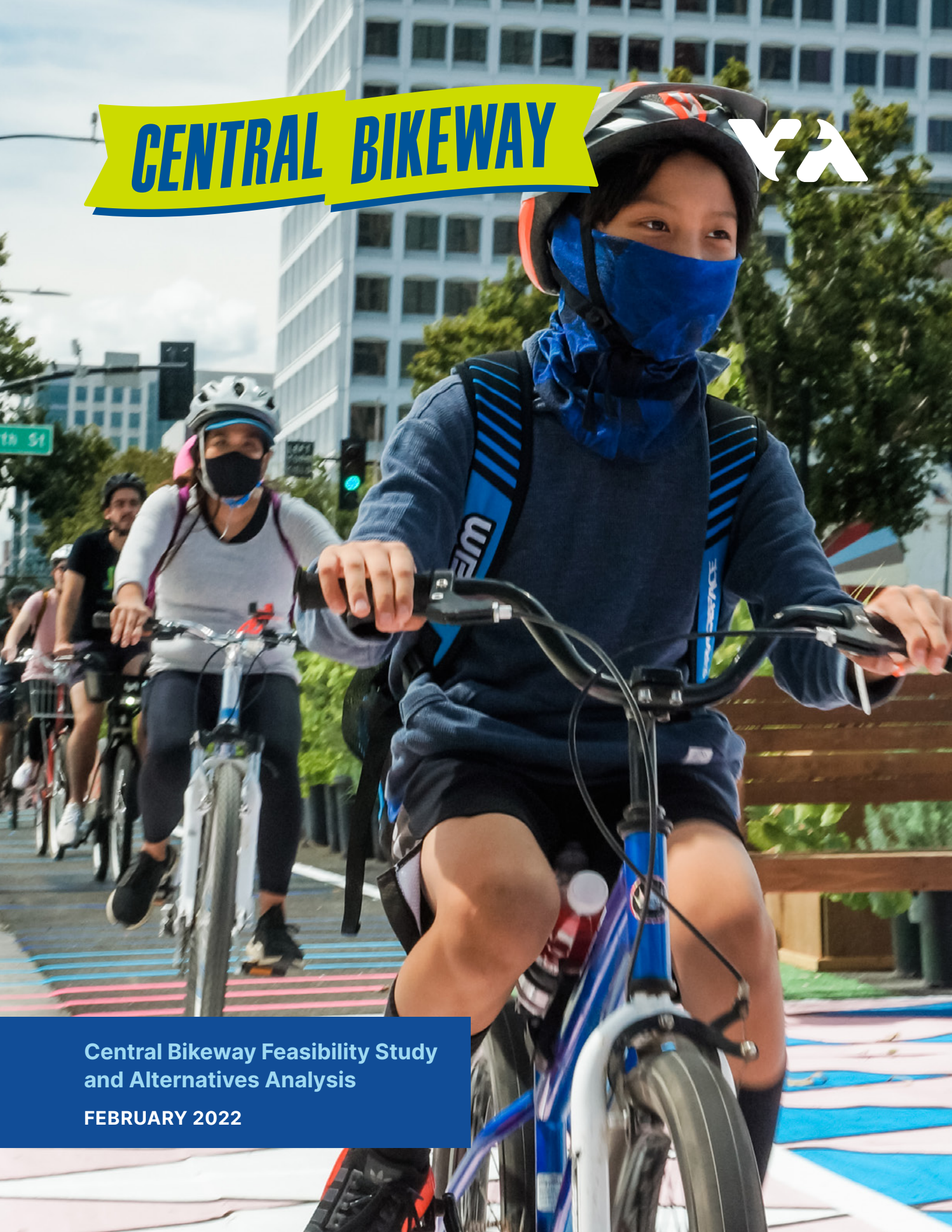


Central Bikeway Feasibility Study and Alternatives Analysis

FEBRUARY 2022

ACKNOWLEDGEMENTS

This project was led by the Santa Clara Valley Transportation Authority (VTA) with funding support from a Caltrans Sustainable Planning Grant.

Project Development Team:

Brent Pearse, VTA

Karen Gauss, VTA

Deanna Bolio, VTA

Lauren Ledbetter, VTA

Carol Shariat, City of Santa Clara

Jonathan Yee, City of Santa Clara

John Brazil, City of San José

Nicky Danty, City of San José

Ellen Talbo, Santa Clara County

Ben Aghegnehu, Santa Clara County

Elliot Goodrich, Caltrans

Greg Curry, Caltrans

Consultant Team:

Alta Planning + Design

HMH Engineers

Hexagon Transportation Consultants

Bike-minded Design Consulting B.V.

Community Based Organizations:

Silicon Valley Bicycle Coalition (SVBC)

Mujeres Empresarias Tomando Acción (META)

Guadalupe River Park Conservancy (GRPC)

PROJECT PARTNERS

Central Bikeway project partners include:

Santa Clara Valley Transportation Authority
Solutions that move you

Caltrans

City of Santa Clara
The Center of What's Possible

City of San José
Capital of Silicon Valley

The County of Santa Clara 1850

TABLE OF CONTENTS

01

THE VISION

THE VISION

A Vision for the Region

This Plan builds upon the vision set forth in VTA's Countywide Bicycle Plan (2018) and Bicycle Superhighway Implementation Plan (2021), which envisions Santa Clara County as an area that is served by a countywide bicycle network that is safe, convenient, and connected, enabling people of all ages and abilities to bike to work, school, shopping, transit, and elsewhere.

The Countywide Bicycle Plan identifies a network of approximately 950 miles of Cross County Bicycle Corridors (CCBCs), as well as seventeen corridors for potential bicycle superhighways -- CCBCs that provide low-friction, long distance, unbroken bicycle travel, separated from motorists.

The Central Bikeway is one of the first bicycle superhighway projects to move forward and work toward completing this monumental vision.

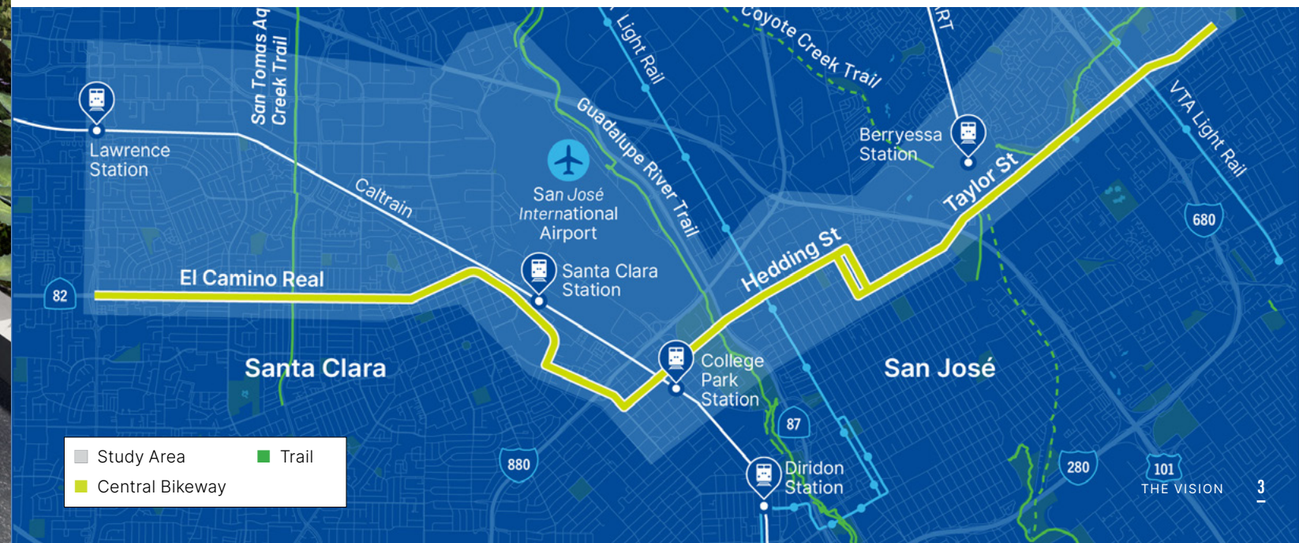
WHY CONNECT SANTA CLARA AND SAN JOSÉ?

Santa Clara and San José include highly populated areas, employment centers, and key destinations, with plans for expansion through numerous planned development projects. The study area has several important transit stations and services including the recently opened Berryessa / North San José BART Station and Santa Clara Transit Station.

As part of the Countywide Bicycle Plan process, community members repeatedly commented on the need for east-west, low-stress bikeways in the region.

While there are several north-south regional trails that pass through the study area, there are few comfortable east-west bicycle routes that connect these two cities. The Central Bikeway will close this key gap in the regional bikeway network, providing opportunities and improved access to disadvantaged communities. Through its connections to key CCBCs and transit stops like BART and Caltrain, the Central Bikeway will provide a key regional connection to destinations in Santa Clara County and beyond. Eventually, the Central Bikeway is proposed to connect west through the City of Sunnyvale.

The Central Bikeway corridor and study area



CENTRAL BIKEWAY VISION

TO CREATE A BICYCLE SUPERHIGHWAY THAT WILL PROVIDE A JOYFUL, CONTINUOUS, CONNECTED, AND COMFORTABLE BIKEWAY BETWEEN SANTA CLARA AND NORTH SAN JOSÉ

Bike riders at Viva Calle San José

Central Bikeway Vision and Goals

The Central Bikeway project is driven by a project vision and seven project goals: Equity, Project Compatibility, Community-Desired Project, Sustainable Mobility, Access, Joy, and Safety. Developed in collaboration with project partners, community partners, and the public, the vision and goals were used to guide the development of project alternatives and identify one preferred Central Bikeway alignment.

Equity

A bikeway that improves access to opportunities for traditionally underserved communities, especially in low-income or communities of color.

Access

A bikeway that expands travel choices, increasing access from local neighborhoods to transit stations and major destinations.

Project Compatibility

A bikeway that will be compatible with previous and existing planning efforts.

Joy

A bikeway that provides a continuous route through engaging landscapes, expanding travel choices that increase access from local neighborhoods to natural areas, parks, and elevated viewsheds.

Community-Desired Project

A bikeway that connects to community-identified destinations and serves community-identified desires and needs.

Safety

A bikeway that will provide a safe route that is separated from vehicular traffic.

Sustainable Mobility

A bikeway that provides an efficient and continuous route for people to bicycle in a low-stress environment, expanding connections to the existing and planned active transportation network.

What is a Bicycle Superhighway?

Bicycle superhighways are low-stress, accessible, direct, and continuous routes that provide an efficient option for long-distance bike travel. They connect major commercial and employment destinations to local neighborhoods, nearby cities, and regional and local bikeways to create a consistent and accessible network.

A NEW MODEL FOR SANTA CLARA COUNTY

The Central Bikeway will take the bicycle superhighway model and adapt it to an urban context. Because the Central Bikeway will be built along the existing roadway network, it will require stops at intersections and will not be fully grade-separated or uninterrupted. However, the Central Bikeway will be designed to provide a comfortable and accessible experience for users of all ages and abilities. The Central Bikeway will include design features such as physical separation from vehicular and pedestrian traffic, protected intersections, and features to minimize delay for bicyclists.

KEY FEATURES

Bicycle superhighways are...

ACCESSIBLE
They are the backbone of the regional bicycle network.

DIRECT
They connect key destinations with few detours and stops.

DEDICATED
They are mostly separated from vehicular and pedestrian traffic.

LOW EFFORT
They have limited interruptions and low grades.

ATTRACTIVE
They provide a positive and safe user experience, and include high quality materials and amenities.

A route with few interruptions and high quality lighting

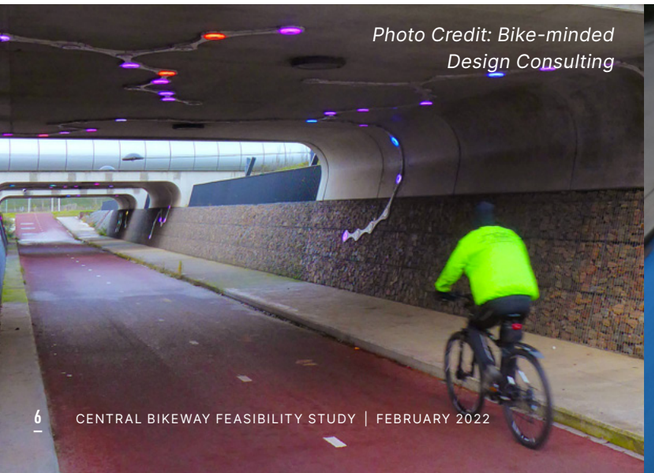


Photo Credit: Bike-minded Design Consulting

A clear route that is separated from vehicular traffic

Photo Credit: Jack Thurston, Flickr

Bicycle Superhighways Around the World

While bicycle superhighways are new for Santa Clara County, there are numerous examples of successful bicycle superhighway networks around the world that make bicycling a safe, convenient, and normal everyday commute option.

