction
- 5 Built – will need upgrades to meet bike superhighway design recommendations

- Cross Street/Segment Extent
- Connection to Another Bike Superhighway
- Alignment TBD

Guadalupe River Trail

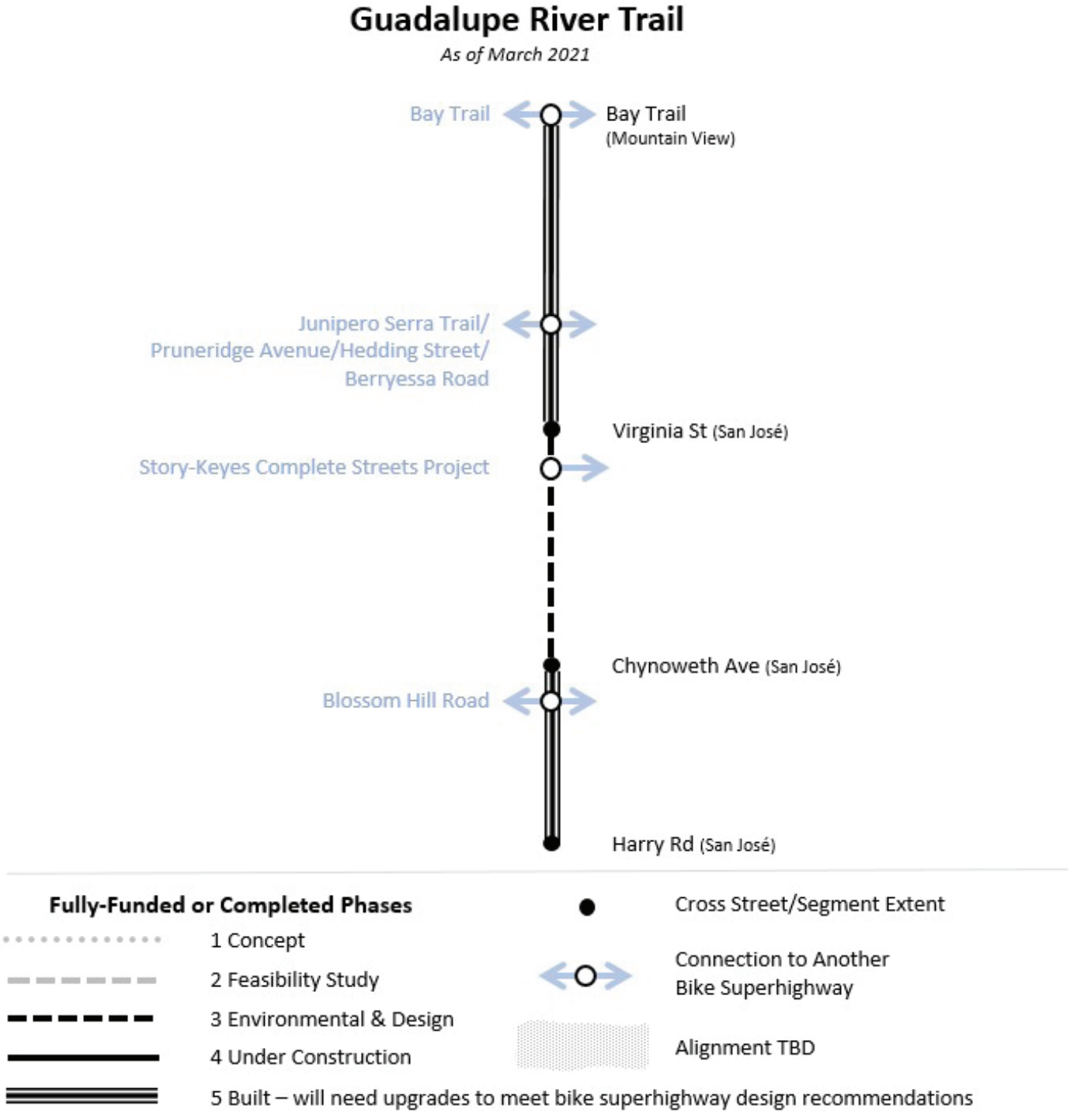
The Guadalupe River Trail runs north-south adjacent to the Guadalupe River for nine miles between Alviso and downtown in San José then meets up with the Los Alamitos Creek trail systems for 5.5 miles between Chynoweth Avenue and Harry Road in South San José. The Guadalupe River Trail Master Plan envisions that the trail will be completed between Virginia Street and Chynoweth Avenue mainly along Almaden Road and Almaden Expressway. This trail is a major bicycle commuter corridor.

Agencies	San José
Destinations	Alviso, office parks, Mineta San José International Airport, Guadalupe River Park, shopping centers, Downtown San José, Children's Discovery Museum of San José, VTA Light Rail Virginia and Tamien Stations, Almaden Lake Park, Leland High School
VTA Involvement	Help lead agency seek funding
Length	20 miles total 14.5 miles existing trail
VMT Reduction Per Weekday (2040)	-7,820
Planning-Level Cost Estimate	$47,300,000 (based on Guadalupe River Trail Master Plan)

Active Implementation Efforts *(as of March 2021)*

- City of San José awarded 2016 Measure B funds to design and environmentally clear Guadalupe River Trail between Virginia St and Chynoweth Ave, including five pedestrian bridges
- VTA's Trimble/De La Cruz/US 101 interchange redesign project will construct a bicycle and pedestrian path from the Guadalupe River Trail Trimble Rd entrance to Central Expy. Construction anticipated to begin in 2021

Guadalupe River Trail

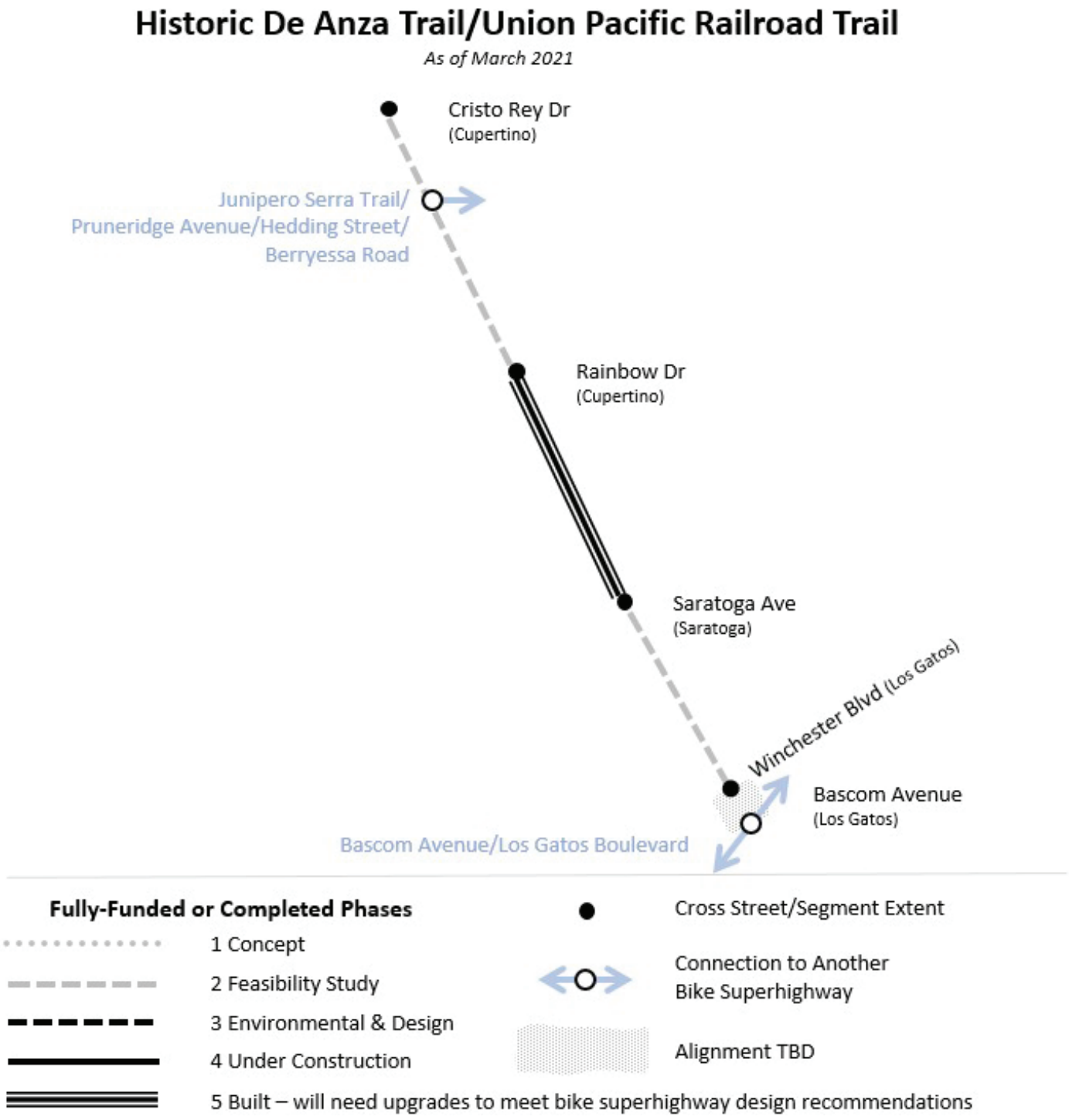

Guadalupe River Trail
As of March 2021
Bay Trail
Bay Trail
(Mountain View)
Junipero Serra Trail/
Pruneridge Avenue/Hedding Street/
Berryessa Road
Virginia St (San José)
Story-Keyes Complete Streets Project
Chynoweth Ave (San José)
Blossom Hill Road
Harry Rd (San José)
Fully-Funded or Completed Phases
1 Concept
2 Feasibility Study
3 Environmental & Design
4 Under Construction
5 Built – will need upgrades to meet bike superhighway design recommendations
Cross Street/Segment Extent
Connection to Another
Bike Superhighway
Alignment TBD

Historic De Anza Trail/Union Pacific Railroad Trail

Proposed on- and off-street bikeway between Rancho San Antonio Preserve (Cupertino) and Bascom Avenue (Los Gatos). The Historic De Anza Trail is a very long-term effort by the City of Cupertino to formalize right of way owned by Union Pacific Railroad between Rancho San Antonio Open Space Preserve and Joe's Trail in Saratoga. The five-mile stretch is mostly dirt and rocks but currently used by pedestrians and some bicyclists. So far, the railroad has not allowed trail planning to move forward. This Plan recommends extending Joe's Trail through Saratoga and Los Gatos to Bascom Avenue. Some segments may need to be on street to accommodate this recommendation.

Agencies	Palo Alto, Los Altos, Mountain View, Sunnyvale, Santa Clara
Destinations	Rancho San Antonio Park, office parks, Congress Springs Park, Rolling Hills Middle School
VTA Involvement	Lead or provide planning support and funding opportunities to lead agencies
Length	9.3 miles total 0 miles existing trail or separated bikeway
VMT Reduction Per Weekday (2040)	-1,130
Planning-Level Cost Estimate	$15,300,000 (cost does not include any additional feasibility studies or environmental clearance that may be required)
Active Implementation Efforts *(as of March 2021)*	City of Saratoga received permits from California Public Utilities Commission to re-open the pedestrian/bicycle crossing of Joe's Trail at Guava Dr/Fredricksburg Dr. VTA and the city are actively seeking construction funds

Historic De Anza Trail


Historic De Anza Trail/Union Pacific Railroad Trail
As of March 2021
Cristo Rey Dr
(Cupertino)
Junipero Serra Trail/
Pruneridge Avenue/Hedding Street/
Berryessa Road
Rainbow Dr
(Cupertino)
Saratoga Ave
(Saratoga)
Winchester Blvd (Los Gatos)
Bascom Avenue
(Los Gatos)
Bascom Avenue/Los Gatos Boulevard
Fully-Funded or Completed Phases
1 Concept
2 Feasibility Study
3 Environmental & Design
4 Under Construction
5 Built – will need upgrades to meet bike superhighway design recommendations
Cross Street/Segment Extent
Connection to Another
Bike Superhighway
Alignment TBD

Junipero Serra Trail/Pruneridge Avenue/ Hedding Street/Berryessa Road

This corridor links three separate bikeway planning efforts underway by Cupertino, Santa Clara, San José, and VTA with on- and off-street bikeways between Mary Avenue (Sunnyvale) and Piedmont Avenue (San José). The proposed Junipero Serra Trail, located just south of I-280 in Cupertino, will provide an off-street bicycle and pedestrian facility that runs parallel to the existing Junipero Serra Channel and Calabazas Creek and provide a connection between the Don Burnett Bicycle-Pedestrian Bridge and Vallco Parkway. It will connect to Pruneridge Avenue, but the exact alignment has not yet been determined.

