

**TRANSPAC Transportation Partnership and Cooperation**  
Clayton, Concord, Martinez, Pleasant Hill, Walnut Creek, and Contra Costa County

**TRANSPAC TAC SPECIAL MEETING NOTICE AND  
AGENDA**

**THURSDAY, July 14, 2022**  
**1:00 P.M. to 4:00 P.M.**

**TELECONFERENCING SPECIAL NOTICE – PUBLIC MEETING  
GUIDELINES FOR PARTICIPATING VIA PHONE/VIDEO  
CONFERENCE**

Pursuant to the Ralph M. Brown Act provisions under Assembly Bill 361, which went into effect on October 1, 2021, meetings of the TRANSPAC Board and TAC will be held utilizing video and teleconference as the State and County continue to recommend measures to promote social distancing. Options for observing the meeting and participating in public comment are provided below:

**Video Conference Access:** Please click the link at the noticed meeting time  
<https://us02web.zoom.us/j/85154428112?pwd=Wkk3aFdZekFjTDJMeDIQSnlRS0laZz09>  
Meeting ID: 851 5442 8112 and Password: 788107.

**Phone Access:** To observe the meeting by phone, please call at the noticed meeting time 1 (669) 900 6883, then enter the Meeting ID: 851 5442 8112 and Password: 788107.

**Public Comments:** Public comment may be provided by submitting written comments to [tiffany@graybowenscott.com](mailto:tiffany@graybowenscott.com) by 3 p.m. on the day before the meeting, which will be read during Public Comment or on the related item when Public Comment is called and entered into the record. To comment by video conference, click the “Raise Your Hand” button to request to speak when the Public Comment period is opened on an Agenda item. After the allotted time, you will then be requested to mute your microphone. To comment by phone, indicate the “Raise Your Hand” icon by pressing “\*9” to request to speak when the public comment is opened on an Agenda item. After the allotted time, you will then be requested to mute your microphone. Please begin by stating your name and indicate whether you are speaking for yourself or an organization.

**Americans with Disabilities Act (ADA):** This agenda is available upon request in alternative formats to persons with a disability, as required by the ADA of 1990 (42 U.S.C. §12132) and the Ralph M. Brown Act (Cal. Govt. Code §54954.2). Persons requesting a disability related modification or accommodation should contact TRANSPAC via email or phone at [tiffany@graybowenscott.com](mailto:tiffany@graybowenscott.com) or (925) 937-0980 during regular business hours at least 48 hours prior to the time of the meeting.

**1. CONVENE MEETING / VIRTUAL MEETING ACCESS GUIDELINES / SELF-INTRODUCTIONS.**

**2. PUBLIC COMMENT.** Members of the public may address the Committee on any item not on the agenda.

**3. Minutes of the May 26, 2022 Meeting 🌀 Page 5**

**ACTION RECOMMENDATION: Approve Minutes.**

Attachments: TAC minutes from the May 26, 2022 meeting.

**4. TRANSPAC COMMITTEE APPOINTMENTS – CCTA TCC APPOINTMENT FOR THE TERM ENDING MARCH 31, 2023.** TRANSPAC is represented on the Contra Costa Transportation Authority's (CCTA) Technical Coordinating Committee (TCC) by three (3) primary representatives and one (1) alternate. Due to staff changes the TCC alternate position is now vacant. Staff is requesting appointment recommendations from the TAC. 🌀 **Page 11**

**ACTION RECOMMENDATION: Recommend a TRANSPAC representative to fill the vacant alternate position on the TCC for the term ending March 31, 2023.**

Attachment: Staff Report

**5. CENTRAL COUNTY ACTION PLAN UPDATE – REGIONAL TRANSPORTATION OBJECTIVES AND PROPOSED ACTIONS.** The Central County Action Plan is intended to address the key transportation issues that Central County will face over the next long-range period (i.e. about twenty five years). Action plans for each subregion of the county were developed through the cooperative, multi-jurisdictional planning process included with Measure J. The Contra Costa Transportation Authority (CCTA) has secured the services of a team of consultants lead by Placeworks to assist TRANSPAC to update the Plan. CCTA and Placeworks staff will discuss Regional Transportation Objectives and proposed actions and review a series of corridor maps. (INFORMATION) 🌀 **Page 13**

Attachment: Staff Report

**6. COMMITTEE UPDATES:**

**a. Technical Coordinating Committee (TCC):** The TCC meeting scheduled for June 16, 2022 was canceled. The next regular meeting is scheduled for July 21, 2022.

**b. Countywide Bicycle & Pedestrian Advisory Committee (CBPAC):** There was no June CBPAC meeting. The next regular meeting is scheduled for July 25, 2022.

- c. **Paratransit Coordinating Council (PCC):** There was no June PCC meeting. The next regular meeting is scheduled for July 18, 2022.

**7. INFORMATION ITEMS**

- a. **GRANT FUNDING OPPORTUNITIES.** This agenda item is intended to provide an opportunity to review and discuss grant opportunities. Additional information will be available at the meeting. (INFORMATION).
- b. **CONTRA COSTA TRANSPORTATION AUTHORITY (CCTA) MEETING CALENDAR:** The CCTA Calendar for June 2022 to September 2022, may be downloaded at: <https://ccta.primegov.com/Portal/viewer?id=18712&type=2>

**8. MEMBER COMMENTS**

**9. NEXT MEETING: AUGUST 25, 2022.**

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**MEETING DATE:** May 26, 2022

**MEMBERS PRESENT:** Andy Smith, Walnut Creek; John Cunningham, Contra Costa County; Melody Reeb, County Connection; Saravana Suthanthira, Concord; Phillip Ho, Pleasant Hill; Jason Chen, Clayton; Kirsten Riker, 511 Contra Costa; Celestine Do, BART

**STAFF PRESENT:** Matt Todd, TRANSPAC Managing Director; and Tiffany Gephart, TRANSPAC Clerk

**GUESTS/PRESENTERS:** Matt Kelly, CCTA; John Hoang, CCTA; Dave Campbell, Bike East Bay; Torina Wilson, Placeworks; Terrence Zhao, Fehr & Peers; Bruce Ole Ohlson; Debbie Toth, Choice in Aging; Elaine Welch, Mobility Matters

**MINUTES PREPARED BY:** Tiffany Gephart, TRANSPAC Clerk

**1. CONVENE MEETING / VIRTUAL MEETING ACCESS GUIDELINES / SELF-INTRODUCTIONS.**

Managing Director Matt Todd called the meeting to order at 9:02 A.M. Introductions followed.

**2. PUBLIC COMMENT.**

Dave Campbell of Bike East Bay commented that he is interested in engaging more on how to approach bicycling in a multi-modal Action Plan and if this would be a separate meeting or during the meeting. Mr. Todd commented that the next TAC meeting will be dedicated to discussing the Action Plan.

**3. MINUTES OF THE APRIL 28, 2022 MEETING.**

Andy Smith requested a correction to the minutes. He noted that his comment on limiting capacity improvements along Marsh Creek Road would be limited to vehicular capacity improvements and that bicycle and safety improvements were acceptable. He commented that there was consensus from the TAC concerning this topic and asked that it would be reflected.

The minutes of the April 28, 2022 meeting, with revisions, were approved by consensus.

#### **4. DRAFT MEASURE J LINE 20A DRAFT FUNDS PROGRAM – FY 2022/2023 AND FY 2023/2024.**

Matt Tod provided an overview of the Measure J Line 20a Program. Mr. Todd noted that at the previous Board meeting, the Board agreed to remove the capital funds request from the Golden Rain Foundation due to the program being oversubscribed with operational requests. Mr. Todd presented the Measure J Line 20a program fund estimate and noted CCTA projections have increased from \$475,000 to \$540,000. Mr. Todd also commented that three projects reported rollover funding from the previous grant cycle that can be used for FY 2022-2023. He noted the following approximations: George Miller Center at \$15,000, County Connection Midday Free Rides Program at \$28,000 and the City of Concord, Get Around Taxi Scrip program at \$18,000, with a total of \$61,000 in rollover funding.

Mr. Todd proceeded with a review some of the topics raised by the Board for further review including Equity Priority Communities, Measure J Line 20a program funding history, local match (including overall budget and transportation specific budgets), and coordination efforts. Mr. Todd went on to review the draft funding scenarios.

Mr. Todd opened the public comment period for the item. Debbie Toth, representing Choice in Aging (CIA), thanked staff for the detailed analysis of the various programs seeking grant funding. Ms. Toth commented that the program request for Choice in Aging (CIA) is for 50% of the operational costs of the program. She further noted that CIA will not receive 5310 funding as anticipated. Ms. Toth further noted that CIA has provided a high volume of trips absorbing over 20% of trips from County Connection LINK, with decreased trip times, for many years. Initially the program began by using a donated County Connection Vehicle and were able to provide over 200 trips per month (far beyond the 50 required trips). Ms. Toth noted her concerns that the program may cease to operate if the grant request is not fully funded. Ms. Toth further commented that the program provides door-through-door service and goes above and beyond to meet the needs of the community.

John Cunningham noted that the CIA program came out of a very early coordination effort, prior to the Accessible Transportation Strategic Plan (ATSP) and is modeling what is hoped to be the future of transportation coordination. Mr. Cunningham noted that if the CIA program is defunded this would be going backwards, and the outcome should be avoided. Mr. Cunningham commented as an aside that there are efforts underway to reform the 5310 program. He further noted that Mobility Matters also provided service at a time where the LINK service was unable to fulfill the demand.

Mr. Cunningham named a few other organizations that provided input and participated in coordination efforts on the ATSP task force including Mobility Matters, Choice and Aging, George Miller Center/Contra Costa ARC and the City of Walnut Creek. Mr. Cunningham commented that the scenario which recommended an across-the-board reduction was equal but not equitable and that other factors should be considered such as some of other criteria noted in the staff report. Finally, Mr. Cunningham noted that the Center for Elders Independence (CEI) is a newer

applicant and a larger organization with a larger budget than some of the other programs that are listed for consideration.

Melody Reebbs offered support for the scenario that would reward programs that have been funded for a while but also commented that not funding a program because it is new could discourage new ideas and is not necessarily the best strategy. Ms. Reebbs further noted that looking at service to an Equity Priority Communities (EPC) should still be included in a scenario.

Andy Smith agreed with Ms. Reebbs that he did not support the legacy of a program as a standalone metric but should be considering along with a demonstrated history of doing good work for the community. He also suggested to incorporate service to an EPC into the scenarios. Mr. Smith added that it is important to consider how much a program/service will offset the cost of LINK.

Matt Todd commented that staff don't currently have raw data on offsetting LINK costs. However, programs report trip costs and number of trips and provide anecdotal data on trips that would otherwise qualify for LINK.

Saravana Suthanthira offered support for scenario 4.

Elaine Welch commented that it is important to consider if a new program that is replacing a legacy program is going to do a better job. She noted that Mobility Matters is the only nonprofit program in Contra Costa County that covers every community for disabled veterans and seniors door through door and there isn't another service out there that is doing that. She noted that if her program is cut it is important to consider if there is another program that will provide a comparable service.

Mr. Cunningham commented that service disruptions from cycle to cycle can be problematic for the County. He further noted that the CEI program's coordination efforts center primarily in Alameda County and noted Contra Costa County coordination efforts maximize local resources.

Mr. Todd asked if there was a recommendation from the group. He also asked for comment if it was required to postpone the Board recommendation to July and asked the two agencies represented to comment. There were no public comments.

Mr. Suthanthira clarified scenario 4 which would fully fund legacy programs and fund new programs at 70%. She further asked if there is a scenario that fully funds CIA and reduces the remaining programs across the board.

Mr. Smith commented that he is supportive of scenario 4 and requested that a recommendation be made. He commented that in scenario 4, CEI is taking the brunt of the cut as a new program, but they are serving an EPC. He requested striking the balance between funding Rossmoor at 100% and CEI at 70%. Ms. Reebbs supported Andy Smith's comment and noted that it would be good to define the EPC communities for the Board.

Ms. Welch commented that the CIA and Mobility Matters programs are unique and reiterated that new programs should replace the old programs and not duplicate. She further noted that neither program is asking for funding to cover 100% of costs.

Mr. Cunningham commented that CEI has other funding. He asked that staff consider maintenance of effort requirements to prevent organizations from utilizing Measure J funding to cover costs that could otherwise be funded from other sources.

The TAC agreed to move forward with scenario 4 and to add an additional scenario that incorporates service to EPCs.

## **5. DYNAMIC PERSONAL MICRO TRANSIT FEASIBILITY STUDY.**

Item carried forward to a later date.

## **6. DRAFT CONTRA COSTA COUNTYWIDE PEDESTRIAN NEEDS ASSESSMENT FOR LOCAL AGENCY IMPLEMENTATION.**

John Hoang introduced the item. Mr. Hoang commented that a draft of the Pedestrian Needs Assessment (PNA) was recently completed as a follow-up to the Comprehensive Bicycle Pedestrian Plan and the Vision Zero document adopted last year. The goal of the draft PNA is to evaluate the infrastructure within the County and to help identify what the facilities gaps are. Mr. Hoang requested that the TAC provide written comment over the next two weeks. Mr. Hoang introduced Terrence Zhao of Fehr and Peers.

Mr. Zhao provided a presentation on the Draft PNA.

Mr. Cunningham asked what is comprised in the single-lane and multi-lane speed management projects. A two-lane uncontrolled crossing can include raised crosswalks, crossing islands, yield signs, curb extensions, restriping, beacons, lighting, as well as removing any potential side obstructions. He noted potential measures are divided by low and high costs.

Ms. Suthanthira asked if the criteria is part of OBAG requirements and asked how the criteria are going to be connected. Mr. Hoang commented that staff can follow-up on the question and provide clarity for the group.

Ole Ohlson provided a public comment. Mr. Ohlson suggested that going forward, anytime there is work on a signalized intersection, that all four quadrants of the intersection have crosswalks. Mr. Ohlson further requested 10-foot sidewalks on both sides of every arterial and collector street. Lastly, Mr. Ohlson, personally requested no angled curb cuts at signalized intersections: two curb cuts, one for each crosswalk in each direction.



Dave Campbell agreed with Mr. Ohlsons comments on behalf of Bike East Bay.

## **7. DRAFT GROWTH MANAGEMENT PLAN CHECKLIST**

Mr. Kelly introduced the item and commented the new updated Growth Management Plan (GMP) Checklists for calendar year 2020 and 2021 have been approved for release by the CCTA Board as of last Wednesday and will go out to all the jurisdictions required to submit a GMP Checklist. They are due by June 30, 2023.

The GMP checklist is required for cities, towns, and county to get their 18% return-to-source funds from Measure J. Submission of GMP checklists, prompts the release of two fiscal-years 18% return to source funds for local street and road maintenance. Funds can also be spent on trails, sidewalks and on ADA curb cuts as well as potholes and can be used to pay for staff time attending meetings, such as TRANSPAC. Funds will be available after July 1st, for 2021-2022. Funds will be released around September 1st. Mr. Kelley encouraged cities to submit early rather than next June.

Mr. Kelly noted that the document is an online Microsoft form. Mr. Kelly also noted that there will be training available. There is an option for a TRANSPAC sponsored training meeting or one-on-one depending on the need.

## **8. DRAFT WORK PLAN AND BUDGET FOR FISCAL YEAR 2022/2023**

Mr. Todd introduced the item. Topics that were raised by the TRANSPAC Board were ongoing meetings between cities and the school districts, transportation improvements around school areas and prioritizing funding opportunities for school related improvements, such as Safe Routes to School and Complete Streets. Mr. Todd noted that there was a comment to include working with CCTA on the Innovate 680 project. Project delivery coordination between Central County cities was again raised as a strategy to deliver projects more efficiently. Continuing to prioritize electric vehicle charging infrastructure, including infrastructure for multifamily units is an ongoing concern also remains a priority. Finally, discussion on how local agencies are handling state housing requirements and what TRANSPAC can do to help individual agencies. These topics will be integrated into the workplan for approval next month. Mr. Todd pointed to the budget and noted that he would accept any questions or comments about the budget and/or Work plan.

## **9. COMMITTEE UPDATES**

Mr. Todd noted that TCC was canceled and asked for any updates from the CBPAC meeting. There were no comments.

**10. INFORMATION ITEMS**

No Comments.

**11. MEMBER COMMENTS.**

Mr. Todd commented that there is an CCTA OBAG 3 Workshop on June 7, 2022 at 10am via Zoom.

**12. ADJOURN/NEXT MEETING.**

The meeting adjourned at 11:07 A.M. The next regular meeting is scheduled for June 30, 2022 and will be from 9-12 to discuss the Action Plans.

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## **TRANSPAC TAC Meeting *STAFF REPORT***

**Meeting Date:** July 14, 2022

<b>Subject:</b>	<b>TRANSPAC COMMITTEE APPOINTMENTS – CCTA TCC APPOINTMENT FOR THE TERM ENDING MARCH 31, 2023</b>
<b>Summary of Issues</b>	TRANSPAC is represented on the Contra Costa Transportation Authority's (CCTA) Technical Coordinating Committee (TCC) by three (3) primary representatives and one (1) alternate. Staff were informed that Edric Kwan, the current TCC alternate from the City of Martinez, has vacated his position leaving a vacant alternate seat on the TCC for the term ending March 31, 2023.
<b>Recommendations</b>	Recommend a TRANSPAC representative to fill the vacant alternate position on the TCC for the term ending March 31, 2023.
<b>Financial Implications</b>	No TRANSPAC financial implications.
<b>Option(s)</b>	Defer the appointment.

### **Background**

TRANSPAC is represented on the CCTA Technical Coordinating Committee (TCC) by three staff representatives and one alternate from the planning and engineering disciplines. The TCC provides advice on technical matters that may come before the CCTA. Members also act as the primary technical liaison between the CCTA and the RTPCs. The TCC reviews and comments on items including project design, scope, and schedule; provide advice on the development of priority transportation improvement lists for submittal to the Metropolitan Transportation Commission (MTC) for projects proposed under certain federal transportation acts; reviews and comments on the Strategic Plan of the CCTA; reviews and comments on the CCTA Congestion Management Program; reviews RTPC Action Plans and the Countywide Transportation Plan; and reviews and comments on the CCTA Growth Management Plan Implementation Documents. The TCC may also form subcommittees for specific issues and meet approximately ten times a year.

Staff were recently informed that Edric Kwan has vacated his position with the City of Martinez and has therefore vacated the alternate position on the TCC. It is requested that the TAC recommend a TRANSPAC representative to fill the vacant alternate position on the TCC for the term ending March 31, 2022.

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## **TRANSPAC TAC Meeting *STAFF REPORT***

**Meeting Date:** July 14, 2022

<b>Subject:</b>	<b>CENTRAL COUNTY ACTION PLAN UPDATE – REGIONAL TRANSPORTATION OBJECTIVES AND PROPOSED ACTIONS</b>
<b>Summary of Issues</b>	The Central County Action Plan is intended to address the key transportation issues that Central County will face over the next long-range period (i.e. about twenty five years). Action plans for each subregion of the county were developed through the cooperative, multi-jurisdictional planning process included with Measure J. The Contra Costa Transportation Authority (CCTA) has secured the services of a team of consultants lead by Placeworks to assist TRANSPAC to update the Plan. At this meeting, the project team will facilitate discussion on proposed Regional Transportation Objectives (RTOs) and actions as well as review a series of Corridor Maps.
<b>Recommendation</b>	None – this item is for information only
<b>Attachment(s)</b>	A. Draft Corridor Maps B. Draft RTO Methodology Memorandum C. Draft RTO Analysis Memorandum D. Draft Actions Memorandum E. Outreach Summary F. 2017 Central County Action Plan <a href="#">[LINK]</a>

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### **Background**

The CCTA has initiated the RTPC Action Plan Updates in FY 2021/2022. The Central County Action Plan is intended to address the key transportation issues that Central County will face over the next long-range period (i.e. about twenty five years). The CCTA procured Placeworks consultant team to lead TRANSPAC in a discussion to evaluate aspects of the existing Central County Action Plan.

At the February 24, 2022 TRANSPAC TAC meeting, Placeworks staff solicited feedback on proposed changes to existing Multi-modal Transportation Objectives (MTSOs) for inclusion in updated Action Plans as Regional Transportation Objectives (RTOs). A working draft of Action Plan goals and Routes of Regional Significance (including regional transit routes and bicycle and pedestrian facilities) was also provided for committee input.

At the March 31, 2022 TAC meeting, Placeworks staff provided an update on revisions to the Routes of Regional Significance and maps based on prior committee feedback and collected feedback from the TAC on the revised maps.

At the April 28, 2022 CCTA and Placeworks staff clarified the Route of Regional Significance designation and subsequent impacts. This is related to interest of the TRANSPLAN RTPC to identify Marsh Creek Road as Route of Regional Significance.

At this meeting, the project team will provide a presentation and facilitate discussion on the proposed Regional Transportation Objectives (RTOs) and proposed actions for the Central County Action Plan update. A brief discussion will be held on a series of Corridor Maps. TRANSPAC TAC members are encouraged to submit their comments via email. Comments on the agenda materials will be accepted through Thursday, July 28<sup>th</sup>. A presentation on the Action Plan is scheduled for the TRANSPAC Board on August 4<sup>th</sup>.

## MEMORANDUM

DATE June 27, 2022  
TO RTPC TAC members  
FROM John Hoang and Matt Kelly, CCTA  
David Early and Torina Wilson, PlaceWorks  
SUBJECT Mapping of Routes of Regional Significance

An ongoing component of the Action Plan updates is revising the existing Routes of Regional Significance (RRS) to create new maps that show multi-modal RRS in Contra Costa County and the Alameda County portion of the Tri-Valley area.

RRS's are transportation facilities that meet certain qualifying criteria and were nominated by local staff. The maps will help CCTA itself, local jurisdictions, and the general public know which roadway, transit, and active transportation facilities are important to the region, and will serve as the basis for monitoring and maintenance by CCTA and the Regional Transportation Planning Committees (RTPCs).

After extensive discussions with RTPC Technical Advisory Committees (TACs) and various community stakeholders, CCTA and the PlaceWorks team have created a series of maps that will show Routes of Regional Significance both as a multimodal network of travel corridors, and for individual modes. These maps are described below.

### Overall Corridor Maps

PlaceWorks has created multimodal RRS "Corridor Maps" that show five different transportation modes (bus, rail, bike, freeway, and surface roadway) on a single map. The maps are intended to illustrate the multimodal nature of the transportation network, and to also show that multiple facilities exist in any given generalized transportation corridor.

There are six Corridor Maps included in this memorandum: one countywide and one for each RTPC subregion. These maps show the location, generalized routing, and modes of each corridor. They are not intended to be exact, but rather to show travel corridors of the multimodal transportation network, as dictated by our hilly geography and Bay coastline. There are several critical notes to these Corridor Maps:

- The Corridor Maps show desired future conditions, meaning some facilities and routes shown are planned but not yet constructed.
- The corridors shown on the maps are highly generalized to show multimodal conditions where they exist or may someday exist, and therefore include multiple facilities and routes within one corridor.

The draft Corridor Maps are attached to this memo. CCTA welcomes comment on them at future meetings, via email, or when the Action Plans themselves are published for review and adoption.

### Mode Specific Maps

In addition to the Corridor Maps, each Action Plan will also include three mode-specific maps that will be tied to specific Regional Transportation Objectives (RTOs). Readers will be able to refer to these maps for a detailed depiction of existing and desired facilities:

- **Vehicular Routes.** One or more maps in each Action Plan will show locations of key freeway and roadway segments and intersections that are to be monitored and maintained as part of the Action Plan process.
- **Low Stress Bike Network.** The Action Plans will contain one or more RTOs to move towards completion of CCTA's already-designated Low Stress Bike Network (LSBN) described in the 2018 Countywide Bicycle and Pedestrian Plan. Therefore, the Action Plans will include a map showing completed and yet-to-be-completed facilities on the LSBN.
- **Key Existing Transit Facilities.** Each Action Plan will include a map showing key transit routes that has been developed in conjunction with the TACs and local transit providers.

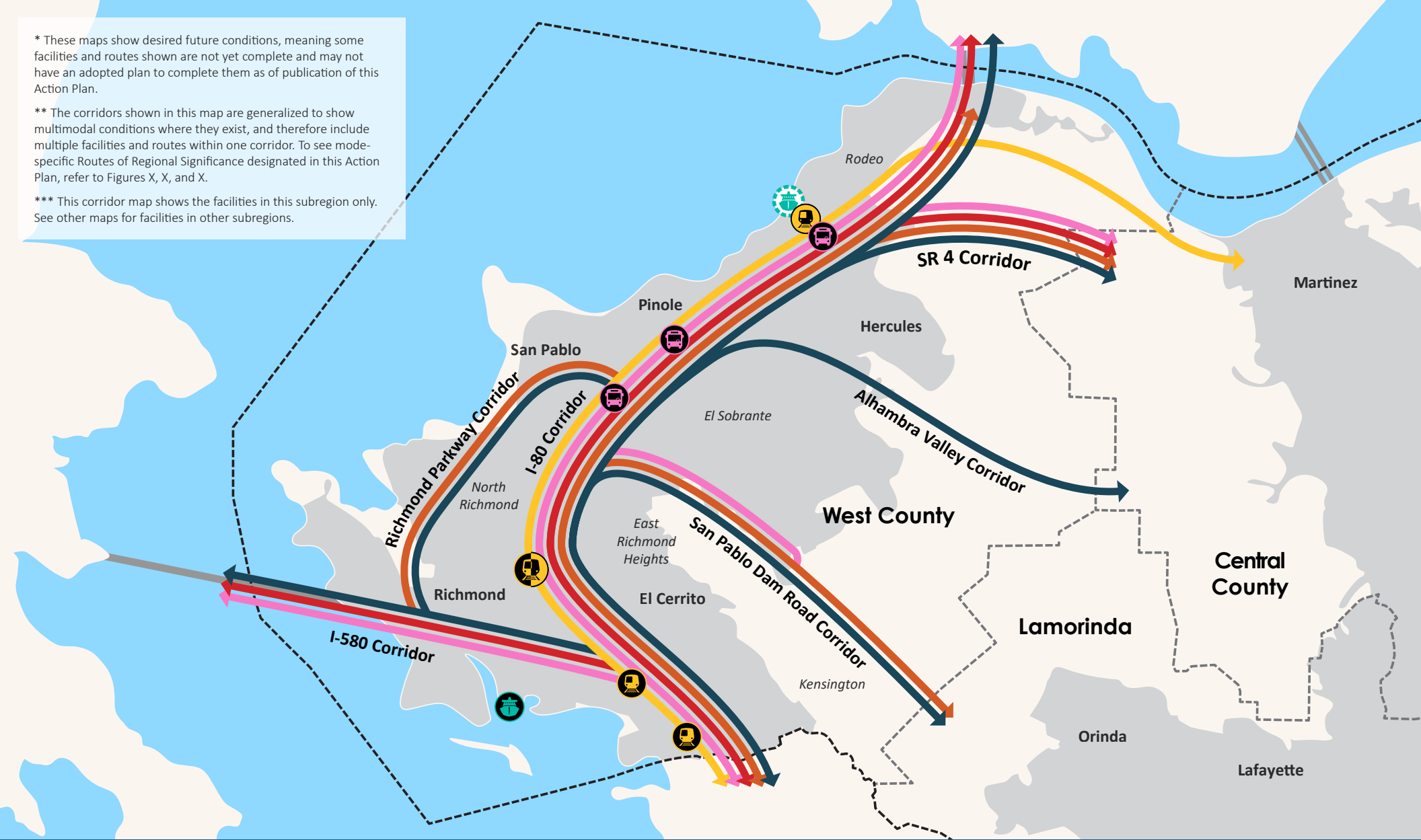


















\* These maps show desired future conditions, meaning some facilities and routes shown are not yet complete and may not have an adopted plan to complete them as of publication of this Action Plan.