> *If San José wants to take climate change seriously, we need to put effective non-car infrastructure first.*
>
> **COMMUNITY MEMBER**

LONDON CYCLEWAY NETWORK

London has an extensive urban cycle superhighway network within the boundaries of Greater London. The cycle superhighway network consists of a network of protected bikeways, off-street bikeways, and bicycle boulevards connecting the center of the city to the suburbs.

COPENHAGEN CYCLE SUPERHIGHWAY NETWORK

Copenhagen has an inter-municipal cycle superhighway network of 466 miles spanning across 30 municipalities in the Greater Copenhagen region. Cycle superhighways prioritize commuters by connecting residential areas, employment centers, and schools with each other and with public transit.

02

SANTA CLARA AND SAN JOSÉ TODAY

CONTEXT

Project Area

The Central Bikeway study area covers nearly 14 square miles between Santa Clara and North San José (Figure 1). Once completed, the Central Bikeway will connect the Santa Clara and College Park Caltrain stations, VTA light rail, and the Berryessa BART station, as well as several shared-use paths, including the Guadalupe River Trail, Upper Penitencia Trail, San Tomas Aquino Creek Trail, and the future Coyote Creek Trail extension.

In addition to existing transit stations and trails, there are also numerous schools, parks, employment centers, and commercial areas including the San José International Airport, Santa Clara University, and commercial destinations along El Camino Real.

Just beyond the study area, Downtown San José serves as a key employment and commercial destination, with San José State University located a few bocks away. See Appendix B: Gaps, Barriers, and Opportunities for more information on existing conditions in the study area.

Figure 1: Central Bikeway Study Area

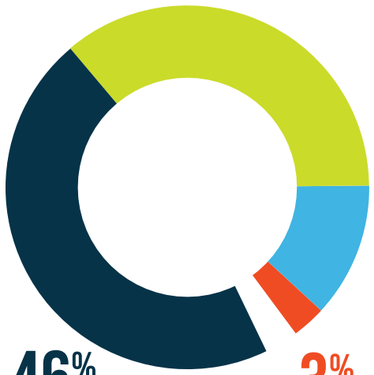
Who Will Use the Central Bikeway?

Approximately 208,000 people live in the area around the Central Bikeway, with an average population density of 8,967 people per square mile. By 2040, the population is expected to increase to 14,085 people per square mile.

The area is diverse and the languages spoken most frequently are English, Spanish, Vietnamese, and Chinese.[1]

> *I believe that biking and good public transport is one of the ways to equalize and improve life and health for people in general.*
>
> **COMMUNITY MEMBER**

The study area is racially diverse



36% are White/ Caucasian

12% are other race

3% are Black/African American

46% are Asian

5% are multi-racial

24% are Hispanic or Latino

The languages spoken most frequently are

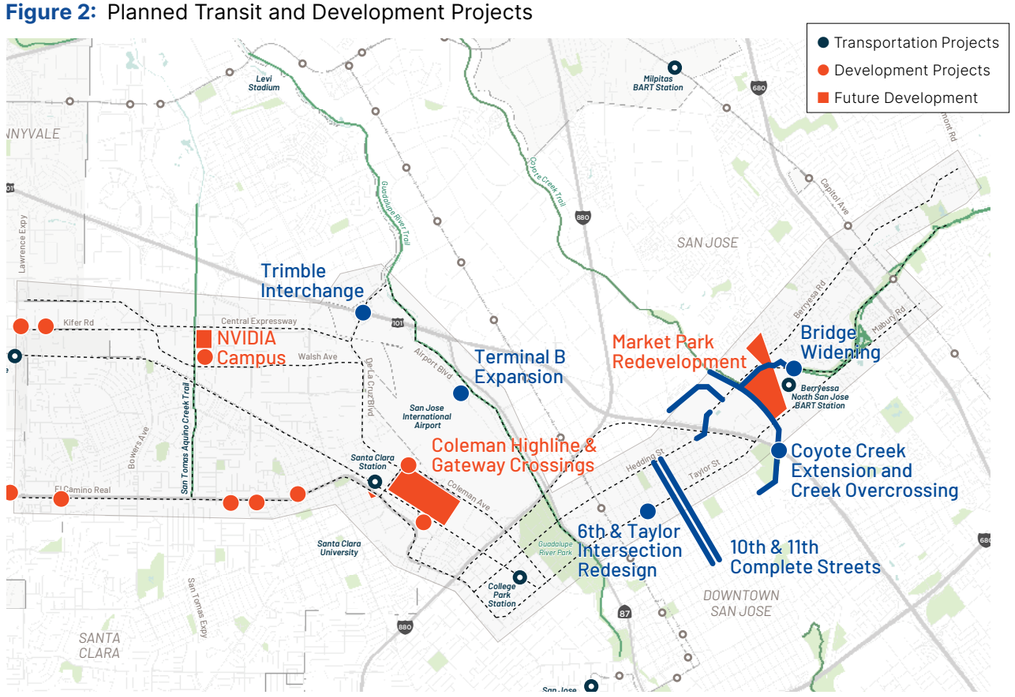
ENGLISH, SPANISH, VIETNAMESE, AND CHINESE.

1 2012-2016 American Community Survey 5-year Estimate

What Will the Study Area Look Like in the Future?

The Central Bikeway study area is undergoing rapid land use and transit changes (Figure 2). There are a number of capital improvement transportation projects planned within or adjacent to the study area, including the planned U.S. 101 De La Cruz/Trimble Interchange Redesign, the future U.S. 101 Berryessa Interchange, and several bicycle and pedestrian crossing improvement projects. In addition, the City of Santa Clara is continuing to work on Specific Plan for El Camino Real and there are numerous pending development projects in the study area. A future BART station will be built adjacent to the existing Santa Clara Station.

Figure 2: Planned Transit and Development Projects



There are also numerous pending development projects, which together will provide:

10,255
Additional Housing Units

357,000 FT²
More Retail Space

8,500,000 FT²
More Commercial Space

Figure 3: Existing and Proposed Bicycle Network

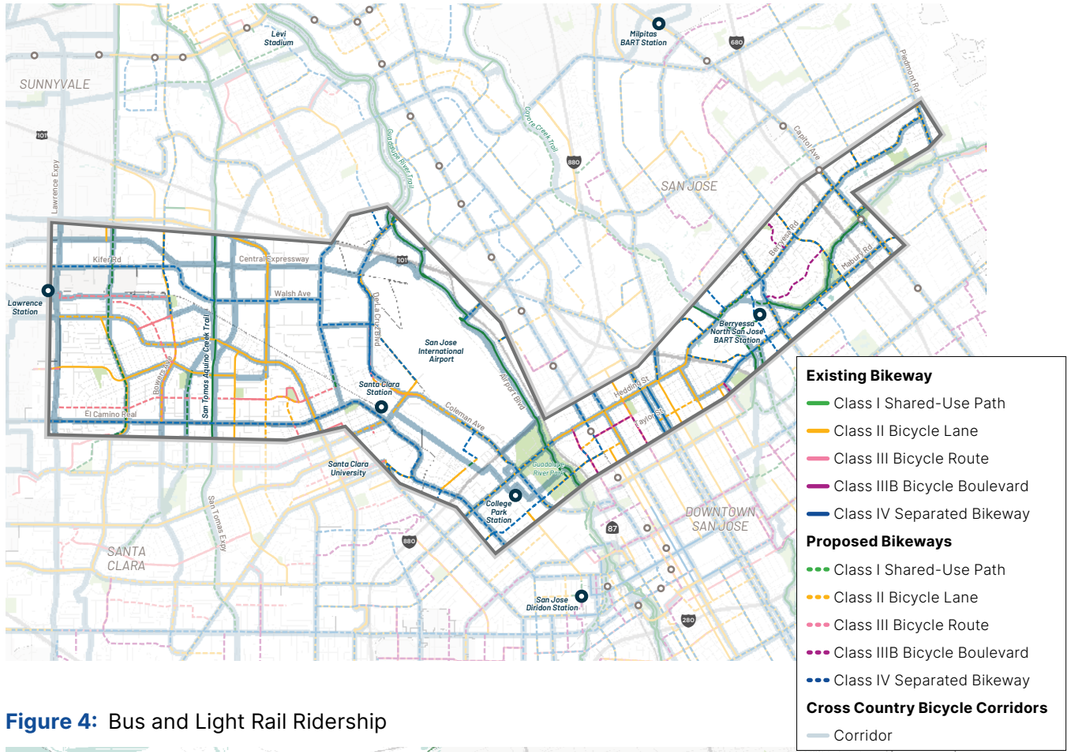
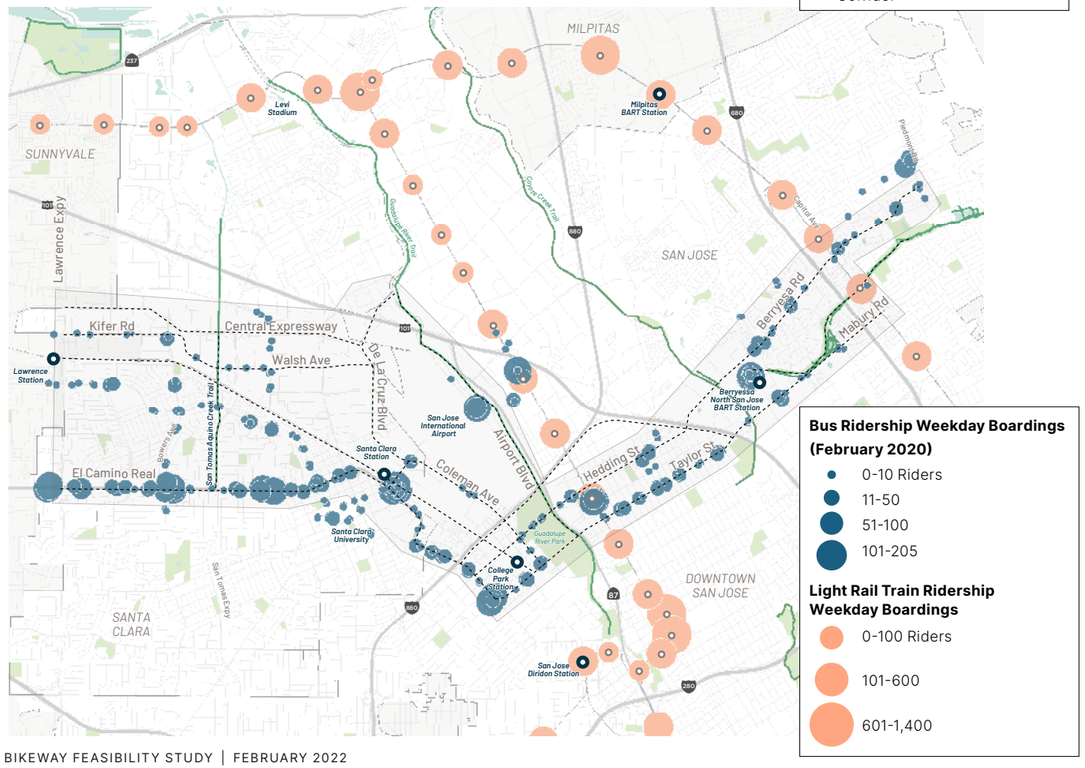
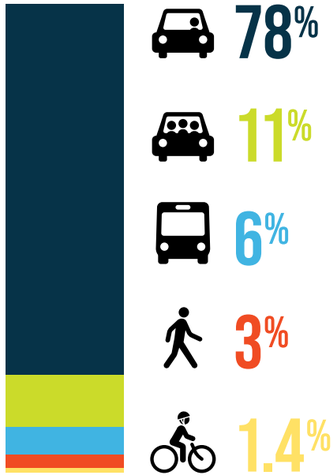


Figure 4: Bus and Light Rail Ridership



How Do People Currently Get Around?