Pruneridge Avenue is in Santa Clara and starts at Tantau Avenue. It changes names to Hedding Street at the San José border and then to Berryessa Road at Maybury Road. Pruneridge Avenue currently does not have any bike facilities from Pomeroy Avenue to Winchester Boulevard. Hedding Street/Berryessa Road alternates between standard and buffered bike lanes between Winchester Boulevard and Piedmont Road. Santa Clara is proposing to reconfigure Pruneridge Avenue to provide buffered bike lanes whereas San José may keep half of Hedding Street as-is or upgrade to separated bikeways. All Berryessa Road is proposed to be upgraded to separated bikeways.

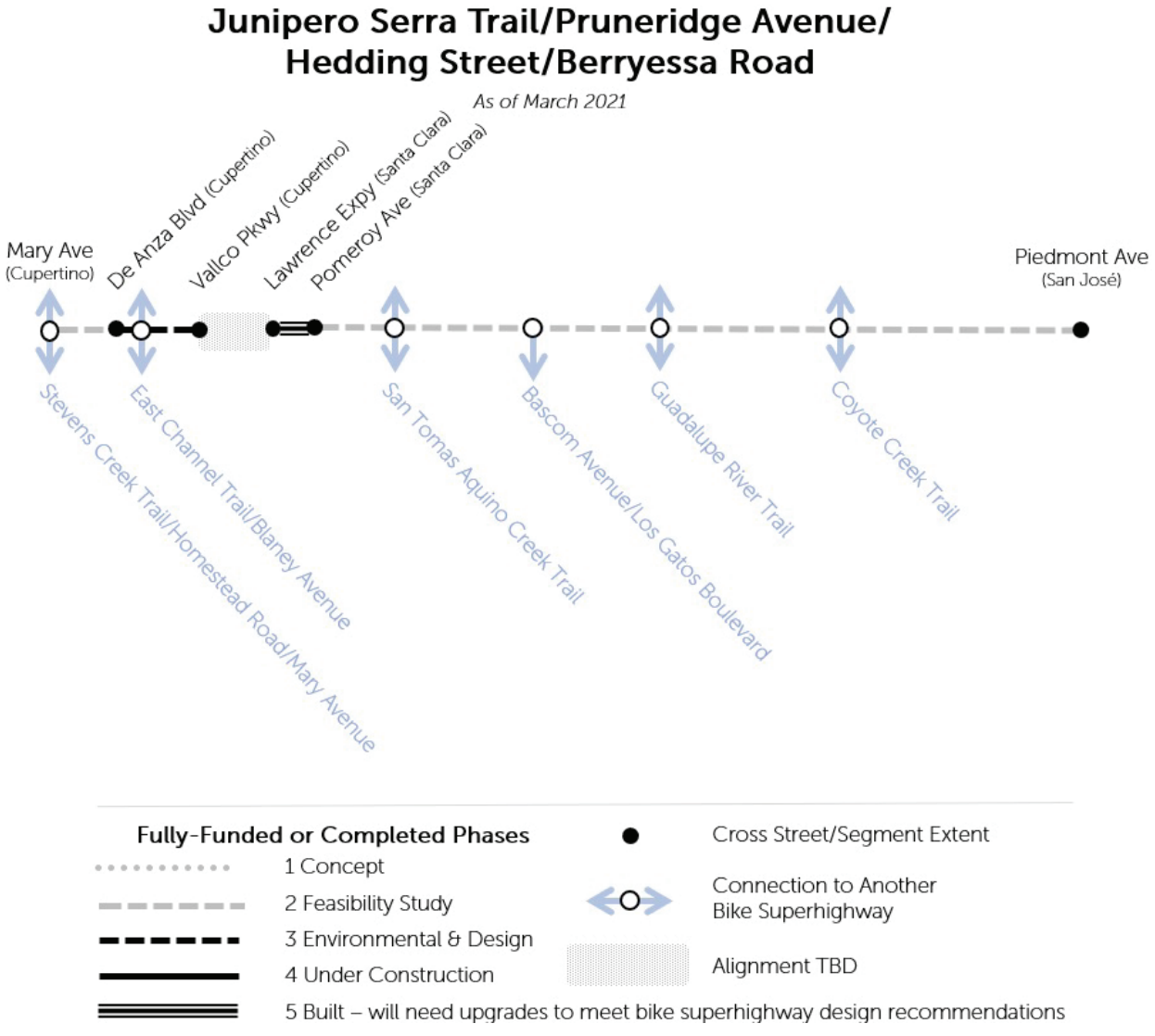
VTA is currently developing the Central Bikeway Feasibility Study, the first bicycle superhighway project to come out of the 2018 VTA Countywide Bicycle Plan. The study will evaluate the feasibility of up to three possible bicycle superhighway alignments between Santa Clara and East San José through North San José. It includes the Hedding/Berryessa segment. See Central Bikeway Study for more information.

Agencies	Cupertino, Santa Clara, San José
Destinations	Office parks, Eisenhower Elementary School, shopping centers, Bellarmine College Prep, Santa Clara County Justice Center, Muwekma Ohlone Middle School, Berryessa BART Station, VTA Light Rail Berryessa Station, Penitencia Creek Park
VTA Involvement	Fund or provide planning support to lead agencies
Length	13.2 miles total 0 miles existing trail or separated bikeway
VMT Reduction Per Weekday (2040)	-7,300
Planning-Level Cost Estimate	$47,668,000 (includes costs from Junipero Serra Trail Feasibility Study; does not include any additional feasibility studies or environmental clearance that may be required)

Active Implementation Efforts *(as of March 2021)*

Hedding Street

- City of Cupertino awarded 2016 Measure B funds to design and construct Junipero Serra Trail Central Segment (De Anza Blvd to Wolfe Rd) and to construct east segment (Wolfe Rd to Calabazas Creek/ Vallco Pkwy) (Two awards)
- VTA leading an interchange redesign project Wolfe Rd/I-280 which will provide trail connections between Wolfe Rd and planned Junipero Serra Trail. Funded in part by 2016 Measure B
- City of Santa Clara leading a Complete Streets Study for Pruneridge Ave between Pomeroy Ave and Winchester Blvd. The plan is considering the feasibility of improved bicycle amenities. Funded by a Caltrans Sustainable Communities Planning Grant



Story-Keyes Complete Streets Project

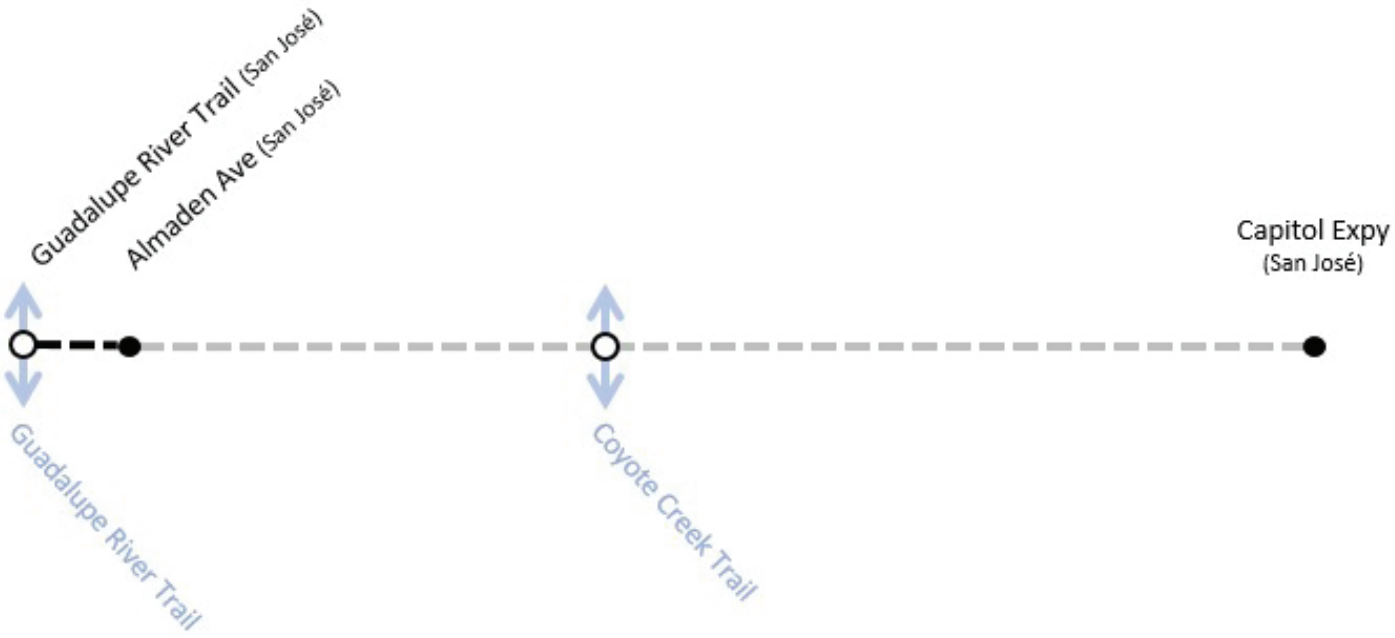
In 2018, VTA adopted the Story-Keyes Complete Streets Study with the City of San José. It evaluated four miles of Willow Street, Graham Avenue, Story Road, and Keyes Street in San José from Highway 87 to Capitol Expressway. Project recommendations include bicycle boulevard treatments on Calle Willow and separated bikeway facilities on Keyes Street and Story Road as well as pedestrian and transit improvements. This corridor is one of VTA's highest ridership corridors so project would be compatible with fast, frequent, and reliable transit.

Agencies	San José
Destinations	Happy Hollow Park and Zoo, shopping centers, Emma Prusch Farm Park
VTA Involvement	Fund or provide planning support to lead agencies
Length	4.1 miles total 0 miles existing trail or separated bikeway
VMT Reduction Per Weekday (2040)	-1,160
Planning-Level Cost Estimate	$62,700,000 (from Story-Keyes Complete Streets Study)
Active Implementation Efforts *(as of March 2021)*	City of San José awarded Active Transportation Program and 2016 Measure B funds to design and construct bicycle and pedestrian safety improvements on Willow-Keyes streets between Lelong St and 3rd St. Project includes protected bikeway.