\*\* The corridors shown in this map are generalized to show multimodal conditions where they exist, and therefore include multiple facilities and routes within one corridor. To see mode-specific Routes of Regional Significance designated in this Action Plan, refer to Figures X, X, and X.

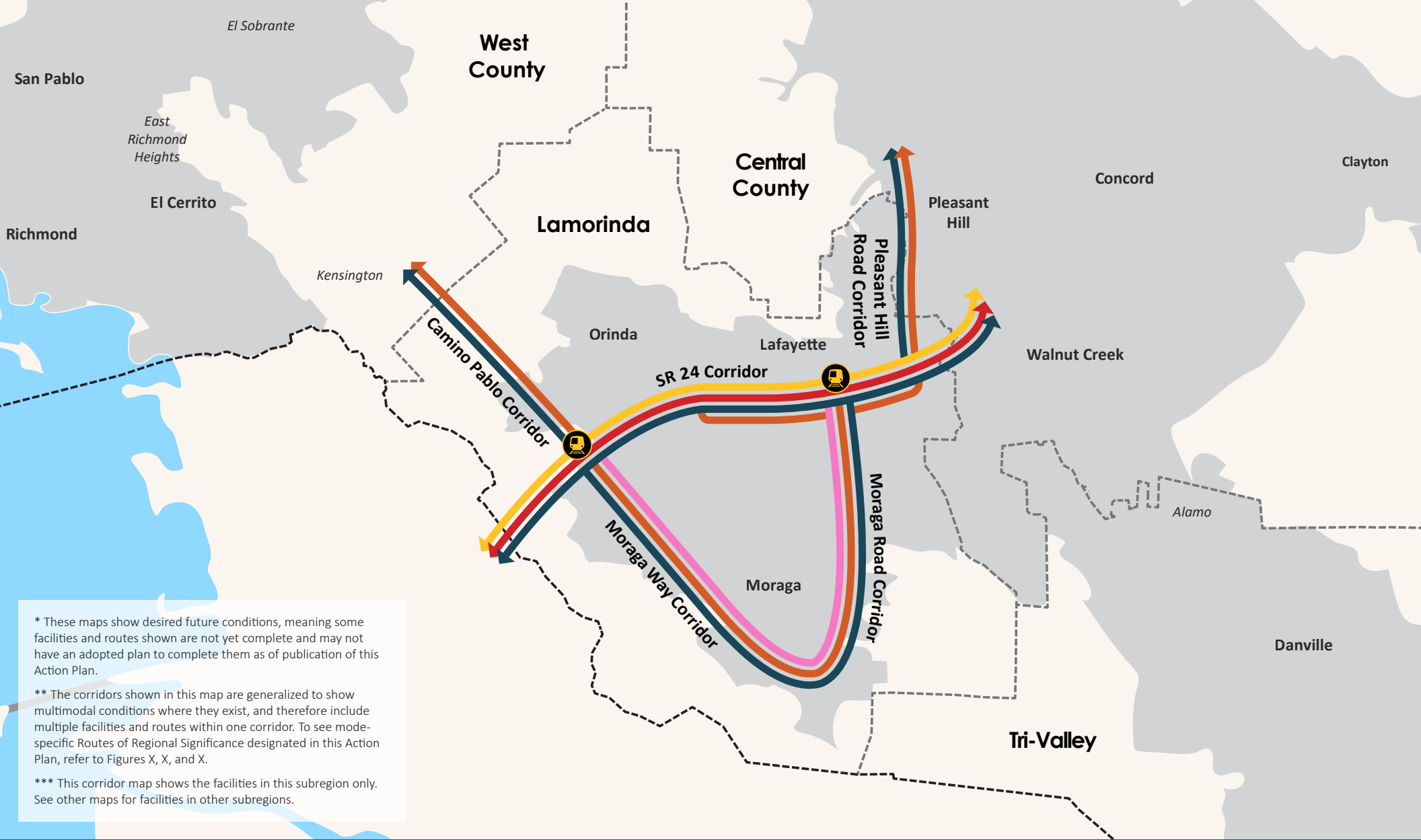
\*\*\* This corridor map shows the facilities in this subregion only. See other maps for facilities in other subregions.



West Contra Costa County Corridor Map

- |  |  |   |   |
|--|--|---|---|
|  Rail            |  Existing Ferry Terminal  |  Existing BART Station                     |  Urbanized Areas                                       |
|  Bus             |  Potential Ferry Terminal |  Existing Heavy Rail Station               |  Regional Transportation Planning Committee Boundaries |
|  Freeway         |  Transit Hub              |  Existing BART/Heavy Rail Transfer Station |  County Boundary                                       |
|  Surface Streets |  |   |   |
|  Bike/Pedestrian |  |   |   |





## Lamorinda Area Corridor Map

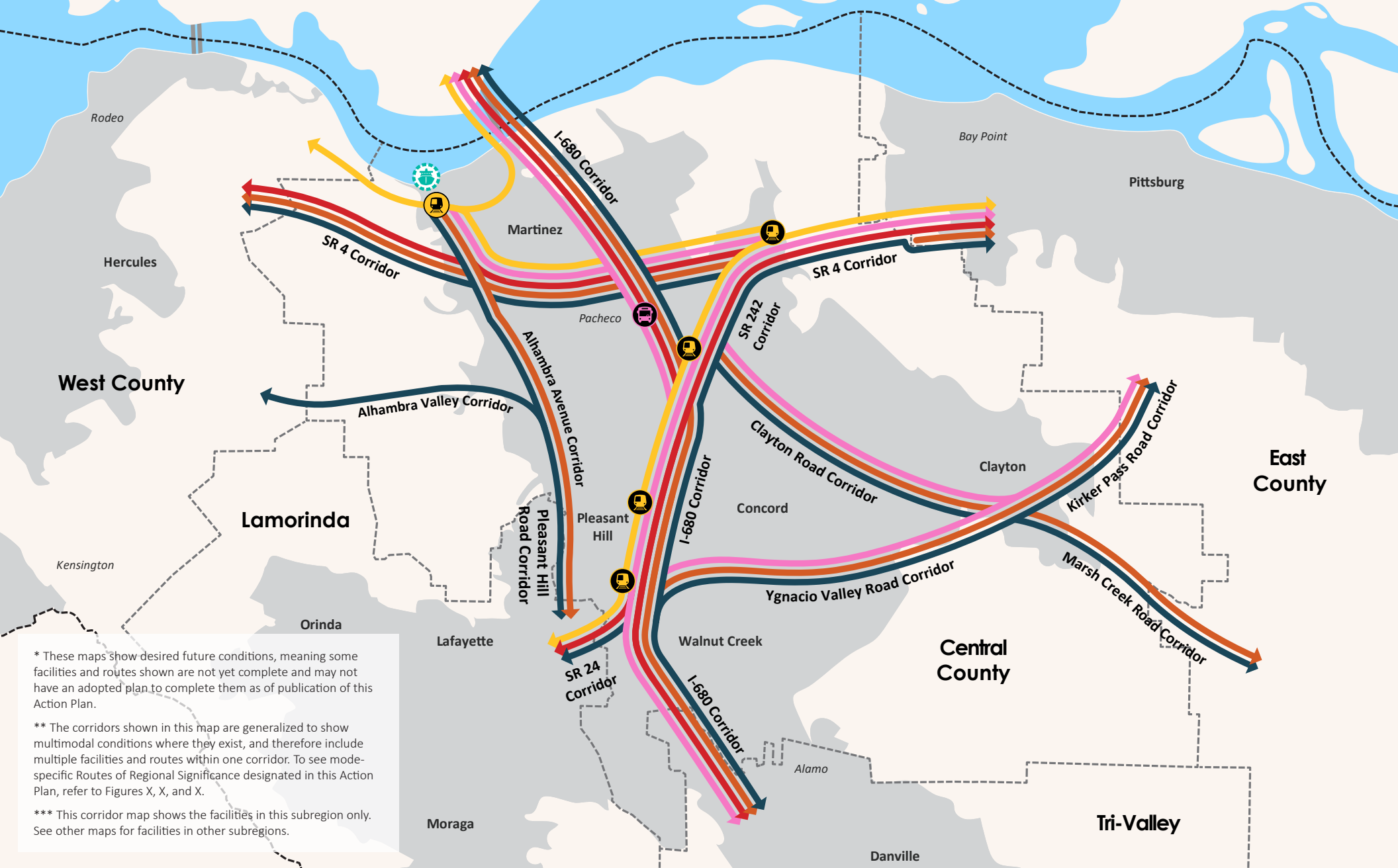
- Rail
- Bus
- Freeway
- Surface Streets
- Bike/Pedestrian



Existing BART Station

- Urbanized Areas
- Regional Transportation Planning Committee Boundaries
- County Boundary

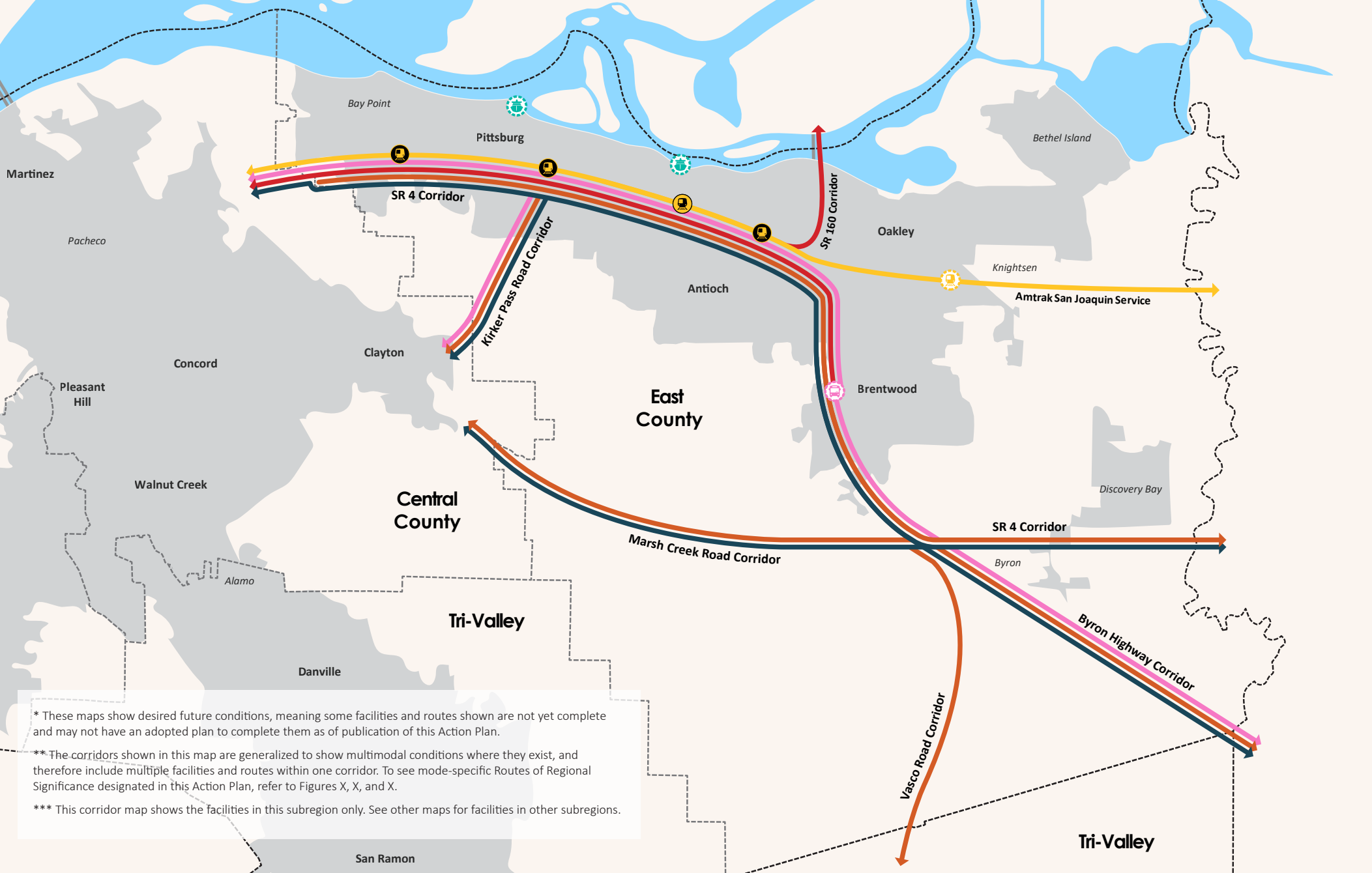




# Central Contra Costa County Corridor Map



Rail	Potential Ferry Terminal	Existing BART Station	Urbanized Areas
Bus	Transit Hub	Existing Heavy Rail Station	Regional Transportation Planning Committee Boundaries
Freeway			County Boundary
Surface Streets			
Bike/Pedestrian			



## East Contra Costa County Corridor Map

- Rail
- Bus
- Freeway
- Surface Streets
- Bike/Pedestrian



Existing BART Station



Existing Heavy Rail Station



Future Heavy Rail Station



Potential Ferry Terminal



Future Transit Hub



Urbanized Areas

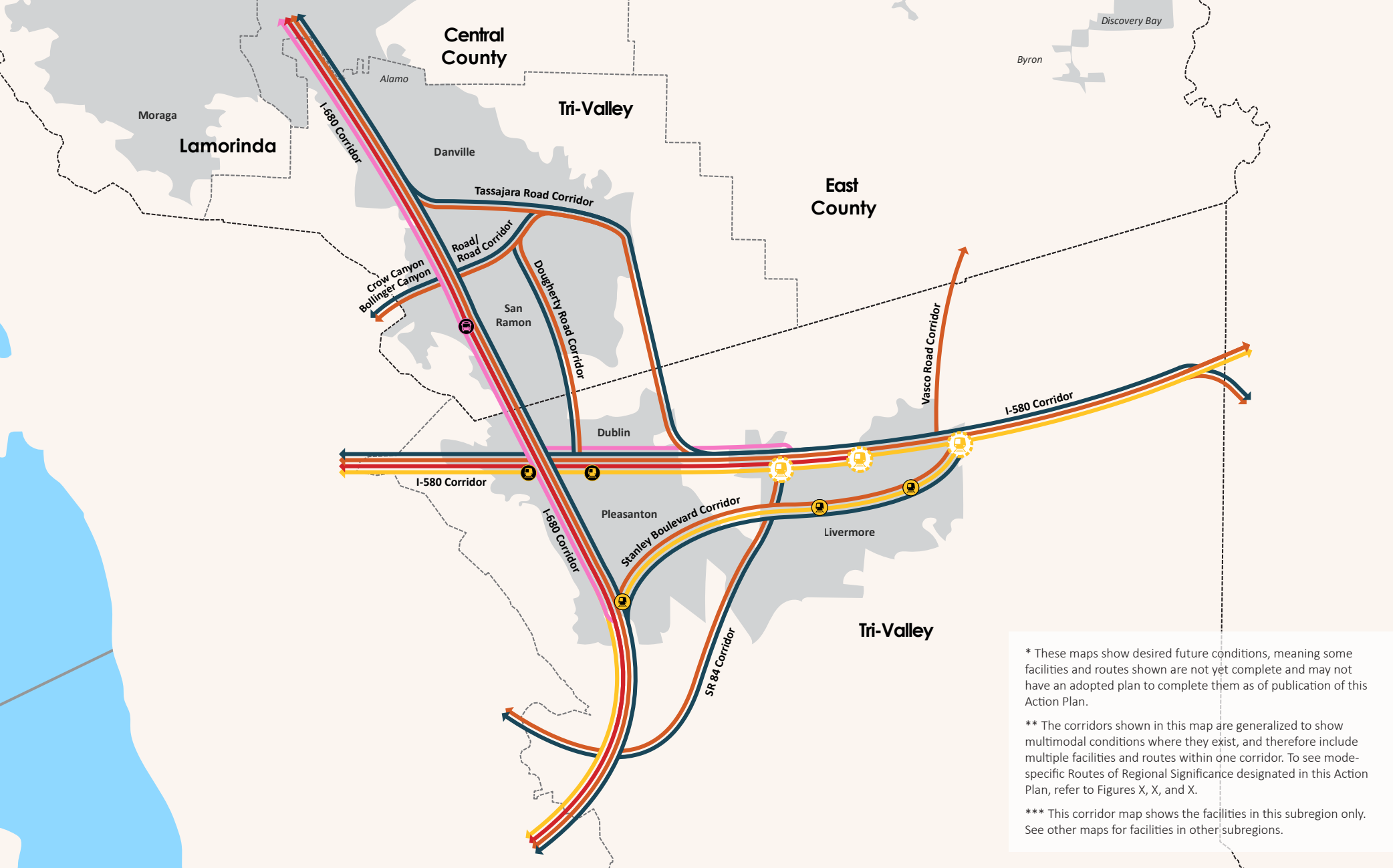


Regional Transportation Planning Committee Boundaries



County Boundary





## Tri Valley Area Corridor Map

- Rail
- Bus
- Freeway
- Surface Streets
- Bike/Pedestrian



Existing BART Station



Transit Hub



Existing Heavy Rail Station



Future Heavy Rail Station

Urbanized Areas

Regional Transportation Planning Committee Boundaries

County Boundary





## MEMORANDUM

DATE July 7, 2022

TO John Hoang and Matt Kelly, CCTA

FROM David Early and Torina Wilson, PlaceWorks  
Erin Vaca, DKS Associates  
Julie Morgan and Terence Zhao, Fehr & Peers

SUBJECT Regional Transportation Objectives Methodology Memorandum

This memorandum outlines the preliminary Regional Transportation Objectives (RTOs) and the methodology behind them that PlaceWorks and its technical consultants (DKS and Fehr & Peers) plan to model in preparation of the Contra Costa Transportation Authority (CCTA) Action Plan Updates. These RTOs cover all Action Plan and Countywide Transportation Plan (CTP) topics and will be used to evaluate success in achieving the goals of each Action Plan. These RTOs could also be carried forward into the CTP to define the outcomes of that plan.

Historically, each Regional Transportation Planning Committee (RTPC) has had latitude to select a set of Multimodal Transportation Service Objectives (MTSOs) of its own choosing, and the various Action Plans have had differing MTSOs. In this round of Action Plan preparation, each RTPC continues to have the authority to craft its own RTOs. However, PlaceWorks is working with CCTA and the RTPCs to ensure that the new RTOs are as consistent as possible across the Action Plans to ensure they are largely internally consistent and to ultimately be combined and consolidated into the future CTP. At this time, PlaceWorks anticipates only minor variations among the RTOs adopted by each RTPC.

The preliminary list of RTOs, and their relevant chapter topics, are:

- Freeway RTOs
  - Peak-hour delay index on select freeway segments.
  - Buffer index on select freeway segments.
- Surface Roadway RTOs
  - Peak-hour Level of Service (LOS) at selected intersections in urban areas.
  - Peak-hour segment LOS on selected two-lane roadways outside of urban areas.
- Transit RTOs
  - Mode share of transit trips.
  - Ratio of travel time for transit as compared to automobile travel time for select trips.
- Bicycle and Pedestrian RTOs
  - Mode share of bicycling and walking.
  - Proportion of the countywide low-stress bike network that has been completed.

- Number of locations where the low-stress bike network makes an unprotected crossing over a heavily traveled vehicle route.
- Safety RTOs
  - Number of Killed or Seriously Injured (KSI) collisions.
  - Number of bike- or pedestrian-involved collisions.
  - Number of bike- or pedestrian-involved collisions within 500 feet of a school.
- Equity RTOs
  - Proportion of KSI and bike- or pedestrian-involved collisions that occur in Equity Priority Communities (EPCs), compared to the county as a whole.
  - Share of county jobs that can be reached by EPC residents within a 30-minute drive, as compared to county residents as a whole.
  - Share of county jobs that can be reached by EPC residents within a 45-minute transit trip, as compared to county residents as a whole.
  - Number of people in EPCs who are not within a quarter-mile distance of a transit stop served by high-quality transit.
- Climate Change RTOs
  - Single-occupant vehicle mode share.
  - Vehicle miles traveled (VMT) per capita.
  - Transportation greenhouse gas (GHG) emissions per capita.
  - Zero-emission vehicle ownership in the subregion.
- Technology RTOs
  - Level of signal interconnection.

This memo ends with a discussion of several potential RTOs that were explored but are not recommended to move forward. They are:

- Wait time for paratransit
- Speed reduction
- Use of shared (pooled) Transportation Network Companies (TNCs)
- Number of shared scooters, shared bicycles, and public autonomous shared vehicles that are deployed
- Pavement condition on the countywide low-stress bike network
- Average commute time for low-income residents as compared to county residents as a whole
- Miles of Routes of Regional Significance (RRS) estimated to be vulnerable to sea-level rise.
- Percentage of vulnerable RRS for which remediation plans or a mitigation approach have been created.



The remainder of this memo explains the methodologies that the PlaceWorks team will use to measure each of these RTOs. These same methodologies will be documented in a revision to CCTA's Technical Procedures and will be available for ongoing assessment of attainment of the RTOs. An explanation of RTOs that were considered and not recommended to move forward are also included.

The modelling work described in this memo will be completed by DKS using the CCTA Countywide Travel Demand Model. This four-step, trip-based model was most recently revalidated to a 2018 base year. The standard CCTA travel demand model incorporates land use (population and employment) forecasts for 2020, 2030, and 2040 and can interpolate these inputs for interim years. Because the standard model cannot produce scenarios beyond 2040, a special version of the model script will be developed for the Action Plan analyses. In addition to accommodating a year 2050 horizon, the revised version will incorporate enhanced traffic assignment procedures for express lanes.

For the Action Plan updates, land use inputs for the horizon year of 2050 will be developed based on the Metropolitan Transportation Commission (MTC) Plan Bay Area 2050 projections for Contra Costa County. The transportation network assumed the Baseline 2050 scenario will be derived from the CCTA Transportation Expenditure Plan (TEP) No Build scenario, to reflect only already programmed improvements. In addition to the TEP projects, some additional express lanes will be assumed on Interstate (I-) 680 and the extension of the Bay Area Rapid Transit (BART) service to Livermore will be removed.

For existing conditions, the project team will use 2018 data to reflect pre-pandemic conditions, as it is not possible to predict how traffic conditions might stabilize as the post-pandemic "new normal" continues to evolve.

## **Freeways RTOs**

### **PEAK-HOUR DELAY INDEX ON SELECT FREEWAY SEGMENTS**

The delay index is a measure of delay experienced by motorists on a roadway segment during a peak commute hour in a single direction. The delay index is calculated by measuring the time it takes to travel a segment of road during average peak-period congested conditions and comparing it to the time it takes to travel the same segment during uncongested, free-flow conditions. A delay index may also be calculated as the ratio of congested speed to uncongested speed, given that the distance is fixed on any given corridor.

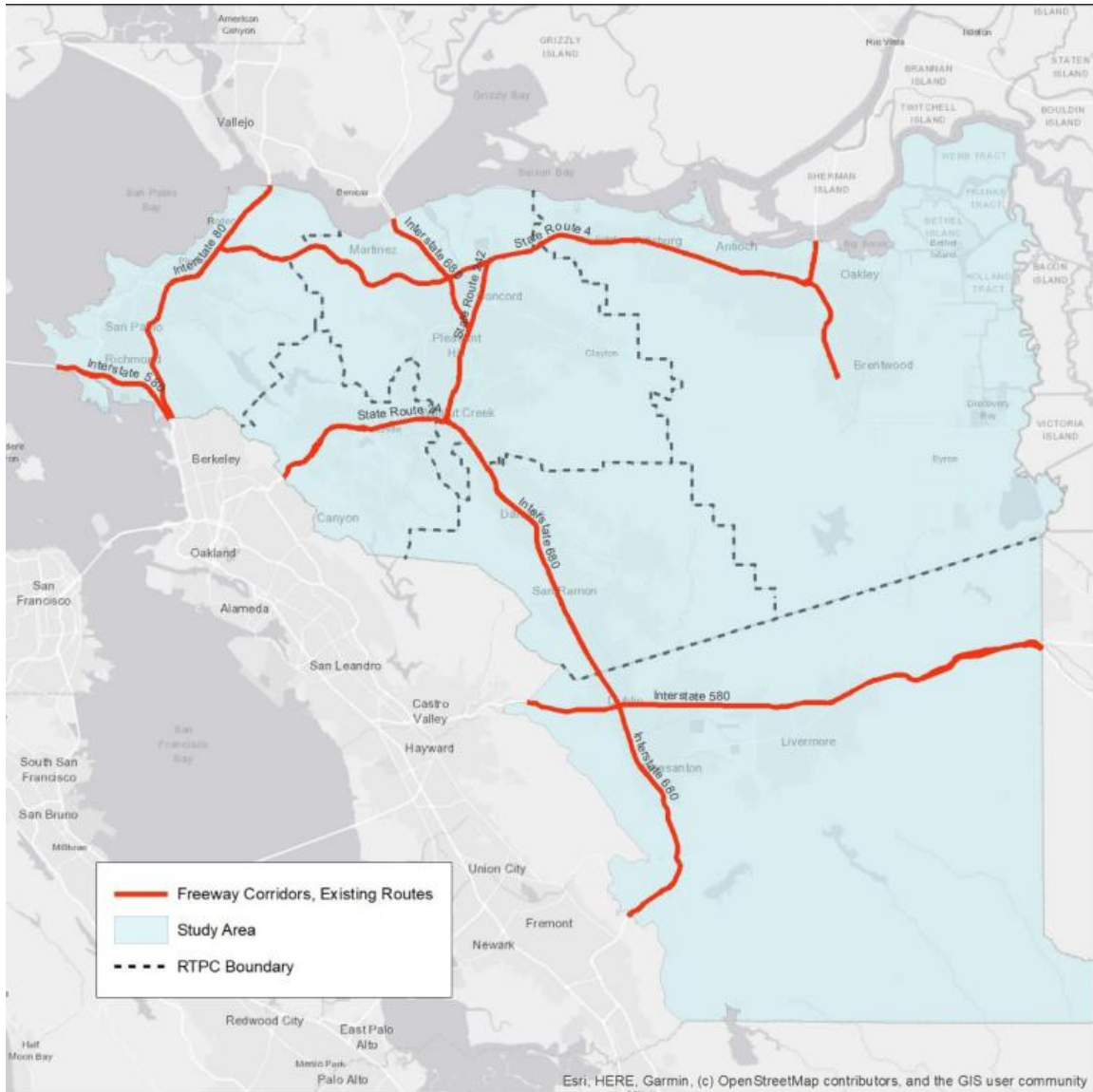
All previous CCTA Action Plans used delay index as MTSOs for freeway facilities. Table 1 lists the specific facilities to be evaluated with this metric for the current Action Plan updates; these segments are mapped in Figure 1. The performance targets used in the previous round of Action Plans are provided for reference, although these will be revisited as part of the current planning process.