2012-2016 American Community Survey 5-year Estimate

> *Cycling needs to be an easy, fast, and most importantly, safe method for almost everyone to commute and shop.*
>
> **COMMUNITY MEMBER**

EXISTING AND PROPOSED BICYCLE NETWORK

Figure 3 illustrates existing and proposed bikeways within and adjacent to the study area, as identified in the City of San José Better Bike Plan and City of Santa Clara Bicycle Master Plan as well as the CCBCs identified in the Countywide Bicycle Plan. The Central Bikeway will build upon these planned facilities to close existing gaps within the greater bicycle network, especially along key routes without existing facilities that have been identified as priority CCBCs. Notable gaps in the existing bikeway network include connections around Berryessa BART station, the east side of San José airport, and east-west corridors through Santa Clara.

> *Transit hub connections really help the everyday riders like myself.*
>
> **COMMUNITY MEMBER**

TRANSIT RIDERSHIP

The project study area contains a high number of local and regional transit services. Transit services in the area include VTA bus service (Rapid 500, Rapid 522, Frequent 22, Frequent 60, Frequent 61, Local 59, Local 53, Local 21), VTA light rail (Green, Blue, and Orange lines), Caltrain, and Bay Area Rapid Transit (BART). There are also several corporate shuttles that serve residents of the study area. Figure 4 illustrates VTA light rail and bus ridership by stop.

03

A COMMUNITY-BASED PROCESS

OVERVIEW

Who Did We Partner With?

VTA partnered with three community-based organizations (CBOs) to help lead meaningful outreach and engagement with local communities with a focus on reaching traditionally underrepresented community members. The CBOs served as the project's anchor institutions in a paid role to help lead local outreach and engagement.

Meet the CBO Partners

META (MUJERES EMPRESARIAS TOMANDO ACCIÓN)

META is a vibrant team of well trained, highly skilled peer educators and community workers that serve as a bridge between institutions and residents. META works with and represents low-income people and immigrants across the City of San José in English and Spanish using social meda, phone calls, messaging, pop-ups, and events.

What has been your role within the Central Bikeway and what do you consider the most important outcome of your involvement?

Our role within the Central Bikeway Project was to conduct outreach to our hardest to reach community. We made sure to inform them, to listen to their feedback, and to encourage them to participate in helping pick out and design the bike route that would best fit their needs.

What is a message you would like to share about what the Central Bikeway could bring to the community?

A route that is safe, secure and enjoyable. Most importantly it will be a route that was chosen and designed by the community for their families and children to enjoy.

GUADALUPE RIVER PARK CONSERVANCY (GRPC)

GRPC is a nonprofit that advocates for green communities with a primary focus on the Guadalupe River Park Trail and Gardens in San José and operates through social media, volunteers, and events.

What has been your role within the Central Bikeway and what do you consider the most important outcome of your involvement?

The GRPC has served as a nexus between the community and the Central Bikeway project, as we have worked to disseminate information regarding project meetings, project status, and Central Bikeway updates to residents of Santa Clara County. Our extensive social media and park advertisement efforts have informed thousands of residents about this incredible Active Transportation Project. The most important component of the Conservancy's involvement was ensuring that the community's preferences were heard and subsequently considered in the Bikeway Design Process.

What is a message you would like to share about what the Central Bikeway could bring to the community?

The Central Bikeway presents an exciting opportunity to increase bike ridership and transportation connectivity in Santa Clara County. This project gives residents multimodal transportation options, encouraging individuals to select an environmentally considerate, healthy, and joyful alternative to car commuting. With hundreds of thousands of bike rides along the Guadalupe River Trail annually, we see the Central Bikeway project as a way to encourage more park users to connect with nature and each other. The community will greatly benefit from having new bike infrastructure that will make riding pleasant, well-connected, and safe.

SILICON VALLEY BICYCLE COALITION (SVBC)

The purpose of the SVBC is to create a healthy community, environment, and economy through bicycling for people who live, work, or play in San Mateo and Santa Clara Counties. Their mission states "We envision a community that values, includes, and encourages bicycling for all purposes for all people. Our mission and vision cannot be achieved without making our cultural humility and social justice central to our work."

What has been your role within the Central Bikeway and what do you consider the most important outcome of your involvement?

SVBC's role has been to help ensure that diverse voices are included in the development of the project. That role stems from one of the most important outcomes of the project: That a project is delivered best when the concerns and needs of communities it is present in is well represented. SVBC is glad to have been able to do outreach and involve community groups and members as a part of the entire process, in particular its partnership with CBOs - GRPC and META LLC.

What is a message you would like to share about what the Central Bikeway could bring to the community?

The Central Bikeway will provide a safe and high-quality transportation option for commuters, people who want to run errands by bike, and recreational or weekend bicycle riders. And, importantly, it will be the first bicycle superhighway, setting the stage for many more to come. This high-quality facility will ensure that biking is made more joyful and inviting for anyone to ride more and more often!

Engagement Principles

The project team created a set of five engagement principles to guide all engagement efforts for the project. The principles were co-created with the CBO partners.

ACTIVELY REACH UNDERREPRESENTED COMMUNITIES

Include all communities in the outreach process, with a particular focus on groups that have been excluded, underserved, or underrepresented in the planning process

BUILD TRUST AND RESPECT WITH THE COMMUNITY

Honor the community's expertise, time, energy, and needs and create an open and honest dialogue between all community members

MAKE IT RELEVANT

Connect the project to the community's current and long-term needs

YOU SPEAK, WE LISTEN

Commit to actively listening to community members' needs, create a culture of participation and openness, and engage in shared decision-making to ensure all voices are considered and heard

DON'T LOSE SIGHT OF JOY

The community engagement process must be fun and joyful for all who participate

Community members stop by to learn about the Central Bikeway during a pop up event.

> *Help out communities and people that have been ignored.*
>
> **COMMUNITY MEMBER**

Engagement Summary by Round

The Central Bikeway engagement process was divided into four rounds between fall 2020 and winter 2021-2022. See Appendix E: Community Engagement for more information on the three rounds of outreach.

Round 1: Listen / Frame

FALL 2020

The first round of engagement sought to listen to the community's vision and needs for the Central Bikeway and refine project goals to guide the project.

Round 2: Collaborate / Evaluate

EARLY 2021

The second round of engagement shared three potential alternatives for the Central Bikeway and sought feedback on the community's preferences and priorities between the three alternatives and bikeway types.

Round 3: Refine / Design

SUMMER 2021

The third round of engagement shared the top ranked alternative from the evaluation process and sought feedback on potential design features and amenities.

Round 4: Finalize

WINTER 2021

The fourth round of engagement sought feedback from community members on the Draft Plan before finalizing the document.

How Did We Engage the Community?

In Spring of 2020, the COVID-19 pandemic resulted in the declaration of a state of emergency. With this, the State of California and many local jurisdictions implemented executive orders per Center for Disease Control guidelines to limit gatherings, practice social distancing, and even issued a stay at home mandate during this project's outreach schedule. Although the COVID-19 pandemic presented challenges, innovative responses were utilized to uphold a robust public engagement process through a variety of virtual and socially distant in-person events described on the next page.

How Did We Raise Awareness About the Project?

- Direct mailers
- Social media posts
- Online noticing & e-newsletters
- E-mail list serves
- In-person events at COVID-19 testing and vaccination clinics and food banks
- Flyers in public areas and along the preferred route in Round 3
- Posters on A-frames
- Local news stories
- Briefings and committee presentations
- All materials presented in four languages: English, Spanish, Chinese, and Vietnamese

VIRTUAL COMMUNITY MEETINGS

Virtual Community Meetings were hosted on Zoom to present a summary and status of the project, solicit preferences through interactive polling activities, and offer opportunities for questions, feedback, and comments. All of the virtual community meetings were streamed simultaneously on YouTube and interpreted in Spanish and Vietnamese. Chinese was available upon request.

ONLINE ENGAGEMENT

A series of online surveys accompanied each round of community meetings. The online surveys were live for about 30 days during each round of engagement as an effective way to reach community members during the pandemic. The first round also provided an interactive mapping tool which collected community preferences for destinations to reach by bike and desired routes for the Central Bikeway. The surveys were available in four languages: English, Spanish, Vietnamese, and Chinese.

VIRTUAL POP-UP MEETINGS

SVBC and META attended multiple local community group virtual meetings to present about the project and invite attendees to take the online survey and spread the word. Neighborhood group meetings included Vecino Actovos, EMPUJE, Jovenes, Vietnamese Voluntary Foundation (VIVO), Project Access, Northside, and Kings Crossing neighborhood meetings. Additionally, SVBC led an outreach training for both GRPC and META constituents to inform participants about the Central Bikeway project and get them more involved in overall bicycle advocacy efforts.

IN PERSON OUTREACH + ENGAGEMENT

During the first two rounds of engagement, META was out in the community providing critical support services during the pandemic. META distributed flyers at food and diaper distribution centers and while doing door-to-door vaccine outreach. In addition to distributing flyers, META spoke one-on-one with community members to guide people through the online survey and assist with completion. During the third round, the project team conducted in-person engagement at the City of San José's Viva Calle event.

By the Numbers

14 pop-up events

6 community meetings

131 community meeting attendees

1,711 in-person touch points

2,550 completed surveys

44,000+ social media touch points

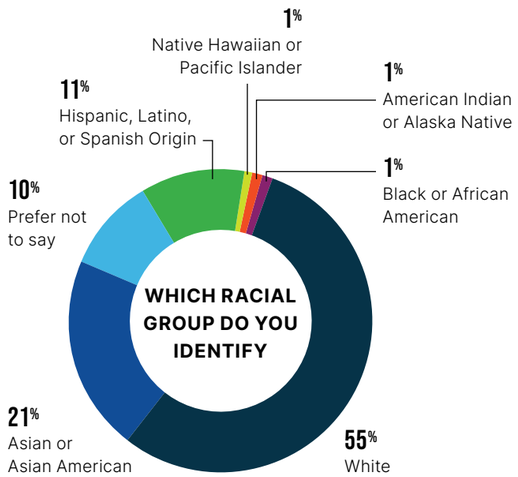
4 languages

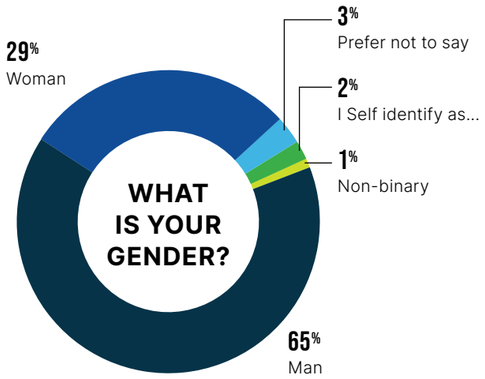
WHO DID WE HEAR FROM?

The study area is diverse and the Central Bikeway is trying to meet the needs of people who are not currently biking for their everyday travel needs, which historically has been women, non-binary, and people of color. Following each round of outreach, the project team compared demographic information of people who completed the online surveys with census data in the study area to adjust outreach efforts to better represent the people who live there. The Central Bikeway team saw an increase in the percentage of new bike riders or commuters during the second round of engagement, which can be attributed to the CBO partners helping with outreach and engagement efforts in the community.

The charts to the right provide an overall summary of who we heard from during all three rounds of engagement, out of a total of 2,550 completed online surveys.

55% of survey respondents were white, which is an overrepresentation compared to 36% of the population who is white in the study area. There was an underrepresentation from Asian and Hispanic populations with only 21% and 11% compared to 46% and 24% of the population reported in the census.





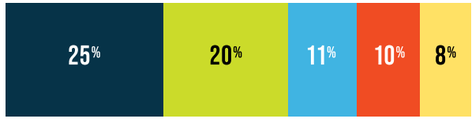
Key Themes

Through the three rounds of outreach, four key themes emerged from the community.

SAFETY IS KEY

Safety was routinely identified as a top priority goal for the Central Bikeway. As shown in the graph the right, when asked about barriers to cycling, 74% of the responses involved safety from vehicle traffic and a lack of comfort on roadways. People were also concerned about personal safety related to crime and cycling in the dark and isolated locations. The remaining 26% of responses were not related to safety and are not included in the graph.