Keyes Street

Story-Keyes Complete Streets Project

As of March 2021



Fully-Funded or Completed Phases

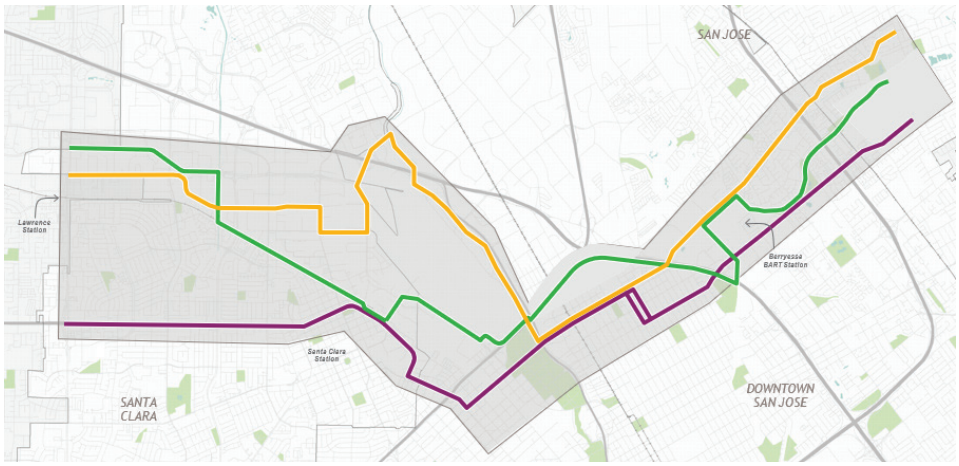
- 1 Concept
- 2 Feasibility Study
- 3 Environmental & Design
- 4 Under Construction
- 5 Built – will need upgrades to meet bike superhighway design recommendations

- Cross Street/Segment Extent
- Connection to Another Bike Superhighway
- Alignment TBD

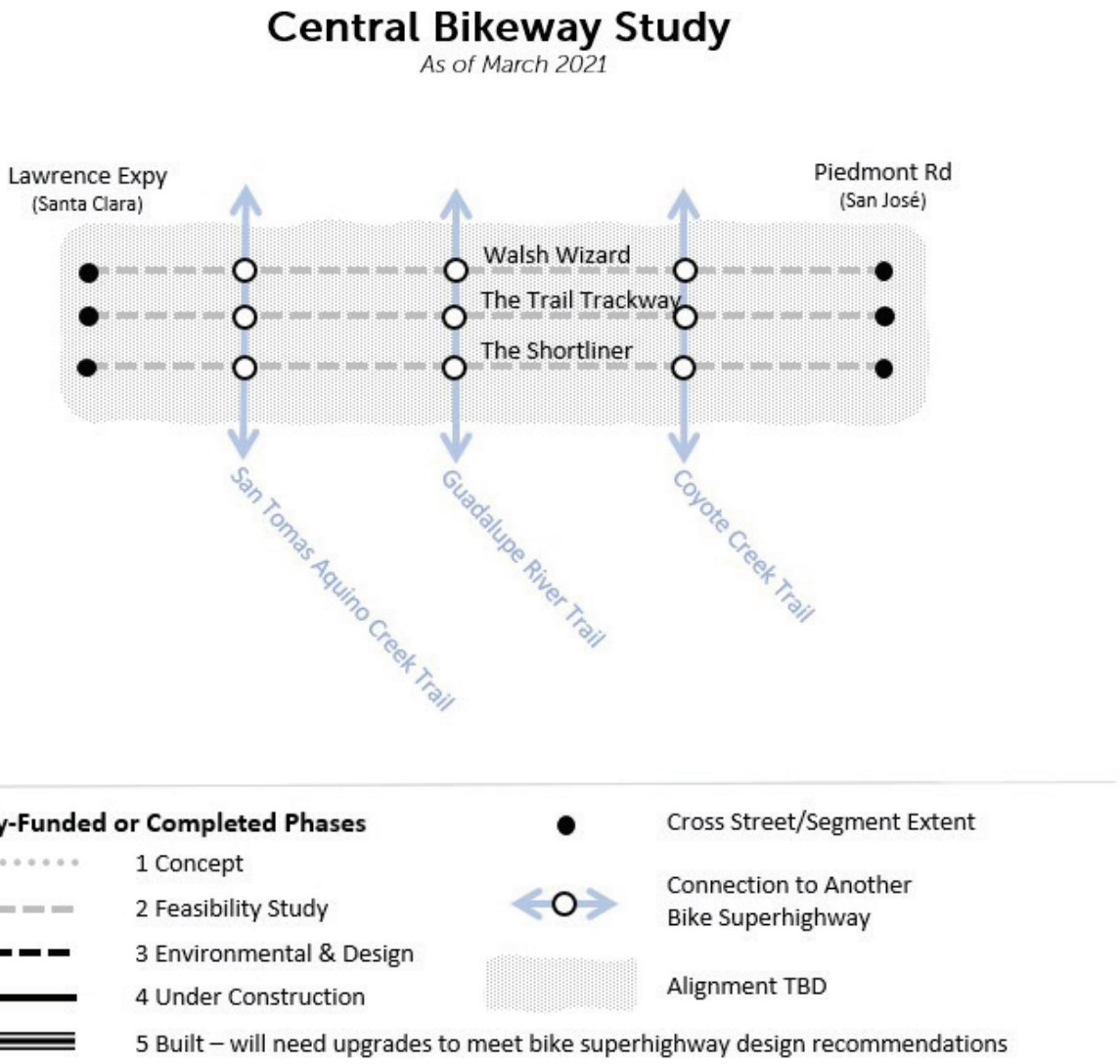
Central Bikeway Study

The ongoing Central Bikeway Study is the first study identifying the feasibility of and desirability for several bicycle superhighway alignments identified in VTA's Countywide Bicycle Plan. The Central Bikeway project will serve disadvantaged communities and provide much needed east-west access between Lawrence Expressway (Santa Clara) and Piedmont Avenue (San José) across Highway 87, US 101, I-680, I-880, connecting three popular bicycle paths, and providing access to Caltrain, VTA Light Rail, and the Berryessa BART Station. Once an alignment is chosen, VTA will work with local agencies to determine the best way to continue the Central Bikeway through Sunnyvale, Mountain View, and Palo Alto.

Agencies	Santa Clara, San José
Destinations	Lawrence and Santa Clara Caltrain stations, office parks, Santa Clara University, Bellarmine College Prep, Santa Clara County Justice Center, Muwekma Ohlone Middle School, Berryessa BART Station, VTA Light Rail Berryessa Station, Penitencia Creek Park, Mineta San José International Airport, Earthquakes Stadium
VTA Involvement	Lead
Length	Between 8 and 11 miles total
VMT Reduction Per Weekday (2040)	(unknown)
Planning-Level Cost Estimate	(unknown)
Active Implementation Efforts *(as of March 2021)*	VTA leading the Central Bikeway Alternatives Analysis and Feasibility Study, funded by a Caltrans Sustainable Communities Planning Grant. Study will be completed in February 2022



Map of Central Bikeway Alternatives

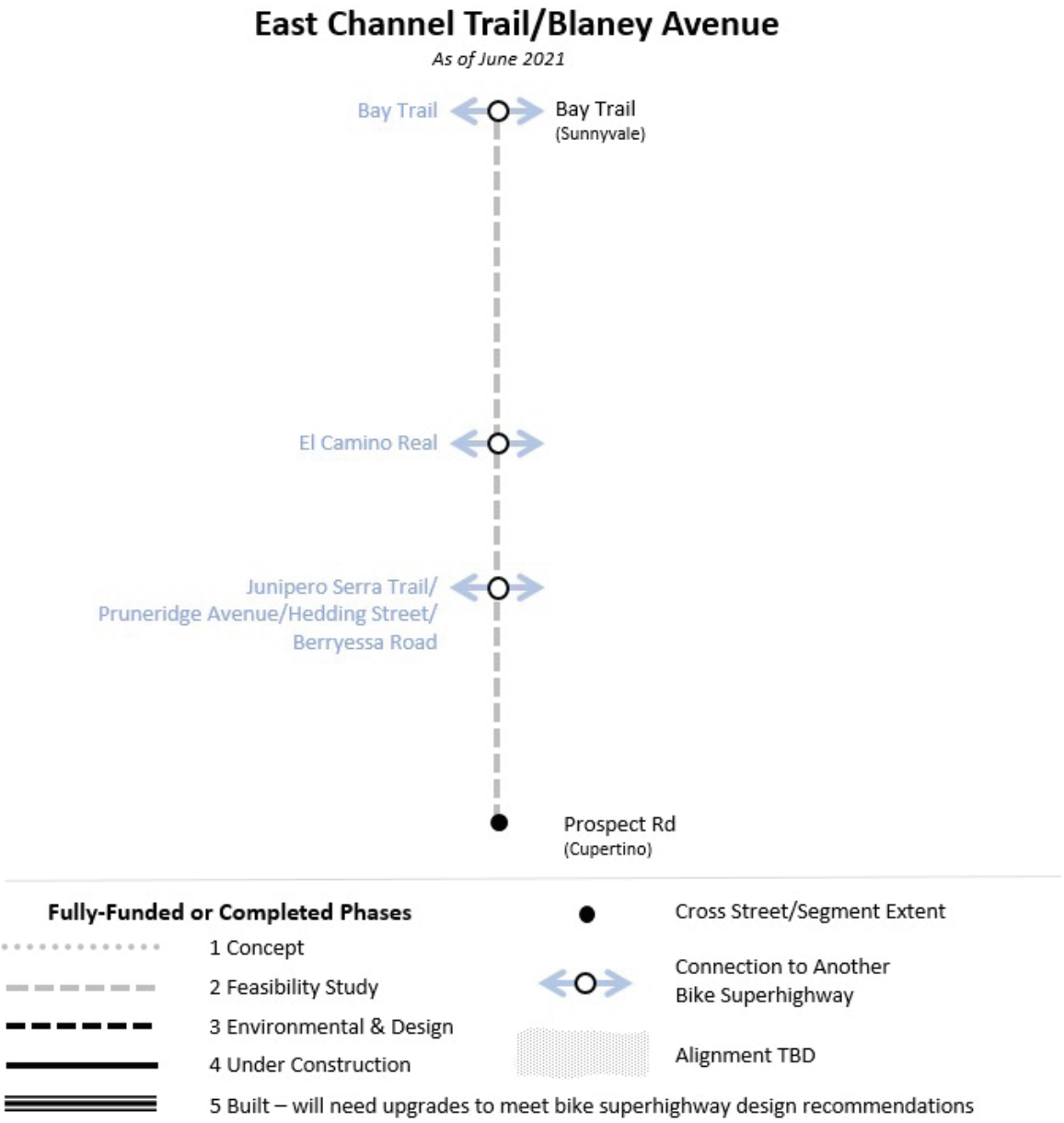


East Channel Trail/Blaney Avenue

Proposed on- or off-street bikeway between the Bay Trail (Sunnyvale) and Prospect Road (San José) Through much of Sunnyvale, the corridor would be off-street, parallel the Sunnyvale East Channel, and would switch to a mostly on-street facility south of Inverness Way, linking up to Blaney Avenue in Cupertino. The Cupertino Bicycle Transportation Plan proposes a separated bikeway along Blaney Avenue between Homestead Road and Bollinger Road and the San José Better Bike Plan 2025 proposes bicycle boulevard treatments between Bollinger Road and Prospect Road. Implementation of a continuous bicycle superhighway would require grade separated crossings at several locations: Highway 237, US 101, Caltrain, Central Expressway. The feasibility of these crossings has yet to be determined.

Agencies	Sunnyvale, Cupertino, San José
Destinations	Moffett Park, The King's Academy, Fair Oaks Park, office parks, Braly Elementary School, shopping centers, Ortega Park, LP Collins Elementary School, R.I. Meyerholz Elementary School, Calabazas Park
VTA Involvement	Lead or provide planning support and funding opportunities to lead agencies
Length	8.7 miles total 0 miles existing trail or separated bikeway
VMT Reduction Per Weekday (2040)	-2,270
Planning-Level Cost Estimate	$16,860,000 (cost does not include any additional feasibility studies, environmental clearance, or separated crossings that may be required)
Active Implementation Efforts *(as of March 2021)*	• City of Sunnyvale received One Bay Area Grant funding to build bike, pedestrian, and transit improvements identified in the East Sunnyvale Area "Sense of Place" Plan, which includes a portion of the East Channel Trail in the plan area • In June 2021, VTA awarded City of Sunnyvale 2016 Measure B funds to study the feasibility of a trail and under/overcrossings along the East Channel Trail • Santa Clara Valley Water District has a flood control project along East Channel trail, which needs to be completed prior to development of trail along levy