**TABLE 1. FREEWAY FACILITIES AND PREVIOUS PERFORMANCE TARGETS**

<b>RTPC</b>	<b>Facility</b>	<b>From</b>	<b>To</b>	<b>Previous Performance Target</b>
WCCTAC (West County)	Interstate 80	Carquinez Bridge	Solano County Line	DI*≤3.0
	Interstate 580	I-80	Marin County Line	DI≤2.5
	State Route 4	I-80	Cummings Skyway	DI≤2.0
TRANSPAC (Central County)	Interstate 680	Benicia Martinez Bridge	I-680/SR-24 Interchange	DI≤ 4.0 (I-680)
	Interstate 680	I-680/SR-24 Interchange	Livorna Road	DI≤ 4.0 (I-680)
	State Route 242	SR-4/WO Port Chicago Highway	I-680/SO Willow Pass Road	DI≤ 3.0 (SR-242)
	State Route 4	Cummings Skyway	Willow Pass Road/Evora Road	DI≤ 5.0 (SR-4)
TRANSPLAN (East County)	State Route 4	Willow Pass Grade	Balfour Road	DI≤2.5
	State Route 160	SR-4	Sacramento County Line	DI≤2.5
Lamorinda (Southwest County)	State Route 24	Caldecott Tunnel	I-680	DI≤2.0
	Interstate 680	Livorna Road	I-580	DI≤2.0
Tri-Valley (Southwest County)	Interstate 680	I-580	SR-80	DI≤2.0
	Interstate 580	Eden Canyon Road	I-680	DI≤2.0
	Interstate 580	I-680	N Midway Road	DI≤2.0

\* DI = Delay index  
Source: RTPC Action Plans.

FIGURE 1. FREEWAY FACILITIES



The delay index (and the related average speed) will be calculated for both the 2019 Base Year and 2050 Baseline scenarios, pivoting from observed data. The source of observed data for this RTO will be speed data from INRIX Roadway Analytics, which was also used in the 2017 MTSO monitoring<sup>1</sup> and 2021 Congestion Management Plan (CMP) monitoring.<sup>2</sup> DKS will first calculate observed 2019 speed with INRIX data using April 2019 as a baseline. DKS will pull one-minute interval data that includes travel time, use a Python program to excerpt defined study areas from Table 1 and Figure 1, and ultimately filter holidays, defined peak hours, defined days of the week, and data points affected by construction and special events, or with low INRIX quality scores. Delay indices will be calculated by estimating the additional congested travel time that is expected to occur on the link using the CCTA Countywide Travel Demand Model during peak hours. Components of this work include:

- Average congested speed for 2019 will be speed data derived from INRIX Roadway Analytics, which was also used in the 2017 MTSO monitoring and 2021 CMP monitoring.
- For 2050, DKS will take average congested speed data from the model.
- Free-flow speed will be the posted speed limit.
- The delay indices will be calculated by dividing the free flow speed by the observed or modeled average congested speed.

These calculations will yield existing and future delay index ratings for the segments of freeways listed in Table 1. Existing delay index ratings will be compared to adopted MTSO delay index thresholds and the project team will suggest any revisions to the existing delay index thresholds for consideration by the RTPCs.

## **BUFFER INDEX ON SELECT FREEWAY SEGMENTS**

RTPC Technical Advisory Committee (TAC) members expressed interest in tracking the reliability of freeway segments. The project team recommends moving forward with the “buffer index” to measure reliability because it will rely on the same data pulled for the delay index RTO. The buffer index represents the extra buffer time (or time cushion) that most travelers add to their average travel time when planning trips to ensure on-time arrival. This extra time is added to account for any unexpected delay. The buffer index is expressed as a percentage and its value increases as reliability gets worse. For example, a buffer index of 40 percent means that, for a 20-minute average travel time, a traveler should budget an additional 8 minutes (20 minutes × 40 percent = 8 minutes) to ensure on-time arrival most of the time. In this example, the 8 extra minutes is called the buffer time. The buffer index is computed as the difference between the 95th percentile travel time over a corridor and average travel time, divided by the average travel time.

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<sup>1</sup> Contra Costa Sub-regional Action Plans for the Routes of Regional Significance Multimodal Traffic Service Objectives (MTSO) Draft 2017 Monitoring Report (March 2018).

<sup>2</sup> 2021 Update of the Contra Costa Congestion Management Program (Draft Final Report).

The CCTA Countywide Travel Demand Model can output only average congested speeds and not 95th percentile speeds, so the buffer index will be a monitoring metric, compiled for existing and observed conditions but not forecasted. The buffer index for each freeway corridor listed in Table 1 will be calculated from the same INRIX data used to calculate the delay index.

## Surface Roadway RTOs

### PEAK-HOUR LOS AT SELECTED INTERSECTIONS IN URBAN AREAS

Peak-hour intersection LOS will be calculated for specified signalized intersections along the defined RRS in urban areas. Signalized LOS is a delay-based qualitative measure of traffic conditions. LOS is expressed in ratings from “A” through “F,” with “A” meaning that all traffic clears the intersection in every cycle and “F” meaning that drivers must wait through multiple cycles to clear the intersection.

Signalized intersection LOS is determined based on intersection turning movement counts (also called turning/traffic volumes), intersection geometry, and signal timing data. The CCTA Technical Procedures specify that methods documented in the latest edition of the Highway Capacity Manual be used to measure signalized intersection LOS.<sup>3</sup> The relationship between average delay and LOS is shown in Table 2.

TABLE 2. INTERSECTION LOS DEFINITIONS

Delay (Second/Vehicle)	Level of Service
≤10	A
> 10-20	B
> 20-35	C
> 35-55	D
> 55-80	E
> 80	F

Source: Highway Capacity Manual, 6<sup>th</sup> Edition, Exhibit 19-8.

The facilities evaluated using signalized intersection LOS or other intersection operational metrics in the previous round of Action Plans are listed in Table 3. The performance of these Action Plan intersections and some additional locations was monitored in 2017. In addition, a subset of these intersections is regularly monitored as part of the Congestion Management Program, which was most recently conducted in 2021. For all previously monitored intersections, intersection operational models have been built, and peak hour turning movement counts were collected to represent 2013, 2017, or 2021 conditions. Table 4 summarizes the available data for intersection analysis.

<sup>3</sup> The Highway Capacity Manual 6<sup>th</sup> Edition was published by the Transportation Research Board in January 2022.

Since the previous rounds of Action Plans and monitoring, some previously rural highway segments have been developed into signalized arterial corridors and some roadways have been newly designated as RRS, potentially adding numerous additional signalized intersection locations to be analyzed. A small number of previously monitored intersections appear to fall on roadway facilities that are no longer proposed as RRS for this round of Action Plan updates.

For this analysis of 2019 and 2050 baseline conditions, the project team proposes to report on only key locations, such as at the intersections of two RRS facilities, freeway ramp terminals, and intersections of local concern, as depicted in Figure 2 through Figure 6. In total, 355 intersections will be analyzed for 2019 and 2050.

**TABLE 3. SIGNALIZED INTERSECTION LEVEL OF SERVICE – PREVIOUS ACTION PLANS**

RTPC	Arterial Facility	Previously Used Performance Target and Number of Intersections
WCCTAC (West County)	<ul style="list-style-type: none"> <li>• Appian Way</li> <li>• Carlson Boulevard</li> <li>• Central Avenue</li> <li>• Cummings Skyway</li> <li>• Interstate 580 (I-580)</li> <li>• Richmond Parkway</li> <li>• San Pablo Avenue</li> <li>• San Pablo Dam Road</li> <li>• State Route 4 (SR-4)</li> <li>• 23rd Street</li> </ul>	LOS D on all intersections except for San Pablo Avenue and San Pablo Dam Road where LOS E is acceptable.
TRANSPAC (Central County)	<ul style="list-style-type: none"> <li>• Alhambra Avenue</li> <li>• Bailey Road</li> <li>• Clayton Road</li> <li>• Contra Costa Boulevard</li> <li>• Geary Road</li> <li>• North Main Street</li> <li>• Pacheco Boulevard</li> <li>• Pleasant Hill Road</li> <li>• Taylor Boulevard</li> <li>• Treat Boulevard</li> <li>• Ygnacio Valley Road/Kirker Pass Road</li> </ul>	LOS F on all intersections. <sup>a</sup>
TRANSPAN (East County)	<ul style="list-style-type: none"> <li>• Auto Center Drive</li> <li>• Bailey Road</li> <li>• Balfour Road</li> <li>• Brentwood Boulevard/Main Street</li> <li>• Buchanan Road</li> <li>• Deer Valley Road (improved portion)</li> <li>• East 10th Street/Harbor Street (in Pittsburg)</li> <li>• East 18th Street</li> <li>• Fairview Avenue</li> <li>• Hillcrest Avenue</li> <li>• James Donlon Boulevard (including future extension)</li> <li>• Laurel Road</li> </ul>	LOS D on all intersections except for Bailey Road where LOS E is acceptable.

**TABLE 3. SIGNALIZED INTERSECTION LEVEL OF SERVICE – PREVIOUS ACTION PLANS**

RTPC	Arterial Facility	Previously Used Performance Target and Number of Intersections
	<ul style="list-style-type: none"> <li>Leland Road (both West and East)/Delta Fair Boulevard</li> <li>Lone Tree Way/A Street</li> <li>Oak Street/Walnut Boulevard (within Brentwood)</li> <li>Ninth Street/Tenth Street (in Antioch)</li> <li>Pittsburg-Antioch Highway</li> <li>Railroad Avenue/Kirker Pass Road</li> <li>Sand Creek Road/Dallas Ranch Road</li> <li>Somersville Road</li> <li>Wilbur Avenue</li> <li>Willow Pass Road</li> </ul>	
Lamorinda (LPMC and Southwest County)	<ul style="list-style-type: none"> <li>Camino Pablo/San Pablo Dam Road</li> <li>Pleasant Hill Road</li> </ul>	Side Street Delay, no LOS rating.
Tri-Valley (TVTC and Southwest County)	<ul style="list-style-type: none"> <li>Alcosta Boulevard</li> <li>Bernal Avenue</li> <li>Bollinger Canyon Road</li> <li>Camino Tassajara</li> <li>Danville Boulevard</li> <li>Dougherty Road</li> <li>Dublin Boulevard</li> <li>Fallon Road</li> <li>First Street/Railroad Avenue</li> <li>Hopyard Road</li> <li>Iron Horse Trail</li> <li>Jack London Boulevard</li> <li>San Ramon Road</li> <li>San Ramon Valley Boulevard</li> <li>Santa Rita Road</li> <li>Stanley Boulevard</li> <li>Stoneridge Drive</li> <li>Sunol Boulevard</li> <li>Sycamore Valley Road</li> <li>Tassajara Road</li> <li>Vasco Road</li> </ul>	LOS E on all intersections except no standard for intersections in downtown areas and those exempt by General Plans.

a. Other TRANSPAC intersection performance targets are defined by volume to capacity (V/C) ratios or the number of cycles.

Source: RTPC Action Plans

**TABLE 4. SIGNALIZED INTERSECTIONS AND AVAILABLE INTERSECTION DATA**

Region	Previous Action Plans	2017 Monitoring	2021 CMP	Total Signalized Intersections on RRS	Total Proposed for Existing and Baseline Scenarios
West County	55	30	29	174	84
Central County	41	41	9	233	83
East County	151	29		301	93
Lamorinda	13	12	1	47	12
Tri-Valley	39	51	22	163	83
<b>Total</b>	<b>299</b>	<b>163</b>	<b>61</b>	<b>918</b>	<b>355</b>



FIGURE 2. ARTERIAL INTERSECTIONS AND ROADWAY RRS (WEST COUNTY)

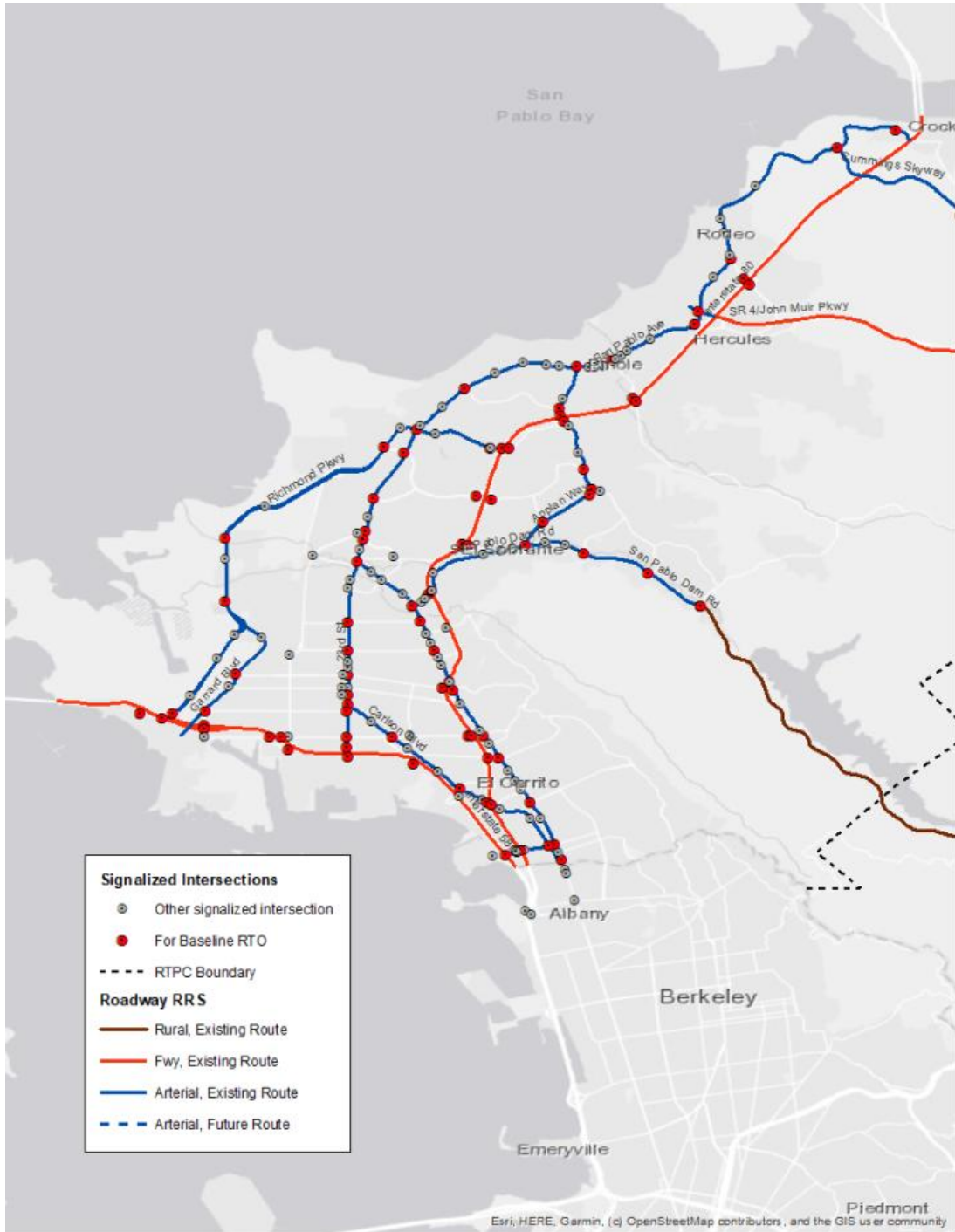


FIGURE 3. ARTERIAL INTERSECTIONS AND ROADWAY RRS (CENTRAL COUNTY)

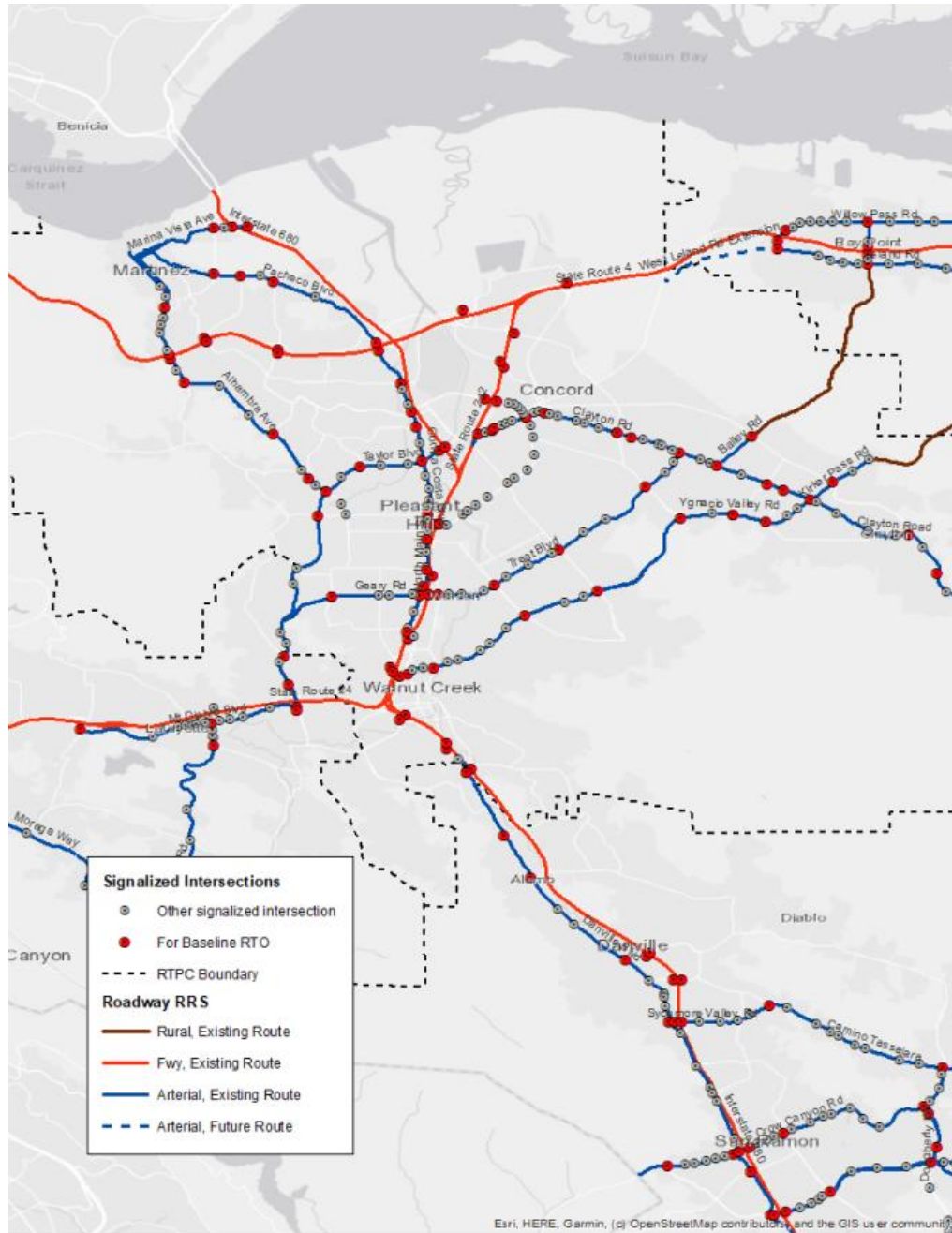


FIGURE 4. ARTERIAL INTERSECTIONS AND ROADWAY RRS (EAST COUNTY)

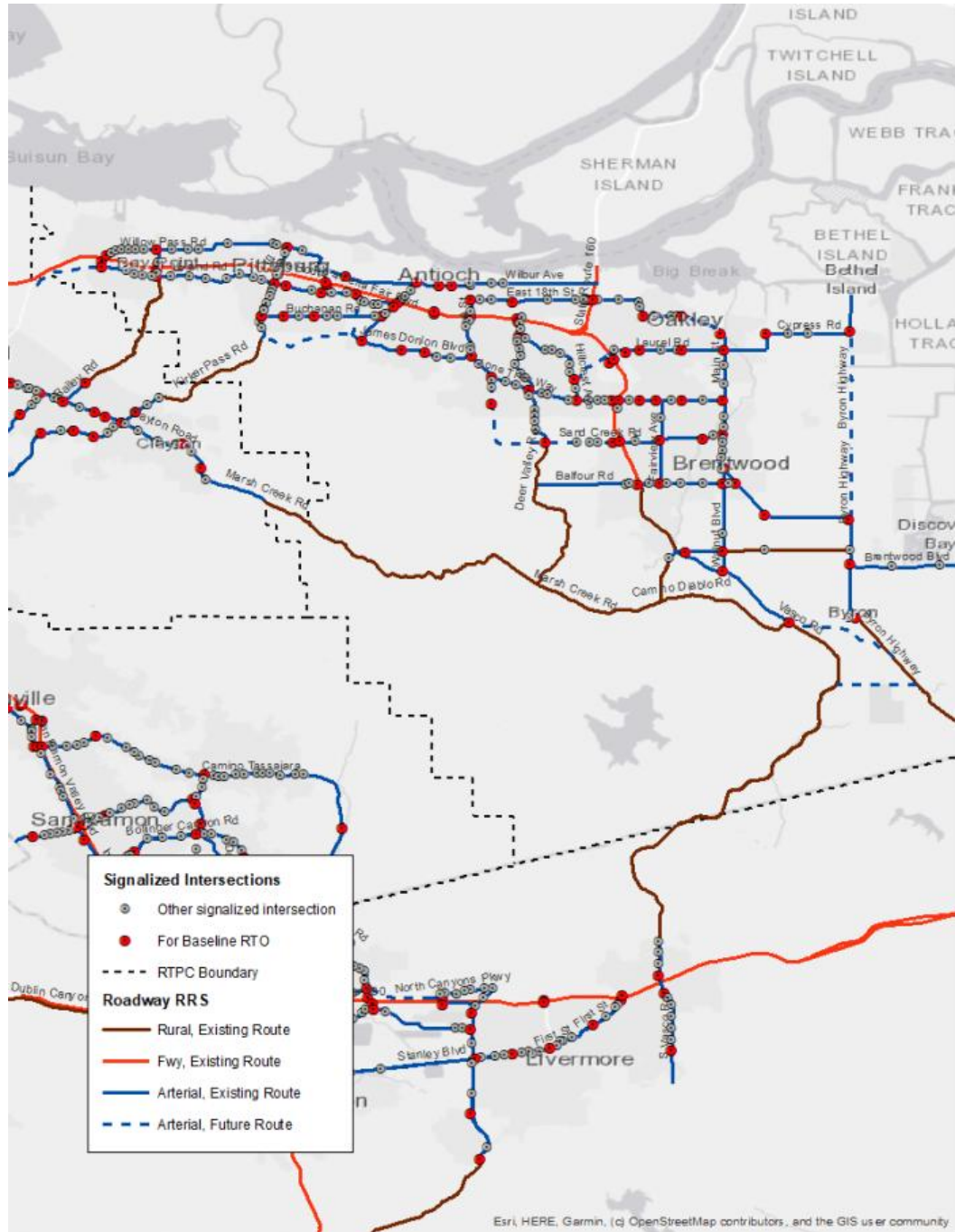


FIGURE 5. ARTERIAL INTERSECTIONS AND ROADWAY RRS (SOUTHWEST COUNTY – LAMORINDA)

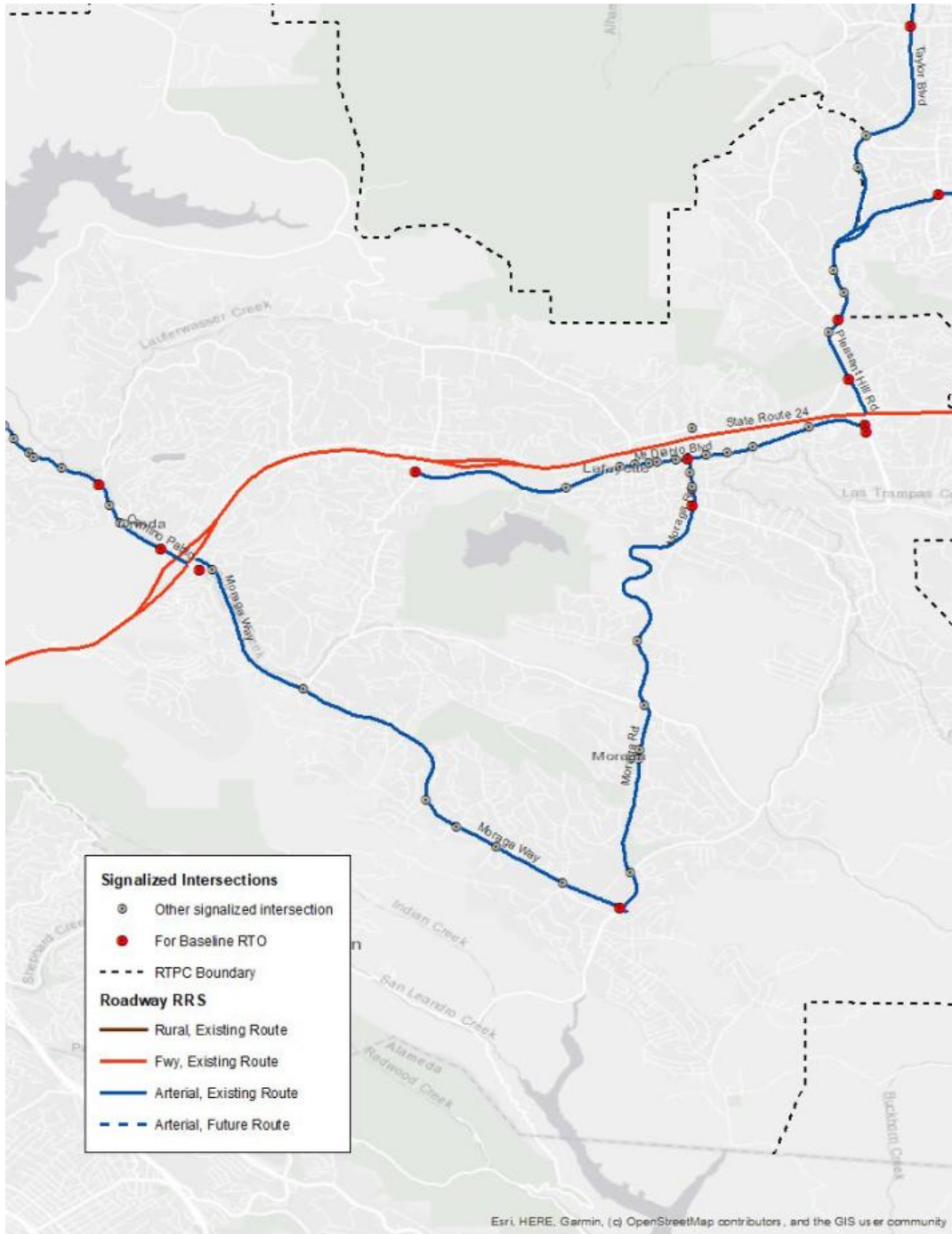
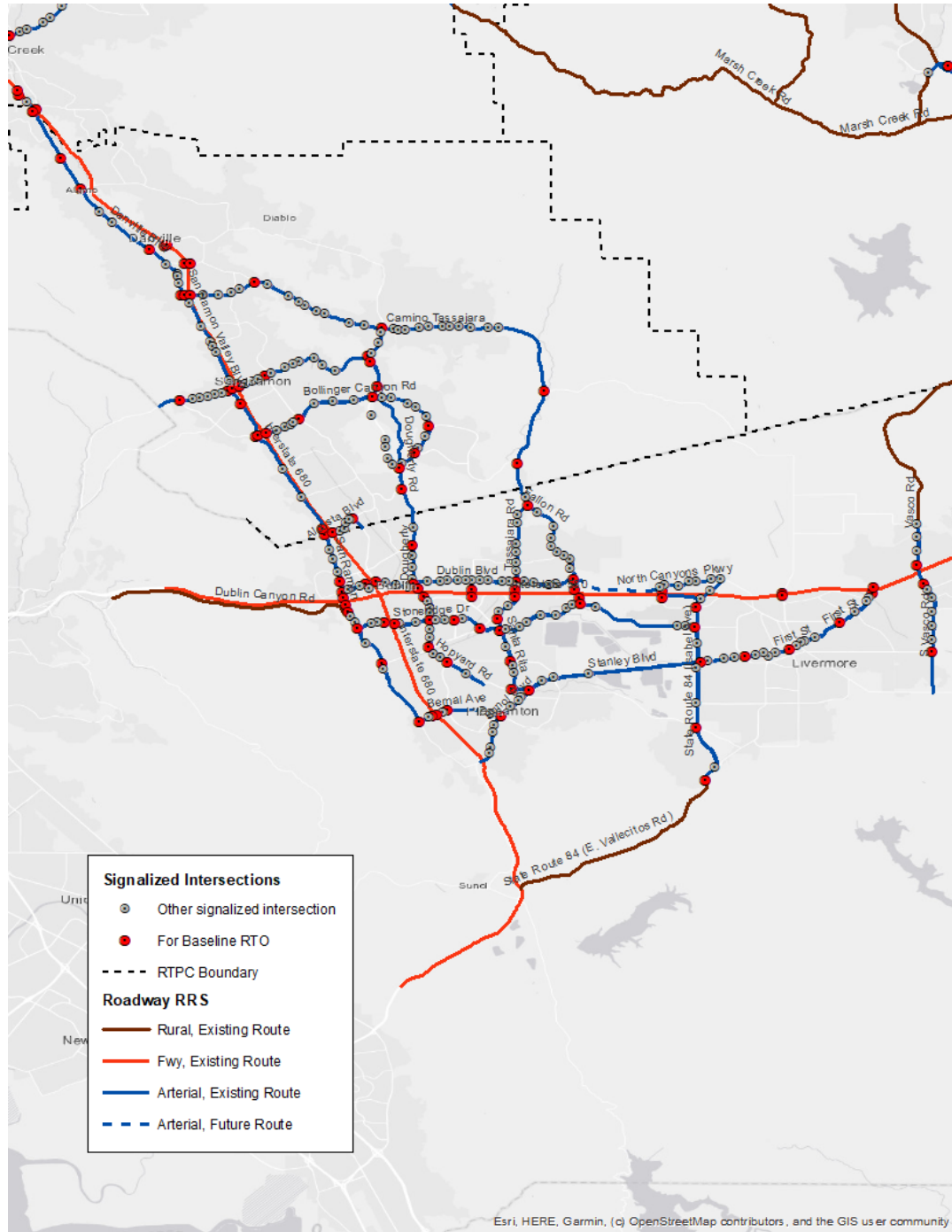




FIGURE 6. ARTERIAL INTERSECTIONS AND ROADWAY RRS (SOUTHWEST COUNTY – TRI-VALLEY)



The methodology for calculating signalized intersection LOS will follow standard practice.