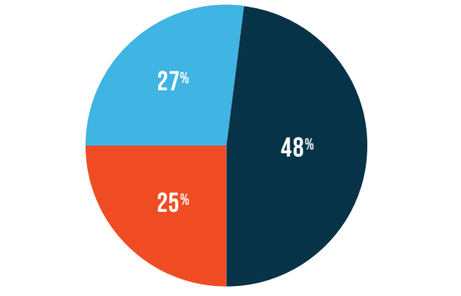
Percent of Survey Respondents who Identified a Safety Issue as a Barrier to Bicycling



PEOPLE LIKE TRAILS

When selecting a preferred alternative, more people choose the alternative with the highest percentage of trails. People said that they feel safer on trails, prefer to be away from cars and traffic, and expressed concerns at conflict points when riding on streets such as at cross streets and driveways. Forty-eight percent of respondents said an off-street trail would most encourage them to ride on the Central Bikeway instead of driving or carpooling.

Type of Bikeway that Would Most Encourage People to Ride the Central Bikeway



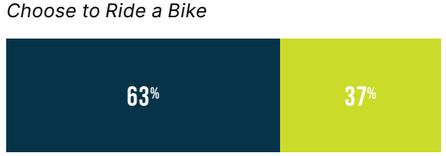
ACCESS TO DESTINATIONS IS IMPORTANT

When asked why community members would use the Central Bikeway, half of respondents said they would use the Central Bikeway to get to work, school, or another destination, indicating the potential for the bikeway to serve as a critical transportation route, in addition to health, exercise, and fun!

What would help you choose riding your bike? Over 60% of respondents said they would prefer a route that connects to more destinations over a route with a short travel time.

Reason Why People Would Use the Central Bikeway

Type of Route That Would Help People Choose to Ride a Bike



IMPLEMENTATION TIMELINE

Respondents were split on implementation. 53% of people wanted to see a bikeway that can be built more quickly on the street network versus new trail corridors that would take more time to build.

Type of Bikeway People Would Prefer

Demonstration Event

An in-person demonstration was showcased on September 19, 2021 during the City of San José's Viva Calle event. The demonstration featured a seven foot wide bikeway separated from traffic by a physical buffer and trees and landscaping donated by Our City Forest. The bikeway passed along the back side of a simulated bus island to demonstrate how the bikeway would interact with bus stops and transit riders. It helped demonstrate to community members what it would feel like to ride the Central Bikeway.

A photo booth allowed community members to picture themselves on the future Central Bikeway.

Project staff asked participants to comment on proposed design treatments, and how comfortable the treatments would make them feel along three corridors proposed for the Central Bikeway (El Camino Real, Hedding Street, and Taylor Street).

Of the 121 completed surveys completed during the demonstration event, being separated from traffic was voted as the design feature that would improve people's comfort bicycling the most. Community members also prefer wide bikeways with shade trees and landscaping.

98%

of people surveyed at the demonstration event say the proposed design features would improve their comfort riding along the Central Bikeway

HERE'S WHAT PEOPLE HAD TO SAY ABOUT THE DAY:

"It makes me sad it doesn't already exist!!!"

"I like this wide bike lane, other ones are too narrow."

"Me gusta el nuevo ordenamiento porque da seguridad al peatón. ¡Felicitaciones!" (I like the new arrangement because it makes it safer for people walking. Congrats!)"

"The barrier makes you feel safer"

"I like the shade"

Photos to right from the demonstration event at Viva Calle

"I don't ride on El Camino but I would with this bike lane"

DEMONSTRATION EVENT PARTICIPANT

04

CENTRAL BIKEWAY ALTERNATIVES

OVERVIEW

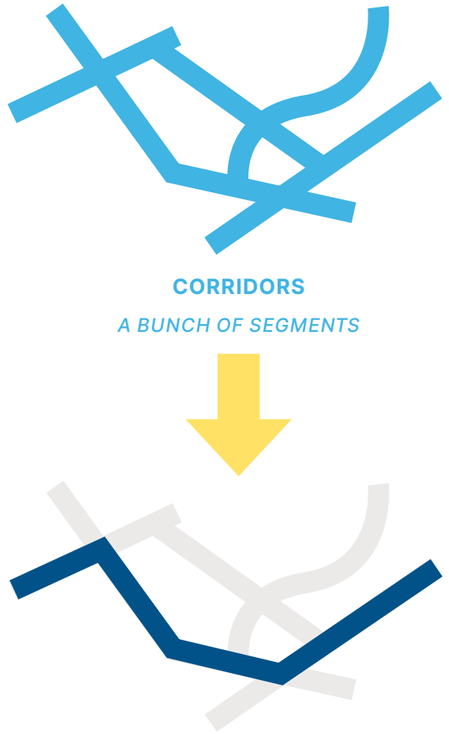
How Did We Develop Alternatives?

The project team identified key east-west and north-south corridors in the study area to develop a network of potential corridor opportunities. These corridors were reviewed for feasibility, with non-feasible corridors removed; roadway and trail segments were then added between corridors to create ten potential alignments that would connect the western and eastern termini of the study area. All alignments met the key features for a bicycle superhighway described in Chapter 1.

These ten alignments were screened against initial criteria to identify three alternatives, from which one would be selected as the preferred alternative for the Central Bikeway. Initial criteria were coded by project goal and included categories such as whether the route was identified in previous planning efforts, connected to communities of concern, and connected to major destinations. Initial criteria were scored on a qualitative basis. I think this is important and should be moved closer to the beginning of this section.

The three alternatives selected best responded to the project goals, stakeholder input, and public feedback during the initial screening process. The three alternatives selected to be evaluated were the Walsh Wizard, the Trail Trackway, and the Shortliner, which are described in detail in the following pages.

See Appendix C: Alternatives Analysis + Evaluation for more information on the development and screening of the alignments and alternatives.



CORRIDORS

A BUNCH OF SEGMENTS

ALIGNMENTS

COHESIVE AND CONTINUOUS 8-MILE BIKE SUPERHIGHWAY ROUTES

ALTERNATIVES

THREE ALIGNMENTS THAT RESPOND TO THE PROJECT GOALS, STAKEHOLDER INPUT, AND PUBLIC FEEDBACK

Alternative #1: The Walsh Wizard

The Walsh Wizard represents the north-of-airport alternative option for the Central Bikeway (Figure 5). The majority of the alignment utilizes on-street one-way or two-way protected bikeways, except for the off-street trail portion along Guadalupe River Trail. The alignment follows Kifer Road and Walsh Avenue through Santa Clara as an alternate option to Central Expressway, and connects to planned improvements along Trimble Road. This alternative is the most readily implementable and lowest cost of the three, with extended portions along corridors with existing trails or bikeways. However it has the longest travel time for bicyclists.

Tradeoffs

How does The Walsh Wizard compare to the other two alternatives?

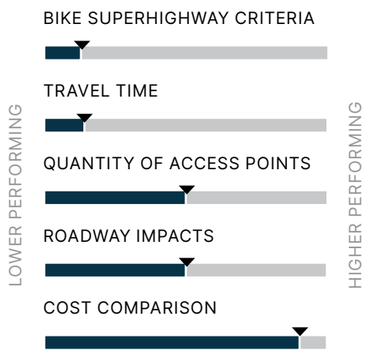
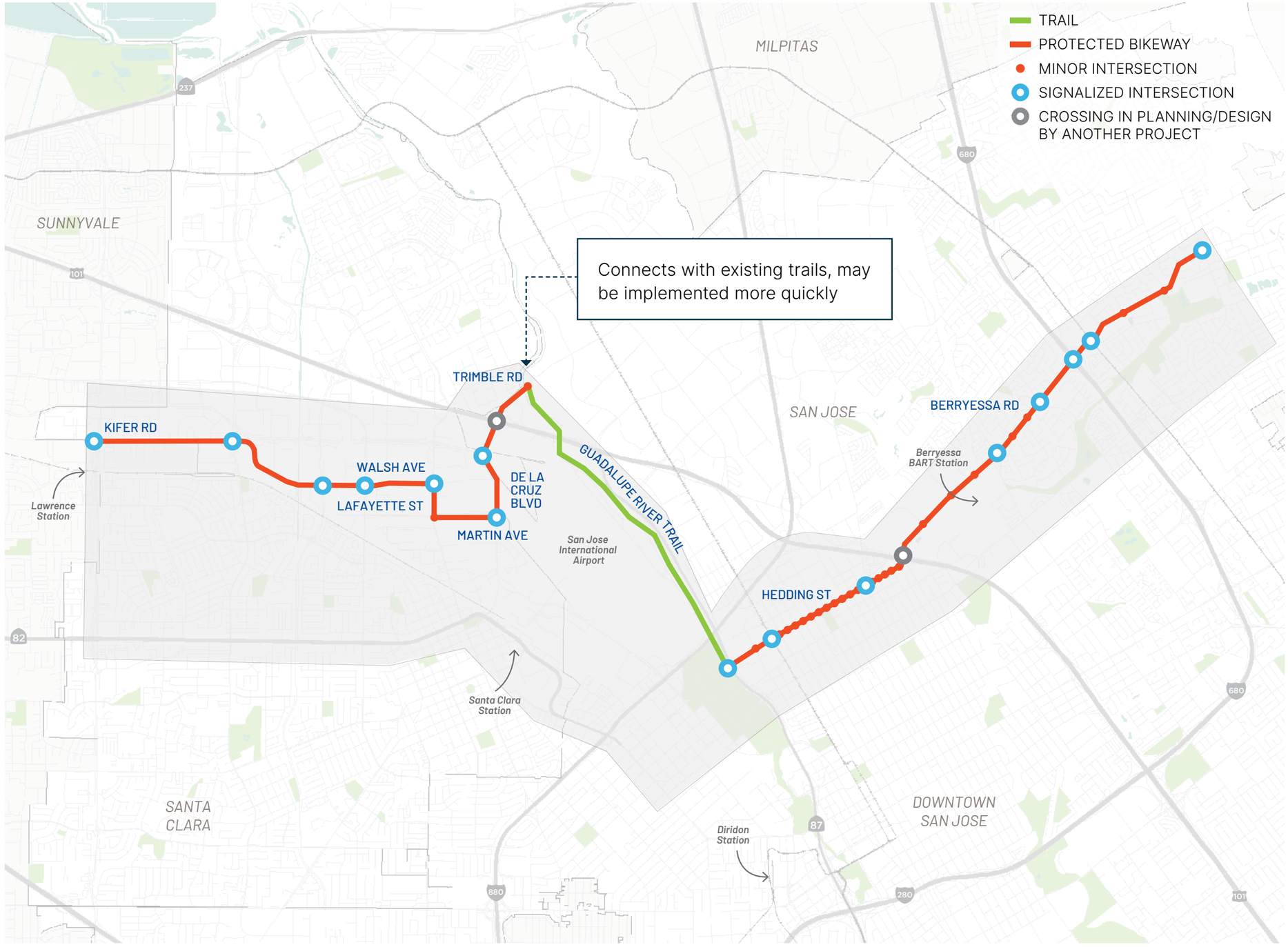


Figure 5: The Walsh Wizard



Alternative #2: The Trail Trackway

The Trail Trackway provides a primarily off-street trail option for the Central Bikeway (Figure 6). The alternative connects the center roadway median along Central Expressway with San Tomas Aquino Creek Trail and the Railroad/Caltrain Corridor. It then connects the Santa Clara Station underpass to the Freeway Corridor along Coleman Avenue around the south side of the airport and continues north along I-880 and US-101, before ultimately connecting to the Penitencia Creek Trail. Use of the Santa Clara Station underpass will require further study. This alternative uniquely features extended segments of grade separated trail along Central Expressway and the Caltrans corridor to bypass major intersections and freeway on-ramps. This alternative features the greatest separation from vehicles.

Tradeoffs

How does The Trail Trackway compare to the other two alternatives?

