



TECHNICAL ADVISORY COMMITTEE MEETING NOTICE & AGENDA

DATE & TIME: Thursday, July 14, 2022 • 9:00 AM – 12:00 PM

REMOTE ACCESS: <https://us02web.zoom.us/j/7321058840>

MEETING ID#: 732 105 8840

PASSWORD (if requested): WCCTAC2020

Remote Participation Only

As a result of the COVID-19 public health emergency, including the County Health Officer and Governor’s directives, **there will be no physical location for the TAC Meeting.** TAC members will attend via teleconference and members of the public are invited to attend the meeting and **participate remotely.**

Pursuant to the Governor’s Executive Order N-29-20, TAC members: Yvetteh Ortiz, Mike Roberts, Sanjay Mishra, Denee Evans, Sarah Kolarik, Rob Thompson, Nathan Landau, Jamar Stamps, and Esther Suh may be attending this meeting via teleconference, as may WCCTAC Alternate TAC Members. Any votes conducted during the teleconferencing session will be conducted by roll call.

The public may observe and address the WCCTAC TAC in the following ways:

Phone Participation

Dial one of the following numbers, enter the participant PIN followed by # to confirm:
+1 669 900 6833
Meeting ID: 732 105 8840
Password: 066620

Public Comment

Members of the public may address the TAC during the initial public comment portion of the meeting or during the comment period for agenda items.

Participants may use the chat function on Zoom or physically raise their hands to indicate if they wish to speak on a particular item.

Written Comment (accepted until the start of the meeting, unless otherwise noted on the meeting agenda). Public comments received by 5:00 p.m. on the evening before the TAC meeting date will be provided to the WCCTAC TAC and heard before TAC action. Comments may be submitted by email to creilly@wcctac.org

Comments may also be submitted via e-mail to creilly@wcctac.org at any time prior to closure of the public comment portion of the item(s) under consideration. All written comments will be included in the record.

Reading of Public Comments: WCCTAC staff will read aloud email comments received during the meeting that include the subject line "FOR THE RECORD" as well as the item number for comment, provided that the reading shall not exceed three (3) minutes, or such other time as the TAC may provide.

1. CALL TO ORDER and MEMBER ROLL CALL

Estimated Time: 9:00 AM, (2 minutes)*

2. PUBLIC COMMENT

Estimated Time: 9:02 AM, (3 minutes)*

The public is welcome to address the TAC on any item that is not listed on the agenda. Please fill out a speaker card and hand it to staff. Please limit your comments to 3 minutes. Pursuant to provisions of the Brown Act, no action may be taken on a matter unless it is listed on the agenda, or unless certain emergency or special circumstances exist. The WCCTAC TAC may direct staff to investigate and/or schedule certain matters for consideration at a future TAC meeting.

3. CONSENT CALENDAR

Estimated Time: 9:05 AM, (5 minutes)*

A. Minutes from May 5, 2022 Special Meeting

Recommendation: Approve as presented

Attachment: Yes

4. REGULAR AGENDA ITEMS

A. TFCA Carryover Funds

Description: The WCCTAC's TDM Program, 511 Contra Costa, has carryover funds that were unspent from a previous fiscal year. These funds could be used for one or more bicycle infrastructure projects, provided they meet program rules and the Air District's cost effectiveness thresholds. Staff solicited project ideas from member agencies, but only one project met the Air District's cost effectiveness requirements.

Recommendation: Forward a recommendation to the WCCTAC Board to allocate \$185,000 in carryover TFCA funds to the El Cerrito Del Norte TOD Complete Streets project.

Attachments: Yes

Presenter/Lead Staff: Coire Reilly, WCCTAC Staff

Estimated Time: 9:10 AM, (5 minutes)*

B. Draft West County Action Plan and County-wide Transportation Plan (CTP) Update

Description: This item constitutes Round 4 of the meeting series that the CCTA Action Plan/CTP Updates team will hold with WCCTAC TAC members. The team will review components of the agenda packet materials and engage the TAC in a discussion. The conversation will focus on proposed Regional Transportation Objectives (RTOs) and proposed actions for the West County Action Plan update. The conversation may also cover Corridor Maps included in the agenda packet, though the team encourages TAC members to submit comments via email. Comments on the agenda packet materials can be accepted before the meeting, at the meeting, or for two weeks after the meeting until **Thursday, July 28th**. The project team is preparing for their final presentation to the WCCTAC Board at the July 22, 2022, meeting.

Recommendation: Review all draft materials prior to the meeting. Receive presentation and provide comments on all draft materials no later than Thursday, July 28, 2022.

Attachments: Yes: 1) Draft Corridor Maps; 2) Draft RTO Methodology Memorandum; 3) Draft RTO Analysis Memorandum; 4) Draft Actions Memorandum; 5) Outreach Summary

Presenter/Lead Staff: David Early and Torina Wilson, Placeworks Inc.

Estimated Time:* **9:15 AM**, (2.5 hours)

5. STANDING ITEMS

A. Technical Coordinating Committee (TCC) Report

Description: TCC representatives will report on the last TCC meeting.