Observed counts will largely be obtained from those collected for the 2017 MTSO monitoring and the 2021 CMP monitoring. For any additional intersections added to the list for this round of Action Plans, historical turning volume estimates will be obtained from the Streetlight data subscription maintained by CCTA.

Peak-hour traffic volumes for the base year and future year will be estimated using the Furness process specified in the CCTA Technical Procedures and summarized here. This process develops intersection turning movement forecasts using observed counts and model outputs, as follows:

- Calculate the Model Correction Volume for each network link (i.e., the difference between the projected peak-hour volume for the validation (base year) run and actual peak-hour traffic volumes).
- Determine the forecast peak-hour approach and departure volumes for each study intersection by adding the Model Correction Volume to the model output.
- Develop intersection turning movement volumes that are consistent with the approach and departure volumes by balancing projected intersection turning movements with actual turning movement volumes using an iterative process.
- Check reasonableness by comparing adjusted intersection turning movement volumes with both the existing count data and the raw model output.
- Review volume adjustments that do not appear reasonable and, if appropriate, revise adjustments.

Prior to modeling the LOS that will result from the calculated volumes, DKS will double-check intersection geometry using Google Earth to ensure that the modeling reflects current intersection configurations. DKS will reach out to the local jurisdictions to request timing plans for any newly added intersection locations. In the absence of local timing plans, optimized timing settings will be applied.

Once the estimated 2019 Base Year and 2050 Baseline turning volumes, intersection geometries, and signal timings are in place, signalized intersection LOS will be assessed by implementing the latest Highway Capacity Model (HCM) methods in the Trafficware Synchro (“Synchro”) software package. The latest HCM 7th Edition was released in February 2022 and is not yet implemented in Synchro, so Synchro reports signalized intersection delay and LOS based on the HCM 6th Edition (there is no significant difference for the analysis of signalized intersections).

The outcome of this modeling will yield a list of all intersections and their baseline 2019 and projected 2050 LOS rating. These ratings will be compared to the existing Action Plan MTSOs, if applicable, and DKS will assist the RTPCs in revising the MTSOs to create new RTOs as appropriate.

There may be a data gap for turning movement counts for newly identified intersections in Alameda County. Since the CCTA Streetlight subscription will not provide data for these locations, local jurisdictions will be contacted to provide any available recent counts. In some cases, it may be necessary

to use turning volumes directly from the CCTA Countywide Travel Demand Model outputs to estimate existing conditions operational performance.

## PEAK-HOUR SEGMENT LOS ON SELECTED TWO-LANE HIGHWAYS OUTSIDE OF URBAN AREAS

LOS will be analyzed for specific segments on rural roadways. Roadway segment LOS is a measure of traffic efficiency and smoothness of flow along roadway segments that are not constrained by a nearby traffic signal. This has previously been calculated for the East County in accordance with the methods specified in the 2010 HCM using average speed for Class I highways, which are two-lane facilities in largely rural areas that motorists expect to traverse at relatively high speed.

DKS will run LOS analysis for the roadway segments as listed in Table 5 and shown in Figures 2 through 6.

**TABLE 5. RURAL ROADWAY CORRIDORS**

Subarea	Facility	From	To
West County	San Pablo Dam Road	Castro Ranch Road	RTPC Boundary
		RTPC Boundary	Wildcat Canyon
Central County	Bailey Road	Concord Boulevard	RTPC Boundary
	Kirker Pass Road	RTPC Boundary	James Donlon Boulevard
	Kirker Pass Road	Clearbrook Drive	RTPC Boundary
	Byron Highway	State Route 4	Alameda County
	Camino Diablo Road	Marsh Creek Road	Vasco Road
	Marsh Creek Road	Deer Valley Road	Vineyard Parkway
	Vasco Road	Walnut Boulevard	Alameda County
East County	Vasco Road	Alameda County	Dalton Avenue
	Bailey Road	Leland Avenue	RTPC Boundary
	State Route 4 Bypass	Balfour Road	Marsh Creek Road
	Deer Valley Road	Sand Creek Road	Marsh Creek Road
	Marsh Creek Road	RTPC Boundary	Deer Valley Road
Lamorinda	San Pablo Dam Road	RTPC Boundary	Wildcat Canyon
Tri-Valley	State Route 84 (E. Vallecitos Road)	Interstate 680	Ruby Hill Drive
	Dublin Canyon Road	Palo Verde Road	Foothill Road

The latest edition of HCM (7th Edition) specifies a new version for calculating segment LOS, which requires substantially more data than the previous HCM 6th edition/2010 approach. The new approach requires information on passing constraint condition (none, passing lane, or passing constrained), flow rate (vehicles per hour), percentage heavy vehicles, vertical slope (five classifications based on segment length and slope), and horizontal curvature (five classifications based on curve radius and superelevation). This data is not available for the segments to be studied, the Action Plan updates will retain this HCM 6th Edition approach, which simply relates LOS to average speed, as shown in Table 6. For this analysis, DKS will use the model to predict average speed for all segments to be analyzed.

**TABLE 6. LOS FOR TWO-LANE RURAL ROADWAYS**

Level of Service	Average Speed (Miles per Hour)
A	>55
B	>50-55
C	>45-50
D	>40-45
E	≤40

Source: Highway Capacity Manual, 2010, Exhibit 15-3.

## Transit RTOs

### MODE SHARE OF TRANSIT TRIPS

Mode share will be estimated for the Action Plan updates, both for transit (which is the focus of this section) and for the bike/pedestrian and climate change topics (as explained in later sections of this memo).

For the Action Plan analysis, mode share in each subregion will be estimated using data collected by the American Community Survey (ACS), as published by the Census Bureau, and model results.

For current conditions, the PlaceWorks team will use ACS data, which gives data for work commute trips for workers 16 years of age and over. The current data release includes one-year estimates for 2019, which will be used for the Action Plan analysis. Mode share for all trips and all modes will be modeled using outputs from the CCTA Countywide Travel Demand Model. Specifically, the person trip tables from the mode choice step of the model will be aggregated to calculate mode share by geographic subarea. The trip tables are in “production-attraction” format, meaning that trips are tabulated based on the zone of production (location of residence for all home-based trip purposes) and zone of attraction (work or other location) rather than representing directional trips.



The CCTA Countywide Travel Demand Model produces person trip matrices by mode by Traffic Analysis Zone (TAZ) for each trip purpose and income quartile. DKS will develop scripts to summarize this data by RTPC and mode. Most mode share RTOs will be summarized by the geographic area of production, but some metrics based on the attraction zone may be of interest as well. Thus, mode share can be reported based on the zone of residence (“X percent of work trips made by East County residents are by auto”) or the attraction zone (“Y percent of work trips for jobs in Central County are by transit”).

Mode shares will be calculated for the 2019 base year and 2050 baseline scenarios. The mode alternatives specified in CCTA Countywide Travel Demand Model include:

- Drive Alone
- Shared Ride 2 Occupants
- Shared Ride 3+ occupants
- Transit with Walk Access
- Transit with Drive Access
- Bicycle
- Walk

The summary tables and charts for these modes will report mode share for the subregion of production (all trips), for commute mode share by subregion of production (home-based work trips only), and for commute mode share by subregion of attraction or job location (home-based work trips only).

## **RATIO OF TRAVEL TIME FOR TRANSIT AS COMPARED TO AUTOMOBILE TRAVEL TIME FOR SELECT TRIPS**

This RTO is intended to measure the difference in travel time for a motorist as compared to a transit user. The origin destination pairs shown in Table 7 are proposed for this metric. Travel times will be developed for each mode based on both the peak-commute and reverse-commute directions of travel for the morning and afternoon peak periods.

**TABLE 7. CORRIDORS FOR TRANSIT-AUTO TRAVEL TIME COMPARISON**

<b>Subarea</b>	<b>Origin-Destination Pairs</b>
West County	North Richmond BART and Contra Costa Center (Pleasant Hill BART station) Hercules Transit Center and Salesforce Transit Center in San Francisco
Central County	Walnut Creek BART station and Montgomery Street BART station Orinda BART station and 12th Street (Oakland) BART station
East County	Antioch BART station and 12th Street (Oakland) BART station
Lamorinda	Orinda BART station and Montgomery Street (San Francisco) BART station
Tri-Valley	Vasco Station (Altamont Corridor Express) and San Jose Diridon station Dublin-Pleasanton BART station and Montgomery Street (San Francisco) BART station

Transit travel times along key routes will be based on published transit schedules. Bus schedules are assumed to account for expected roadway congestion that would impact bus routes. Driving travel times will be derived from INRIX roadway analytics for weekdays (Tuesday – Thursday) for April 2019.

Baseline 2050 conditions will be modeled using the CCTA Countywide Travel Demand Model. The model outputs used for this purpose will be the peak period transportation “skim” matrices, representing transit wait time, transit in-vehicle travel time, and drive-alone automobile travel time between all TAZs.

## **Bicycle and Pedestrian RTOs**

Bicycle and pedestrian RTOs will be based on the countywide Low-Stress Bike Network (LSBN) adopted in the 2018 CCTA Countywide Bike and Pedestrian Plan. This network consists of existing and planned Class 1 bike paths and Class 4 cycle tracks throughout Contra Costa County.

### **MODE SHARE OF BICYCLING AND WALKING**

The methodology for this RTO will be identical to the methodology for the “Mode Share of Transit Trips” RTO. See the previous section for more details.

### **PROPORTION OF THE COUNTYWIDE LOW-STRESS BIKE NETWORK THAT HAS BEEN COMPLETED**

The LSBN is a component of the CCTA Countywide Bicycle and Pedestrian Plan (CBPP) adopted in 2018. The CBPP introduced a new way of evaluating a facility’s “Level of Traffic Stress,” in which roadways are evaluated on several factors, including, but not limited to, the speed and number of vehicles and presence and width of bicycle facilities. Facilities are given a rating from one (least stressful) to four (most stressful) to evaluate the stress a bike rider will experience. The goal of the 2018 CBPP is to ensure the countywide bicycle network is complete and rated either Level of Traffic Stress 1 (most children can feel safe riding on these facilities) or Level of Traffic Stress 2 (The “interested but concerned” adult population will feel safe riding on these facilities). Ultimately, construction of the entire LSBN would result in an increase in bicycle mode share and a reduction in KSI collisions.

For this RTO, the project team will update the LSBN to reflect any portions that have been constructed since the 2018 CBPP and map adoption. Once the LSBN is updated, the number of total miles in the network upon buildout will be calculated and compared with the total miles already completed.

### **NUMBER OF LOCATIONS WHERE THE LOW-STRESS BIKE NETWORK MAKES AN UNPROTECTED CROSSING OVER A HEAVILY TRAVELED VEHICLE ROUTE**

PlaceWorks will create an ArcGIS point data set to identify each location where the LSBN crosses a vehicle roadway. Then, we will rank the crossing by how protected it is using Google Maps. Ranking will occur as follows:

- **Fully protected** by grade separation or a signalized intersection with cyclist protections.
- **Semi-protected** at an at-grade crossing with a beacon system, or with a signal but without cyclist protections.
- **Unprotected** at an at-grade crossing, which includes none of the improvements listed above.

This exercise will be conducted for low-stress bikeway crossings of all arterials and major collectors in each subarea. The types of roadways included in this exercise are interstates, freeways, expressways, other principal arterials, minor arterials, and major collectors. The only roadways not included in this exercise are minor collectors and local routes.

## Safety RTOs

### NUMBER OF KILLED OR SERIOUSLY INJURED (KSI) COLLISIONS

DKS will obtain KSI collisions data for Contra Costa County from the Transportation Injury Mapping System (TIMS) and will then geocode and clean the data to form the basis for the RTO. The number of KSI collisions will be tabulated and mapped by subregion.

### NUMBER OF BIKE- OR PEDESTRIAN-INVOLVED COLLISIONS

This RTO will be developed using the same TIMS data set described above. The number of bicycle- or pedestrian-involved KSI collisions will be tabulated and mapped by subregion.

### NUMBER OF BIKE- OR PEDESTRIAN-INVOLVED COLLISIONS WITHIN 500 FEET OF A SCHOOL

This RTO will be developed using the same TIMS data set described previously. The project team will use GIS school site polygon data to create a 500-foot buffer around school sites and determine which of the geocoded collisions occurred within these school site buffers. The resulting data will be tabulated and mapped by subregion. The number of crash records is expected to be low, so the records identified through GIS analysis will be individually reviewed to confirm that the crashes involve student bicyclists or pedestrians.

## Equity RTOs

### PROPORTION OF KSI AND BIKE- OR PEDESTRIAN-INVOLVED COLLISIONS THAT OCCUR IN EQUITY PRIORITY COMMUNITIES

This RTO will be developed using the same TIMS data set described for the Safety RTOs. Using GIS, this analysis will map the boundaries of identified Equity Priority Communities (EPCs). For each subregion and the county as a whole, the proportion of collisions occurring in EPCs will be reported and mapped. This RTO would not be tracked in Action Plans that do not contain EPCs, including Tri-Valley and Lamorinda.

### **SHARE OF COUNTY JOBS THAT CAN BE REACHED BY EPC RESIDENTS WITH A 30-MINUTE DRIVE, AS COMPARED TO COUNTY RESIDENTS AS A WHOLE**

DKS will compare the model's map of TAZs to identified EPCs in Contra Costa and identify each TAZ as either "EPC" or "non-EPC." DKS will then calculate which TAZs can be reached within a 30-minute drive from each TAZ in the study area and will sum the number of jobs within those TAZs. The average number of jobs per TAZ that are reachable within 30 minutes will be calculated for EPC and non-EPC TAZs, and the results will be compared to each other. Since this analysis has not been completed, it is unknown if there is any correlation in the data. If there is no correlation, the RTO will be recommended to move forward. This RTO would not be tracked in Action Plans that do not contain EPCs, including Tri-Valley and Lamorinda.

### **SHARE OF COUNTY JOBS THAT CAN BE REACHED BY EPC RESIDENTS WITH A 45-MINUTE TRANSIT TRIP, AS COMPARED TO COUNTY RESIDENTS AS A WHOLE**

DKS will use the TAZs identified as "EPC" and "non-EPC" in the previous RTO to calculate which TAZs can be reached within a 45-minute transit trip from each TAZ in the study area. DKS will then sum the number of jobs within those TAZs. The average number of jobs per TAZ that are reachable by a 45-minute transit trip will be calculated for EPC and non-EPC TAZs, and the results will be compared to each other. Since this analysis has not been completed, it is unknown if there is any correlation in the data. If there is no correlation, the RTO will be recommended to move forward. This RTO would not be tracked in Action Plans that do not contain EPCs, including Tri-Valley and Lamorinda.

### **PROPORTION OF EPC ACRES THAT ARE NOT WITHIN A QUARTER-MILE DISTANCE OF A TRANSIT STOP SERVED BY HIGH-QUALITY TRANSIT**

GIS data will be used to map the EPC boundaries and all high-quality transit stops in the CCTA area. A buffer of a quarter mile will be created around the high-quality transit stops to determine if there are any portions of EPCs that are not within this buffer. A calculation will then be made to determine how many acres of EPCs in each subregion are not within the buffer and thereby not served by high-quality transit. This RTO would not be tracked in Action Plans that do not contain EPCs, including Tri-Valley and Lamorinda.

## **Climate Change RTOs**

### **SINGLE-OCCUPANT VEHICLE MODE SHARE**

The methodology for this RTO will be identical to the methodology for the "Mode Share of Transit Trips" RTO, except that the metric associated with this RTO will track a decrease in overall single-occupant vehicle (SOV) mode share, not an increase as desired for transit and bicycle/pedestrian mode share. See the previous section for more details.

## **VEHICLE MILES TRAVELED PER CAPITA**

VTM per capita will be modeled for the 2019 Base Year and Baseline 2050 condition using outputs from the CCTA Countywide Travel Demand Model. Scripts tabulating VMT per capita at the residential location and VMT per employee at the worksite for each TAZ have already been developed as part of CCTA's Technical Procedures update. Final processing will be done in a spreadsheet, and results will be tabulated by subregion.

## **TRANSPORTATION GREENHOUSE GAS EMISSIONS PER CAPITA**

This RTO will be based on the VMT data developed, as described previously. DKS will divide the VMT by speed bin and time period to create inputs for the most recent Emission Factor (EMFAC) mobile source emissions model maintained by the California Air Resources Board. Subregional scenarios will be created for the 2019 Base Year and 2050 Baseline conditions. Total tons of GHG emissions will be divided by the subregional population assumed in the CCTA Countywide Travel Demand Model to arrive at average daily GHG emissions per capita (in tons).

## **ZERO-EMISSION VEHICLE OWNERSHIP IN THE SUBREGION**

The California Energy Commission tracks zero-emission vehicle (ZEV) ownership in partnership with the Department of Motor Vehicles. Data are updated annually in April and are published on the Zero Emission Vehicle and Infrastructure Statistics web page.

Vehicle population is also updated annually in April, to reflect the number of vehicles on the road during the previous calendar year. The vehicle population number includes vehicles whose registration is either current or less than 35 days expired.

PlaceWorks will assemble this data and disaggregate it by subregion. Total registrations by vehicle type are available by county and zip code, so a rough approximation of ownership by subregion is possible.

## **Technology RTOs**

### **LEVEL OF ETHERNET-BASED SIGNAL INTERCONNECTION**

Interconnected signal systems are those that communicate with other signals or systems. Signal interconnect helps in establishing a connection between the traffic signals and the central system, which enables remote access to the signals from the local agency locations or the Traffic Management or Operations Center. This will allow signal timings to be adjusted remotely, during regular day-to-day operations, during major incidents, and during special events. Interconnection enables cross-jurisdiction communications, coordination, and data exchange to respond to varying traffic conditions.

Information will be collected from cities regarding signal systems to identify percentage of signals that are currently interconnected through ethernet-based communications. The assembled data will determine the level of signal interconnection as compared to the total number of signals with the jurisdiction and countywide as a whole.

## **RTOs Considered but Not Recommended**

### **WAIT TIME FOR PARATRANSIT**

Several RTPC TAC members expressed interest in an RTO relating to wait time for paratransit services. The project team met with CCTA staff and consultant Nelson Nygaard to discuss their work with paratransit services and other accessible transit in the county. This group prepared CCTA's *Accessible Transportation Strategic Plan* in 2021, which provides a detailed catalog of existing accessible transportation facilities in the county, needed improvements, and goals and strategies to address gaps in service. Upon recommendation from this group, the Action Plans and Countywide Transportation Plan will include language and actions that refer to the *Accessible Transportation Strategic Plan* but will not include an RTO related to such service.

### **SPEED REDUCTION**

Several RTPC TAC members stated that reducing typical travel speeds on surface streets around Contra Costa, especially in areas where prevailing speeds exceed designated speed limits, may improve overall safety. Reducing vehicular speeds is critical to improve safety outcomes and make streets more comfortable for active users such as bicyclists and pedestrians.

CCTA's Vision Zero effort includes speed reduction as a defined goal. The CCTA Vision Zero Implementation Guide for Local Jurisdictions points to encouraging safe speeds as a key priority, and notes that "[managing] speeds is critical to achieving zero fatalities because the kinetic transfer of energy from vehicles traveling at high speeds is much greater than at lower speeds, and results in more fatalities and more injuries, increasing in severity as speeds increase." It additionally suggests that local jurisdictions "[identify] high-speed corridors based on speed surveys and Safety Priority Locations Maps. The concentration of locations on high-speed arterials reveals a relationship between speed and traffic collisions resulting in fatal or severe injuries."

Mobile device data can be used to measure existing prevailing speeds on specific roadways, so an RTO could be defined that monitors prevailing speeds along specific corridors and sets a goal to reduce those prevailing speeds over time. However, this mobile device data can be difficult to gather, especially within a large geographic area, so use of this data is not practical for this RTO. However, the CCTA countywide travel model also produces estimates of vehicular speed along each road segment, and that data could hypothetically be used to forecast changes in travel speeds under various future scenarios. Thus, gathering data for this RTO is possible.

Regardless, a potential RTO relating to speed reduction is not as relevant to land use as the RTOs described previously. Therefore, the project team does not propose to move forward with this RTO.

### **USE OF SHARED (POOLED) TRANSPORTATION NETWORK COMPANIES**

Data assembled before the pandemic showed that the emerging presence of Transportation Network Companies (TNCs), such as Lyft and Uber, were leading to increases in VMT and congestion, but that shared TNC rides (also referred to as pooled rides), in which several unrelated riders share a vehicle for a trip, could result in reductions in VMT and congestion. For this reason, many experts suggested that shared TNC rides should be considered, and several RTPC TAC members thought it would be useful to track the proportion of TNC rides that are shared.

However, the pandemic has led to the cancellation of shared services by both Lyft and Uber in the greater Bay Area market, so it is impossible to track such rides today. Moreover, data from Lyft and Uber is not readily available and is difficult to obtain. For these reasons, no RTO regarding shared TNC rides is recommended at this time, but one could be added if shared services are reinstated, and data can be collected from TNCs.

### **NUMBER OF SHARED SCOOTERS, SHARED BICYCLES, AND PUBLIC AUTONOMOUS VEHICLES THAT ARE DEPLOYED**

Several RTPC TAC members indicated that they'd like to track micromobility programs through the Action Plans. Potential metrics included the number of shared devices deployed, miles of rides completed, and number of operators, among others. However, there is only one subarea with an active micromobility program and only one other subarea currently pursuing deployment of their own. To determine feasibility of this RTO, the project team met with these jurisdictions and government relations staff at micromobility operator Lime. Lime and local jurisdiction staff expressed support for increasing the number of micromobility programs. However, it was agreed that the most efficient use of time and funding is to first support CCTA in taking a regional leadership role similar in the way that the Transportation Authority of Marin and the Sonoma County Transportation Authority have done. This role could include working with operators and jurisdictions to create a draft ordinance and/or Request for Proposals or a set of model standards for the local jurisdictions to adopt locally. Therefore, the project team proposes that micromobility programs be addressed in the Action Plans as actions and not as an RTO. The action will consider a micromobility RTO in the next iteration of Action Plans.

### **PAVEMENT CONDITION ON THE COUNTYWIDE LOW-STRESS BIKE NETWORK**

Several RTPC TAC members indicated that condition of pavement along bicycle and pedestrian routes could potentially encourage or deter their use. The project team explored how and where pavement condition on these facilities is measured to determine if this RTO would be feasible. The project team found that there are no programs that track pavement condition on the entirety of the countywide LSBN. Pavement condition is currently tracked in a few areas of the county:



- Some portions of the LSBN are on arterial roadways, which, in some cases, do have a tracking system for pavement condition. However, pavement condition data for these arterial roadways is limited to the portion used by vehicles and does not include shoulder bicycle or pedestrian facilities.
- The East Bay Regional Parks District (EBRPD) measures Pavement Condition Index (PCI) on their off-street bicycle facilities. This data is used by the EBRPD to determine where pavement needs to be enhanced or replaced on their facilities. However, the project team discussed this potential RTO with EBRPD staff and heard that the PCI is not considered a truly accurate measurement of overall pavement condition. EBRPD staff noted that the tool is tailored for vehicle roadways and does not account for varying pavement conditions resulting from tree uprooting, settling, or damage.

Given that no comprehensive data regarding pavement conditions on bikeways currently exists, no RTO regarding this topic is recommended at this time.

## AVERAGE COMMUTE TIME FOR LOW-INCOME RESIDENTS VERSUS HIGHER-INCOME RESIDENTS

Various RTPC TAC members were interested to know if there is a correlation between the time that commuters spend traveling to and from work and their income. Specifically, RTPC TAC members were curious to know if low-income commuters spend a disproportionately longer amount of time traveling to work than higher-income commuters. They wanted to determine:

- Is there a correlation between household income and **total** commute time?
- Is there a correlation between household income and **transit** commute time?
- Is there a correlation between household income and **driving (solo)** commute time?

Commute time and income can be estimated through data collected by the ACS, as published by the Census Bureau. The ACS estimates only cover work commute trips for workers 16 years of age and over. The current data release includes one-year estimates for 2019. The project team pulled this ACS data and calculated the average travel time in each census tract by dividing the aggregate travel time by the number of workers over 16 that commute to work. The finding from this exercise was that the correlation value was 0.3, indicating a weak correlation between all three commute types and household income. Due to this lack of correlation, the project team moved forward to check related questions, including:

- Is there any correlation between income and the percentage of commuters at 19 minutes or less (total of three commute time groups)?
- Is there any correlation between income and the percentage of commuters at 60 minutes or more?
- Is there any higher commute time for tracts inside of EPCs vs those outside EPCs?