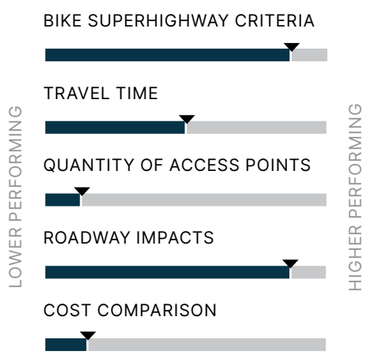
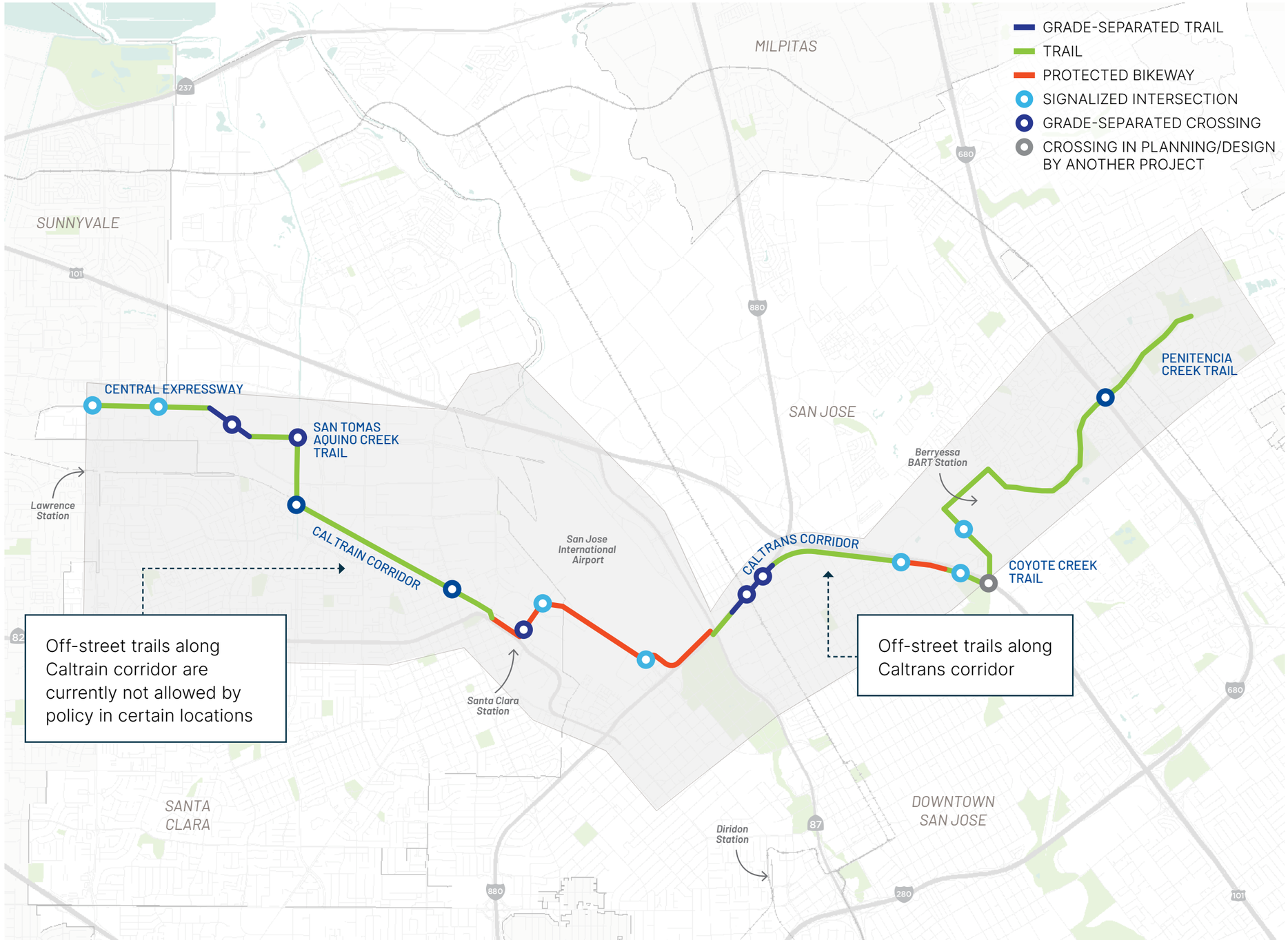


Figure 6: The Trail Trackway



Alternative #3: The Shortliner

The Shortliner provides an entirely on-street connection along the southern end of the study area (Figure 7). Beginning along El Camino Real and The Alameda, the alternative provides direct access to community-identified destinations, local bus stops, Santa Clara University, and the Santa Clara Caltrain Station. East of the airport, the alternative connects to Hedding Street and ultimately to Mabury Road, and features intelligent signal coordination to provide an efficient route for bicyclists from the Guadalupe River Trail to the Berryessa BART Station. This alternative provides the greatest level of access for local communities and the fastest travel time for bicyclists across the entire study area.

Tradeoffs

How does The Shortliner compare to the other two alternatives?

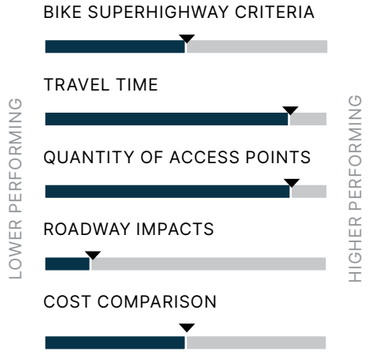
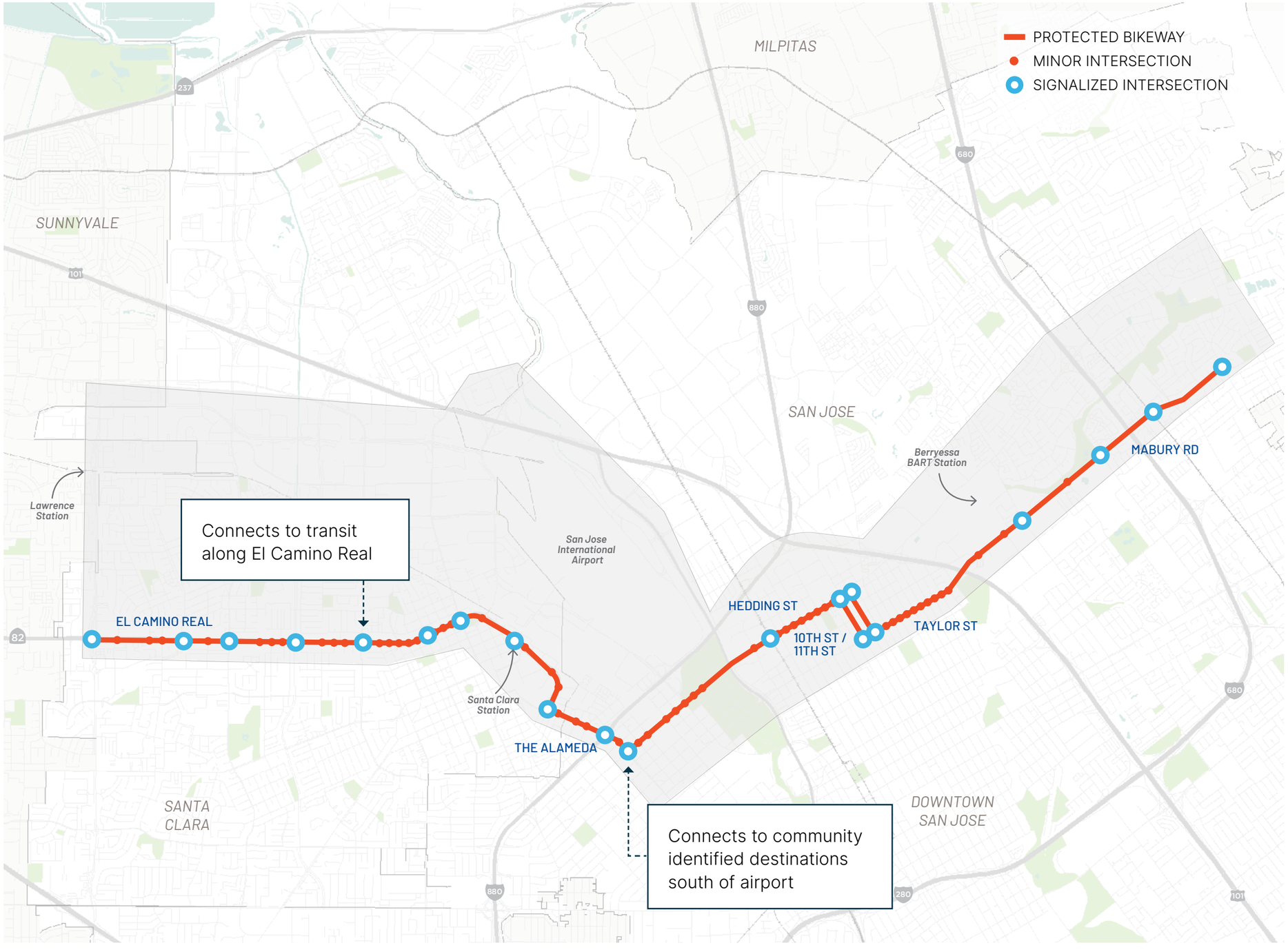


Figure 7: The Shortliner



Goal-Based Evaluation Criteria

A goal-based evaluation of the three alternatives was conducted, which involved four key steps.

01 Develop Criteria

On their own, there is no singular way to measure the project goals - they are inherently complex goals. Instead, each goal was broken down into two to five measurable criteria.

02 Identify Segments

The study area was divided into three segments (Figure 8). By evaluating across three areas, it provided a more detailed comparison and enabled the preferred alternative to be the best possible mix-and-match combination of the three alternatives.

03 Measure Criteria

The criteria were analyzed and measured for each alternative by segment to provide a standard basis for comparison.

04 Compare Alternatives by Goal

Once measured, the criteria were consildated into their respective goals. This allowed for a direct comparison to identify where alternatives met or exceeded each goal.

Figure 8: Segments

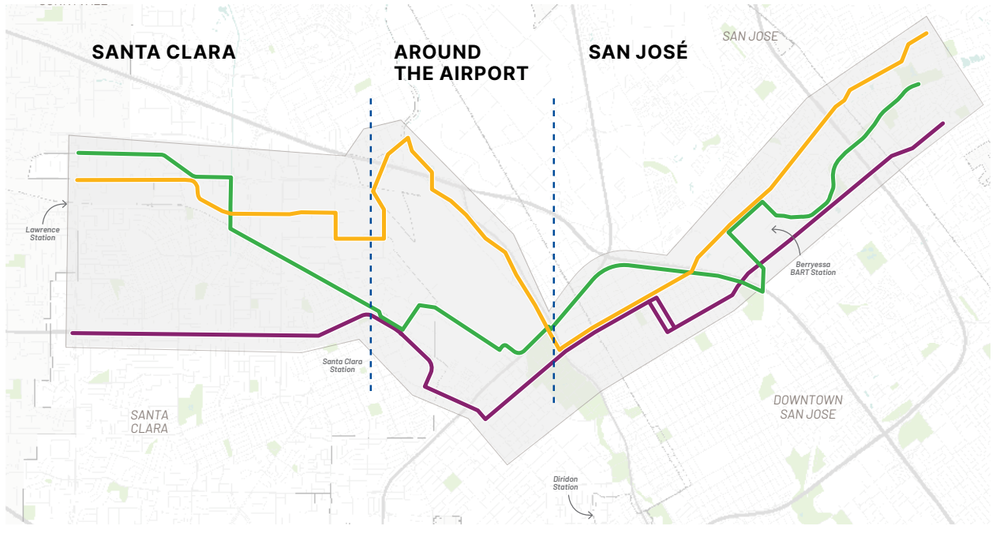


Table 1: Summary of Evaluation Criteria

GOAL	TIER 2 CRITERIA	INFORMED BY (Engagement / Data)
Equity	New Users	Engagement
	Women/Non-Binary & People of Color	Engagement
	Equity Analysis	Data
Project Compatibility	Available ROW	Data
	Traffic Impacts	Data
	Parking Analysis	Data
	Transit Impacts	Data
	Aligns with Planning Efforts	Data
Community-Desired Project	Community-Identified Destinations	Engagement
	Community-Identified Segments	Engagement
Sustainable Mobility	Time/Length	Data
	Modal Friction	Data
	User Demand	Data
	Potential VMT Reduction	Data
Access	Transit Access	Data
	Level of Traffic Stress (LTS) Analysis	Data
	Access to Employment	Data
Joy	Access to Open Space	Data
	Promotes Passive Attention	Data
	Expands Choice	Data
	Level of Effort	Data
Safety	Separation from Traffic	Data
	Intersections & Exposure to Vehicles	Data
	Traffic Speed	Data
	Perceived Safety	Data

Community Input Guided the Development and Evaluation of Alignments

Community input was used throughout the project to guide the development and evaluation of alternatives. In particular, community input directly informed the evaluation for two of the project goals: Equity and Community-Desired Project.