East Channel Trail



East San José Alignment

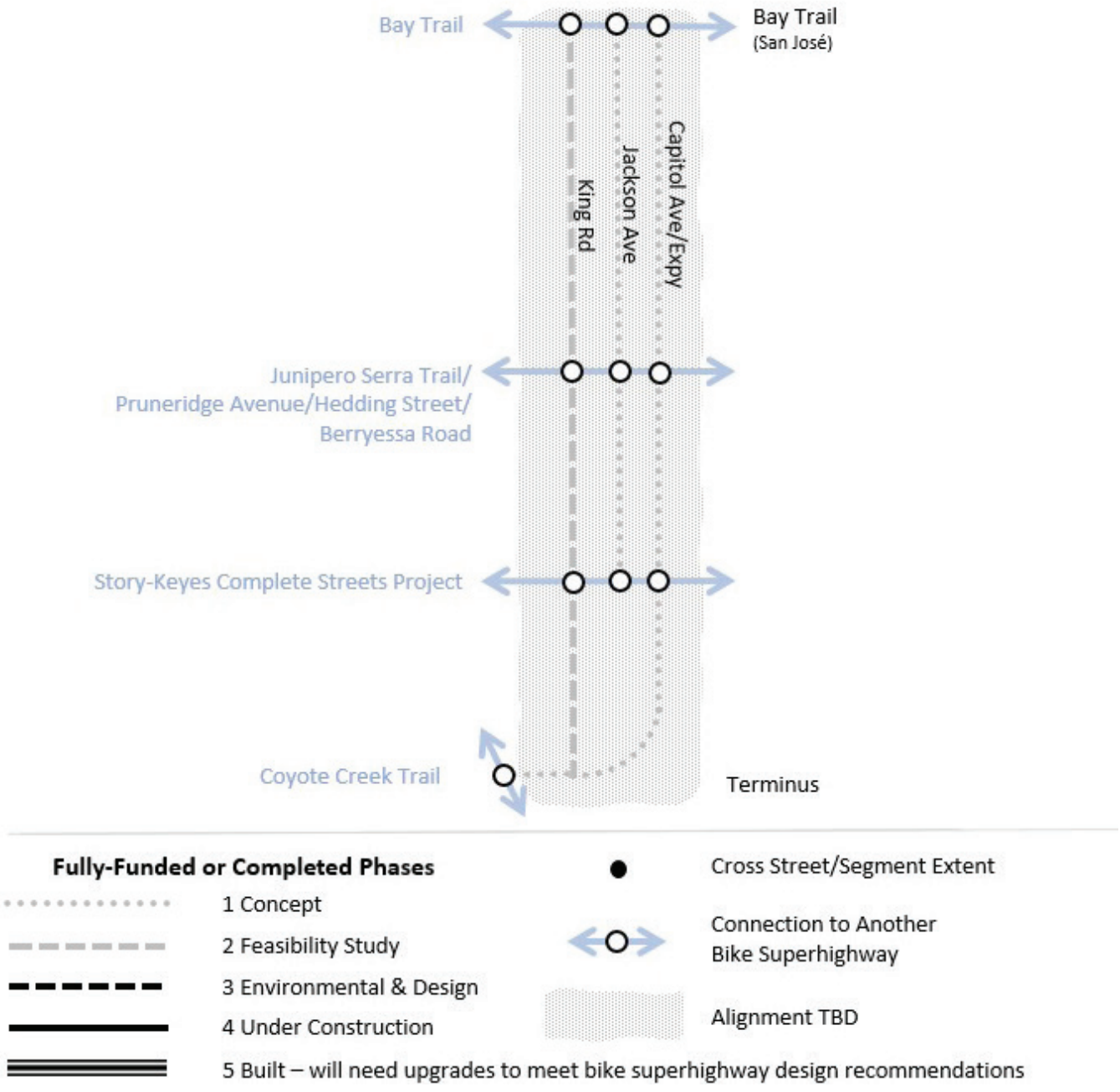
VTA is working with the City of San José to identify a north-south alignment in East San José that would connect the Milpitas BART station to Coyote Creek Trail in south San José. An on-street facility currently seems most feasible. King Road, Capitol Avenue/Expressway, or Jackson Street are likely candidates, but each has constraints.

Agencies	San José
Destinations	The Great Mall; Milpitas and Berryessa BART Stations; VTA Light Rail Milpitas, Cropley, Hostetter, Berryessa, Penitencia Creek, McKee, and Alum Rock Stations; Eastridge Mall; shopping centers; office parks; Mexican Heritage Plaza; PAL Stadium; Emma Prusch Farm Park; Independence High School; Regional Medical Center
VTA Involvement	Lead or provide planning support to lead agencies
Length	Between 10 and 12 miles total
VMT Reduction Per Weekday (2040)	(unknown)
Planning-Level Cost Estimate	(unknown)
Active Implementation Efforts *(as of March 2021)*	• VTA's East Bay Regional Connector that will extend light rail from its terminus at Alum Rock Ave to the Eastridge Transit Center. The project will provide eight-foot shoulder for bicyclists on Capital Expy • City of San José's En Movimiento Plan received partial funding from MTC Safe and Seamless Quick Strike program in June 2021 • City of San José received Caltrans Sustainable Transportation Planning Grant funding for a Complete Streets Plan for King Rd • City of San José repaving plans

King Road

East San Jose Alignment

As of June 2021



Junipero Serra Boulevard/Foothill Expressway

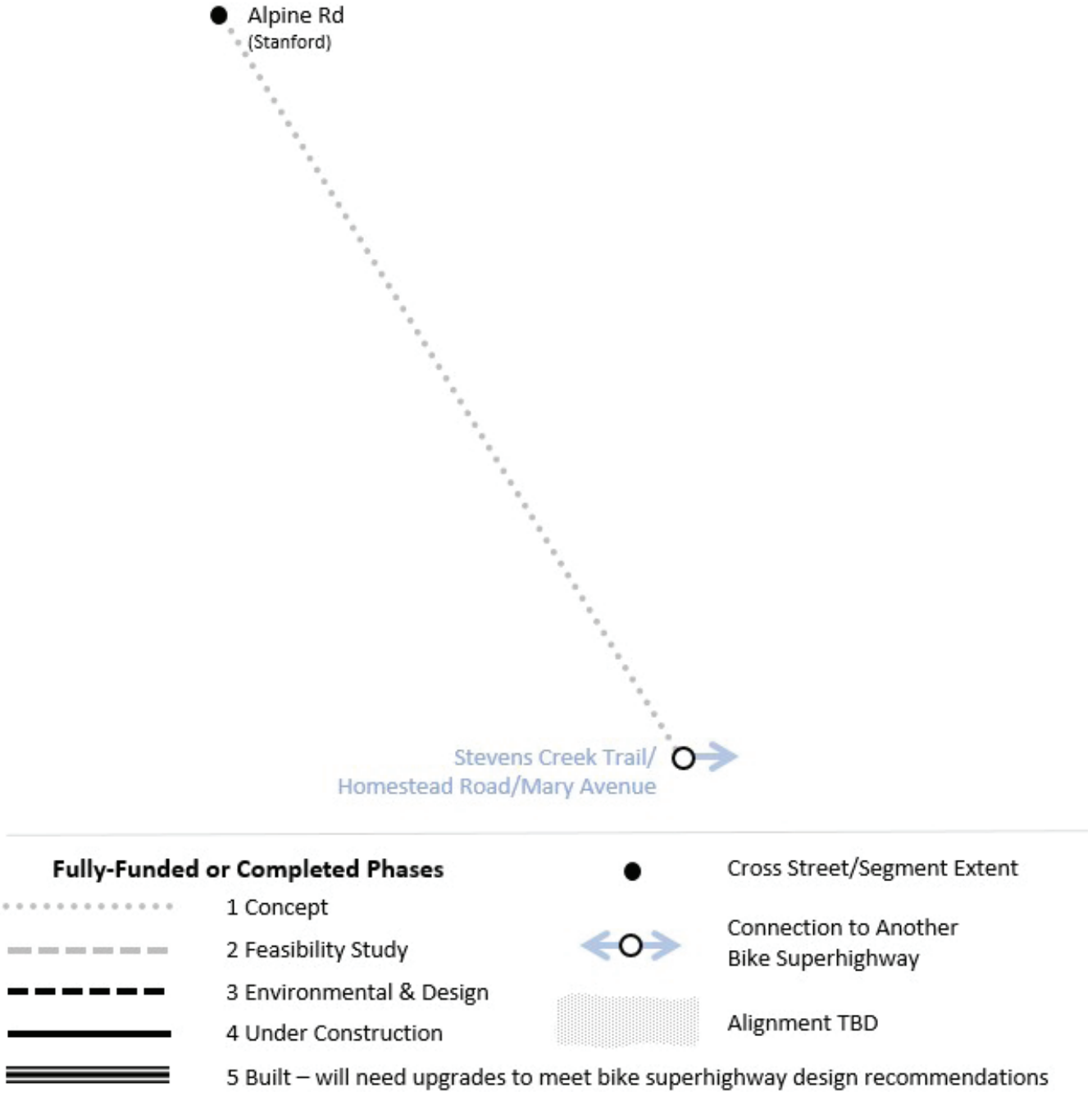
Junipero Serra Boulevard starts at Alpine Road by the Stanford University Campus and turns into Foothill Expressway at Page Mill Road in Palo Alto. Foothill Expressway then runs south until Homestead Road in Cupertino. The project would upgrade the existing bicycle facilities on Junipero Serra Boulevard then create either a shared-use path or separated bikeway along Foothill Expressway to Homestead Road in Cupertino.

Agencies	Palo Alto, Stanford, County, Los Altos, Cupertino
Destinations	Stanford University, Stanford Research Park, shopping centers, St. Simon Parish School
VTA Involvement	Provide planning support to lead agencies
Length	9.5 miles total 0 miles existing trail or separated bikeway
VMT Reduction Per Weekday (2040)	-2,010
Planning-Level Cost Estimate	$21,900,000 (cost does not include a feasibility study)
Active Implementation Efforts *(as of March 2021)*	None known at this time

Junipero Serra Boulevard

Junipero Serra Boulevard/Foothill Expressway

As of March 2021

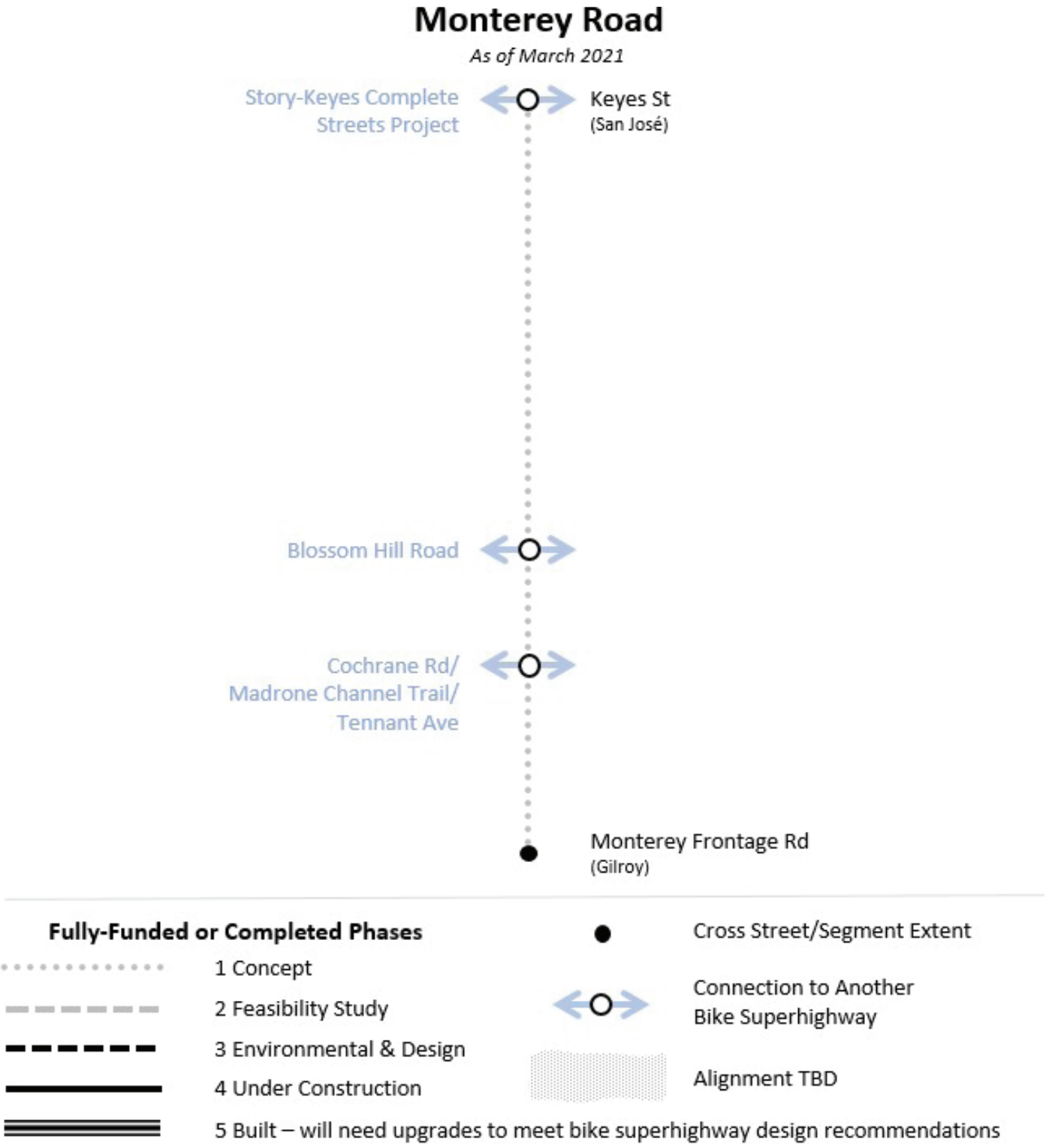


Monterey Road

Proposed on- and off-street bikeway between Keyes Street (San José) and Monterey Frontage Road (Gilroy). The project would likely have on-street facilities in the urban areas and off-street in rural segments. The city of San José has expressed interest in upgrading Monterey Road to a Complete Street and exploring the concept of transit lanes. Future planning and design work will need to be compatible with the California High-Speed Rail project, which may run as a blended service along the Caltrain corridor.