Recommendation: None.

Attachment: No

Presenter/Lead Staff: WCCTAC's TCC Representatives & WCCTAC Staff

Estimated Time:* **11:50 AM** (5 minutes)

B. Staff and TAC Member Announcements

Description: TAC members or WCCTAC staff can make general comments or announcements

Recommendation: Receive update.

Attachment: No

Presenter/Lead Staff: WCCTAC Staff and TAC Members

Estimated Time:* **11:55 AM** (5 minutes)

6. ADJOURNMENT

Description / Recommendation: Adjourn to the next regularly scheduled meeting of the TAC on Thursday, September 8, 2022. The next meeting of the WCCTAC Board is Friday, July 22, 2022.

Estimated Time:* **12:00 PM**

- In compliance with the Americans with Disabilities Act of 1990, if you need special assistance to participate in the WCCTAC TAC meeting, or if you need a copy of the agenda and/or agenda packet materials in an alternative format, please contact Valerie Jenkins at 510.210.5930 prior to the meeting.
- If you have special transportation requirements and would like to attend the meeting, please call the phone number above at least 48 hours in advance to make arrangements.
- Handouts provided at the meeting are available upon request and may also be viewed at WCCTAC's office.
- Please refrain from wearing scented products to the meeting, as there may be attendees susceptible to environmental illnesses. Please also put cellular phones on silent mode during the meeting.
- A meeting sign-in sheet will be circulated at the meeting. Sign-in is optional.

El Cerrito

Hercules

Pinole

Richmond

San Pablo

Contra Costa
County

AC Transit

BART

WestCAT

WCCTAC TAC Meeting Action Minutes

MEETING DATE: June 9, 2022

MEMBERS PRESENT: Jamar Stamps, Contra Costa County; Yvetteh Ortiz, El Cerrito; Esther Suh, BART; Sanjay Mishra and Misha Kaur, Pinole; Nathan Landau, AC Transit; Mike Roberts, Hercules.

GUESTS: Sarah Kolarik, San Pablo; Matt Kelly and Colin Clark, CCTA; Dave Campbell, Bike East Bay; Tim Rood, Hercules; Luz Guzman, Contra Costa County; Terence Zhao, Kimley-Horn; Patrick Phelan, Richmond

STAFF PRESENT: John Nemeth, Coire Reilly, Leah Greenblat, Joanna Pallock

ACTIONS LISTED BY: WCCTAC Staff

ITEM	ITEM/DISCUSSION	ACTION/SUMMARY
1.	Call to Order	The meeting was called to order at 9:01 AM
2.	Public Comment	Mike Roberts asked to move item Bo earlier on the agenda since Tim Rood needed to leave by 10 AM; Executive Director Nemeth responded that Agenda item 4A would be brief and that it involved guest presenters.
3.	Consent Calendar: A. Minutes from May 5, 2022 Special Meeting	Jamar Stamps moved, Yvetteh Ortiz seconded, and the TAC unanimously approved the Consent Calendar.
Regular Agenda Items		
4.	A. Draft Contra Costa Countywide Pedestrian Needs Assessment (PNA)	Colin Clark introduced the PNA and Terence Zhao presented the item. TAC members provided comments.

ITEM	ITEM/DISCUSSION	ACTION/SUMMARY
4.	B. Growth Management Program Checklist and Possible Staff Training	Leah Greenblat sought feedback on the TAC's interested in offering a training on the Measure J Checklist for local staff. TAC members indicated support. Matt Kelly provided information about the Checklist process and answered questions.
4.	C. TFCA Carryover Funds	Coire Reilly explained that there would be additional Air District funding for the TDM Program this year. He sought ideas for bicycle-related capital projects that might fit the funding criteria. TAC members provided suggested projects for Coire to consider.
Standing Items:		
5.	A. Technical Coordinating Committee Report	Leah Greenblat noted that the TCC discussed the OBAG Call for Projects and the CCTA's Traffic Model.
5,	B. Staff and TAC Member Announcements	Coire Reilly announced that the Summer Bike Challenge had begun.
6.	Adjournment	The meeting adjourned at 10:25 PM.

TO: WCCTAC TAC

MEETING DATE: July 14, 2022

FR: Coire Reilly, TDM Program Manager

RE: TFCA Carryover Funds

REQUESTED ACTION

Provide a funding recommendation to the WCCTAC Board based on staff's recommendation.

BACKGROUND

At the June WCCTAC TAC meeting, staff proposed using up to \$250,000 in TDM carryover funds, from the Transportation Funds for Clear Air (TFCA) source, for a small-scale, bicycle-oriented capital project. After reviewing the criteria required by the funder, staff requested ideas for projects in West County. Prior to the TAC meeting, staff also discussed ideas with planners from the cities of Richmond and San Pablo.

In total, staff received five project ideas, two from the city of Richmond and one each from Pinole, El Cerrito, and Contra Costa County. To screen projects, staff requested the information needed to determine if the projects met the Air District's cost effectiveness criteria. Staff requested project lengths, bicycle facility class types (class 1, 2, 3, or 4), and average daily traffic counts of routes, which are inputs to the cost-effectiveness calculator.