COMMUNITY-DESIRED PROJECT

Both criteria for the community-desired project goal were directly informed by community input. During the first round of outreach, the community was asked to identify destinations across the study area that they would like to access (Figure 9). Each alternative was analyzed for the extent to which it provided access to these "Community-Identified Destinations" both along the route and accessible from connecting low-stress bikeways (Figure 10).

The results show significant latent demand for accessing destinations such as stores and restaurants.

During the second round of outreach, the community was asked to select their preferred alternative in each of the three segments - Santa Clara, Airport, San José (Figure 12). These preference percentages were directly used in the evaluation model.

Figure 9: What destinations do people want to go to on their bike?

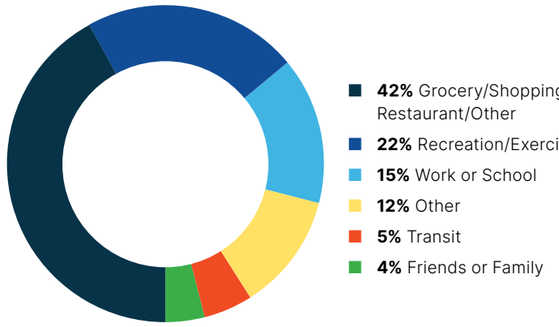
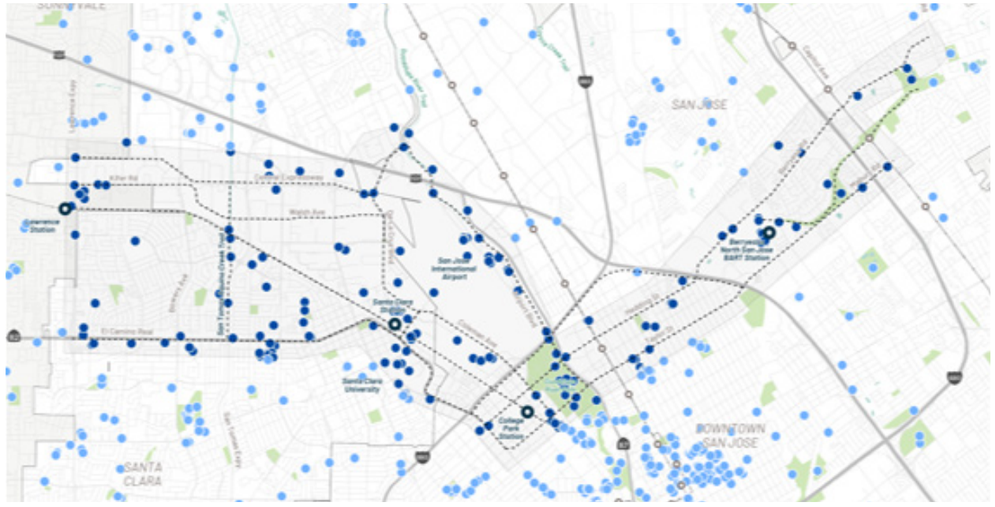


Figure 10: Community-identified destinations



EQUITY

Two of the equity criteria directly analyzed the responses of underrepresented groups in bikeway planning and design from the second round of outreach. The first criterion extracted the preferred alternatives selected by women/ non-binary and people of color (POC). Women/non-binary and POC made up 45% of respondents (Figure 11).

The second criteria extracted the preferred alternatives of potential new users—people who are interested in cycling but due to a variety of reasons do not currently bike. New users made up 29% of respondents, which is considerably high for this type of feasibility study.

Figure 11: Who participated in the second round of outreach?

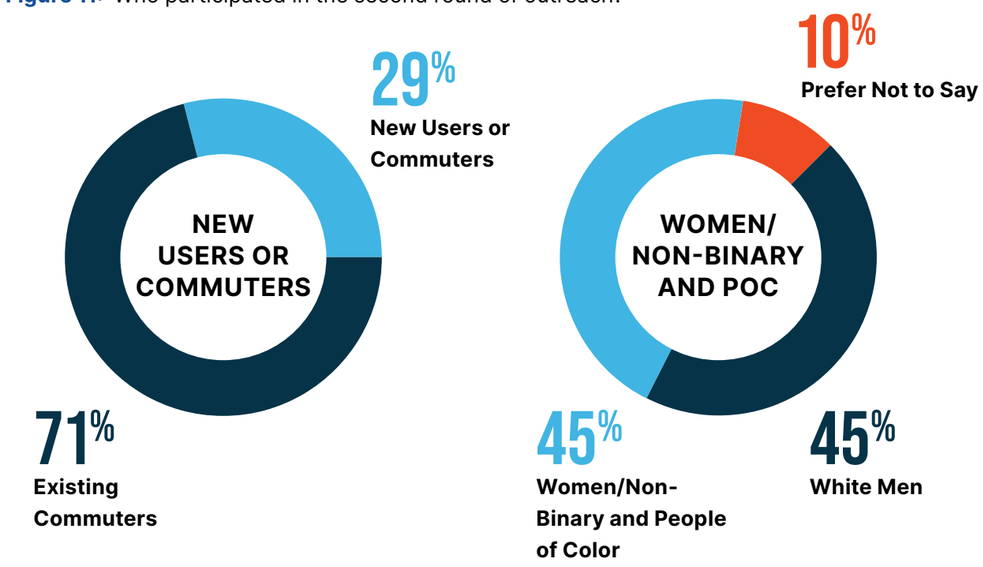
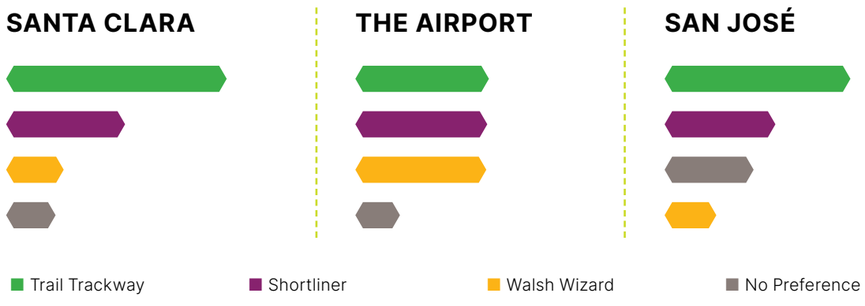


Figure 12: What was the preferred alternative in each segment?



Summary of Results

Although only the Equity and Community-Desired Project goals were directly informed by outreach, all criteria were aimed at identifying an alternative that would best meet community needs. For example, community members noted the importance of making connections to open space, which was a criterion under the Joy goal.

Figure 13 illustrates evaluation results by goal as well as provides as an overall roll up score within each of the project areas.

In Santa Clara, the Shortliner performed the best with the project goals, and performed best for feasibility as well along with the Walsh Wizard.

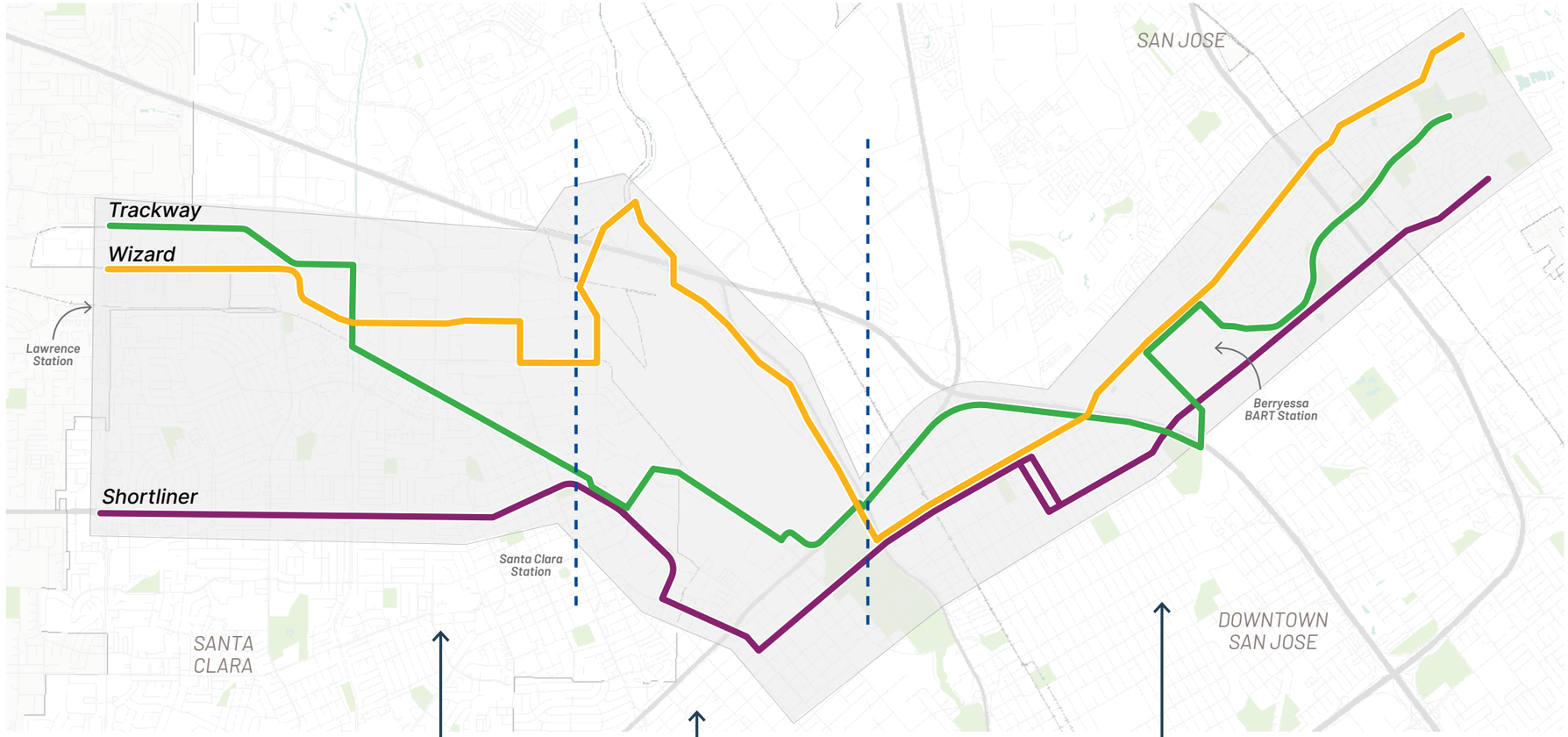
Around the Airport, the Shortliner overwhelmingly performed the best for both the project goals and feasibility. The Walsh Wizard and Trail Trackway were a distant second and third, respectively.

In San José, the Shortliner performed the best with the project goals and feasibility, with the Walsh Wizard slightly behind. The Trail Trackway was a distant third.

Although the Trail Trackway was the preferred alternative based on community input during Round 2 of outreach, the Shortliner was a close second. Because it provides more access to community-identified destinations, the Shortliner scored highest overall for the Community-Desired Project goal.

Lower performing — Higher performing

Figure 13: Summary of Results



SANTA CLARA

	WIZARD	TRACKWAY	SHORTLINER
Equity			
Project Compatibility			
Community Desired Project			
Sustainable Mobility			
Access			
Joy			
Safety			
Overall			★★★
Feasibility/ Implementation			

AIRPORT

	WIZARD	TRACKWAY	SHORTLINER
Equity			
Project Compatibility			
Community Desired Project			
Sustainable Mobility			
Access			
Joy			
Safety			
Overall			★★★
Feasibility/ Implementation			

SAN JOSÉ

	WIZARD	TRACKWAY	SHORTLINER
Equity			
Project Compatibility			
Community Desired Project			
Sustainable Mobility			
Access			
Joy			
Safety			
Overall			★★★
Feasibility/ Implementation			

05

RECOMMENDED ALTERNATIVE

THE SHORTLINER ALTERNATIVE BECOMES THE CENTRAL BIKEWAY

The Shortliner alternative was the best performing alternative overall in Santa Clara, around the airport and in San José (Figure 14). The alternative connects from west to east along El Camino Real, The Alameda, Hedding Street, 10th/11th Street, Taylor Street, and Mabury Road.

The Shortliner alternative scored highest for the goals of Community-Desired Project, Sustainable Mobility, Access, and Joy. It also scored highly for feasibility and implementation due to its relatively low cost and maintenance needs and high opportunities for funding. Because of its overall high scores, the Shortliner alternative was chosen as the preferred alternative for the Central Bikeway. It is referred to simply as the "Central Bikeway" in the following pages.