Agencies	San José, County, Morgan Hill, Gilroy
Destinations	Shopping centers; Capitol, Blossom Hill, San Martin, and Gilroy Caltrain Stations; Edenvale Gardens Regional Park; office parks; Charter School of Morgan Hill; Britton Middle School
VTA Involvement	Lead
Length	30.1 miles total 0 miles existing trail or separated bikeway
VMT Reduction Per Weekday (2040)	-4,560
Planning-Level Cost Estimate	$42,656,000 (cost does not include any feasibility studies or environmental clearance that may be required)
Active Implementation Efforts *(as of March 2021)*	None known at this time

Monterey Road

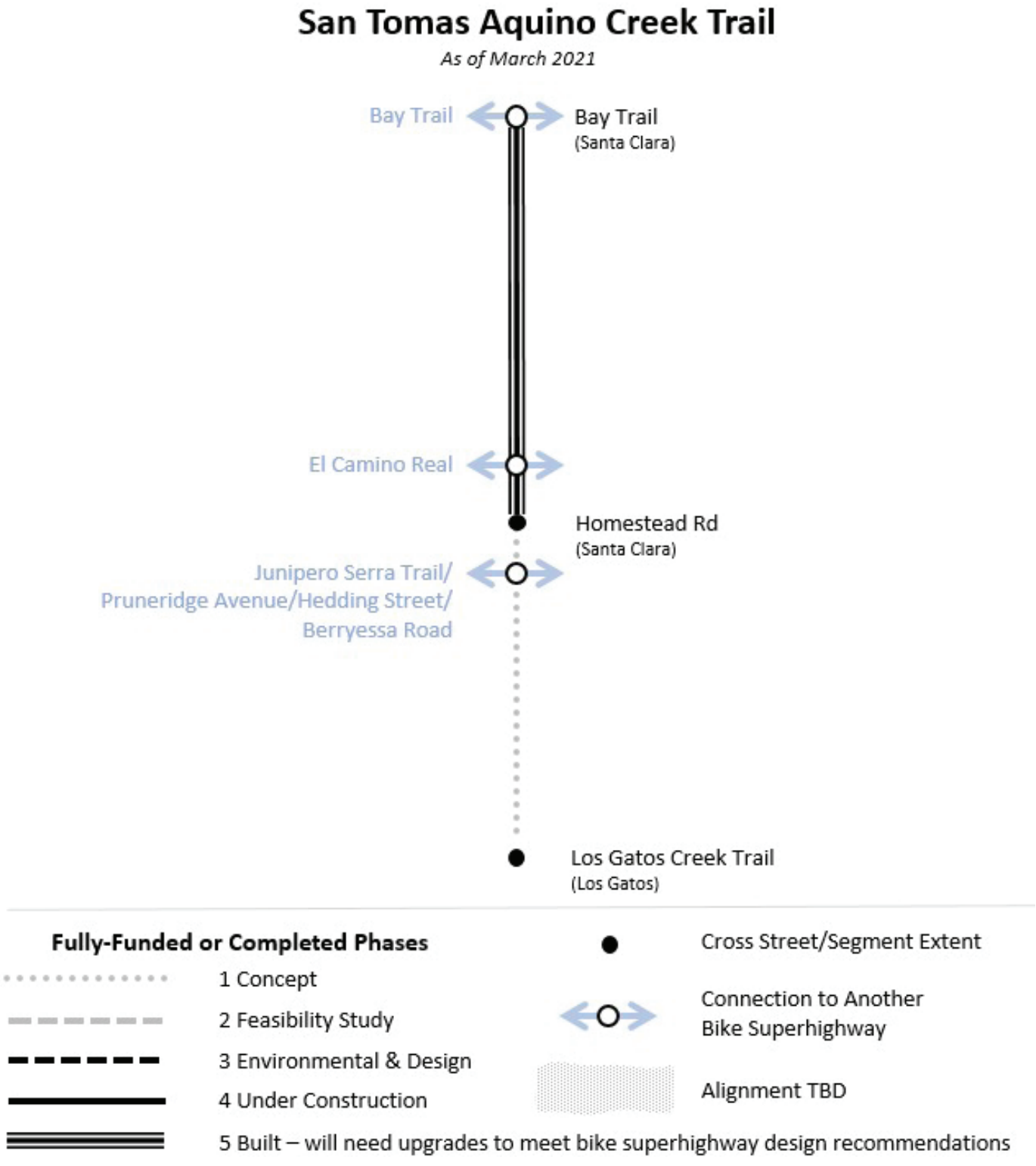

Monterey Road
As of March 2021
Story-Keyes Complete Streets Project
Keyes St
(San José)
Blossom Hill Road
Cochrane Rd/ Madrone Channel Trail/ Tennant Ave
Monterey Frontage Rd
(Gilroy)
Fully-Funded or Completed Phases
1 Concept
2 Feasibility Study
3 Environmental & Design
4 Under Construction
5 Built – will need upgrades to meet bike superhighway design recommendations
Cross Street/Segment Extent
Connection to Another Bike Superhighway
Alignment TBD

San Tomas Aquino Creek Trail

The existing San Tomas Aquino Creek Trail runs from the Bay Trail to Homestead Road in Santa Clara. The County of Santa Clara plans to extend the trail adjacent to San Tomas Expressway to Stevens Creek Boulevard. This Plan proposes to extend the trail down to Los Gatos Creek Trail.

Agencies	Santa Clara, San José, Los Gatos, County
Destinations	Office parks, Levi's Stadium, California's Great America, Cabrillo Middle School, shopping centers, Campbell School of Innovation, Los Gatos Creek County Park
VTA Involvement	Provide planning support to lead agencies
Length	10.5 miles total 5.4 miles existing trail
VMT Reduction Per Weekday (2040)	-7,620
Planning-Level Cost Estimate	$15,900,000 (cost does not include feasibility study)
Active Implementation Efforts *(as of March 2021)*	• City of Santa Clara awarded One Bay Area Grant funding to design and construct an underpass for the San Tomas Aquino Creek Trail on the west bank of the creek between Tasman Dr and ¼ mile south of Tasman Dr to permit trail users to avoid conflicts with Levi's Stadium patrons during events. Construction scheduled begin to 2023 • City of Santa Clara awarded Transportation Fund for Clean Air grant to design and construct a bicycle and pedestrian path along the Hetch-Hetchy right-of-way and along the east bank of San Tomas Aquino Creek to Agnew Rd. This would provide a detour route for trial users during events at Levi's Stadium

San Tomas Aquino Creek Trail


San Tomas Aquino Creek Trail
As of March 2021
Bay Trail
Bay Trail
(Santa Clara)
El Camino Real
Homestead Rd
(Santa Clara)
Junipero Serra Trail/
Pruneridge Avenue/Hedding Street/
Berryessa Road
Los Gatos Creek Trail
(Los Gatos)
Fully-Funded or Completed Phases
1 Concept
2 Feasibility Study
3 Environmental & Design
4 Under Construction
5 Built – will need upgrades to meet bike superhighway design recommendations
Cross Street/Segment Extent
Connection to Another Bike Superhighway
Alignment TBD

Stevens Creek Trail/Homestead Road/Mary Avenue

This proposed project would combine three existing projects: The Stevens Creek Trail extension project, the Homestead Road Safe Routes to School project by VTA and the Mary Avenue bicycle facility project by Cupertino. The existing Stevens Creek Trail runs between the Bay Trail and Heatherstone Way in Mountain View and between Stevens Creek Boulevard to McClellan Road through Blackberry Farm Park and McClellan Ranch Preserve in Cupertino. The "Joint Cities Stevens Creek Trail Feasibility Study," approved by the cities of Mountain View, Sunnyvale, Los Altos, and Cupertino in 2016, studied four alignment alternatives for closing the gap between Heatherstone Way and Stevens Creek Boulevard with a preferred alignment chosen between Heatherstone Way and Fremont Avenue and more feasibility work to be done between Fremont Avenue and Homestead Road. The Homestead Road project runs east-west and would provide bicycle facilities on Homestead Road between Grant Road and Hollenbeck Avenue/Stelling Road. The Mary Avenue project runs north-south and will install separated bikeways or buffered bike lanes on Mary Avenue between the Don Burnett Bicycle-Pedestrian Bridge and Stevens Creek Boulevard. The project was identified in the Cupertino Bicycle Transportation Plan. The two projects are connected by the Don Burnett Bicycle-Pedestrian Bridge and would connect to the Historic De Anza Trail via separated bikeways on Stevens Creek Boulevard.

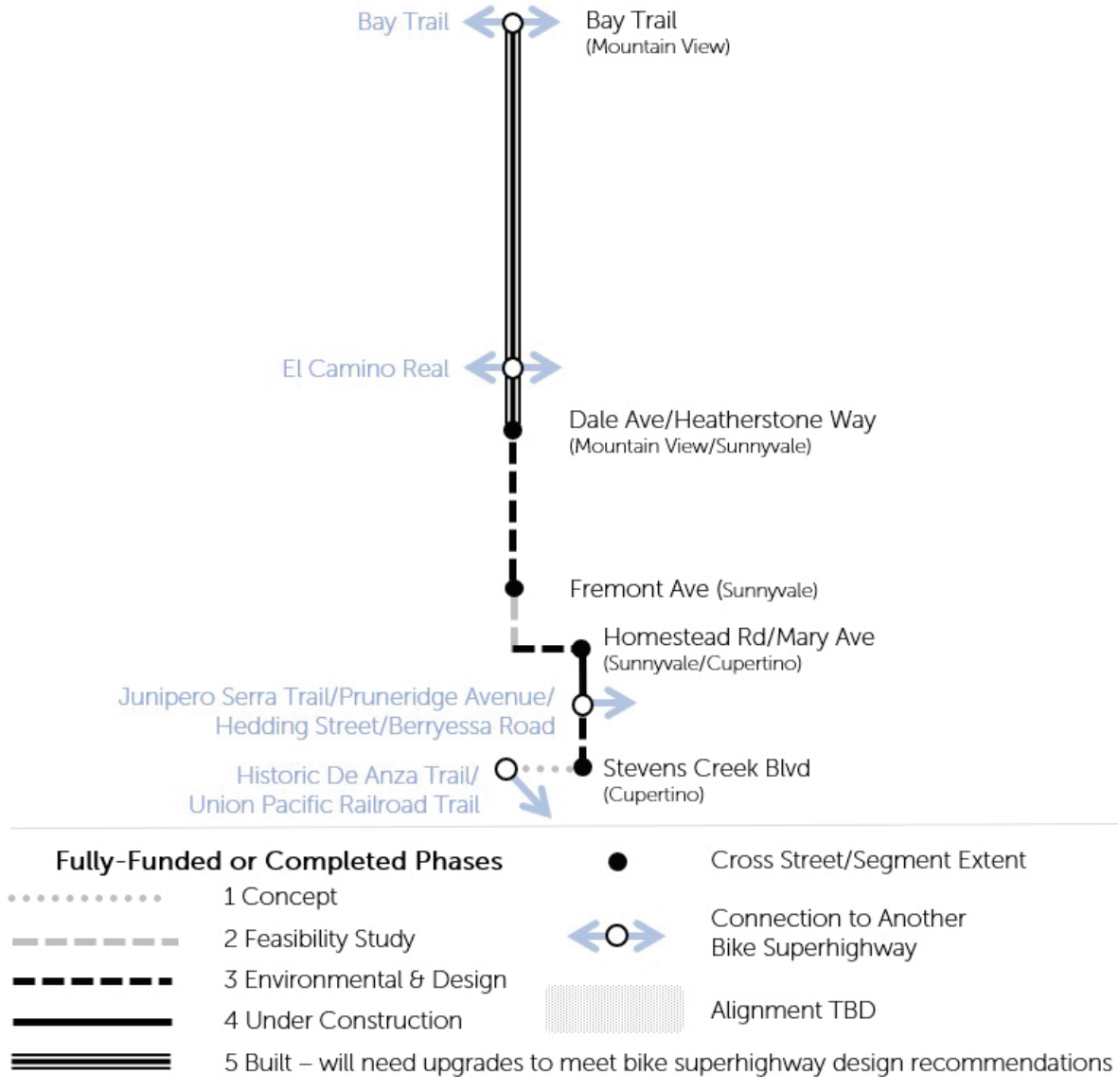
Agencies	Mountain View, Los Altos, Sunnyvale, Cupertino, County
Destinations	Office parks, Landels Elementary School, Cupertino Middle School, Homestead High School, De Anza College
VTA Involvement	Provide planning support to lead agencies
Length	9.4 miles total 4.9 miles existing trail or separated bikeway
VMT Reduction Per Weekday (2040)	-1,980
Planning-Level Cost Estimate	$5,438,000 (cost does not include environmental clearance)
Active Implementation Efforts *(as of March 2021)*	• City of Mountain View awarded 2016 Measure B funds to for environmental clearance and design of Stevens Creek Trail from existing terminus at Dale Ave/ Heatherstone Way to Remington Dr and Mountain View High School • City of Sunnyvale awarded 2016 Measure B funds to design and environmentally clear Stevens Creek Trail from Remington Dr to Fremont Ave