A detailed examination revealed that none of these questions resulted in a strong correlation. Therefore, the project team could not make a conclusion that household income is directly related to the amount of time that commuters spend traveling to and from work. For these reasons, the project team does not propose moving forward with this RTO.

### **MILES OF ROUTES OF REGIONAL SIGNIFICANCE ESTIMATED TO BE VULNERABLE TO SEA-LEVEL RISE**

RTPC TAC members and the project team indicated interest in how rising sea levels would potentially impact RRS. PlaceWorks identified all key facilities subject to inundation through sea-level rise, which were limited to bay shore areas in West, Central, and East County. These facilities subject to inundation were determined using RRS maps, which the project team then overlaid with sea-level rise projections. The sea-level rise projections are also used in Contra Costa County's ongoing Climate Action Plan and 2019 Vulnerability Assessment, congruent with best practices. Through this exercise, the project team determined that the majority of RRS or other infrastructure are in areas where private property owners and entities, such as Union Pacific Railroad, will likely work with local agencies to protect their infrastructure, thereby reducing the need for local intervention. In cases where local intervention or action would need to occur, sea-level rise adaptation planning will occur incrementally over time and is likely already being considered, such as through the current update to the Contra Costa County General Plan and Climate Action Plan and regional work through agencies such as the Association of Bay Area Governments and State working groups. Furthermore, it is difficult to know the true extent of infrastructure impacted by sea-level rise due to elevation of existing roadways (that may not be at sea level, such as the Carquinez Bridge) and unknowns related to vital infrastructure along these routes that may not be identified, such as bus storage lots or utility boxes. For these reasons, the project team does not propose moving forward with this RTO.

### **PERCENTAGE OF VULNERABLE RRS FOR WHICH REMEDIATION PLANS OR A MITIGATION APPROACH HAVE BEEN CREATED**

Much like the above RTO, the RTPCs and project staff wanted to know if there were existing or proposed remediation plans or mitigation approaches to address the RRS that are vulnerable to sea-level rise inundation. Since the project team does not propose moving forward with the above RTO, we recommend not moving forward with this subsequent RTO.

## MEMORANDUM

**DATE** July 7, 2022  
**TO** John Hoang and Matt Kelly, CCTA  
**FROM** David Early and Torina Wilson, PlaceWorks  
Erin Vaca, DKS Associates  
**SUBJECT** Regional Transportation Objectives Analysis Memorandum

The Action Plan planning process will incorporate performance metrics known as Regional Transportation Objectives (RTOs) that address transportation modes such as driving, transit, and bicycle and pedestrian travel, along with nonmodal topics of safety, equity, climate change, and technology. This memorandum presents the initial results of modeling and data collection for each of these RTOs for the Central County subregion, and it presents performance targets for each RTO based on the modeling and data collection results.

This memorandum was compiled and authored by PlaceWorks. DKS conducted the modeling and wrote most of the text regarding the roadway, mode share, collision, and climate change RTOs. PlaceWorks prepared the content for the remaining RTOs.

The RTOs and proposed performance targets are summarized in Table 1.

Information about the methods used to calculate this data is contained in the RTO Methodology Memorandum dated July 7, 2022.

**TABLE 1. REGIONAL TRANSPORTATION OBJECTIVES FOR CENTRAL COUNTY SUBREGION**

Facility Type or Planning Focus	Metric	Definition	Existing Target	Proposed 2027 Target	Proposed 2050 Target
Roadways	Freeway Delay Index	Travel time ratio for congestion vs. free-flow conditions	Delay Index: DI≤4.0 (I-680) DI≤3.0 (SR-242) DI≤5.0 (SR-4)	Delay Index: DI≤4.0 (I-680) DI≤3.0 (SR-242) DI≤5.0 (SR-4)	Delay Index: DI≤4.0 (I-680) DI≤3.0 (SR-242) DI≤5.0 (SR-4)
	Freeway Buffer Index	Proportion of added travel time between the 95 <sup>th</sup> percentile and the average	None	0.50	0.50
	Intersection Level of Service (LOS)	Average control delay during peak hours	LOS F at selected intersections	LOS D in all areas except for downtowns, key school sites, and freeway ramps; LOS E at freeway ramps; no LOS standards for downtowns, key school sites, or TPAs	LOS D in all areas except for downtowns, key school sites, and freeway ramps; LOS E at freeway ramps; no LOS standards for downtowns, key school sites, or TPAs
	Roadway Segment LOS outside of urban areas	Average speed during peak hours	None	LOS E (≤40mph)	LOS E (≤40mph)
	Transit Mode Share	Proportion of daily person trips using transit	None	20% commute trips	40% of commute trips
Transit	Travel Time Ratio	Ratio of peak commute period travel time on transit to drive alone auto travel time for key corridors	None	Transit time ≤ auto travel time	Transit time ≤ auto travel time
Active Transportation	Bicycle Mode Share	Proportion of daily person trips made by bicycle	None	6% all trips 2.5% commute trips	12% all trips 5% for commute trips,
	Low Stress Bike Network (LSBN)	Proportion of the LSBN that is complete	None	29.5%	100%
	LSBN Crossings	Number of locations the LSBN crosses a roadway and is considered to be unprotected	None	None	None
Safety	KSI Collisions	Number of crashes resulting in fatality or injury	None	Zero fatality and severe injury crashes	
	Bike-Ped Collisions	Number of KSI crashes involving a bicyclist of pedestrian	None		
	Bike-Ped Collisions near Schools	Number of bicycle or pedestrian involved KSI collisions occurring within 500 feet of schools	None		
Equity	KSI Collisions in EPCs	Proportion of KSI collisions that occur in EPCs	None	Zero fatality and severe injury crashes	
	Job Share Accessible by driving in EPCs	Share of jobs accessible by EPCs residents with a 30-minute drive	None	68% of jobs accessible	85% of jobs accessible

Facility Type or Planning Focus	Metric	Definition	Existing Target	Proposed 2027 Target	Proposed 2050 Target
	Job Share Accessible by transit in EPCs	Share of jobs accessible by EPCs residents with a 45-minute transit trip	None	58 % of jobs accessible	100% of jobs accessible
	High Quality Transit Access in EPCs	Number of people in EPCs not within a quarter-mile distance of a transit stop served by high quality transit	None	40%	100%
Climate Change	SOV Mode Share	Proportion of daily person trips made by single occupant vehicle	None	50%	40%
	GHG Emissions per Capita	Tons of CO <sub>2</sub> emissions	None	17 lbs per capita	Zero transportation related
	EV Ownership	Number of battery electric vehicles owned by subregion residents	None	50% market penetration	100% market penetration
	VMT per capita	Home-based vehicle miles traveled per capita	None	26.6 VMT	21 VMT
Technology	Level of Signal Interconnection	Number of connected signals	None	101	101

## Mode Share RTOs

Mode share is considered in RTOs regarding the transit, bike/pedestrian, and climate change topics. Since mode share is relevant to three separate topics, information on it is presented in this section. Specific RTOs for each mode are contained in the sections below.

### REPORTED CURRENT COMMUTE MODE SHARE

The American Community Survey (ACS) estimates published by the Census Bureau reports the number of work trips by mode. An estimated mode share based on this data is shown in Table 2 shows the commute mode share for Contra Costa County and the Central County subregion. As shown, about 78 percent of the work trips in Contra Costa County are made by automobile while 76 percent are made by automobile in the Central County subregion.

**TABLE 2. MEANS OF TRANSPORTATION TO WORK IN CONTRA COSTA COUNTY AND THE CENTRAL COUNTY SUBREGION (2019)**

Mode	Contra Costa County			Central County Subregion		
	Estimate	Margin of Error	Percent Mode Share	Estimate	Margin of Error	Percent Mode Share
<b>Total:</b>	<b>544,376</b>	<b>±3,447</b>		<b>166,294</b>	<b>±3445</b>	
Car, truck, or van - drove alone	367,467	±3,409	68%	111,651	±2793	67%
Car, truck, or van - carpooled	62,385	±2,486	11%	14,516	±1141	9%
Public transportation (excluding taxicab)	59,068	±1,981	11%	21,336	±1128	13%
Taxicab, motorcycle, bicycle, walked, or other means	19,344	±2,462	4%	7,601	±851	5%
Worked from home	36,112	±1,310	7%	11,188	±780	7%

Source: American Community Survey 5-Year Estimates, Table B08301.

### MODELED COMMUTE MODE SHARE

Mode shares for the home-based work trip purpose have been calculated based on the residence location (Table 3) or the work location (Table 4). These tables report mode shares for both Central County and the Planning Area as a whole. The modeling results show that most work trips by Central County residents are made by automobile, specifically driving alone. Central County's transit mode share for work trips is slightly higher than the Planning Area's, reflecting the availability of BART service. Bicycling and walking account for a very small portion of commute trips made by Central County residents (note that the bicycle mode share only reflects those trips made by bicycle from beginning to end and does not count access trips to and from transit stops).

Commuters to jobs located within Central County predominantly use the automobile modes to get to work, specifically driving alone. Transit, bicycling, and walking account for very small shares of this market. Transit accounts for about 2 percent of this market while bicycling and walking account for a bit over 3 percent. Commute mode shares are predicted to remain much the same by 2050.

**TABLE 3. MODELED HOME-BASED JOURNEY-TO-WORK MODE SHARE – CENTRAL COUNTY RESIDENTS**

	Planning Area		Central County	
	2019	2050 Baseline	2019	2050 Baseline
Drive Alone Auto	73%	73%	72%	72%
Carpool	14%	13%	13%	12%
Transit	11%	12%	13%	13%
Bike	0.4%	0.5%	0.4%	0.5%
Walk	1.3%	1.4%	2%	3%

Source: CCTA travel demand model and DKS Associates.

Note: Mode shares calculated with home-based work person trip ends at the production (home location) zone. Totals may not add due to rounding.

**TABLE 4. MODELED HOME-BASED JOURNEY-TO-WORK MODE SHARE – JOBS LOCATED IN CENTRAL COUNTY**

	Planning Area		Central County	
	2019	2050 Baseline	2019	2050 Baseline
Drive Alone Auto	83%	81%	83%	82%
Carpool	12%	12%	12%	12%
Transit	2%	3%	2%	3%
Bike	0.6%	0.7%	0.4%	0.6%
Walk	2%	2%	3%	3%

Source: CCTA travel demand model and DKS Associates.

Note: Mode shares calculated with home-based work person trip ends at the attraction (work location) zone. Totals may not add due to rounding.

## MODE SHARE FOR ALL TRIP PURPOSES

Table 5 reports the mode share calculated for all trip purposes included in the CCTA travel demand model – home-based work, home-based shopping, home-based social/recreation, non-home-based, home-based grade school, home-based high school, and home-based college. The modeling results show that most trips are currently made by automobile, with transit and active transportation modes accounting for about 11 percent of all trips.

By 2050, the mode shares are expected to remain like existing conditions, with only a slight decrease in drive alone and increases in the transit and active transportation mode shares.

**TABLE 5. MODE SHARE FOR ALL TRIPS— CENTRAL COUNTY SUBREGION RESIDENTS**

	Planning Area		Central County	
	2019	2050 Baseline	2019	2050 Baseline
Drive Alone Auto	63%	62%	64%	63%
Carpool	27%	27%	25%	25%
Transit	3%	4%	4%	4%
Bike	1%	1%	0.5%	0.6%
Walk	6%	6%	7%	7%

Source: CCTA travel demand model and DKS Associates.

Note: Totals may not add due to rounding.

## Freeway RTOs

Freeway Route of Regional Significance (RRS) in the Central County subregion include:

- I-680 between the Benicia Martinez Bridge and SR-24.
- I-680 from SR-24 to Livorna Road.
- SR-242 from SR-4 at Port Chicago Highway to I-680 at Willow Pass Road.
- SR-4 from Cummings Skyway to Willow Pass Road.

## PEAK HOUR DELAY INDEX ON SELECT FREEWAY SEGMENTS

The delay index is a measure of delay experienced by motorists on a roadway segment during a peak commute hour in a single direction. The delay index is calculated by measuring the time it takes to travel a segment of road during peak-period congested conditions and comparing it to the time it takes to travel the same segment during uncongested, free-flow conditions. The delay index may also be calculated as the ratio of congested speed to uncongested speed, given that the distance is fixed on any given corridor.

Baseline observed and modeled results for freeway delay index on the freeway Routes of Regional Significance are shown in Table 6. As shown, freeway corridors with especially high levels of delay (greater than 1.5 delay index) include I-680 south of SR-24 (northbound in the p.m. and southbound in the a.m.) and SR-242 (northbound in the p.m.), and SR-4 (eastbound in the p.m.). The modeled condition for 2050 shows similar patterns.

Based on current performance and the future modeled performance, it is proposed that the previous delay index standards be maintained.

## BUFFER INDEX ON SELECT FREEWAY SEGMENTS

The buffer index represents the extra buffer time (or time cushion) that most travelers add to their average travel time when planning trips to ensure on-time arrival. This extra time is added to account for any unexpected delay. The buffer index is expressed as a percentage and its value increases as

reliability gets worse. For example, a buffer index of 40 percent means that, for a 20-minute average travel time, a traveler should budget an additional 8 minutes (20 minutes × 40 percent = 8 minutes) to ensure on-time arrival most of the time. In this example, the 8 extra minutes is called the buffer time. The buffer index is computed as the difference between the 95<sup>th</sup> percentile travel time and average travel time, divided by the average travel time.

Baseline observed and modeled results are shown in Table 6. The observed buffer index for existing conditions and peak direction of travel ranges from 0.10 to 0.43, reflecting a high degree of travel time variability in some of the corridors.

The existing Central County Action Plan does not have a buffer index performance target set for any RRS. The proposed performance target for the buffer index is 0.50, which means that the extra travel time that must be considered for travelers would be no more than half of the average travel time over the corridor. This target appears attainable for most of the RRS corridors based on current performance.

**TABLE 6. FREEWAY RTOS**

Route of Regional Significance	2019 Observed			2050 Baseline Modeled	
	Avg Speed <sup>a</sup>	Delay Index	Buffer Index	Avg Speed <sup>a</sup>	Delay Index
<b>Interstate 680 n/o SR-24</b>					
Northbound – a.m.	64.7	1.0	0.06	64.8	1.0
Northbound – p.m.	44.6	1.5	0.30	49.4	1.3
Southbound – a.m.	46.3	1.4	0.39	49.9	1.3
Southbound – p.m.	63.4	1.0	0.29	64.7	1.0
<b>Interstate 680 s/o SR-24</b>					
Northbound – a.m.	64.4	1.0	0.06	68.5	0.9
Northbound – p.m.	27.1	2.4	0.30	27.4	2.4
Southbound – a.m.	33.9	1.9	0.39	36.9	1.8
Southbound – p.m.	45.3	1.4	0.29	50.1	1.3
<b>SR 242</b>					
Northbound – a.m.	63.7	1.0	0.10	63.3	1.0
Northbound – p.m.	22.9	2.8	0.37	30.3	2.1
Southbound – a.m.	43.4	1.5	0.26	46.3	1.4
Southbound – p.m.	64.4	1.0	0.11	60.5	1.1
<b>State Route 4</b>					
Eastbound – a.m.	55.0	1.2	0.36	56.1	1.2
Eastbound – p.m.	26.9	2.4	0.43	56.1	1.2
Westbound – a.m.	44.1	1.5	0.27	58.5	1.1
Westbound – p.m.	61.7	1.0	0.11	65.1	1.0



## Surface Roadway RTOs

### PEAK HOUR LOS AT SELECTED INTERSECTIONS IN URBAN AREAS

This RTO will be applied to signalized intersections along the defined arterial RRS. Signalized Intersection LOS is a delay-based qualitative measure of traffic conditions at a signalized intersection. LOS is expressed in ratings from “A” through “F”, with “A” meaning that all traffic clears the intersection in every cycle and “F” meaning that drivers must wait through multiple cycles to clear the intersection. Signalized intersection LOS is determined based on intersection turning movement counts (also called turning/traffic volumes), intersection geometry, and signal timing data. The CCTA Technical Procedures specify that methods documented in the latest edition of the *Highway Capacity Manual* be used to measure signalized intersection LOS<sup>1</sup>. The relationship between average control delay and LOS is shown in Table 7. The key arterial intersections that are analyzed for LOS will be available in Table 8 by the time of the Round 4 meeting.

The existing Central County Action Plan specifies that LOS F is acceptable at selected intersections, including:

- Geary Road and North Main Street
- Treat Boulevard and Geary Road
- Treat Boulevard and Bancroft Road
- Ygnacio Valley Road and Bancroft Road
- Ygnacio Valley Road and Civic Drive

Congestion in downtown areas often results from economically- and socially positive increased activity, so it is considered acceptable. Congestion at freeway ramps is often unavoidable since large numbers of trips are concentrated in areas where motorists get onto freeways. Therefore, the proposed performance targets for signalized intersection LOS for the Central County subregion is as follows:

- LOS D in all areas except downtowns, at key schools, and freeway.
- LOS E at freeway ramps.
- No LOS standard for downtowns, key schools, or Transit Priority Areas (TPAs).

**TABLE 7. INTERSECTION LOS DEFINITIONS**

Control Delay (Seconds/Vehicle)	LOS
≤10	A
>10-20	B
>20-35	C
>35-55	D

<sup>1</sup> The *Highway Capacity Manual* 7<sup>th</sup> Edition was published by the Transportation Research Board in January 2022.

>55-80	E
>80	F

Source: *Highway Capacity Manual*, 6<sup>th</sup> Edition, Exhibit 19-8

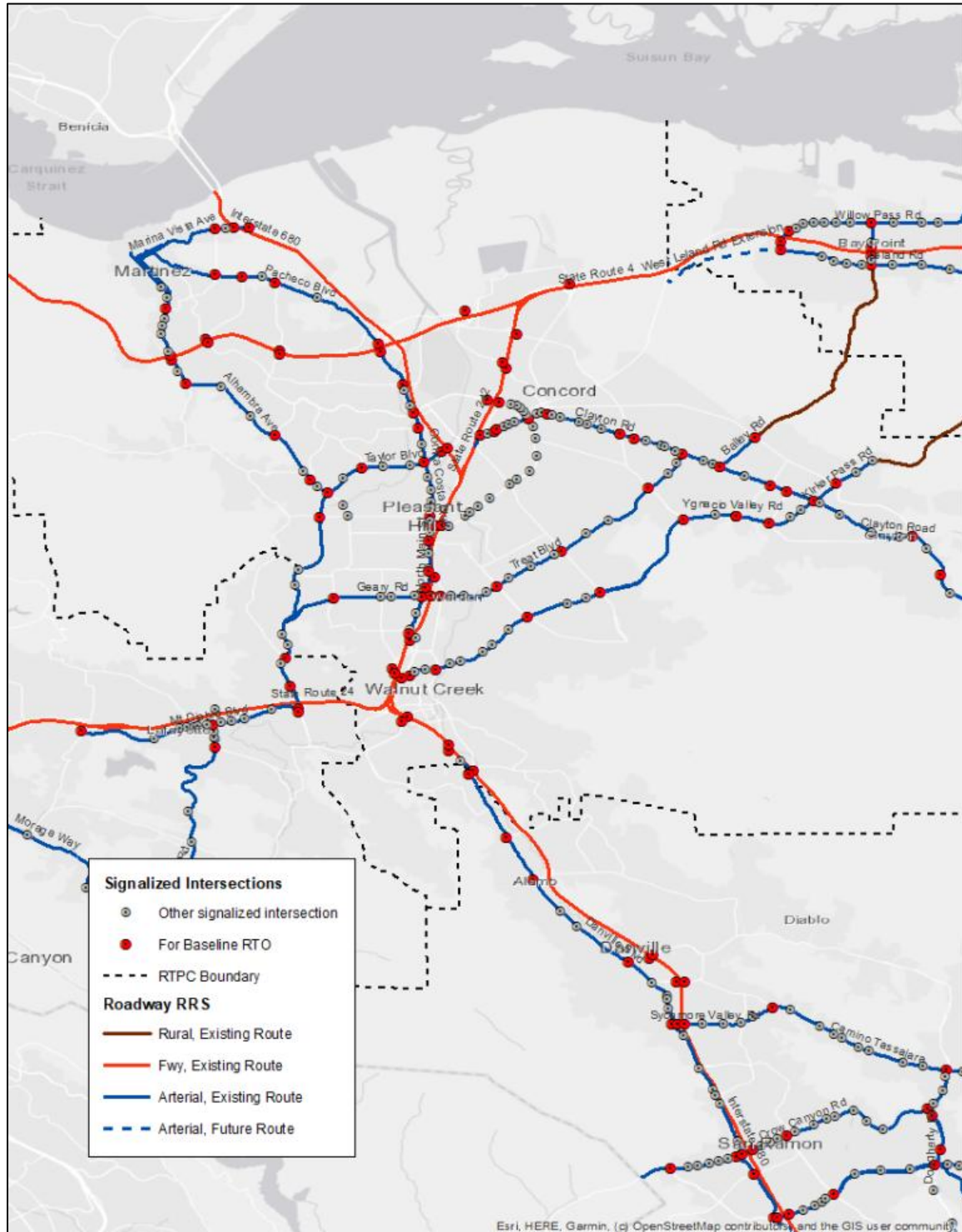
DRAFT

TABLE 8. SIGNALIZED INTERSECTION PEAK HOUR LOS [DATA IN PROGRESS AND FORTHCOMING PRIOR TO THE ROUND 4 TAC MEETING- MAPPING OF SIGNALS TO BE ADDED TO TABLE 8 ARE SHOWN IN FIGURE 1 BELOW]

[illegible]

Notes: Delay is average control delay reported in seconds. Cells that are bolded indicate performance below target.

FIGURE 1. SIGNALIZED INTERSECTIONS AND ROADWAY RRS - CENTRAL COUNTY



## PEAK HOUR SEGMENT LOS ON SELECTED TWO-LANE ROADWAYS OUTSIDE OF URBAN AREAS

Roadway segment LOS is a measure of traffic efficiency and smoothness of flow along roadway segments that are not constrained by a nearby traffic signal. This has been calculated in accordance with the methods specified in the 2010 *Highway Capacity Manual* using average speed for Class I highways (Class I highways are two-lane facilities in largely rural areas that motorists expect to traverse at relatively high speed).

For the Central County subregion, this metric is applied to:

- Bailey Road from Concord Boulevard to the RTPC Boundary.
- Kirker Pass Road from Clearbrook Drive to the RTPC Boundary.

The segment LOS is related to average speed, as shown in Table 9. Table 10 lists the two-lane roadway corridors analyzed for the Central County subregion and reports the existing and forecasted LOS. Much of the roadway corridors operate at LOS E, corresponding to speeds at or under 40 mph.

The existing Central County Action Plan does not have an adopted LOS threshold for any two-lane rural roadways. The recommended performance target for this metric is LOS E, which would essentially maintain the current performance.

**TABLE 9. LOS FOR TWO-LANE ROADWAYS**

LOS	Average Speed (MPH)
A	>55
B	>50-55
C	>45-50
D	>40-45
E	≤40

Source: *Highway Capacity Manual* 2010, Exhibit 15-3.

**TABLE 10. ROADWAY CORRIDOR LOS FOR TWO-WAY ROADWAYS OUTSIDE OF URBAN AREAS**

Route of Regional Significance	Time of Day	Direction	2019		2050	
			Avg Speed	LOS	Avg Speed	LOS
Bailey Road	A.M.	EB	32.0	E	33.9	E
Bailey Road	P.M.	EB	34.6	E	48.9	C
Bailey Road	A.M.	WB	40.1	D	59.4	A
Bailey Road	P.M.	WB	39.8	E	57.4	A
Kirker Pass Road	A.M.	EB	32.0	E	33.9	E
Kirker Pass Road	P.M.	EB	34.6	E	48.9	C
Kirker Pass Road	A.M.	WB	40.1	D	59.4	A
Kirker Pass Road	P.M.	WB	39.8	E	57.4	A

Source: Inrix Roadway Analytics, CCTA Travel Demand Model

## Transit RTOs

### MODE SHARE OF TRANSIT TRIPS

As shown in Table 3 in the first section of this memo (“Mode Share”), 13 percent of Central County residents commute to work using transit, compared to 11 percent of residents within the planning area. Table 3 and Table 4 illustrate that the model output predicts that this number will remain at 13 percent of home-based work mode share based on residence location and increase to 3 percent based on job location. Meanwhile, the model predicts that around 4 percent of all trips (not strictly commute trips) will be taken by transit by 2050.

The existing Central County Action Plan does not have an adopted transit mode share target. Covid has greatly reduced transit trips, so the proposed performance target for transit mode share in the Central County subregion is to return to pre-pandemic levels of 13 percent of home-based work trips by 2027. We also propose a target is to double the level of home-based work transit trips to 26 percent by 2050. This is an ambitious goal, but one that will be needed to meet goals to minimize VMT, transportation related GHG emissions and congestion.

### RATIO OF TRAVEL TIME FOR TRANSIT AS COMPARED TO AUTOMOBILE TRAVEL TIME FOR SELECT TRIPS

This metric compares the peak period transit travel time on select corridors to the equivalent single occupant vehicle travel time in the peak commute direction. The key corridor(s) monitored for the Central County subregion along with the comparative travel times are shown in Table 11.

The proposed performance target is that transit travel time should be less than or equal to auto time, when measured from transit station to transit station. As shown in Table 11, BART travel times are currently favorable to driving in the afternoon eastbound direction between the Orinda and 12<sup>th</sup> Street BART stations. BART travel times are favorable for both the morning westbound and afternoon eastbound directions between the Walnut Creek and Montgomery Street BART stations. By 2050, these patterns are more pronounced, assuming BART service remains constant.

**TABLE 11. TRAVEL TIME RATIO FOR AUTOS VS TRANSIT ON KEY CORRIDORS**

				Transit/Drive Alone Time	
Corridor	Median Drive Time (Minutes) <sup>a</sup>	Scheduled Transit Time (Minutes) <sup>b</sup>	2050 Drive Alone <sup>c</sup>	Existing	2050
ORINDA BART STATION - 12TH STREET (OAKLAND) BART STATION					
Morning – Westbound	11.08	14.00	28.62	1.26	0.49
Morning – Eastbound	10.50	13.00	11.09	1.24	1.17
Afternoon- Westbound	10.95	14.00	12.52	1.28	1.12
Afternoon- Eastbound	18.12	13.00	19.11	0.72	0.68
WALNUT CREEK BART STATION - MONTGOMERY STREET BART STATION					
Morning – Westbound	43.37	37.00	108.89	0.85	0.34
Morning – Eastbound	24.06	35.00	26.28	1.45	1.33

Afternoon- Westbound	29.04	37.00	32.18	1.27	1.15
Afternoon- Eastbound	45.19	35.00	108.80	0.77	0.32

Notes:

a) Range of average driving time for Tuesdays – Thursdays for April 2019 from Inrix Roadway Analytics;

b) From published schedules

c) CCTA travel demand model congested time skims for a.m. and p.m. peak periods

## Bike/Pedestrian RTOs

### MODE SHARE OF BICYCLING AND WALKING

As shown in Table 3 in the first section of this memo (“Mode Share”), about one percent of Central County residents commute to work through active transportation such as biking or walking. Table 3 and Table 4 illustrate that these shares will increase to over 3 percent of home-based work trips based on residence location as well as job location. As shown in Table 5, the model predicts that eight percent of all trips (not strictly commute trips) would be by walking or biking by 2050.