AT A GLANCE

10 MILES LONG

KEY DESTINATIONS
Berryessa BART Station, Santa Clara Station, Santa Clara University, Japantown, Guadalupe River Trail, Coyote Creek Trail

KEY CORRIDORS
El Camino Real, The Alameda, Hedding St, Taylor St, Mabury Rd

99% ON-STREET PROTECTED BIKEWAY

Figure 14: The Shortliner Alternative

WHAT DOES THE CENTRAL BIKEWAY DO WELL ALREADY?

Connects to Community Destinations

The Central Bikeway connects to the greatest number of community-identified destinations.

Access to Jobs & Transit

The Central Bikeway provides convenient access to jobs in downtown San José, the El Camino Real corridor, and Santa Clara University. It provides direct access to Santa Clara Caltrain station, two VTA light rail stops, Berryessa BART, and major bus lines along El Camino Real.

Efficient and Quick Route

The Central Bikeway is the shortest alternative both in terms of distance and travel time.

Figure 15: Central Bikeway Connections

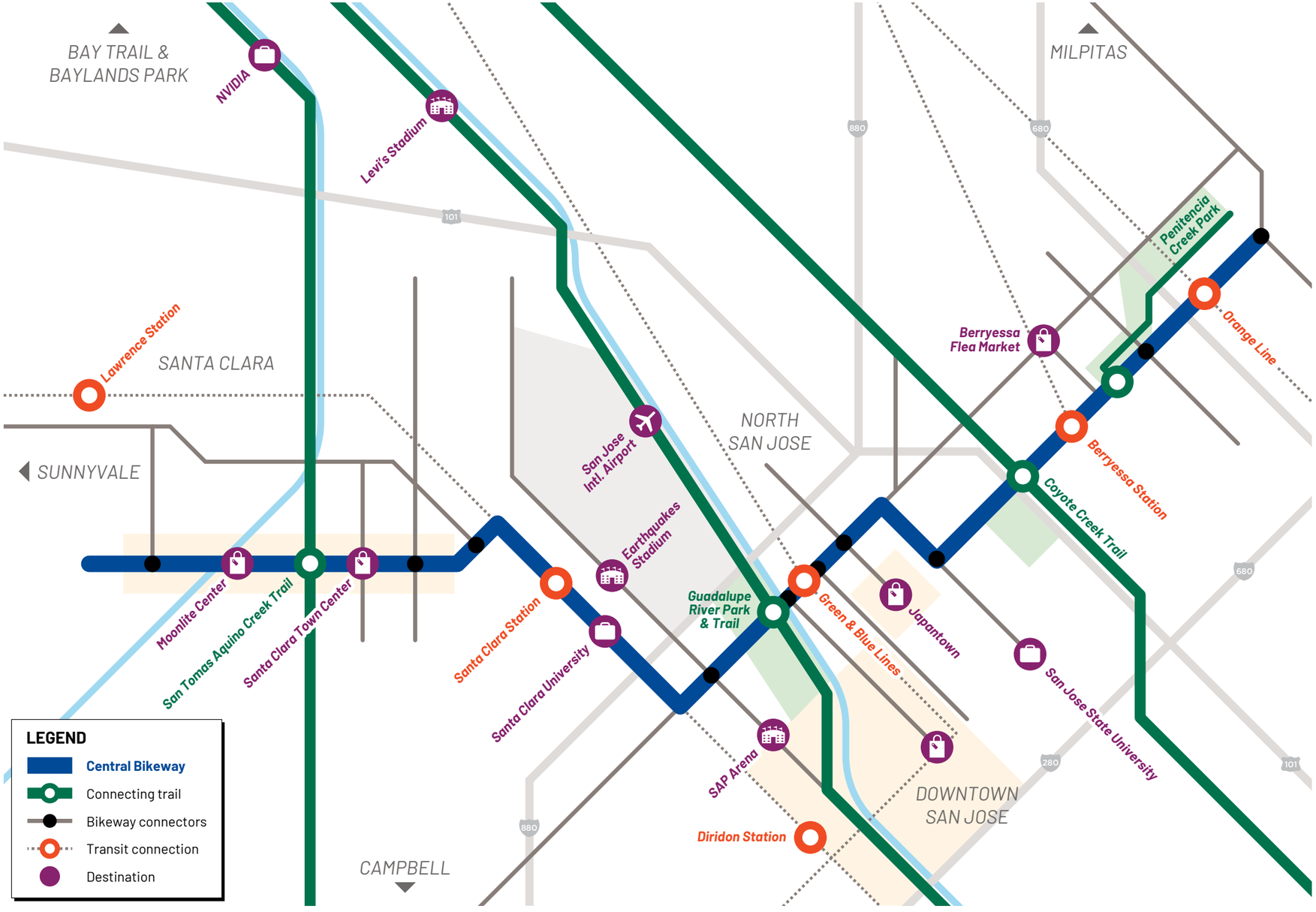


Figure 15 shows how the Central Bikeway makes critical connections to transit and cross county bike corridors (CCBCs) in Santa Clara and San José. Through these connections, the Central Bikeway will connect users to a number of key commercial and employment destinations, including Santa Clara University, San José State University, and Berryessa Flea Market. In addition, the route will allow for connections to key recreational areas and sports arenas, including Guadalupe River Park, the Bay Trail and Baylands Park, and the Earthquakes and Levi Stadiums.

WHAT DESIGN FEATURES WILL HELP THE CENTRAL BIKEWAY ADDRESS COMMUNITY PREFERENCES?

Trail-Like Experience

We heard repeatedly from the community that trails are desirable and preferred. The Trail Trackway ranked highest by the community because it was the alternative with the most trails. However, it is not feasible at this time due to Caltrain policy along their ROW.

When all criteria are taken into account the Central Bikeway alternative ranked highest overall, including for the Community-Desired Project goal due to its connections to community-identified destinations.

Although the Shortliner runs along the road network, the design will incorporate design features that promote a feeling of openness, safety, flow, and physical comfort—making it feel more like a trail experience.

WIDE BIKEWAY

The standard width for each direction of the bikeway is seven feet. Significantly wider than a traditional protected bikeway, this provides space for passing and riding side-by-side with a friend.

SEPARATED FROM TRAFFIC

The bikeway will be consistently separated from traffic, with a standard buffer of four to five feet. The buffer will be curb-height to provide a physical barrier to vehicles.

SHADE TREES & LANDSCAPE

The Central Bikeway will feature shade trees as well as extensive landscape to provide habitat, cooling, and stormwater benefits.

RAISED CROSSINGS

At stop-controlled intersections, the bikeway and crosswalk will cross the roadway elevated at curb height to prioritize cyclists and pedestrians and make them more visible to vehicles.

BIKE-PRIORITY SIGNAL TIMING

From Berryessa BART to the Guadalupe River Trail, the bikeway will feature bike-priority signal timing. This will provide longer green lights for cyclists, shorter reds, minimize stopping, and increase flow.

PROTECTED INTERSECTIONS

Where the bikeway crosses roadways with other bike routes, a protected intersection will provide dedicated space for cyclists to merge, turn, and queue, all while separated from traffic.

WHAT WILL BE THE EXPERIENCE ALONG THE CENTRAL BIKEWAY?

El Camino Real

The Central Bikeway along El Camino Real will be an active mobility backbone through Santa Clara. Closely aligned with the Santa Clara Bicycle Master Plan Update,, the bikeway is part of a larger regional effort to make El Camino Real a more walkable and multi-modal corridor.

The bikeway will be seven feet wide at sidewalk level on both sides of the street to provide an urban trail-like experience and will connect conveniently to expanded bus-island stops. Separated from traffic by a landscape and tree-lined buffer, it provides shade and nature to a previously exposed and concrete environment. At intersections and driveways, the bikeway will be raised to curb height to prioritize bicyclists and make them more visible to vehicles. Driveway consolidation along El Camino Real is a goal in both Santa Clara and San José.

A bicycle facility along El Camino Real will provide direct access to jobs, grocery stores, restaurants, and retail. Residents, students, and employees alike will have a choice in how they want to move through the corridor, making for a more diverse and accessible El Camino Real.

Conceptual rending of the Central Bikeway along El Camino Real

Conceptual rendering of the Central Bikeway along Hedding St.

> *Clear separation from the road is key. It must be more than paint on the street.*
>
> **COMMUNITY MEMBER**

Hedding Street

Hedding Street is the connective tissue that links Japantown, Downtown San José, and the Guadalupe River Trail. Characterized by numerous connections to local bikeways, the Central Bikeway along Hedding Street features bicycle-priority signal timing and frequent protected intersections to create a quick and connected corridor.

The design builds upon the existing bikeways along Hedding Street, making the bikeway wider and fully buffered from traffic. It maintains a residential character with a tree-lined buffer, landscape at intersections, and pedestrian lighting.

Taylor Street

Taylor Street links central San José to Berryessa BART Station, and provides safe crossing over US 101. On Taylor Street, the Central Bikeway is proposed to be a bi-directional bikeway, with a wide six to 10-foot landscaped buffer to create a trail-like experience through a residential area. It features dedicated bike signals and raised crossings at intersections for a safe, relaxing, and joyful cycling experience.

Over US 101, the Central Bikeway features a dedicated bike and pedestrian space physically separated from cars to provide convenient and safe access into Berryessa BART Station and Coyote Creek Trail.

Conceptual rendering of the Central Bikeway along Taylor Street

> *"Plant trees along bike routes for shade for bikers."*
>
> **COMMUNITY MEMBER**

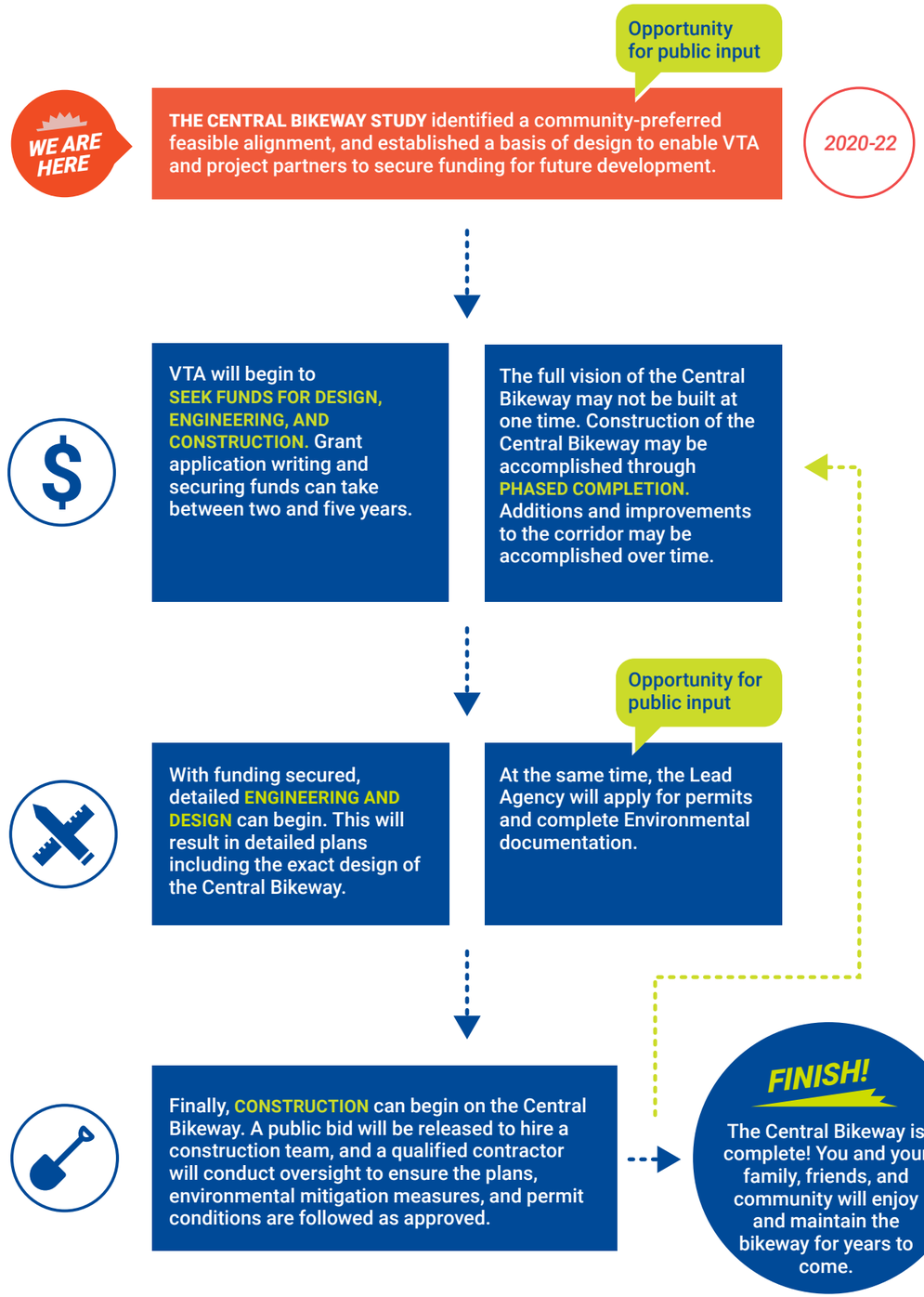
HOW DOES THE CENTRAL BIKEWAY GET BUILT?