Homestead Road

- In summer 2021, City of Sunnyvale will be installing improvements at Homestead Rd and Mary Ave and Homestead Rd and Kennewick Dr intersections. Traffic signals will be upgraded to improve pedestrian and bike crossings
- VTA awarded 2016 Measure B funds to design Safe Routes to School improvements on Homestead Rd between Foothill Expy and Kennewick Dr. Consultant selection is anticipated summer 2021

Stevens Creek Trail/Homestead Road/Mary Avenue

As of March 2021



5. Implementation

Implementing the grand vision of a countywide network of bicycle superhighways will succeed only as a partnership between VTA and Member Agencies. Already, Member Agencies have made significant progress on building high-quality bikeways along several superhighway corridors. In fact, alignments were selected in part to support and enhance these local projects. Moving forward, implementation of the bicycle superhighway network will continue to be led by Member Agencies and other agencies with land use authority. However, VTA will play a role in organizing the vision, coordinating the effort across jurisdictional lines, and seeking funding sources.

VTA Involvement

VTA understands that this effort may take considerable funding and staff time. VTA can use this Plan to advocate for new funding sources for bicycle superhighways. Bicycle superhighway implementation will be a partnership between VTA and Member Agencies. As noted above, Member Agencies will primarily be responsible for designing and building the bicycle superhighway network as they have roadway or riparian authority. VTA's role will be to coordinate and track progress, assist with securing funding, support outreach efforts, and lead feasibility studies to identify preferred alignments and designs. In some cases, particularly large projects that cross multiple jurisdictions or require coordination with Caltrans or other transit agencies, it may be appropriate for VTA to lead the environmental clearance, project design, and construction.

VTA envisions three levels of involvement in the implementation of the bicycle superhighway projects presented in this Plan:

1. In some instances, VTA will ***support*** the efforts of Member Agencies and other entities through promoting outreach, serving on technical advisory committees, providing technical guidance, or writing support letters.
2. In some instances, VTA will provide ***funding*** to Member Agencies.
3. In other instances, VTA will ***lead*** project implementation. In these cases, VTA will manage the effort and Member Agencies may dedicate staff time or financial resources to the effort.

These roles are not exclusive. VTA may lead, fund, or support each proposed superhighway project as they are implemented. ***Table 1*** shows VTA's anticipated level of involvement for each of the potential projects. This is subject to change and may differ by project segment.

Table 1: VTA Level of Involvement in Priority Projects

Project	VTA Level of Involvement
Bascom Ave/Los Gatos Blvd	Lead
Bay Trail	Support
Blossom Hill Rd	Support or Fund
Cochrane Rd/Madrone Channel Trail/Tennant Ave	Fund
Coyote Creek Trail	Fund
El Camino Real	Support or Lead
Guadalupe River Trail	Fund
Historic De Anza Trail/Union Pacific Railroad Trail	Lead, Support, or Fund
Junipero Serra Trail/Pruneridge Ave/Hedding St/ Berryessa Rd	Fund or Support
Story-Keyes Complete Streets Project	Fund or Support
Central Bikeway Study	Lead
East Channel Trail/Blaney Ave	Lead, Support, or Fund
East San José Alignment	Support or Lead
Junipero Serra Boulevard/Foothill Expy	Support
Monterey Rd	Lead
San Tomas Aquino Creek Trail	Support
Stevens Creek Trail/ Homestead Rd/Mary Ave	Support

Planning and Policy Support

VTA's policies and plans can help define a vision for the transportation network. They can also support consistent implementation of projects that meet the needs of all users. Policies can address a broad range of topics, such as bikeway selection, funding, project development, planning, design, accessibility, and maintenance. Policies are also useful to guide and prioritize acceptable trade-offs.[3]

The bicycle superhighway network builds on Member Agency plans, and so for most segments, local agencies already have some level of planning and policy support for the project. Member Agencies can further support the bicycle superhighway effort by continuing to:

- Prioritize implementation of bicycle superhighway alignments by allocating capital funds and staff time to implementation efforts
- Update local plans to formalize bicycle superhighway alignments within their jurisdiction
- Update local plans and design documents to support bicycle superhighway design expectations
- Ensure projects along bicycle superhighway alignments meet design expectations for bicycle superhighways
- Fund and prioritize maintenance of bicycle superhighways, including street sweeping for separated bikeways
- Develop policies and practices that reduce delay for bicyclists in areas where bicycle superhighways cross other transportation facilities

VTA can assist Member Agencies wishing to update their policies to be more bike friendly and to prioritize bicycle superhighways. VTA can look for opportunities to expand funding, including policy and legislative change at the regional, state, and federal level.

[3] *FHWA. Bikeway Selection Guide. https://safety.fhwa.dot.gov/ped_bike/tools_solve/docs/fhwasa18077.pdf.*

Transit and Bicycle Superhighways

Several identified bicycle superhighway alignments are on major transit corridors: Bascom Avenue, Monterey Road, El Camino Real and Story-Keyes. It is possible to build bicycle superhighway quality bikeways and also provide high quality transit service on the same roadway. On these major transit corridors, VTA will work with Member Agencies so that transit access is integrated seamlessly into the bikeway design. We encourage other agencies to adopt a transit-first policy to establish hierarchy on their roadways and to utilize VTA guidance for designing bus stops that integrate with bicycle facilities.

Planning-Level Cost Estimates

Planning-level cost estimates were developed for the 15 known priority projects and are shown in ***Table 2***. Where possible, VTA used cost estimates from from existing feasibility studies developed by Member Agencies. These are noted in the table. The remaining cost estimates provided in ***Table 2*** are based on standard planning-level cost by facility type found in Appendix A. Assumptions on facility type were based on mileage and the facility type most likely to be implemented. Except when noted, costs shown in ***Table 2*** are in 2020 dollars and include design and construction only and do not include feasibility studies, right of way acquisition, or any required environmental clearance. Actual project costs may differ depending on final design treatments and alignments. Appendix A also shows a more detailed cost estimation by route segment. Vehicle Miles Traveled Reduction

Table 2: Planning-Level Cost Estimates

Proposed Project	Total Cost
Bascom Ave/Los Gatos Blvd*	$82,562,000
Bay Trail	$3,300,000
Blossom Hill Rd	$6,450,000
Cochrane Rd/Madrone Channel Trail/Tennant Ave	$9,730,000
Coyote Creek Trail	$20,400,000
El Camino Real*	$50,746,000
Guadalupe River Trail	$47,300,000
Historic De Anza Trail/Union Pacific Railroad Trail	$15,300,000
Junipero Serra Trail/Hedding St/Pruneridge Ave/Berryessa Rd*	$47,668,000
Story-Keyes Complete Streets Study*	$62,700,000
East Channel Trail/Blaney Ave	$16,860,000
Junipero Serra Blvd/Foothill Expy	$21,900,000
Monterey Rd	$42,656,000
San Tomas Aquino Creek Trail	$15,900,000
Stevens Creek Trail/Homestead Rd/Mary Ave	$5,438,000
TOTAL	**$448,910,000**

Note: Projects marked with an asterisk (*) used costs from existing planning studies. Other costs were developed by VTA using implementation costs per mile estimates that does not include feasibility studies, environmental clearance, or right of way acquisition.

Vehicle Miles Traveled Reduction

VTA calculated the estimated reduction in vehicle miles traveled (VMT) per day for each route except the Central Bikeway project and the East San José Alignment as those routes have not been finalized. This analysis shows that should the network be built out by 2040, there could be approximately 71,700 fewer miles traveled by passenger vehicles per typical workday. ***Table 3*** shows this calculation. Please note some numbers may be slightly off due to rounding.

Table 3: VMT Reduction

Route Name	Total Cost	Avg VMT change (by route)	Total VMT Change Per Mile
Bascom Ave/Los Gatos Blvd	6.95	-2,560	-370
Bay Trail	15.55	-6,640	-430
Blossom Hill Rd	12.91	-3,970	-310
Coyote Creek Trail	28.72	-8,580	-300
El Camino Real	15.83	-13,830	-870
Guadalupe River Trail	13.76	-7,820	-570
Historic De Anza Trail/ Union Pacific Railroad Trail	9.29	-1,130	-120
Junipero Serra Trail/Pruneridge Ave/ Hedding St/Berryessa Rd	13.18	-7,300	-550
Story-Keyes Complete Streets Project	4.09	-1,160	-280
Cochrane Rd/Madrone Channel Trail/ Tennant Ave	6.67	-270	-40
East Channel Trail/Blaney Ave	8.70	-2,270	-260
Junipero Serra/Foothill Expy	9.53	-2,010	-210
Monterey Rd	30.08	-4,560	-150
San Tomas Aquino Creek Trail	10.53	-7,620	-720
Stevens Creek Trail/ Mary/Homestead	9.40	-1,990	-210
TOTAL	**195.17**	**-71,710**	**-5,390**

The methodology for this analysis can be found in Appendix C.

6. Maintenance

During conversations with Member Agency staff and the VTA BPAC, maintenance of bicycle superhighways frequently came up as a challenging area. To provide high-quality bicycling conditions, bikeways – particularly separated bikeways and trails – need consistent, dedicated maintenance, and sweeping. Local agencies may need to purchase special equipment that can sweep separated bikeways and allocate additional funding to support maintenance hours. Bikeway users may not know what agency they should contact to report poor conditions. Some corridors have unhoused individuals taking up residence, which can increase maintenance needs. This section outlines general guidance for maintenance, with the recognition that more work is needed to address these concerns.

Maintenance Guidance

Bicycle superhighways should be maintained, free of debris and other obstacles, and designed to permit sweeping equipment to access the bikeway. Bicyclists are particularly sensitive to poor-quality surfaces. Bicyclist comfort and safety is significantly reduced by the unpleasantness of bumpy surfaces. Pavement along the bikeway should meet a pavement condition index (PCI) of 80 or higher, indicating adequate quality for bicycling. All contractors should be informed that all asphalt repairs must be carried out so that there are no noticeable edges or differences in level to the existing asphalt.[4]

There should be a high service standard for bicycle facilities cleaning as well. VTA recommends paths be swept systematically according to the maintenance hierarchy, from twice a month to once every two months. In addition, extra sweeping is necessary during fall.[5] VTA also recommends each Member Agency have a way to accommodate acute removal of dangerous objects and broken glass, outside from regularly scheduled cleaning, whether through 311, city-specific apps, a hotline, or other.