The existing Central County Action Plan does not have an adopted biking or walking mode share target. The proposed performance target for biking and walking mode share in the Central County subregion is to double the combined mode share for all trips for bikes and walking to 15 percent by 2050. Because biking and walking modes are important to CCTA and their member jurisdictions, the proposed performance target for 2027 is half of the 2050 target, at 7.5 percent. Further, the project team proposes the Central County Action Plan include biking and walking mode share performance targets for commute trips in addition to all trips. The proposed biking and walking performance targets for commute trips are five percent by 2027 and 10 percent by 2050. These are ambitious goals but will be needed to meet goals to minimize VMT, transportation related GHG emissions and congestion.

### PROPORTION OF THE COUNTYWIDE LOW STRESS BIKE NETWORK THAT HAS BEEN COMPLETED

The Low Stress Bike Network (LSBN) is a component of the CCTA Countywide Bicycle and Pedestrian Plan (CBPP) adopted in 2018. The CBPP introduced a new way of evaluating a facility’s Level of Traffic Stress, in which roadways are evaluated on several factors, including, but not limited to the speed and number of vehicles and presence and width of bicycle facilities. Facilities are given a rating from one (least stressful) to four (most stressful) to evaluate the stress a bike rider will experience. The goal of the 2018 CBPP is to ensure the LSBN is complete and rated either Level of Traffic Stress 1 (most children can feel safe riding on these facilities) or Level of Traffic Stress 2 (The “interested but concerned” adult population will feel safe riding on these facilities). Ultimately, construction of the entire LSBN would result in an increase in bike/pedestrian mode share and a reduction in KSI collisions.

The status of the entire Central County portion of the LSBN is shown in Figure 2. If the entire LSBN in the Central County subregion were completed, it would result in 180 miles of Class I and Class IV facilities.

Table 12 shows that 25 percent of Central County’s LSBN is already completed. A further three percent of low stress facilities are incomplete yet have an adopted plan to complete the facility. There are projects proposing improvements that would not result in low-stress facilities on an additional two

percent of the LSBN while nine percent are proposed for further study. A total of 61 percent of the total LSBN miles are incomplete and do not have a plan to complete them.

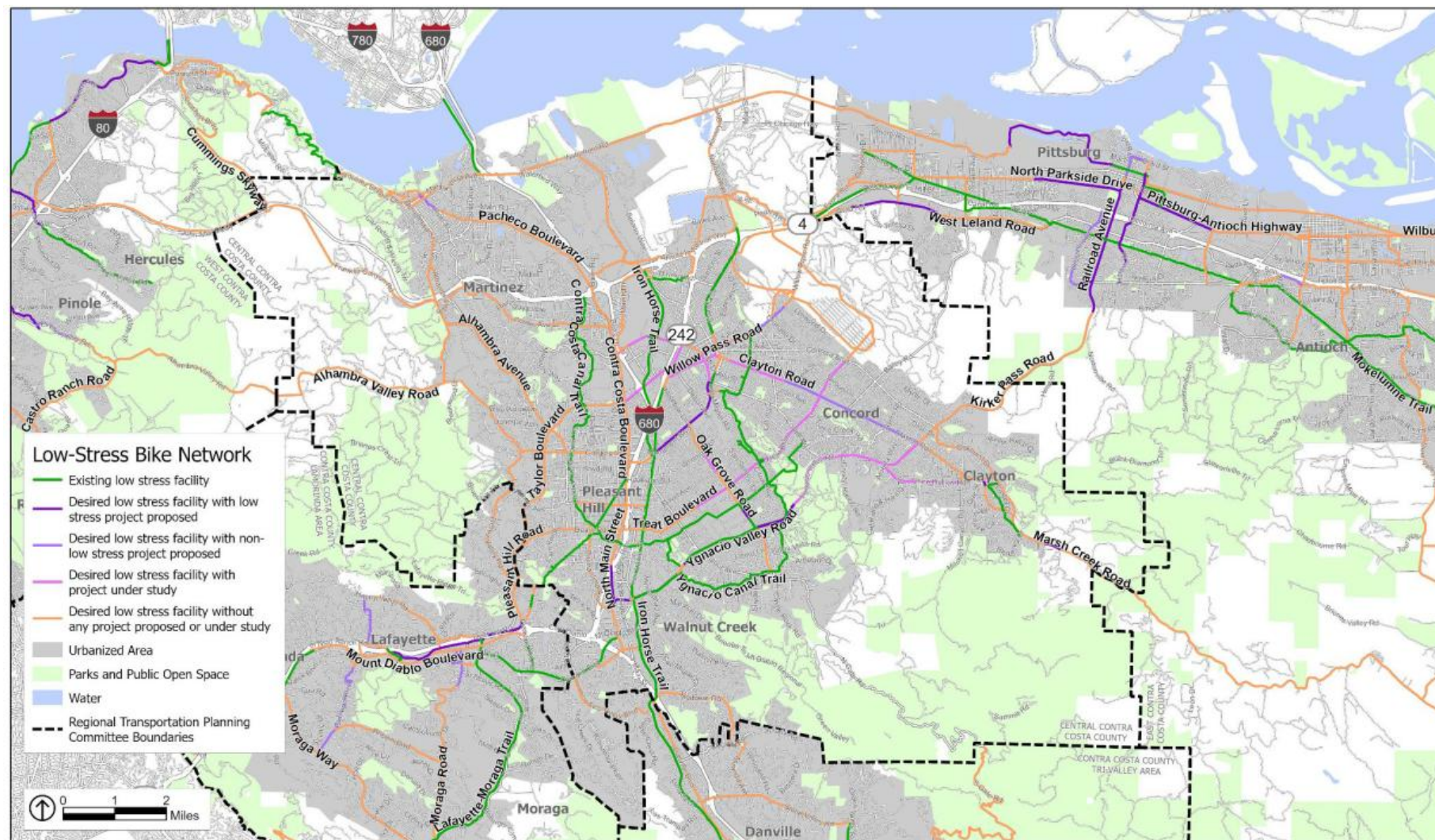
We suggest that the region should aim to achieve 100% completion of the LSBN by 2050. We also propose an interim target of 29.5% (52.4 miles) completion by 2027. This is the sum of existing completed facilities (25%) and 150% of the already proposed low-stress additions to the network ( $3\% \times 150\% = \text{approximately } 4.5\%$ ). This would require completion of the low-stress projects that already have an adopted plan, and completion of additional projects on 1.5 percent (2.7 miles) of the proposed LSBN. This could include segments on which non-low-stress facilities are currently proposed if those projects are revised to become low-stress projects.

**TABLE 12. PROPORTION OF THE CENTRAL COUNTY SUBREGION LSBN THAT IS COMPLETE**

Status of Facility	Miles	Percent
Existing Low Stress Facility	45.3	25%
Desired Low Stress Facility with Low Stress Project Proposed	4.7	3%
Desired Low Stress Facility with Non-Low Stress Project Proposed	4.3	2%
Desired Low Stress Facility with Project Under Study	16.5	9%
Desired Low Stress Facility without any Project Proposed or Under Study	109.2	61%



FIGURE 2. STATUS OF THE CENTRAL COUNTY LSBN



Source: ABAG/MTC, 2021, 2019; CCTA, 2021; ESRI, 2021; PlaceWorks, 2021.

WORKING DRAFT — CENTRAL CONTRA COSTA COUNTY LOW-STRESS BIKE NETWORK

## NUMBER OF LOCATIONS WHERE THE LOW STRESS BIKE NETWORK MAKES AN UNPROTECTED CROSSING OF A HEAVILY TRAVELED VEHICLE ROUTE

For this RTO, PlaceWorks created an ArcGIS point data set, shown in Figure 3, that identifies each location where the existing LSBN crosses a heavily-traveled vehicle route and is considered:

- **Fully protected** by grade separation or a signalized intersection with cyclist protections.
- **Semi-protected** at an at-grade crossing with a beacon system, or with a signal but without cyclist protections.
- **Unprotected** at an at-grade crossing which includes none of the improvements listed above.

As illustrated in Figure 3, there are three intersections in the Central County subregion that are currently unprotected. There are three existing intersections that are already fully protected and twenty-four which are semi-protected. The unprotected intersections are:

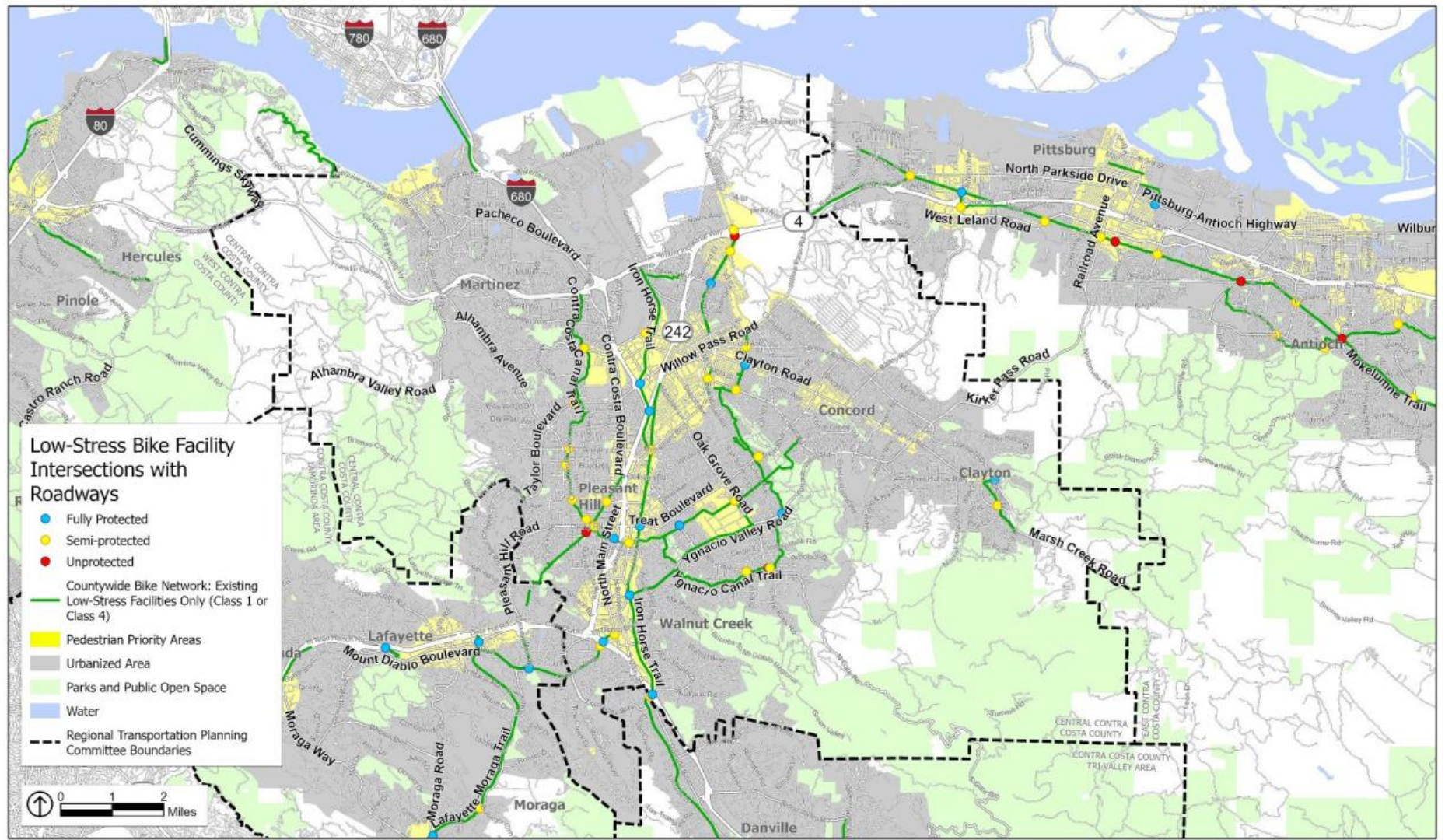
- Unprotected: Port Chicago Highway crossing an eastbound freeway off-ramp on SR-24.
- Unprotected: Briones to Mount Diablo Regional Trail crossing at Buena Vista Avenue north of 1<sup>st</sup> Avenue.
- Unprotected: Ygnacio Canal Trail and Oak Grove Road Couplet in the southeast direction.

We propose that the Action Plan set a target to modify these three unprotected crossings to be fully protected by 2027. Then, we propose to set a target to modify all semi-protected intersections to become fully protected by 2050.

As the LSBN is completed over time, new locations where the LSBN crosses a heavily traveled vehicle route will be added. Local jurisdictions should install full intersection protections for cyclists and pedestrians at these locations.



FIGURE 1. TYPES OF CROSSINGS AT INTERSECTIONS OF THE LSBN AND A HEAVILY-TRAVELED ROADWAY



WORKING DRAFT — CENTRAL CONTRA COSTA COUNTY LOW-STRESS BIKE NETWORK AND SIGNIFICANT ROADWAY INTERSECTIONS

## Safety RTOs

The RTOs presented in this section are based on the injury and fatality crashes reported by the Transportation Injury Mapping System (TIMS)<sup>2</sup>. TIMS crash records represent cleaned and geocoded data compiled by the Statewide Integrated Traffic Records System (SWITRS) maintained by the California Highway Patrol. The statistics reflect the most recent five years available data (January 1, 2016 through December 31, 2020).

CCTA has published the *Vision Zero & Systemic Transportation Safety “How To” Policy and Implementation Guide* and encourages local jurisdictions to adopt and implement Vision Zero Action plans. In addition, an objective found in the Contra Costa Countywide Bicycle and Pedestrian Plan is to, “Reduce the rate of pedestrian and bicycle fatalities and injuries per capita.”

In alignment with the Vision Zero philosophy, the proposed performance target is zero fatalities and severe injuries for each of the below safety RTOs.

### NUMBER OF KILLED OR SERIOUSLY INJURED (KSI) COLLISIONS

This RTO tracks the number of bicycle or pedestrian involved KSI crashes from the TIMS data set. The crash locations are depicted in Figure 4. Table 13 summarizes the crashes by type and Table 14 summarizes the crashes by severity.

During the analysis timeframe, there were 6,839 severe injury or fatality crashes throughout the planning subarea. The most common types of crash were rear end and broadside collisions. These collisions resulted in over 106 fatalities and 451 severe injuries.

### NUMBER OF BIKE- OR PEDESTRIAN-INVOLVED COLLISIONS

The crash locations for the Central County subregion are depicted in Figure 5 and summarized by severity in Table 14. During this timeframe, there were 817 bicycle or pedestrian involved crashes, accounting for about 12 percent of all crashes. Thirty-seven of the bicycle or pedestrian crashes resulted in fatalities and 121 resulted in severe injury.

### NUMBER OF BIKE- OR PEDESTRIAN-INVOLVED COLLISIONS WITHIN 500 FEET OF A SCHOOL

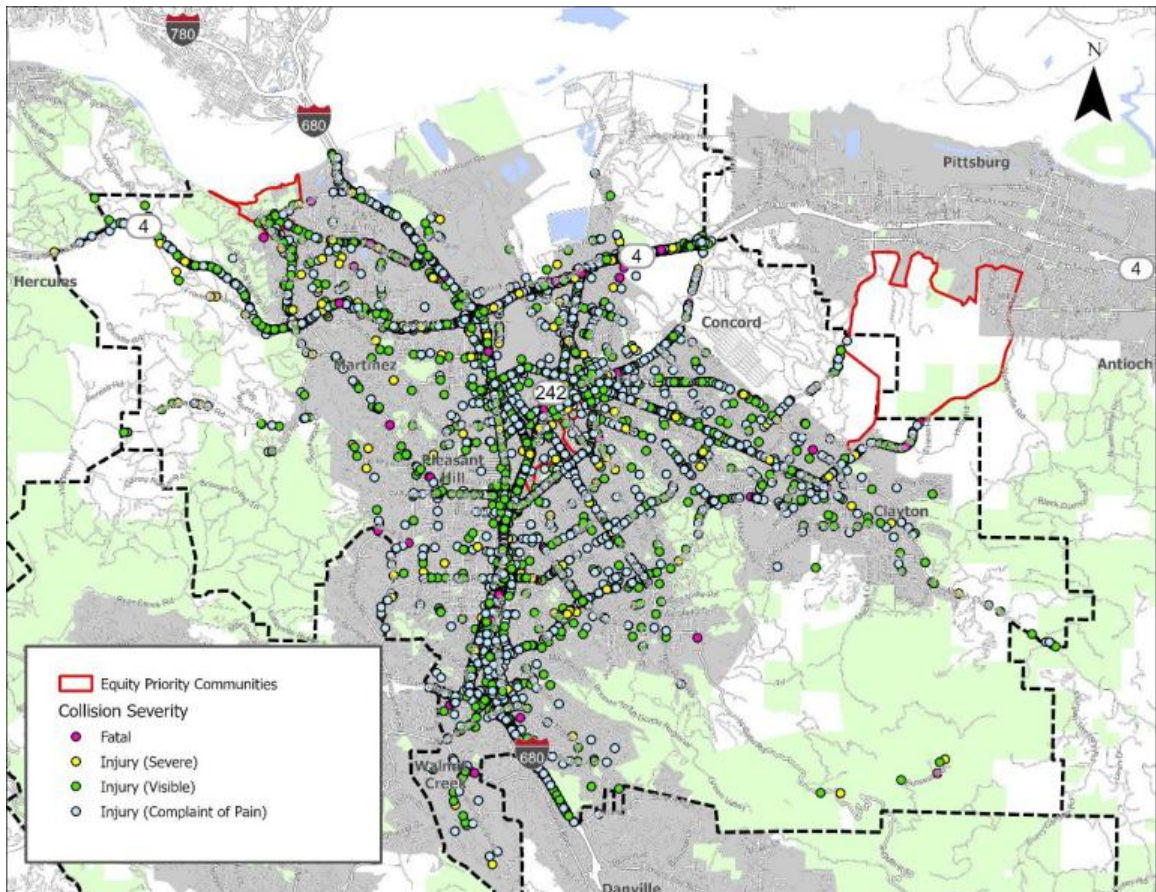
This RTO tracks the number of bicycle or pedestrian involved KSI crashes that occur within 500 feet of school campuses. These crash locations are also depicted in Figure 5. A total of 78 crashes occurred near school campuses, 47 of which involved collision with a pedestrian and 31 with a bicyclist, resulting in three fatalities.

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<sup>2</sup> Transportation Injury Mapping System (TIMS), Safe Transportation Research and Education Center, University of California, Berkeley. 2022



FIGURE 4. FATALITY AND INJURY COLLISIONS (2016-2020)



**TABLE 13. INJURY AND FATALITY COLLISION BY CRASH TYPE - CENTRAL COUNTY SUBREGION FROM JANUARY 1, 2016, THROUGH DECEMBER 31, 2020**

Crash Type	Number of Crashes
Not Stated	118
Head-on	387
Sideswipe	751
Rear End	2,458
Broadside	1,471
Hit Object	931
Overtaken	236
Vehicle/Pedestrian	404
Other	83
<b>Total</b>	<b>6,839</b>

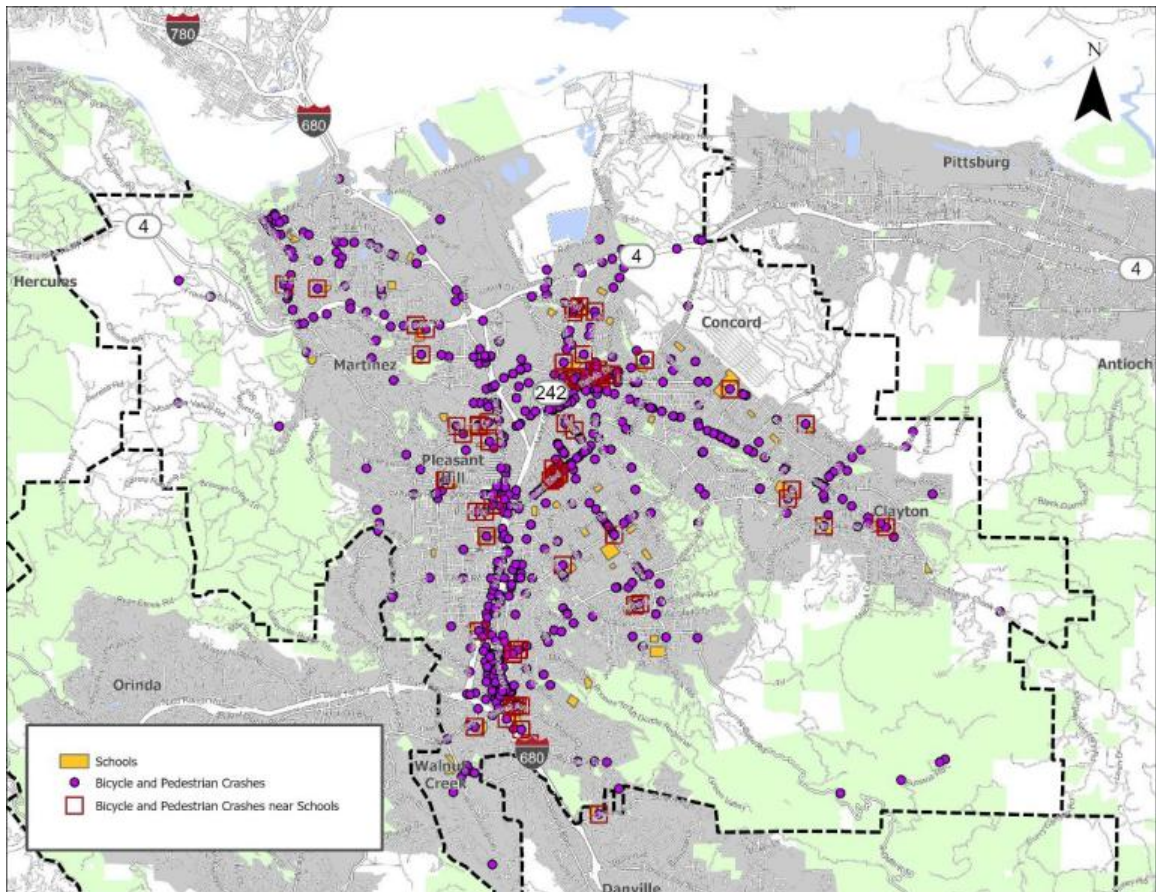
Source: Transportation Injury Mapping System and DKS Associates

**TABLE 14. NUMBER OF CRASHES BY SEVERITY - CENTRAL COUNTY SUBREGION FROM JANUARY 1, 2016, THROUGH DECEMBER 31, 2020**

Severity	Number of Total Crashes	Bike and Ped Crashes
Fatal	106	37
Injury (Severe)	451	121
Injury (Other Visible)	1,928	318
Injury (Complaint of Pain)	4,354	341
<b>Total</b>	<b>6,839</b>	<b>817</b>

Source: Transportation Injury Mapping System and DKS Associates

FIGURE 5. BICYCLE AND PEDESTRIAN INVOLVED CRASHES INCLUDING WITHIN 500 FEET OF SCHOOLS



## Equity RTOs

### PROPORTION OF KSI AND BIKE- OR PED-INVOLVED COLLISIONS THAT OCCUR IN EPCS

This metric tracks the proportion of all collisions that occur within EPCs. Of the 6,839 crashes summarized under Safety RTOs, 773 or about 11 percent occurred within Central County EPCs.

### SHARE OF COUNTY JOBS THAT CAN BE REACHED BY EPC RESIDENTS WITH A 30-MINUTE DRIVE, AS COMPARED TO COUNTY RESIDENTS AS A WHOLE

This metric compares the proportion of Contra Costa County jobs reachable within a 30-minute peak period drive from each TAZ in the subregion compared to the proportion of County jobs reachable from all TAZs within subregion EPCs. The number of jobs corresponds to those used in the travel demand model inputs. As shown in Table 15 below, while 83% of County jobs are reachable from the Central County subregion, only 63% of County jobs are reachable from within the EPCs. By 2050, the share of County jobs reachable from the Central County region is forecasted to drop slightly to 77% while the EPC share rises to 65%.

The proposed performance target for this RTO is that the share of accessible jobs from within the EPCs should be equivalent to that of the subregion as a whole by 2050. This implies that the EPC accessibility for Central County should rise to 68% by 2027.

**TABLE 15. SHARE OF COUNTY JOBS ACCESSIBLE WITHIN A 30 MINUTE DRIVE**

GEOGRAPHY	JOBS 2019	PERCENT REACHABLE 2019	COUNT TAZs 2019	JOBS 2050	PERCENT REACHABLE 2050	COUNT TAZs 2019
Contra Costa County	404,286	100%	1,493	530,467	100%	1,493
Central County	336,573	83%	1,154	406,423	77%	1,155
Central County EPCs	255,437	63%	917	345,153	65%	923

### SHARE OF COUNTY JOBS THAT CAN BE REACHED BY EPC RESIDENTS WITH A 45-MINUTE TRANSIT TRIP, AS COMPARED TO COUNTY RESIDENTS AS A WHOLE

This metric compares the proportion of Contra Costa County jobs reachable within a 45-minute peak period transit trip from each TAZ in the subregion compared to the proportion of County jobs reachable from all TAZs within subregion EPCs. The number of jobs corresponds to those used in the travel demand model inputs. As shown in Table 16 below, while 100% of County jobs are reachable from the Central County subregion, only 43% of County jobs are reachable from within the EPCs. By 2050, while the EPC share rises to 51%.

The proposed performance target for this RTO is that the share of accessible jobs from within the EPCs should be equivalent to that of the subregion as a whole by 2050. This implies that the EPC accessibility for Central County should rise to 58% by 2027.



**TABLE 16. SHARE OF COUNTY JOBS ACCESSIBLE WITHIN A 45 MINUTE TRANSIT TRIP**

GEOGRAPHY	JOBS 2019	PERCENT REACHABLE 2019	COUNT TAZs 2019	JOBS 2050	PERCENT REACHABLE 2050	COUNT TAZs 2019
Contra Costa County	404,491	100%	1,495	530,616	100%	1,495
Central County	404,491	100%	1,495	530,616	100%	1,495
Central County EPCs	174,506	43%	570	269,249	51%	626

### PROPORTION OF EPC ACRES THAT ARE NOT WITHIN A QUARTER-MILE DISTANCE OF A TRANSIT STOP SERVED BY HIGH QUALITY TRANSIT

As shown on Figure 6, there is portion of EPC areas in Central County that are not within a quarter mile of high frequency bus stops with 15-minute headways or less, or within a half-mile of rail or ferry terminals. Table 17 indicates that only 26 percent of EPC acreage is within the high-quality transit buffer, meaning a total of 74 percent are not within the buffer.