Building the Central Bikeway is an ambitious process that will require fundraising, community engagement, detailed design and engineering, environmental study, and permits from state and local agencies.

The vision set forth for the Central Bikeway will require about $200 million to design and construct. Because of the large scope and scale of this multi-jurisdictional project, full implementation may take years due to the number of steps required to get to construction. Figure 16 describes where to go from here.

See Appendix D: Implementation Strategy for more details on the implementation strategy and funding opportunities.

Figure 16: Central Bikeway Implementation Flow Chart



Implementation Approach: Phased with Segmented Construction

It is recommended that VTA pursue environmental clearance for the entire Central Bikeway project and then segment the corridor for phased construction.

The primary benefit to this approach is the flexibility and efficiency it would allow. Smaller segments of the project could move forward as funds became available, which would allow for portions of the bikeway to be built more quickly. This could allow segments with greater public support to be built sooner and not be held up by more challenging locations. This approach would also require lower up front construction costs, and could rely on a variety of smaller grant programs.

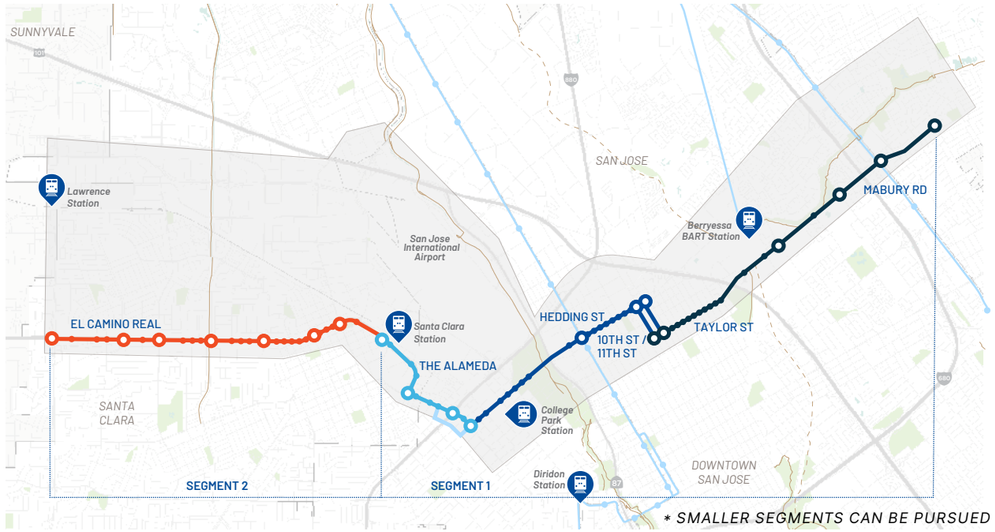
Figure 17 identifies the two segments under consideration; Segment 1: Santa Clara Station to White Road and Segment 2: El Camino Real west of Santa Clara Station. Segment 1 includes three sub-segments for consideration.

> *East-west protected route is needed. Now.*
>
> **COMMUNITY MEMBER**

Within these two segments, further segmentation could be made based on existing bikeway conditions, alignment with other local projects, right-of-way availability, and connecting logical destinations.

Each segment represents a different opportunity to rethink Santa Clara County's streets. Segment 1 prioritizes connections to transit, while Segment 2 focuses on creating new connections to commercial destinations along El Camino Real.

Figure 17: Segmented Construction



SEGMENT 1. TRANSIT CONNECTIVITY: SANTA CLARA STATION TO WHITE ROAD

Completing a segment of the Central Bikeway that connects from the Santa Clara Transit station, through downtown San José to the Berryessa BART station and east to White Road would make for a competitive grant package and minimizes potential right-of-way impacts along El Camino Real. This section of the Central Bikeway passes through the most communities of concern and may be most competitive for the state's Active Transportation Program. Implementation of this section should focus on the full design features of the Central Bikeway, including Class IV separated bikeway, protected intersections, bicycle signal priority, and landscape and amenities along the route.

> *It's all about safety and physical separation from cars.*
>
> **COMMUNITY MEMBER**

SEGMENT 2. COMMERCIAL CONNECTIVITY: EL CAMINO REAL TO SANTA CLARA TRANSIT CENTER

The vision for the Central Bikeway may take years to see the full build out. However, much of the vision can be accomplished by installing a sidewalk-level separated bikeway in the space currently used by on-street parking where feasible. Because El Camino Real is owned by Caltrans, the agency will need to approve all designs along this corridor.

There are currently three block faces where the removal of on-street parking is not recommended by the City of Santa Clara until redevelopment occurs. These locations are along the eastern portions of El Camino Real on the south side between San Tomas Expressway and Las Padres Boulevard, the north side between Las Padres Boulevard and McCormick Drive, and a short block on the north side between Main and Washington Streets (see Appendix A: Basis of Design Plans Sheets SI-05, SI-06, and SI-08). In these sections, standard bike lanes are proposed until a later period of time. In addition, to accommodate VTA's standard 10 foot wide bus boarding islands, there are selected locations where the existing sidewalk would narrow. If the City of Santa Clara's El Camino Real Specific Plan is adopted, certain parcels will be redeveloped. Sidewalks will be widened and there may be opportunities to consolidate driveways to make the route safer for bicyclists.

The first phase of the Central Bikeway on El Camino Real should focus on implementing the core alignment and key safety features, including a sidewalk-level Class IV separated bikeway, protected intersections with existing bikeways, and intersection improvements, where parking and ROW impacts are minimized. Because El Camino Real has a high bicycle and pedestrian collision history, it may be particularly competitive for grant programs that address existing safety issues.

Project Costs

A rough order of magnitude cost estimate has been developed based on Basis of Design plans for the long-term vision for the Central Bikeway. Environmental clearance, engineering, and construction management costs are estimated as 40% of construction costs (2% planning feasibility, 4% environmental, 12% design, 6% VTA project oversight, 8% construction management, and 8% inspections). Construction costs include material and labor costs for items to build the linear bikeway, intersection, landscape, and amenity improvements as well as construction soft costs for mobilization (10%) and contingency (30%). Table 2 provides a summary of the costs.

Table 2: Rough order of magnitude costs

Environmental Clearance and Design for Study Corridor	
Project Approval & Environmental Document (PA/ED) and Plans, Specifications, and Estimates (PS&E) - 18%	**$27,000,000**
Construction Costs by Area	
Santa Clara (3.5 miles)	$57,000,000
Airport (2.3 miles)	$35,000,000
San José (5.1 miles)	$60,000,000
Total Construction	**$152,000,000**
Oversight, Construction Management, and Inspections - 22%	**$34,000,000**
Project Total	**$213,000,000**

Potential Funding Sources

Potential funding sources for Section 1 include:

- Active Transportation Program (ATP)
- 2016 Measure B
- SB 1 Local Partnership Program
- Rebuilding American Infrastructure with Sustainability and Equity (RAISE)
- One Bay Area Grant (OBAG) Program
- Regional Measure 3
- Urban Greening Program

Potential funding sources for Section 2 include:

- Rebuilding American Infrastructure with Sustainability and Equity (RAISE)
- One Bay Area Grant (OBAG) Program
- Regional Measure 3
- Highway Safety Improvement Program (HSIP)

A full list of potential funding sources is included in Appendix D.

Organizational Strategies

Because the full vision of the Central Bikeway will take time to build, it is important to identify an organizational strategy that is conducive to this multi-jurisdictional corridor and will set the bikeway up for success.

There are a number of criteria to consider when identifying an appropriate organizational strategy for a bicycle superhighway. These include:

- **Risk and Liability:** The level of risk taken on by a single entity.
- **Time Frame for Implementation:** How long the bikeway would take to implement given the strengths and weaknesses of the organizational structure.
- **Staff Expertise and Resources:** The level of staff expertise and capacity to implement and maintain the bikeway.
- **Design Consistency:** The ability for the bikeway to be consistently built and maintained. The bikeway should have uniform infrastructural standards across all municipal boundaries to ensure a standard level of service.
- **Funding Availability:** The availability of funding sources for planning, design, operations, and maintenance.
- **Maintenance Capabilities:** The level of resources available to maintain the bikeway.

See Appendix D: Implementation Strategy, for more information on proposed organizational strategies for the Central Bikeway.

Operations + Maintenance

To provide high-quality bicycling conditions, separated bikeways need consistent, dedicated maintenance, and sweeping. Bikeway users may not know what agency they should contact to report poor conditions so it is critical that a clear communication protocol is established for the Central Bikeway. Finally, the Central Bikeway will be designed to include potential amenities such as wayfinding, landscaping, seating, and public art. These amenities should be accounted for in any future maintenance plan.

MAINTENANCE

Required maintenance may be routine or remedial, and will vary depending on context, user demand, and the types of amenities present.

- **Routine.** Routine maintenance refers to the day-to-day regimen of litter pick-up, trash and debris removal, weed and dust control, sweeping, vegetation trimming, and other regularly scheduled activities. Some routine maintenance may be conducted on a seasonal basis.
- **Remedial.** Remedial maintenance refers to repairing, replacing, or restoring major components that have been destroyed, damaged, or significantly deteriorated from normal usage and old age. Some items ("minor repairs") may occur on a five to ten-year cycle, such as repainting or replacing signage.
- **Inspections.** Inspections are important for monitoring the maintenance needs of the bikeway and its associated amenities. Routine inspections such as monitoring surface conditions, signs, and lighting can be carried out by maintenance staff. A 311 System could serve as a way for the public to report necessary inspections and repairs.

Typical maintenance tasks along the Central Bikeway will include pavement sweeping, vegetation management, and landscape irrigation.

OPERATIONS

Operation tasks along the Central Bikeway may include management and coordination, public safety, and emergency response services. It may be beneficial to designate one agency or staff person to oversee these tasks for all bicycle superhighways once the network is developed beyond the Central Bikeway.

For more information on operations and maintenance, see Appendix D: Implementation Strategy.

> *"Keep the bike lane free of broken glass and debris.*
>
> **COMMUNITY MEMBER**

NEXT STEPS

Project Partner Roles

VTA is the preferred agency to lead implementation as a regional authority that can implement cross-county corridors. VTA would be responsible for securing funding, leading environmental clearance and design, ongoing community engagement and outreach, coordinating and tracking progress, and overseeing construction.

Partner agencies will be responsible for allocating capital funds and staff time to implementation efforts, updating local plans for the Central Bikeway and bicycle superhighway design guidelines, developing policies and practices to reduce delay for bicyclists, and funding and prioritizing maintenance of bicycle superhighways.

Regional Connectivity

The Central Bikeway is the first of many bicycle superhighways to be implemented in Santa Clara County. Ultimately, the Central Bikeway is proposed to extend west through the City of Sunnyvale and connect to the Peninsula Bikeway. Any bicycle improvements within the City of Sunnyvale will be implemented in accordance with recommendations in the City's Active Transportation Plan.

Potential Future High Quality Bikeways

The Caltrain Corridor and Central Expressway are two corridors evaluated in this study that show potential for future high quality bikeways.

The Caltrain corridor could provide an important spur connection between San Tomas Aquino Creek Trail and the Santa Clara BART station.

A high quality bikeway along Central Expressway between Trimble and Palo Alto could serve as an efficient and continuous bicycle superhighway route through the South Bay.

Although the Shortliner responded best to the Central Bikeway project goals and was chosen as the best alternative for the users in this project's study area, this study does not preclude future high quality bicycle planning efforts along these two key regional corridors.