More detail on maintenance within Santa Clara County can be found in the Uniform Interjurisdictional Trail Design, Use, and Management Guidelines: *https://www.sccgov.org/sites/parks/PlansProjects/Documents/TrailsMasterPlan/Interjursidictional-Trails-Guidelines-text-and-graphics.pdf*

[4] *Collection of Cycling Concepts, Cycling Embassy of Denmark, 2012.*

[5] *Ibid.*

7. Summary and Next Steps

By implementing the proposed bicycle superhighway network, along with additional bicycle facilities, Santa Clara County can become internationally known for superb, sustainable infrastructure that could increase tourism, reduce greenhouse gas emissions, and make our community healthier. VTA looks forward to working with our Member Agencies and other partners in developing a bicycle superhighway network that connects our cities and towns in healthier and more joyful ways. VTA anticipates updating this plan periodically as projects progress. Routes may be modified as feasibility is determined, and the implementation status maps will be updated as funding for implementation phases are secured.

Appendices

Appendix A – Planning-Level Cost Estimates

The following table shows the cost estimates for the recommended bikeway types per mile except for the Bike/Ped Bridge. Costs are shown in 2020 dollars and include planning and design phases along with construction. Actual project costs may differ depending on final design treatments and alignments.

Table 4: Planning-Level Cost Estimates by Facility Type

Bikeway Type	Planning-Level Cost Estimate (per mile)
Bicycle Path	$3,000,000
Separated Bikeway	$500,000
Bike Lanes	$70,000
Buffered Bike Lanes	$90,000
Bicycle Boulevard	$200,000
Bike/Ped Bridge	$9,000,000 - $12,000,000

Table 5 shows the full breakdown of the planning-level cost estimates by segment for the 15 projects with more defined route alignments.

Table 5: Planning-Level Cost Estimates per Segment

Bikeway	Mileage	Segment	Cross Street A	Cross Street B	Jurisdiction	Facility Type	Cost[6]	Total Cost	Notes
Junipero Serra Trail/ Hedding St/Pruneridge Ave/Berryessa Rd	2.9	Junipero Serra Trail			Cupertino	trail	$45,200,000	$47,668,000*	Cost is based on https://www.cupertino.org/home/showdocument?id=22925; includes an undercrossing at Stelling Rd and a bike-ped bridge at De Anza Blvd; would require environmental clearance and maybe additional feasibility studies
	2.2	Pruneridge Ave	Pomeroy Ave	Winchester Blvd	Santa Clara	buffered	$198,000		Keeping Pruneridge Ave as-is from Tantau Ave to Pomeroy Ave
	1.2	Hedding St	Elm St	1st St	San José	separated	$600,000		Keeping Hedding St as-is from Winchester Blvd to Elm St
	3.34	Berryessa Rd	N Bayshore Rd W	Piedmont Rd	San José	separated	$1,670,000		Keeping Hedding St as-is from 1st St to N Bayshore Rd W
Historic De Anza Trail/Union Pacific Railroad Trail	5.1	Historic De Anza Trail			Cupertino/ UPRR	trail	$15,300,000	$15,300,000*	Using mileage based on https://walkbikecupertino.org/index.php/projects-and-funding/de-anza-uprr-trail/; would require additional feasibility study and environmental clearance
Coyote Creek Trail	6.8	Coyote Creek Trail			San José	trail	$20,400,000	$20,400,000	
Blossom Hill Rd	12.9	Blossom Hill Road			San José	separated	$6,450,000	$6,450,000	
Bay Trail	1.1	Bay Trail	1st St	Zanker Rd	San José	trail	$3,300,000	$3,300,000	
Guadalupe River Trail	4.8	Guadalupe River Trail	Virginia St	Chynoweth Ave	San José	trail	$47,300,000	$47,300,000	Cost from Guadalupe River Trail Master Plan https://www.sanjoseca.gov/home/showpublisheddocument?id=20601
Stevens Creek Trail/ Homestead Rd/ Mary Ave	2.5	Heatherstone Way/ Bernardo Ave	Dale Ave	Homestead Rd	Mountain View/ Sunnyvale	boulevard	$500,000	$5,438,000*	
	1.5	Homestead Rd	Grant St	Hollenbeck Ave	Cupertino/ Sunnyvale	trail	$4,500,000		North side; may require environmental clearance
	1.5	Homestead Rd	Grant St	Hollenbeck Ave	Cupertino/ Sunnyvale	separated	$375,000		South side; cost estimate halved due to only on one side of street
	0.7	Mary Ave	Don Burnett Bridge	Stevens Creek Blvd	Cupertino	buffered	$63,000		
East Channel Trail/ Blaney Ave	5.2	East Channel Trail	Caribbean Dr	Inverness Way	Sunnyvale	trail	$15,600,000	$16,860,000*	Would require feasibility study and environmental clearance
	0.45	Mariani Ave	Inverness Way	Homestead Rd	Sunnyvale	boulevard	$90,000		
	1.9	Blaney Ave	Homestead Rd	Bollinger Rd	Cupertino	separated	$950,000		
	1.1	Blaney Ave	Bollinger Rd	Prospect Rd	San José	boulevard	$220,000		

[6] *Where available, costs were pulled from existing planning documents*

Note: Projects marked with an asterisk (*) do not include additional costs for feasibility studies, environmental clearance, or right of way acquisition. Italicized costs in the Total Cost column were pulled from existing planning studies.

Bikeway	Mileage	Segment	Cross Street A	Cross Street B	Jurisdiction	Facility Type	Cost[6]	Total Cost	Notes
Cochrane Rd/ Madrone Channel Trail/ Tennant Ave	0.86	Cochrane Rd	Coyote Creek Trail	Madrone Channel	Morgan Hill	separated	$430,000	$9,730,000	
	2.9	Madrone Channel Trail	Cochrane Rd	Tennant Ave	Morgan Hill	trail	$8,700,000		
	1.2	Tennant Ave	Madrone Channel	Monterey Rd	Morgan Hill	separated	$600,000		
Junipero Serra Blvd/Foothill Expy	2.4	Junipero Serra	Alpine Rd	Page Mill Rd	Stanford	separated	$1,200,000	$21,900,000*	
	6.9	Foothill Expy	Page Mill Rd	Homestead Rd	County	trail	$20,700,000		May require feasibility study
Monterey Rd	9.5	Monterey Rd	Keyes St	Metcalf Rd	San José	separated	$4,750,000	$42,655,500*	
	6.4	Monterey Rd	Metcalf Rd	Tilton Ave	San José/ County/ Morgan Hill	trail	$19,200,000		Would require feasibility study and environmental clearance
	1.7	Monterey Rd	Tilton Ave	Wright Ave	Morgan Hill	separated	$850,000		
	1.7	Monterey Rd	Wright Ave	Tennant Ave	Morgan Hill	buffered	$153,000		
	0.85	Monterey Rd	Tennant Ave	John Wilson Way	Morgan Hill	separated	$425,000		
	1.6	Monterey Rd	John Wilson Way	Roosevelt Ave	County	trail	$4,800,000		Would require feasibility study and environmental clearance
	0.24	Monterey Rd	Roosevelt Ave	San Martin Ave	County	separated	$120,000		
	3.8	Monterey Rd	San Martin Ave	Cohansey Ave	County/ Gilroy	trail	$11,400,000		Pave existing trail between Fitzgerald Ave/Masten Ave and Denio Ave
	1.6	Monterey Rd	Cohansey Ave	2nd St	Gilroy	separated	$800,000		
	1.75	Monterey Rd	2nd St	Monterey Frontage Rd	Gilroy	buffered	$157,500		
El Camino Real	15.83	El Camino Real	Palo Alto Ave	Benton St	Caltrans	separated	$50,746,000	$50,746,000*	Costs include Mountain View Streetscape Plan cost estimates https://www.mountainview.gov/civicax/filebank/blobdload.aspx?BlobID=31039; may require additional feasibility studies or environmental clearance

Bikeway	Mileage	Segment	Cross Street A	Cross Street B	Jurisdiction	Facility Type	Cost[6]	Total Cost	Notes
Bascom Ave/Los Gatos Blvd	5.8	Bascom Ave	Hedding St	Highway 85	San José/ County/ Campbell	separated	$82,444,800	$82,561,800	Costs include cost estimates from Bascom Complete Streets Study
	1.3	Los Gatos Blvd	Highway 85	Blossom Hill Rd	Los Gatos	buffered	$117,000		
San Tomas Aquino Creek Trail	5.3	San Tomas Aquino Creek Trail	Homestead Rd	Los Gatos Creek Trail	County	Trail	$15,900,000	$15,900,000*	May require feasibility study
Story-Keyes Complete Streets Study	0.45	Willow St	Highway 87	Graham Ave	San José	boulevard	$5,800,000	$62,700,000	Costs from Story-Keyes Complete Streets Study *https://www.vta.org/sites/default/files/documents/AppendixJ-DesignPlans_CostEstimate-Final_Story-Keyes_Corridor_Complete_Streets_Study_sm-10.pdf*
	0.25	Graham Ave	Willow St	Goodyear St	San José	lanes	$4,900,000		
	0.25	Goodyear St	Graham Ave	Keyes St	San José	separated	$4,900,000		
	0.76	Keyes St	2nd St	Senter Rd	San José	separated	$15,500,000		
	2.75	Story Rd	Senter Rd	Capitol Expy	San José	separated	$36,500,000		
TOTAL								**$448,909,300**	

Note: Projects marked with an asterisk (*) do not include additional costs for feasibility studies, environmental clearance, or right of way acquisition. Italicized costs in the Total Cost column were pulled from existing planning studies.

Appendix B – Planning in Riparian Corridors

Lighting

The design expectations for bicycle superhighways, as stated in the Santa Clara Countywide Bicycle Plan (2018), include year-round, 24/7 access and adequate lighting. The superhighway network includes major creek trails in Santa Clara County. None of them currently have continuous lighting. VTA staff conducted research to find examples of creek trails with lighting, to learn about the challenges faced with this type of project, to understand best practices, and to discuss the lessons learned with project managers. In 2019 and 2020, staff contacted approximately 30 agencies throughout the United States to inquire about their creek trails. Only three trails out of the over 30 trails possess lighting in a continuous stretch, not including under bridges, overpasses, or running through a park area.

Reasons for not installing lighting include: 1) potential impact to valued/endangered species in close proximity to the trail, 2) high cost of installation and maintenance, 3) lighting not desired by the adjacent residents, 4) conflicting lighting ordinances between cities that the trail passes through, and 5) lighting would require agencies to reexamine the time of operations. Some of the challenges identified are comparable to the challenges faced in Santa Clara County. VTA's Bicycle Technical Guidelines (2012) summarize local issues encountered by the Bicycle Superhighway Project:

i. Inconsistent Hours: A bike path that travels through many jurisdictions is potentially subject to different sets of operating hours.

ii. Multimodal access: Bicyclists who also use transit may expect trails to be open after dark in coordination with the hours of served offered by VTA's buses or light rail.

iii. Direct Routing and Safety: The trails system can, and often does, provide a more direct and safer route than the roadway network for bicycle commuters. Restrictions on hours of operation would direct cyclists and pedestrians onto alternative routes of travel at night that could result in additional travel time or less safe conditions.

iv. Connectivity: Ideally, the trails system would be seamlessly interconnected with the rest of Santa Clara County's transportation system. There are currently gaps in the proposed corridors for the bicycle superhighway network map that will need extensive discussions and outreach efforts between VTA and various stakeholders.

v. Potential Liability: Jurisdictions may be hesitant to extend the hours of trail operations due to increase in potential liability.

vi. Availability of Resources: There are staffing costs associated with patrolling and maintenance of bike paths if they are open 24/7 year-round.

Summary of Trails with Lighting

Three jurisdictions managed to overcome the challenges listed above to provide lighting along continuous stretches of a riparian corridor. Their strategies are described below.

Boulder Creek Path & Lighting Improvements Project (Boulder, Colorado)

Boulder Creek Path is a seven-mile multi-use path parallel to the Boulder Creek riparian corridor. The bike path is 10-feet wide with a two-foot buffer separating it from the pedestrian path. The path is a busy recreational and commuting corridor, serving an average of 1,500 to 2,000 bicyclists daily and roughly equal number of pedestrians.