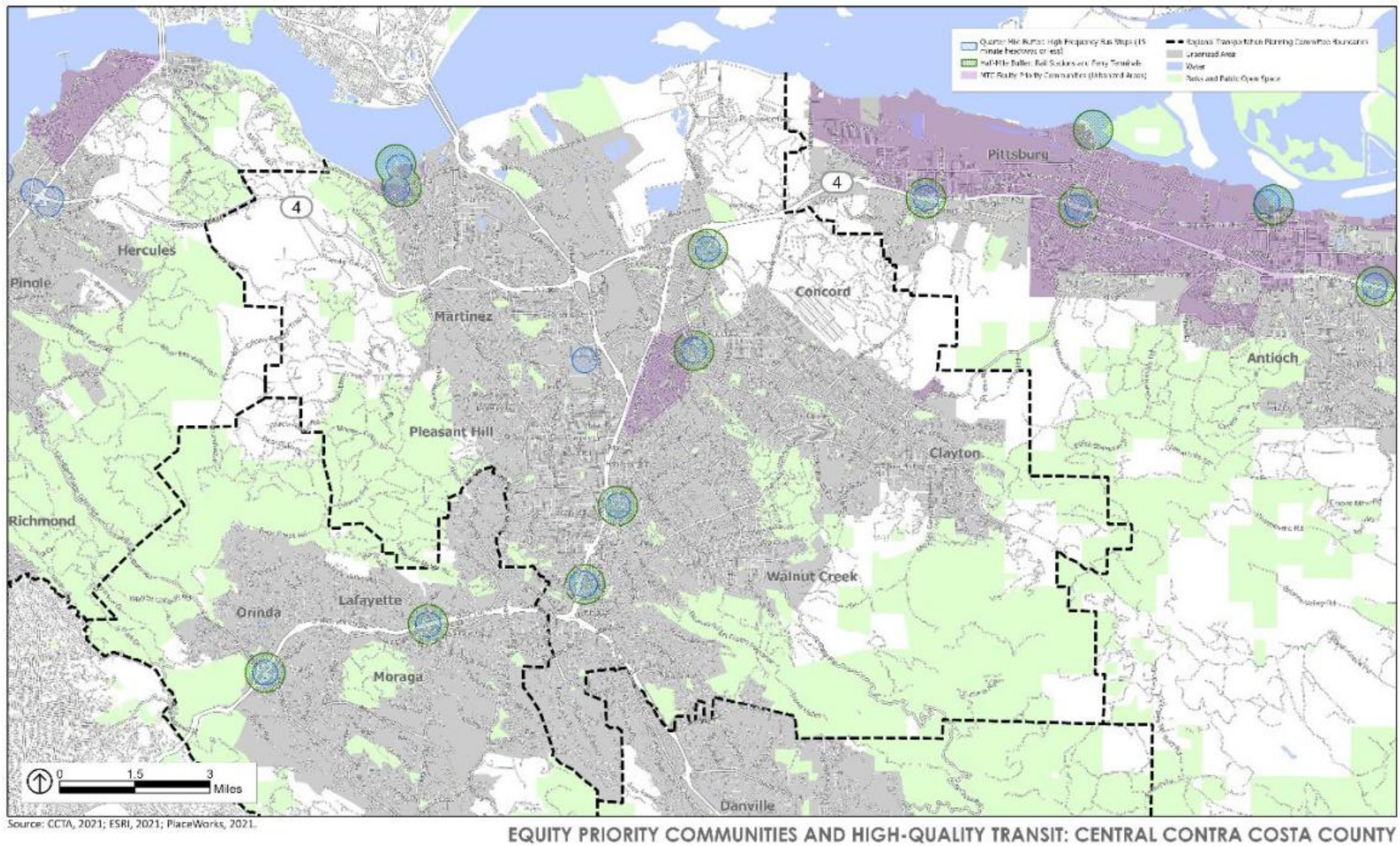
We suggest that the region aim to achieve 100% of EPC acres within a quarter mile of high-quality transit by 2050. We know that this is an ambitious goal, especially in cases where EPC acreage includes industrial areas. However, this goal will help the subregion and CCTA meet broad transit goals and increase access in areas considered to be EPCs.

We also propose an interim target of 40% completion by 2027 (a roughly 50% increase over the current condition).

**TABLE 17. CENTRAL COUNTY EPC ACRES IN RELATION TO HIGH-QUALITY TRANSIT**

	Acres	Proportion of Total Acres
Within high-quality transit buffer	373.1	26%
Not within high-quality transit buffer	1,072.4	74%
<b>Total EPC acres in Central County</b>	<b>1,1445.51</b>	<b>100%</b>

FIGURE 6. CENTRAL COUNTY EPCS AND HIGH-QUALITY TRANSIT



## Climate Change RTOs

### SINGLE OCCUPANT VEHICLE MODE SHARE

As shown in Table 2 in the first section of this memo (“Mode Share”), 67 percent of total Central County work trips were taken by driving alone, compared to 68 percent of all Contra Costa County residents. Table 3 and Table 4 illustrate that the model output predicts that this number will increase to 66 percent of home base work mode share based on residence location and 72 percent based on job location by 2050. Meanwhile, the model predicts that 63 percent of all trips made by Central County residents (not strictly commute trips) will be taken by driving alone by 2050.

The proposed performance target for single-occupant vehicle work commute mode share in the Central County subregion is 60 percent for home-based work trips, in 2027 and 49 percent in 2050. These numbers have been derived by reducing future single-occupant vehicle mode share by the targeted increases in transit, bike and walk trip mode share, and by also assuming an increase in carpooling (multiple-occupant vehicle) mode share to 15 percent.

### VEHICLE MILES TRAVELED (VMT) PER CAPITA

The Action Plans will consider total VMT for County and subregion residents.

The 2020 VMT study conducted for CCTA by Fehr & Peers found that 2018 VMT per service population in the Central County subregion was 29.4, and that the same number for Contra Costa County was 30.3 VMT per service population.

The California Air Resources Board’s document entitled *2017 Scoping Plan-Identified VMT Reductions and Relationship to State Climate Goals* published in January 2019<sup>3</sup> states that the state needs to reduce daily per capita total VMT to 21 to achieve carbon-neutrality, which is the State’s goal for 2045.

Based on this finding, we propose that the Action Plan contain a goal for 2050 to reduce VMT per capita to 21 VMT per service population in the Central County area. Using a straight-line projection for reductions from 2018 until 2045, this would mean a reduction of ten percent to 26.6 VMT per capita by 2027.

**TABLE 18. VMT PER SERVICE POPULATION**

	2018	2050
Central County	29.4	24.7
Contra Costa County	30.3	28.2

Source: Fehr and Peers, 2020; DKS and CCTA Travel Demand Model, 2022

<sup>3</sup> Available at [https://ww2.arb.ca.gov/sites/default/files/2019-01/2017\\_sp\\_vmt\\_reductions\\_jan19.pdf](https://ww2.arb.ca.gov/sites/default/files/2019-01/2017_sp_vmt_reductions_jan19.pdf)

## TRANSPORTATION GREENHOUSE GAS (GHG) EMISSIONS PER CAPITA

This metric reflects the total daily VMT occurring on roadways within the planning area, including commercial vehicle trips and through traffic but does not include estimates of VMT occurring outside the travel demand model boundaries. The EMFAC emissions model has been used to translate this total daily roadway VMT into GHG emissions (specifically, CO<sub>2</sub>)<sup>4</sup>. The emissions outputs also reflect assumptions about the future vehicle fleet.

The proposed target for this metric is zero tons of transportation related emissions by 2050 or about a 1/3 reduction in GHG per capita by 2027. With the currently estimated 26 pounds of GHG per capita, this translates to a 2027 target of about 17 pounds per capita. Although transportation related CO<sub>2</sub> emissions are projected to fall by 2050, more work is needed to reach the target of zero.

**TABLE 19. AVERAGE DAILY TRANSPORTATION RELATED GHG PER CAPITA**

	2019			2050		
	POPULATION	CO <sub>2</sub> EMISSIONS (TONS)	CO <sub>2</sub> EMISSIONS PER CAPITA (LBS)	POPULATION	CO <sub>2</sub> EMISSIONS (TONS)	CO <sub>2</sub> EMISSIONS PER CAPITA (LBS)
Central County	318,611	4,153	26.07	560,029	2,648	9.46
Contra Costa County	1,148,922	13,734	23.91	1,545,776	8,738	11.31

Source: DKS Associates, EMFAC 2021, CCTA Travel Demand Model.

## ZERO-EMISSION VEHICLE OWNERSHIP IN THE SUBREGION

This RTO tracks the number of battery electric vehicles “on the road,” with the goal of increasing total EV penetration. Data as of April 2021, which is the most recent report date, are shown in Table 20 for Central County as well as all of Contra Costa County for comparison. Central County currently has 4,879 EVs, as compared to 21,609 in the County overall.

Under a rule proposed by CARB, 35 percent of new passenger vehicles sold in the state must be powered by batteries or hydrogen by 2026, and 100 percent 2035<sup>5</sup>. Currently, 12.4 percent of new vehicles sold in California are ZEV and ZEVs make up about 4 percent of the light duty vehicle fleet in Contra Costa County.

By executive order, California has set a target of one million ZEVs on the road by 2025 and five million ZEVs by 2030<sup>6</sup>. Since Central County accounts for less than one percent of the state’s population, this suggests that the subregion should have about 8,100 EVs by 2025 and 40,600 EVs by 2030. A straight-line extrapolation of this number through 2050 suggests over 191,000 EVs in Central County by 2050.

<sup>4</sup> [California Air Resources Board, EMFAC 2021 v1.0.2 Scenario Analysis.](#)

<sup>5</sup> California Air Resources Board. Advanced Clean Cars II.

<sup>6</sup> Executive Order B-16-2012 and Executive order B-48-18.



With all the above factors in mind, we propose a target 100 percent of the fleet, contrasted to the estimated existing EV fleet penetration of about two percent. The estimated number of light duty vehicles currently based in Central County is about 250,700.

**TABLE 20. ELECTRIC VEHICLES BY SUBREGION AS OF APRIL 2021**

<b>Area</b>	<b>Battery Electric Vehicles</b>
Central County	4,879
East County	2,926
Lamorinda	3,141
Tri-Valley	15,262
West County	4,258
<b>Total Subregion</b>	<b>30,466</b>
Contra Costa County	21,609

Source: California Energy Commission (2022). California Energy Commission Zero Emission Vehicle and Infrastructure Statistics. Data last updated April 2022. Retrieved June 29, 2022 from <http://www.energy.ca.gov/zevstats>.

Note: Correspondence of zip codes to RTPC boundaries is approximate.

## Technology RTO

### LEVEL OF SIGNAL INTERCONNECTION

Interconnected signal systems are those which communicate with other signals or systems. Signal interconnection helps in establishing a connection between the traffic signals and the central system, which enables remote access to the signals from the local agency locations or the Traffic Management or Operations Center. These interconnections allow signal timings to be adjusted remotely, during regular day-to-day operations, during major incidents, and during special events. Interconnection also enables cross-jurisdiction communications, coordination, and data exchange to respond to varying traffic conditions.

CCTA is currently working with Central County's jurisdictions to interconnect a total of 101 signals in Clayton, Concord, Martinez, Pleasant Hill, and Walnut Creek, using funding to come primarily from MTC's OBAG3 program. Since this effort is already underway, the target for this RTO is the completion of all 101 signal improvements by 2027. There is no additional target for 2050, since there are no plans for a further interconnection program.

## MEMORANDUM

DATE July 7, 2022

TO John Hoang and Matt Kelly, CCTA

FROM David Early and Torina Wilson, PlaceWorks  
Erin Vaca, DKS Associates  
Julie Morgan and Terence Zhao, Fehr & Peers

SUBJECT Central County Subregion Actions Memorandum

This Memorandum lists the existing Central County Action Plan actions and proposes revisions to those actions as part of the Action Plan update. These actions will reinforce the Regional Transportation Objectives (RTOs) set, and described in further detail, in the RTO Methodology and RTO Analysis Memorandums submitted as part of the Round 4 TAC meeting materials and dated July 7, 2022.

The revisions proposed in Table 1 reflect consolidation and/or wordsmithing of existing actions, removing of actions which are now complete, and the introduction of new actions. Proposed new actions come from several sources, including:

- Actions recommended by the project team based on best management practices or similar projects, that are necessary to achieving the performance targets established under the RTOs.
- Actions to introduce topics that would have been RTOs but the project team decided not to pursue. These RTOs considered but not recommended are discussed in detail at the end of the RTO Methodology Memorandum dated July 7, 2022.
- Actions to address topics requested by Central County TAC members or through other subregional TAC members that are also applicable to the Central County subregion.

The middle column of Table 1 lists the existing Central County Action Plan text and includes strikethrough and underline edits to show revisions proposed by the project team. Column B includes notes on why the edit has been made while the first column assigns each revised action with an action number that will be used in the Draft Action Plan. TAC members can make comments on these revisions at the Round 4 TAC meeting or through email before or after the meeting.

**TABLE 1**      **RECOMMENDED REVISIONS TO THE CENTRAL COUNTY ACTION PLAN ACTIONS**

New Action Number	Proposed Action Language Revisions	Notes
<i>Freeways</i>		
Freeways-1	<u>Continue to monitor and evaluate operational improvements at freeway interchanges on I-680, SR-242, SR-24, and SR-4. (8-A) Complete necessary operational improvements (i.e. protected turn lanes, synchronized signal timing, and auxiliary lanes, among others) at select intersections or roadway segments, while ensuring that the improvements are balanced against the objectives and actions set forth elsewhere in this Action Plan</u>	Revised with language drafted for all action plans
	<del>8-B: Support development of operational improvements on mainline SR-4.</del>	Removed because operational improvements are addressed above.
	<del>Continue to support the completion of the fourth bore of the Caldecott Tunnel (SR-24). (8-C)</del>	Removed by staff
	<del>Support the study and implementation of potential regional freeway management strategies. (8-D)</del>	Removed because this is part of the general operational improvements action.
	<del>Consider a multi-agency approach to freeway ramp metering. (8-E)</del>	Removed because it is addressed in the operational efficiency action above.
	<del>Support the implementation of Express Lanes on I-680, consistent with MTC's project. (9-D)</del>	Removed because it is addressed in the operational efficiency action above.
Freeways-2	<u>Support the Work with CCTA and local jurisdictions to completion of a continuous HOV system on I-680, including the connection of the SR-4 HOV system to I-680</u>	Revised to consolidate with HOV action below.
	<del>Support the connection of the SR-4 HOV system to I-680. (9-B)</del>	Consolidated with HOV action above
Freeways-3	<u>Support Work with applicable agencies to support consistent occupancy requirements for toll-free HOV/HOT lanes on the Benicia-Martinez Bridge and I-680. (9-C)</u>	Revised to sounds more actionable.
	<del>Support additional incentives for HOV users. (9-E)</del>	Removed because it is vague.
	<del>Support the efforts of the Authority to evaluate congestion relief strategies along the I-680 corridor, including transit options and new technologies. (2-B)</del>	Removed because this is implied through all actions proposed for this Action Plan

**TABLE 1**                      **RECOMMENDED REVISIONS TO THE CENTRAL COUNTY ACTION PLAN ACTIONS**

New Action Number	Proposed Action Language Revisions	Notes
	<del>Contra Costa Mobility Management Plan to establish a mobility management center</del>	Removed due to lack of detail and could be included in the general corridor management plan action proposed
Freeways-4	<u>Improve the operational efficiency of freeways and arterial streets through effective corridor management strategies, such as ramp metering, traffic operations systems, Intelligent Transportation Systems (ITS) improvements, HOV/HOT lane and bypass lanes, among others, to support a cohesive transportation system for all modes.</u>	Added using language drafted for all action plans
Freeways-5	<u>Work with CCTA and local jurisdictions to study the feasibility of bus on shoulder pilot and long term programs on subregional freeways.</u>	Added using language drafted for all action plans
Freeways-6	<u>Work with CCTA, Caltrans, and California Highway Patrol to track HOV/HOT and Fastrak lane violators.</u>	Added using language drafted for all action plans
Freeways-7	<u>Work with CCTA and local jurisdictions to discourage diversion from freeways and cut through travel on surface roadways by developing traffic management programs, increasing trip capacity on freeways, completing freeway operational improvements, implementing traffic calming measures on surface roadways, and exploring surface roadway redesign to support active and public transportation modes.</u>	Added using language drafted for all action plans
Freeways-8	<u>Work with CCTA to complete a Countywide Goods Movement Plan that promotes greater use of technology for communications and scheduling, funding for equipment upgrades for air quality improvements with cleaner technology, and an advocacy platform for goods movement and guidance for local jurisdictions.</u>	Added using language drafted for all action plans
Freeways-9	<u>Work with CCTA, Caltrans, and other applicable agencies to conduct Integrated Corridor Management (ICM) studies for Central County corridors to improve multimodal function of countywide facilities.</u>	Added using language drafted for all action plans
Freeways-10	<u>Conduct a study to develop a seamless HOV/HOT/Express Lane on SR-24.</u>	Added using language drafted for all action plans
Freeways-11	<u>Improve the operational efficiency of freeways and arterial streets through effective corridor management strategies, such as ramp metering, traffic operations systems, Intelligent Transportation Systems (ITS) improvements, HOV/HOT lane and bypass lanes, among others, to support a cohesive transportation system for all modes.</u>	Added using language drafted for all action plans
<b>Surface Roadways</b>		
Surface Roadways-1	<u>Develop subregional corridor management plans to provide adequate roadway capacity for local and subregional travel while also including both public and active transportation modes and nonmodal transportation issues such as equity, climate change, safety, and technology.</u>	



**TABLE 1**                      **RECOMMENDED REVISIONS TO THE CENTRAL COUNTY ACTION PLAN ACTIONS**

New Action Number	Proposed Action Language Revisions	Notes
<i>Transit</i>		
Transit-1	Support the development of real time information and better connectivity for regional transit and local and feeder bus service. (2-A)	
	<u>Work with CCTA, local jurisdictions, and local public transit operators to:</u> - Link transit service in the entire subregion, including more directly to communities within Central County, between BART stations, and between adjacent Central County communities. - Standardize operations, regional mapping, and wayfinding. - Implement traffic signal management and bus prioritization technology on regionally significant transit routes to improve bus speed and reliability. - Implement improvements that increase the capacity and efficiency of local transit on Regional Routes. (2-F) - Promote coordination of transfer times among Express bus, feeder bus, BART, and park-and-ride lots. (2-C)	Replaced with language drafter for all subarea action plans.
	Support improvements that increase the efficiency of local transit on Regional Routes. (2-F)	Consolidated action with general transit improvements action above
	Support improvements that increase the efficiency of local transit on Regional Routes. (2-F)	Consolidated action with general transit improvements action above
Transit-2	<u>Complete general improvements to BART stations to increase their use, including:</u> - <del>Support increased</del> Construct necessary infrastructure to ensure safe and complete access to BART stations for buses, bikes and pedestrians. (2-G) - Support the expansion of BART service and BART station and parking facilities. (2-D) - <del>Modernize all Central County BART Stations to include modernization</del> new paid areas, platform expansions; new vertical circulation; additional fare gates and fare collection equipment; upgrade systems; <u>replace elevators and to</u> improve customer amenities including bathrooms, signage, lighting, safety and security. <del>For all 3 Central County BART Stations.</del> - Encourage and participate in access and development plans in the immediate vicinity of each BART Station to improve multimodal access and facilities for buses, bicycles and pedestrians. (2-H) - Improve BART Station parking and access, including bicycle and pedestrian amenities; and improve carpool, garage and electric vehicle parking.	Revised to be more general towards BART improvements and to merge an additional action

**TABLE 1**                      **RECOMMENDED REVISIONS TO THE CENTRAL COUNTY ACTION PLAN ACTIONS**

New Action Number	Proposed Action Language Revisions	Notes
	<del>Encourage and participate in access and development plans in the immediate vicinity of each BART Station to improve multimodal access and facilities for buses, bicycles and pedestrians. (2-H)</del>	Consolidated with the general BART action above
	<del>BART Station parking and access improvement. Upgrade station areas to improve access including bicycle and pedestrian amenities; and improve carpool, garage and electric vehicle parking. For all 3 Central County BART Stations.</del>	Consolidated with the general BART action above
	<del>Increase investment in support innovative approaches to improve the efficiency and effectiveness of transit services for seniors and disabled persons through the allocation of Central County's Measure J \$10 million for Additional Transportation for Seniors and People with Disabilities. These funds are in addition to Measure J Other Countywide Programs and total \$35 million in Central County. (2-I)</del>	Remove because this is part of general implementation/support of the revised Accessible Transportation Strategic Plan action
Transit-3	Support the <del>extension</del> expansion of ferry service to and from San Francisco and Contra Costa County. <del>(2-K)</del>	Keep with minimal improvements
Transit-4	Implement the recommendations of the Contra Costa <u>Accessible Transportation Strategic Plan Mobility Management Plan, including the establishment of a new Coordinating Entity and establishing a new, ongoing, dedicated funding stream.</u> <del>mobility management center for the County. (2-K)</del>	Keep with minimal improvements
	<del>Continue to support higher density development around transit hubs and downtown. (3-B)</del>	Removed action because it will instead provide policy direction for the Action Plan
Transit-5	Support the construction and maintenance of accessible bus stops, park and ride lots, and transit hubs. <del>(2-E)</del> <u>Implement park and ride facilities at appropriate locations, including shared-use agreements at activity centers with underutilized parking spaces.</u>	Replaced with a general action drafted for all Action Plans
	Support expansion and use of park and ride facilities using Express and local buses. <del>(2-J)</del>	Replaced with a more detailed mobility hub action drafted for all Action Plans
	Promote park and ride lot use to potential carpoolers, vanpoolers, and transit riders, including shuttle services, where applicable. <del>(7-E)</del>	Replaced with a more detailed mobility hub action drafted for all Action Plans
Transit-6	<del>Provide additional park and ride lots, and develop shared mobility hubs along the I-680 corridor. (9-F)</del> <u>Work with local jurisdictions to develop intermodal transportation facilities ("Mobility Hubs") that serve major activity centers and connect transit, pedestrian, bicycle facilities, and car/ride share in their planning documents, and site park and ride facilities, where needed and feasible.</u>	Replaced with a more detailed mobility hub action drafted for all Action Plans
	Promote coordination of transfer times among Express bus, feeder bus, BART, and park and ride lots. <del>(2-C)</del>	Combined with general coordination action above
	Support the expansion of BART service and BART station and parking facilities. <del>(2-D)</del>	Consolidated with general BART action above

**TABLE 1**      **RECOMMENDED REVISIONS TO THE CENTRAL COUNTY ACTION PLAN ACTIONS**

New Action Number	Proposed Action Language Revisions	Notes
	<del>Encourage commuters to make local trips or trips linked to transit by walking, bicycling, or carpooling instead of driving alone. (7-D)</del>	Removed because this is implied through all actions proposed for this Action Plan
	<del>Martinez Intermodal Station (Phase 3)</del>	Removed because it is too vague and is likely included in the general mobility hub action
Transit-7	<u>Participate in any current or future studies regarding rail options for the Central County area and continue exploring development of new rail stations.</u>	Added using language drafted for all action plans
Transit-8	<u>Work with CCTA and local transit operators to explore financial incentives and reduced fares for public transportation, including a feasibility study to explore a subregional or countywide Universal Basic Mobility program.</u>	Added using language drafted for all action plans
Transit-9	<u>Evaluate systemwide bus stop improvements, including making it safer and easier for people to access transit stations and ensuring that transit is safe and attractive.</u>	Added using language drafted for all action plans
Transit-10	<u>Provide educational awareness of public transportation options through outreach, education, and advertising, particularly in local schools.</u>	Added using language drafted for all action plans
Transit-11	<u>Assist local jurisdictions in reviewing and considering options for improving curb management and bus and truck loading on public streets.</u>	Added using language drafted for all action plans
Transit-12	<u>Work with CCTA to fund and develop a regional mapping data services digital platform to enable the standardization and routine updating of digital and paper maps across all transit services</u>	Added using language drafted for all action plans
Transit-13	<u>Complete a feasibility study to explore feasibility of a Regional Express Bus Program and expansion and enhancement of Bus Rapid Transit, along SR-24 and other key roadways.</u>	Added using language drafted for all action plans
Transit-14	<del>BART Station modernization new paid area, platform expansion; new vertical circulation; additional fare gates and fare collection equipment; upgrade systems; improve customer amenities including bathrooms, signage, lighting, safety and security. For all 3 Central County BART Stations.</del>	Combined with general BART improvement action above
<i>Bike/Ped</i>		
Bike/Ped-1	<u>Prioritize the needs of pedestrians and bicyclists in the design, construction, and maintenance of development projects. (3-D)</u>	Keep with minimal improvements
Bike/Ped-2	<u>Prioritize the needs of pedestrians and bicyclists, and improve facilities along and connecting to Regional Routes and activity centers. (5-C)</u>	Keep and add action from below
	<del>Support the improvement of bicycle and pedestrian facilities on and connecting to Routes of Regional Significance. (6-B)</del>	Consolidated with Bike/Ped priority action above
Bike/Ped-3	Seek funding to provide bicycle parking infrastructure at employment sites and activity centers throughout Central County. (6-C)	Keep as is
Bike/Ped-4	<del>Support development of pedestrian and bicycle plans and safe routes to transit improvements. (6-D)</del>	Revised using language drafted for all action plans and addressed in two actions

**TABLE 1**      **RECOMMENDED REVISIONS TO THE CENTRAL COUNTY ACTION PLAN ACTIONS**

New Action Number	Proposed Action Language Revisions	Notes
	<u>Work with local jurisdictions in adopting and updating their bicycle and pedestrian plans to expand and/or improve their facilities to ensure a seamless active transportation network that provides a positive user experience.</u>	
	<del>Seek funding to provide bicycle parking infrastructure at employment sites and activity centers throughout Central County. (7 H)</del>	Removed by staff
	<del>Detroit Avenue Complete Streets Project</del>	Revised because it is too vague and is likely included in proposed action revisions
	<del>Farm Bureau Road Safe Route to School Improvements</del>	Revised because it is too vague and is likely included in proposed action revisions
	<del>Cleveland Road widening and sidewalk improvements</del>	Revised because it is too vague and is likely included in proposed action revisions
Bike/Ped-5	<u>Complete the following gaps in the Countywide Low Stress Bike Network:</u> <u>=[Gaps to be identified in Round 4 meeting]</u>	Added using language drafted for all action plans and listed gap closure related actions; gaps to be closed will be determined at the round 4 TAC discussion
Bike/Ped-6	<u>Complete bicycle and pedestrian crossing improvements at the following intersections:</u> <u>- Port Chicago Highway crossing an eastbound freeway off-ramp on SR-24.</u> <u>- Briones to Mount Diablo Regional Trail crossing at Buena Vista Avenue north of 1st Avenue.</u> <u>- Ygnacio Canal Trail and Oak Grove Road Couplet in the southeast direction.</u>	Added using language drafted for all action plans
Bike/Ped-7	<u>Work with CCTA, Contra Costa Health Services, and Street Smarts Diablo Region to facilitate a countywide coordinated approach to Safe Routes to Schools programs, and to identify continual funding streams to encourage students, employees, and residents at K-12 schools, technical schools, and college sites to use non-vehicle modes to get to school.</u>	Added using language drafted for all action plans
Bike/Ped-8	<u>Develop a program to provide educational awareness of active transportation options and safety through outreach, education, and advertising.</u>	Added using language drafted for all action plans
Bike/Ped-9	<u>Work with CCTA and MTC to promote Safe Routes to Transit projects and programs, and submit applications for funding for construction of local Safe Routes To Transit projects and programs.</u>	Added using language drafted for all action plans
Bike/Ped-10	<u>Continue the program to reduce the cost of bicycles, pedal-assist bicycles, and electric bicycles for Contra Costa residents.</u>	Added using language drafted for all action plans
Bike/Ped-11	<u>Support development of pavement management systems and implementation of pavement rehabilitation improvements. (1-B) Work with CCTA and other regional agencies to develop a method of tracking</u>	Replaced with language drafted for all action plans