The City of Boulder owns the land and/or is in a joint agreement for the land adjacent to the creek trail. The community and trail users did not feel safe on the path during nighttime due to the various illegal activities taking place along the path. Both the public and city council believed that lighting would help to address these safety concerns. The city did their best to minimize impacts of lighting on the environment by using funnel and shield to focus light on the path and to avoid "light trespass." As part of the design/decision process, the City of Boulder's Urban Wildlife Coordinator evaluated the potential impacts of lighting on riparian species. She indicated that she was able to find only limited research on impacts of lighting on valued/endangered species, with impacts of invertebrates particularly lacking. She did not find any definitive "best practice" guidance for minimizing/mitigating impacts on riparian wildlife.

Ultimately, the city prioritized safety over potential (uncertain) environmental impacts and chose to provide lighting. They worked closely with the Urban Wildlife Coordinator to select lighting and operational features that limit light intrusion off the trail. The Urban Wildlife Coordinator, originally skeptical of the project, now supports it. The undesirable uses have been reduced/eliminated.

Light poles are placed 100 feet apart with conduits installed between the poles. Path lighting is a low-glare LED luminaire with rectangular light distribution specifically designed for multi-use paths. The distribution is narrow, and only lights the path, not the landscape next to it. Many aspects of the lighting can be controlled, including hue, times of operation, and brightness. The Urban Wildlife Coordinator found this flexibility very important, as it allowed the city to adjust the characteristics of the light so that it provided just enough light to permit trail use at night but did not over-light the trail.

Scull Creek Trail (Fayetteville, Arkansas)

Scull Creek Trail is 4.24 miles in length with 12-foot wide paved surface. The trail serves an average of over 2,000 people per day (data from October 2008). The trail accommodates a high number of users ranging from commuters to a variety of recreational users.

There are no strict rules on lighting placement in riparian zones in Arkansas, but the project strived to keep the lights as low impact as possible. Dark sky-friendly LED trail lights were installed at 100-foot spacing along the trial. The lights provide 0.5 foot candle light coverage as recommended by American Association of State Highway and Transportation Officials (AASHTO).

San Lorenzo River Parkway Project Phase II (Santa Cruz, California)
The Santa Cruz Riverwalk is roughly 3.7 miles in length and runs along the San Lorenzo River. A Mitigated Negative Declaration (MND) was completed in 2003 for projects along the San Lorenzo River and other locations. The City of Santa Cruz owns the portion of the land where the lights are installed, and the City of Santa Cruz is not under the jurisdiction of a water district, so the City is tasked with their own flood control projects. The City of Santa Cruz worked with an electrical engineer to research the spread of trail lighting. The lighting is compliant with "dark sky" guidelines and are shallow glass LED lights. The final designed is considered "non-intrusive to fish and wildlife and energy efficient."

The initial challenge for lighting installation was lack of public support and the pushback from the Sierra Club. The surrounding neighborhood and businesses didn't want lights shining into their properties. However, due to the safety issues on the unlit trail (drug usage and other crimes), the public became more supportive of the lighting. The current challenges are the cost of installation as well as issues of vandalism. The lights are all equipped with bulletproof shields to deter vandals.

Lessons Learned and Next Steps for the Bicycle Superhighway Project
There were several lessons learned through online research and phone calls with staff involved with successful lighting projects. For two projects with lighting installed, the jurisdiction that carried out the projects own the land adjacent to the creek trails. This ownership decreased the extent of the environmental review and permitting process.

The next steps are:

i. Identify one-two key segments of Santa Clara County's trails where lighting is warranted and work with various landowners, jurisdictions, regulatory agencies, and stakeholders to try to get to agreement on providing lighting. This includes understanding the specific funding, maintenance, community, environmental, and permitting issues that would need to be addressed to install and maintain lighting.

ii. Continue conversations with other agencies that build and maintain trails with lighting.

iii. Work with VTA's Environmental Group to conduct a more thorough literature review of potential impacts of lighting on riparian wildlife.

iv. Talk to the Santa Clara Valley Water District to assess their concerns for lighting along riparian corridors and their openness to providing lighting.

v. Identify best practices for lighting bicycle paths along riparian corridors, as well as a catalogue of lighting fixtures and operational considerations.

Special Considerations for Bikeways along Waterways

Numerous public agencies have jurisdiction over waterways in Santa Clara County. These include but are not limited to Santa Clara Valley Water District (Valley Water), San Francisco Regional Water Control Board, California Department of Fish and Game, U.S. Army Corps of Engineers, and U.S. Fish and Wildlife Service. These agencies have specific regulations and requirements related to flood protection, environmental preservation, and access for emergency and planned or routine maintenance. Valley Water is drafting a new policy for implementing pathways along creeks and rivers managed that are by the District. This policy describes how Valley Water collaborates with local municipalities interested in using its lands for public trail use and clarifies how partner agencies who build trails are responsible.

Early and continued engagement with partner agencies is imperative to support development of bicycle paths along waterways. Bicycle paths routed along waterways should be designed to balance the primary public use of the property—flood protection and stream stewardship—with recreation and bicycle transportation. To protect the flora and fauna within and along the county's waterways, lighting should be avoided or placed at locations to minimize the impacts to wildlife in the creek and riparian habitat and must be addressed as part of environmental review. It is preferable to locate bicycle paths farther from the water and provide vegetated buffers between the path and the waterway. Bicycle paths along waterways are subject to closures throughout the year due to Valley Water maintenance or high-water events that impact undercrossings of roadways. Based on the severity of the flooding or maintenance required, closures may last between a few hours and several months. Detours around creek maintenance areas and portions of trails subject to flooding should be considered and established as part of the planning process for bike paths along waterways to ensure that one or more alternative routes will be available when maintenance or flooding inevitably happens. In addition, trailside amenities, such as sign posts, benches, and fencing, should not restrict Valley Water vehicles from accessing their property and equipment from accessing the creek. Where feasible, pavement markings should be used instead of signs. If a bicycle path or bridge constructed on Valley Water land needs to be temporarily or permanently removed for a Valley Water project, such as flood control improvements, the California Environmental Quality Act may require mitigation Valley Water will include language addressing this issue in agreements with local agencies, and may ask agencies to pay for mitigation.

Appendix C – VMT Reduction Methodology

The routes were divided into three categories (facility type): on-street, expressway, or trail. Then, a set of buffer sizes (1.0, 1.5, 2.0, 2.5, and 3.0 miles) was used to estimate the captured households and total employments (also using the 2040 base scenario) for each route. Jointly utilizing results from the travel demand model and the buffer analysis, the VMT change rates weighted by lengths, captured households (by buffers), and captured employment (by buffers) were calculated. The final deliverable is a spreadsheet-based calculator (Excel).

In addition to all the assumptions associated with the original VTA trip-based travel demand model (Version "CCAC2019THIRD"), additional key assumptions are listed below.

- The project facility type is coded as NMT=3 in the non-motorized traffic network of the VTA trip-based travel demand model.
- The VMT change rate ("VMT change per mile per SE") is calculated using the following formula.

VMT Change Rate=VMT Change Rate*Length*(0.6*HH+0.4*Emp)

The VMT Change Rate in the formula above is the weighted one based on users' input. For example, if a route or sub-route is considered mainly as an on-street facility type, the weighted VMT Change Rate can be obtained by giving 90 percent, five percent, and five percent to the VMT Change Rate of trail, expressway, and on-street, respectively. The specific weights should be determined by users' professional judgement, local knowledge, and expertise. The weights, 0.6 and 0.4, shall also be determined by users' professional judgement and specific needs. The route type categories may have different weights if preferred. Specific for this set of coefficients, a slightly lower weight is given to the captured employment to reflect the typical situations where employment areas tend to lack bike facilities in the study area.

Please note, the final VMT change estimation is the averaged estimates from the five buffer sizes. However, a user can also choose the estimate of a specific buffer size based on his or her professional judgement and local knowledge. Also, the user does not have to choose the estimate from the same buffer size for each route.

Appendix D – Funding Opportunities

A variety of sources exist to fund various phases of bicycle projects. Some of the major regional and statewide funding sources that can be used for construction or maintenance of bicycle or pedestrian improvements, along with competitive grant programs, are described below. Each jurisdiction may have separate local funding sources not listed here.

Transportation Funds for Clean Air

Funds in the Transportation Funds for Clean Air (TFCA) program, may be used on projects that reduce vehicle emissions, including trail and bicycle facility project development, and can also be used as a match for competitive grant programs. Funds are programmed by the Bay Area Air Quality Management District (BAAQMD) through the Vehicle Trip Reduction Grant Program and VTA.

One Bay Area Grant

MTC's One Bay Area Grant (OBAG) is a competitive grant program that targets investments in Priority Development Areas (PDAs). Member Agencies, the county, and VTA can use OBAG funds for transportation planning and bicycle-related improvements.

Transportation Development Act Article 3

Transportation Development Act Article 3 (TDA 3) is programmed by VTA and provides annual funding for bicycle and pedestrian projects. Two percent of TDA funds collected within the county are used for TDA 3 projects. MTC requires that all projects be reviewed by a BPAC or similar body before approval.

2016 Measure B

VTA administers the 2016 Measure B funds with a portion of funding programmed for bicycle and pedestrian projects. There are two bicycle and pedestrian program categories that could help implement bicycle superhighways through a competitive process: planning studies and capital projects. Planning studies call for projects are on a two-year cycle and capital projects are on a 10-year cycle with a chance for a mid-cycle call. Several segments of the Bicycle Superhighway alignments are eligible for the 10-year capital funding.

California Active Transportation Program

California's Active Transportation Program (ATP) is a competitive grant program that is programmed by the California Transportation Commission (CTC). The program funds infrastructure and programmatic projects that aim to shift trips to walking and bicycling, reducing greenhouse gas emissions, and improving public health. Competitive application cycles occur every one to two years. Eligible projects include construction of bicycling and walking facilities. Typically, no local match is required, though extra points are awarded to applicants who do identify matching funds.

Sustainable Transportation Planning Grants

Caltrans Sustainable Transportation Planning Grants are available to communities for planning, study, and conceptual design work to identify and evaluate projects, including conducting outreach or implementing pilot projects. Communities are typically required to provide an 11.47 percent local match, but staff time or in-kind donations are eligible to be used for the match provided the required documentation is submitted.

Highway Safety Improvement Program

Caltrans offers Highway Safety Improvement Program (HSIP) grants every one to two years. Projects on any publicly owned road or active transportation facility are eligible, including bicycle and pedestrian improvements. HSIP focuses on projects that explicitly address documented safety challenges through proven countermeasures, are implementation-ready, and demonstrate cost effectiveness.

Solutions for Congested Corridors Program

The purpose of the Solutions for Congested Corridors Program is to provide funding to achieve a balanced set of transportation, environmental, and community access improvements to reduce congestion throughout the state. This program can fund a wide array of improvements including bicycle and pedestrian facilities. Eligible projects must be detailed in an approved corridor-focused planning document. These projects must include aspects that benefit all modes of transportation using an array of strategies that can change travel behavior, dedicate right of way for bikes and transit, and reduce vehicle miles traveled. Funds are programmed by the CTC. Regional transportation planning agencies, county transportation commissions, and Caltrans are eligible to apply.

Recreational Trails Program

The Recreational Trails Program helps provide and maintain recreational trails and trail facilities for both motorized and nonmotorized trail use. Funds are programmed by the California Department of Parks and Recreation.

Urban Greening Grants

California Natural Resources Agency administers Urban Greening grant programs that support the development of green infrastructure projects that reduce GHG emissions and provide multiple benefits. Projects must include one of three criteria, most relevantly: 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. Eligible projects include green streets, green alleyways, and non-motorized urban trails that provide safe routes for travel between residences, workplaces, commercial centers, and schools.

Senate Bill 1: Local Partnership Program

The Local Partnership Program is administered by the CTC. It provides local and regional agencies that have passed sales tax measures, developer fees, or other transportation-imposed fees to fund transportation improvement projects. Jurisdictions with these taxes or fees are then eligible for a formulaic annual distribution and a competitive grant program. Local Partnership Program funds can be used for a wide variety of transportation purposes including roadway rehabilitation and construction, transit capital and infrastructure, bicycle and pedestrian improvements, and green infrastructure. In the 2020-21, 2021-22, and 2022-23 fiscal years, VTA was awarded a total of $15,435,000 unprogrammed funds through the formulaic annual distribution. VTA also applied for $50 million in the 2020 competitive program cycle.