**TABLE 1**                      **RECOMMENDED REVISIONS TO THE CENTRAL COUNTY ACTION PLAN ACTIONS**

New Action Number	Proposed Action Language Revisions	Notes
	<u>the Pavement Condition Index (PCI) of bicycle facilities on the low-stress bike network, and implement rehabilitation improvements where needed.</u>	
Bike/Ped-12	<u>Work with Caltrans to prepare an incident management plan for Central County freeway corridors.</u>	Added using language drafted for all action plans
<i>Safety</i>		
Safety-1	<u>Support the inclusion of Complete Streets in General Plan updates. (6-A) Work with CCTA to implement the Countywide Vision Zero Framework.</u>	Revise to be more general to support Vision Zero
Safety-2	<u>Conduct a study to identify all safety-related transportation improvements needed within 500 feet of schools.</u>	Added using language drafted for all action plans
Safety-3	<u>Develop a program to coordinate the collection and analysis of safety data, identify areas of concern, and propose safety-related improvements and user awareness so as to support state and federal safety programs and performance measures.</u>	Added using language drafted for all action plans
Safety-4	<u>Work with CCTA, MTC, and East Bay Regional Parks to study and avoid the safety impacts of electric bicycles on local trails and streets, so as to eventually allow electric bicycles on all local trail facilities.</u>	Added using language drafted for all action plans
<i>Equity</i>		
Equity-1	<u>Conduct a study to identify strategies to increase low income resident access to transit hubs, jobs, and areas with goods and services (for example, in Central County, the study could explore enhancing existing transit hubs, constructing new transit hubs, and first/last mile solutions).</u>	Added using language drafted for all action plans
Equity-2	<u>Increase access to car sharing services for low-income residents and support financial incentives for using them.</u>	Added using language drafted for all action plans
Equity-3	<u>Increase express bus service to regional job centers, particularly those with low-income workers, inside and outside of the subregion.</u>	Added using language drafted for all action plans
Equity-4	<u>Increase high frequency transit lines and stops in EPC areas.</u>	Added using language drafted for all action plans
<i>Climate Change</i>		
	<u>Encourage “green” commuting, including ZEV and NEV vehicles, clean fuel infrastructure, and car sharing. (7-I)</u>	Removed because it is covered by new green commuting actions
Climate Change-1	<u>Support the Work with the 511 Contra Costa to continually expand and improve TDM Programs to educate and encourage Contra Costa residents, students and commuters to use multimodal alternatives by promoting transit, shuttles, carpooling, vanpooling, walking, bicycling, alternative work schedules, and telecommuting. (7-A)</u>	
Climate Change-2	<u>Develop TDM programs at K-12 schools and colleges to encourage carpooling, transit ridership, walking, and bicycling. (7-B) Work with regional agencies, local employers and schools to increase tele-work, compress work weeks, alternative work location, and flex schedules, and provide pre-tax employer transportation benefit programs.</u>	Revised to be more inclusive

**TABLE 1**      **RECOMMENDED REVISIONS TO THE CENTRAL COUNTY ACTION PLAN ACTIONS**

New Action Number	Proposed Action Language Revisions	Notes
	<del>Promote alternative work opportunities including employer pre-tax benefit programs, compressed work week schedules, flex schedules, and telework. (7-C)</del>	Removed because it is consolidated in the action above
	<del>In cooperation with Central County jurisdictions, develop TDM plans and provide consultations to improve mobility and decrease parking demand for new development and redevelopment. (7-F)</del>	Removed because it is implied in the TDM actions above
Climate Change-3	<u>Continue to implement a program to support deployment of high-quality, fast and diverse electrical vehicle chargers in the subregion.</u>	Added using language drafted for all action plans
Climate Change-4	<u>Continue to promote electric vehicle ownership by offering financial incentives and providing educational programs and demonstrations.</u>	Added using language drafted for all action plans
Climate Change-5	<u>Coordinate with impacted jurisdictions, property owners, and other applicable agencies that own or maintain Routes of Regional Significance that would be impacted by sea level rise, to coordinate and plan for inundation mitigation.</u>	Added using language drafted for all action plans
Climate Change-6	<u>Encourage regional agencies and local jurisdictions to refer to the Adapting to Rising Tides Adaptation Roadmap when planning for sea level rise.</u>	Added using language drafted for all action plans
	<del>Clean Fuel Vehicle infrastructure</del>	Removed because it is included in general actions above
<b>Technology</b>		
Technology-1	<del>Support innovative approaches for the deployment of technologies. (4-A)</del> <u>Work with CCTA, micromobility operators, and local jurisdictions to create a subregional model ordinance and model RFP to deploy micromobility systems, built off industry best management practices.</u>	Revised with language drafted for all action plans
Technology-2	<del>Support the construction of infrastructure needed for the expansion of low emission technologies, such as vehicle charging stations. (4-B)</del> <u>Continue to implement a program to support deployment of high-quality, fast and diverse electrical vehicle chargers in the subregion.</u>	Revised with language drafted for all action plans
	<del>Explore innovative new technologies to improve mobility and reduce SOV trips. (7-G)</del>	Removed because it is too vague. Covered by new actions relating to SOV reducing technology
Technology-3	<u>Upgrade the signal system along certain Routes of Regional Significance, including the 101 signals identified for interconnection.</u>	Added using language drafted for all action plans
Technology-4	<u>Conduct a study of the feasibility of a pilot Dynamic Personal Micro Transit System or Automated Driving System somewhere in the Central County area.</u>	Added using language drafted for all action plans
Technology-5	<u>Work with local transit agencies, regional policymakers, and private entities to promote pooled regional ridesharing services.</u>	Added using language drafted for all action plans

**TABLE 1**                      **RECOMMENDED REVISIONS TO THE CENTRAL COUNTY ACTION PLAN ACTIONS**

New Action Number	Proposed Action Language Revisions	Notes
Technology-6	<u>Coordinate with CCTA and local jurisdictions to identify solutions to the Intelligent Transportation System (ITS) communications needs during the development and implementation of a Regional ITS Communications Plan and/or regional communications infrastructure, including expanding fiber to link all traffic signals and bolster communications for signals, etc.</u>	Added using language drafted for all action plans
<i>Funding</i>		
Funding-1	<u>Seek funding for the ongoing maintenance and operation of the existing transportation system and infrastructure. Includes all modes. (1-A)</u> <u>Continue to participate and periodically update the TRANSPAC Subregional Transportation Mitigation Program and the Central Contra Costa Traffic Management Program to ensure it will produce sufficient funds in light of current and anticipated growth rates and construction costs.</u>	Revised using language drafted for all action plans
	<u>Continue to implement the TRANSPAC Subregional Transportation Mitigation Program. (3-E)</u>	Consolidated above
	<u>Continue to implement the Central Contra Costa Traffic Management Program. (5-B)</u>	Consolidated above
	<u>Seek funding for traffic, <del>multimodal</del>, and transit improvements along Regional Routes and other major streets. (5-A)</u>	Removed because funding will come through in actions above and other work through TRANSPAC and regional/local partners
<i>Misc.</i>		
	<u>Continue to support implementation of the Measure J Growth Management Program. (3-A)</u>	Removed because this is implied by the nature and requirements of the Action Plan
	<u>Continue to require each jurisdiction to:</u> <u>a. Notice the initiation of the environmental review process for projects generating more than 100 net new peak hour vehicle trips.</u> <u>b. For projects that require a General Plan Amendment, identify any conflicts with Action Plan MTSOs and then, if requested, present the analysis results and possible mitigation strategies to TRANSPAC for review and comment. (3-C)</u>	Removed because this is implied by the nature and requirements of the Action Plan





# ..... CONNECT CONTRA COSTA .....

## Planning for Tomorrow's Transportation



# Outreach Summary

Action Plan and Countywide Transportation Plan Updates March - May 2022



CONTRA COSTA  
transportation  
authority

Prepared by:



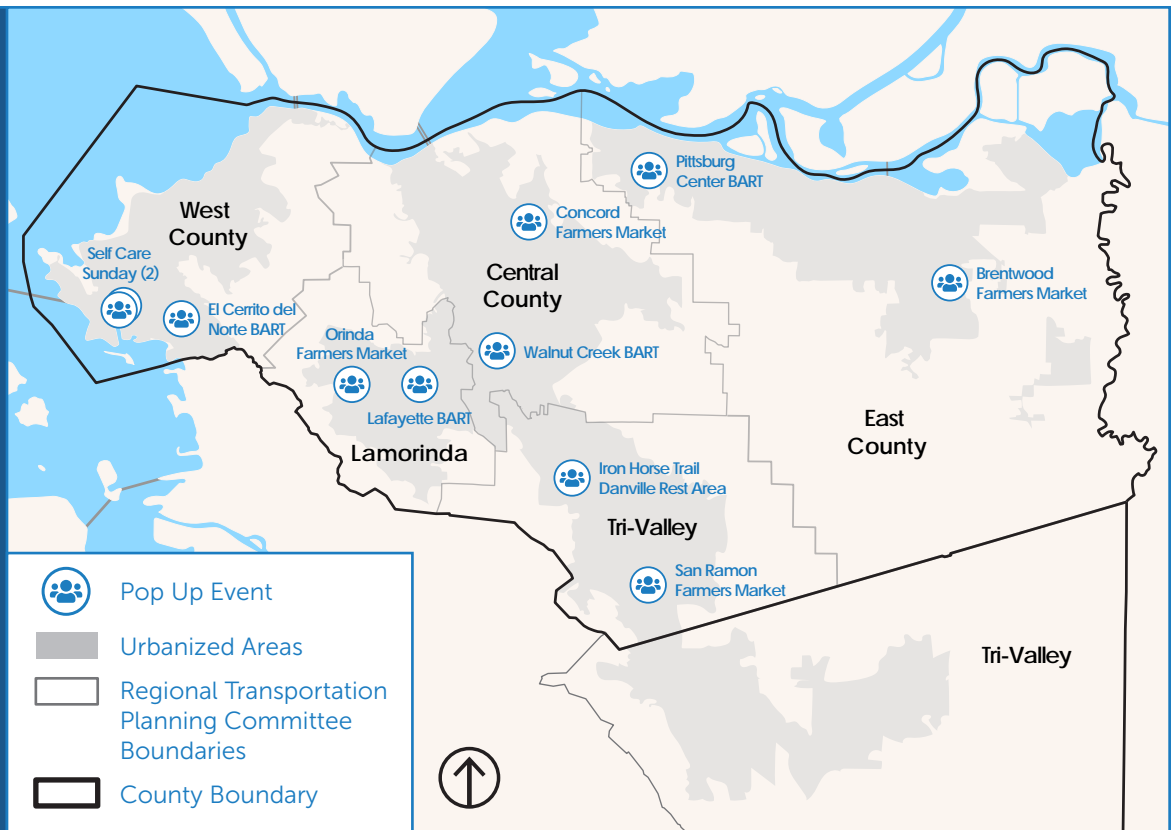
PLACEWORKS  
Page 88



# Introduction

This document outlines the first round of public outreach conducted by the Contra Costa Transportation Authority (CCTA) and its consultants between March and April 2022 for the Action Plan and Countywide Transportation Plan Updates. Outreach was conducted to the general Contra Costa Community and the Alameda County portion of the Tri Valley area. Feedback was collected both in-person and virtually to provide for a variety of feedback channels:

- **11 In-Person Pop Up Events**
- **5 Virtual Workshops**
- **Online Community Forum Survey**
- **421 Project Flyers Distributed!**



Each CCTA subregion had two in-person pop up events and one virtual workshop, except for the West County subregion where a repeated pop up was conducted due to a last-minute rain cancellation. The online community forum survey was available countywide for all residents.



## TRI-VALLEY AREA: San Ramon Farmers Market

Saturday, March 5<sup>th</sup> 2022 from 9:00 am to 1:00 pm  
6000 Bollinger Canyon Road  
San Ramon

In-person pop up events included interactive poster boards, surveys, and project flyers while the virtual workshops included a PowerPoint presentation and group discussion. Regardless of the event, participants were asked the same set of questions (*though additional feedback was welcomed and encouraged*):

- **What do you think transportation should look like in the future?**
- **What can we do to help you with your transportation needs?**
- **What is your bright idea for improving transportation in the County?**

A total of 704 comments were collected through this outreach effort. 151 of these comments were made on the online community forum survey, the remaining 553 comments were collected during the pop-up and workshop events.



**151**  
**People**  
**Commented**  
**Online**

**553** People  
**Commented**  
**In Person**

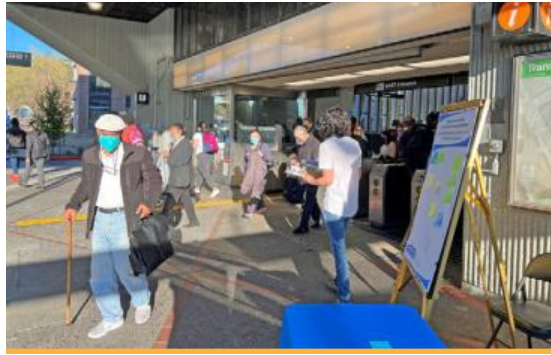




# Demographic Breakdown



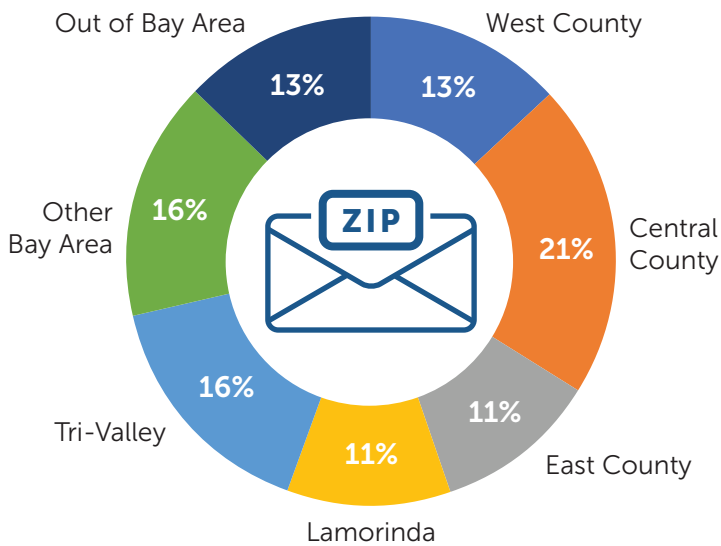
The project team collected optional demographic information on the written surveys at the pop-up events, during registration for the virtual workshops, and on the online community forum survey. Note that not all respondents chose to share demographic information. Percentages shown on this page indicate the percentage of responses in each category, not demographics of all respondents.



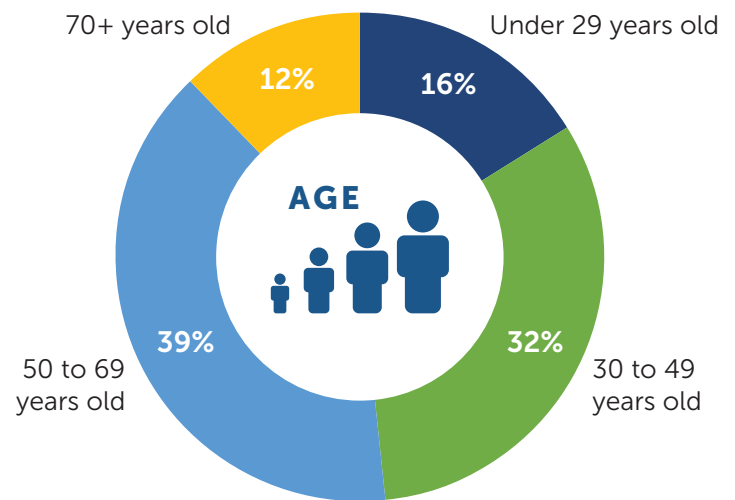
## WEST COUNTY: El Cerrito del Norte BART

Tuesday, March 22<sup>nd</sup>  
2022 from 4:00 pm  
to 6:00 pm  
6400 Cutting Blvd,  
El Cerrito

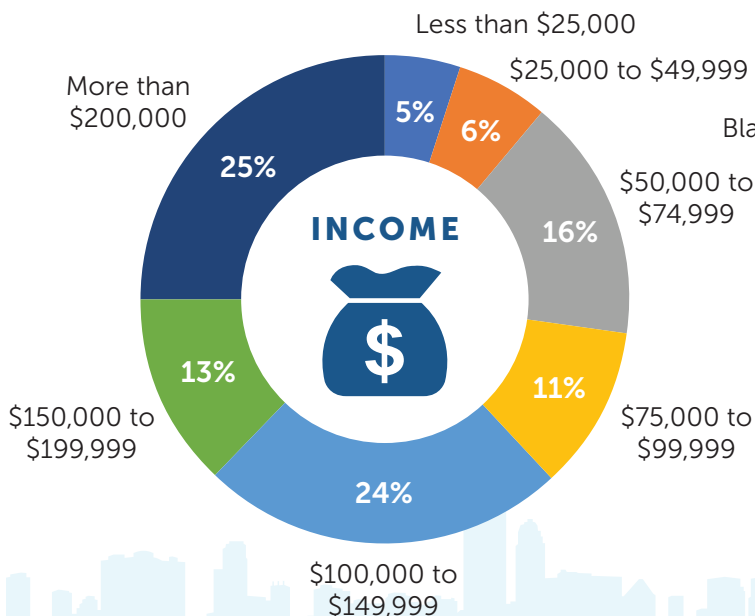
### Zip Code - 38 Responses



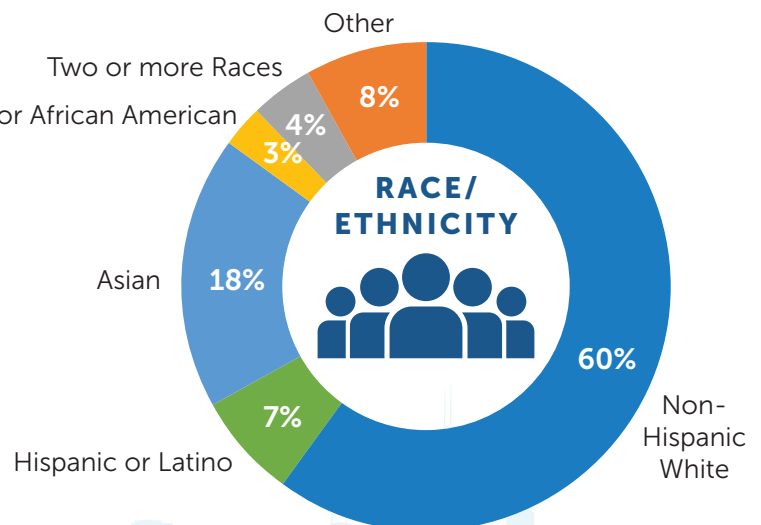
### Age - 74 Responses



### Household Income - 63 Responses

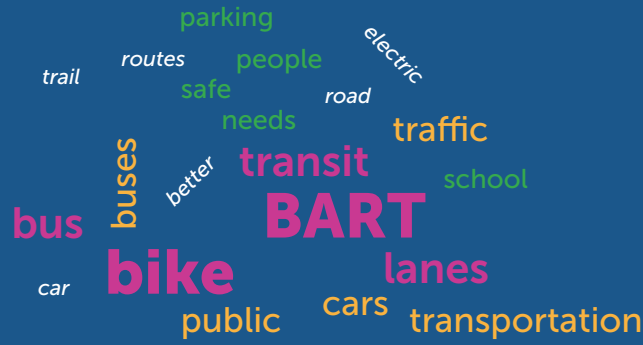


### Race/ Ethnicity - 73 Responses



\* 0% American Indian or Alaska Native  
\*\* 0% Native Hawaiian or Pacific Islander

Of the 704 total comments, 470 of them were general comments about countywide transportation and not focused on improvements in a specific subregion. The most commented words include:



This list of comments includes frequently mentioned topics and ideas but is not an exhaustive list of general comments. Comments are not listed in order of priority.

- Increase walkability and explore pedestrian-only areas
- Increase bikeability, number of bike lanes, and their convenience and safety
- Ensure bicyclists and pedestrians feel safe
- Conduct safety presentations for pedestrians, cyclists, and drivers
- Bike and scooter share
- Improve last mile connections to public transit
- Bus express lanes or bus-only lanes on freeways and arterials
- Public transit improvements to frequency, hours of service, reliability, and cleanliness
- Ensure public transportation is accessible for all socioeconomic groups
- Improve paratransit and other accessible transportation options and solutions
- Safety improvements on BART and buses
- Improved parking options at major transit stations
- Plan for regional connections throughout the county and beyond
- Electrify the transportation system (public and private) and improve infrastructure
- Explore autonomous vehicles
- Decrease number of potholes on freeways and major roadways
- Decrease traffic congestion
- Improve the timing of traffic lights



## EAST COUNTY: Brentwood Farmers Market

Saturday, March 26<sup>th</sup> 2022  
from 8:00 am to 12:00 pm  
Oak Street and 1st Street,  
Brentwood



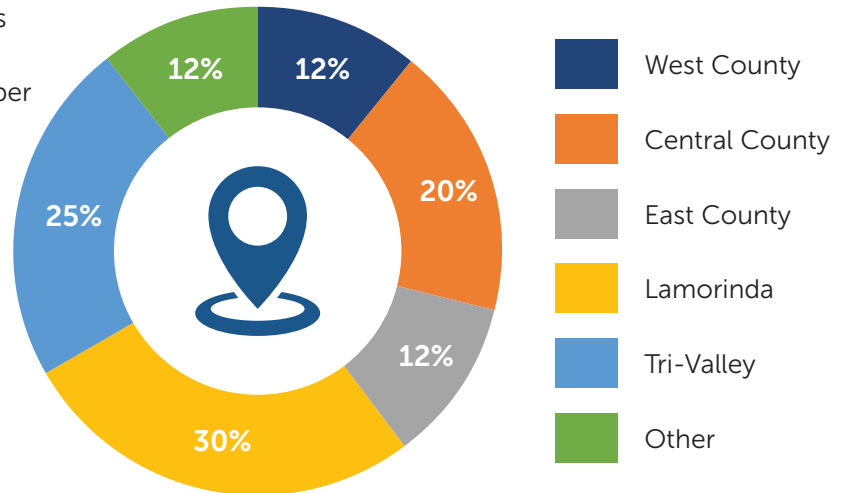
## CENTRAL COUNTY: Concord Farmers Market

Tuesday, March 8<sup>th</sup> 2022  
from 10:00 am to 2:00 pm  
Todos Santos Plaza at 2175  
Willow Pass Road,  
Concord

# Specific Comments

The graph to the right indicates the percent of comments that were collected by subregion, with some subregions more eager to comment than others. Note that the number of comments by subregion does not reflect the number of people engaged with, but rather the number of comments since many participants chose to provide more than one comment.

Of the 704 comments collected, 234 of them were comments made to indicate transportation improvements in a specific subregion. The most frequently mentioned topics and ideas are listed in the following pages. Note that this list is not exhaustive and are not listed in order of priority.



## West County

### Incorporated Jurisdictions:

**Hercules, Pinole, San Pablo, Richmond, El Cerrito**

Feedback regarding West County focused on safe and adequate roadways, transit improvements, bike and pedestrian improvements and safety of all modes. There was little mention of technology, climate change, and equity.

- Desire for well-maintained, continuous, protected/safe/calm bike facilities that cross cities, especially connecting to waterfront destinations and regional routes, with safe and easy freeway crossings
- Need for traffic calming techniques
- Improve transit access for those with mobility needs
- Give bus priority on arterial routes between Alameda County and Contra Costa County
- Provide timed/coordinated service between BART, Amtrak, and various bus agencies to serve long-distance and regional travel
- Ensure public transportation is safe, comfortable, and efficient
- Increase frequency of BART
- Improve streetlight issues throughout Richmond, replace traffic lights, fix potholes and paving issue areas
- Many comments mentioning improvements to specific roadways, including: San Pablo Ave, Cutting Blvd, Central Ave, Canal Blvd, and 15th Street

## Central County

### Incorporated Jurisdictions:

**Martinez, Concord, Pleasant Hill, Walnut Creek, Clayton**

Feedback regarding Central County focused on transit improvements, bike and pedestrian sidewalk and intercity access, need for traffic calming, and equity in the transportation system. Few comments are made regarding climate change and technology.

- Address active and public transportation barriers for those with mobility needs, including ADA accessible bike and pedestrian facilities, taxi service with wheelchair access, and extended service hours
- Increase traffic calming techniques along busy roadways
- Desire for safe bike and pedestrian connections across the subregion, particularly when crossing roadways and train tracks
- Provide continuous sidewalks and bike lanes and install lighting for safe travel in the dark
- Provide protected bike lanes to schools
- Improve traffic light cycles and remove unprotected left turns
- Reduce neighborhood cut-through traffic
- Connect trail networks to transit hubs
- Encourage public transit ridership again



## East County

### Incorporated Jurisdictions:

Pittsburg, Antioch, Brentwood, Oakley

Feedback regarding East County focused on improvements to and extension of the BART system.

- More frequent BART service and extension to Brentwood
- Increased BART connections and access, including parking, carpooling, or commuter buses from outlying communities
- Deploy High-Occupancy Vehicle (HOV) commuter buses to job centers and BART stations
- Increase off-street bikeways and connections to BART and railroads
- Increase first and last mile connections from residential areas to public transportation
- Increase lighting and shade on trails
- Ensure adequate ADA accessibility on all modes
- Reduce frequency of automobile speeding

## Tri-Valley

### Incorporated Jurisdictions:

Danville, San Ramon, Dublin, Pleasanton, Livermore

Feedback regarding the Tri Valley area focused on I-580/I-680 corridor connections, bike and pedestrian improvements, general equity, and general safety concerns. Climate change was not a specific concern mentioned.

- Increase traffic calming techniques, especially near schools
- Improve crossings of bike and pedestrian facilities with roadways
- Deploy bike and scooter share programs
- Improve bike and pedestrian facilities, especially with better lighting and restroom facilities
- Increase bus service to schools and other major facilities
- Expand BART service through the Tri Valley area
- Examine the success of HOV and toll lanes on I-680

## Lamorinda

### Incorporated Jurisdictions:

Lafayette, Moraga, Orinda

Feedback regarding the Lamorinda area included safe routes to schools, BART access, transportation electrification, and roadway speeding. Little mention of equity concerns or climate change were given.

- Increase traffic calming solutions around schools and improve general Safe Routes to Schools techniques
- Increase controlled crossings of major roads
- Explore first and last mile connections to BART
- Improve bike and pedestrian facilities with traffic lights and bike activation of traffic signals
- Expand County Connection service to middle and high school students
- Explore small bus options
- Explore feasibility of autonomous vehicles
- Reduce frequency of automobile speeding



### LAMORINDA: Orinda Farmers Market

Saturday, March 12<sup>th</sup> 2022 from 9:00 am to 1:00 pm  
Orinda Village at 14 Orinda Way, Orinda



### TRI-VALLEY: Iron Horse Trail Danville Rest Area

Sunday, March 6<sup>th</sup>  
2022 from 9:00 am to  
12:00 pm