The only project to pass this initial screening was El Cerrito's project, detailed below. Additionally, the only way the project could pass the Air District's minimum threshold was if less funds (\$185,000) were provided than the City of El Cerrito requested (\$200,000).

PROJECT RECOMMENDATION

Staff recommends that \$185,000 of the TFCA carryover funds be used to support the El Cerrito Del Norte TOD Complete Streets Improvement Project. Overall, the project will improve access, safety, and comfort for bicyclists, pedestrians, transit users, and motorists to support transit-oriented development (TOD) in the San Pablo Ave Uptown area and connections to Del Norte BART Station. Specifically, these TFCA funds will be used to improve bicycle connections within the project, building class 4 and class 2 bicycle connections between the BART Station, Ohlone Greenway, and surrounding roads.

If supported by the TAC, this proposal will go to the WCCTAC Board for concurrence at its July meeting.

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

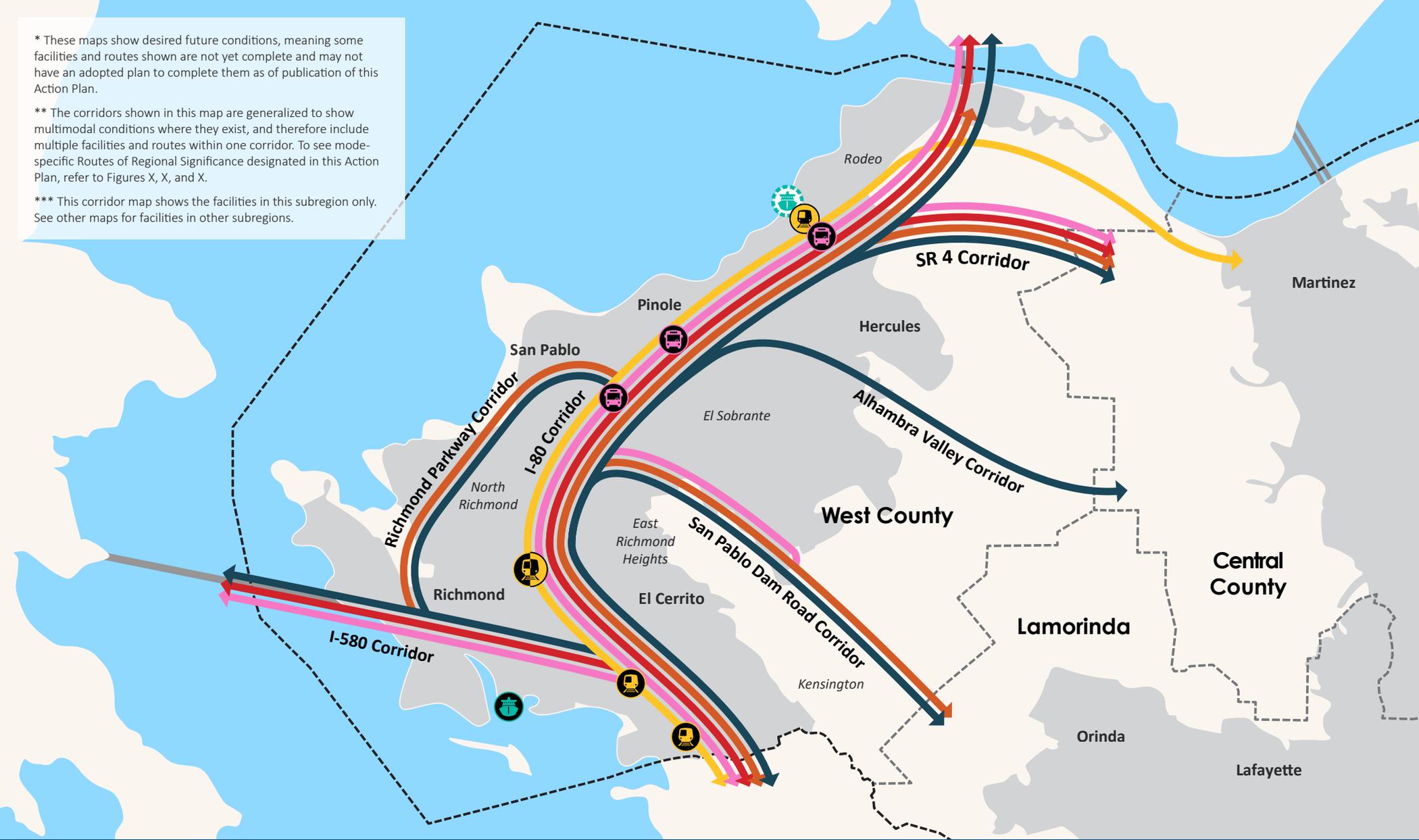
In addition to the Corridor Maps, each Action Plan will also include three mode-specific maps that will be tied to specific Regional Transportation Objectives (RTOs). Readers will be able to refer to these maps for a detailed depiction of existing and desired facilities:

- **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.

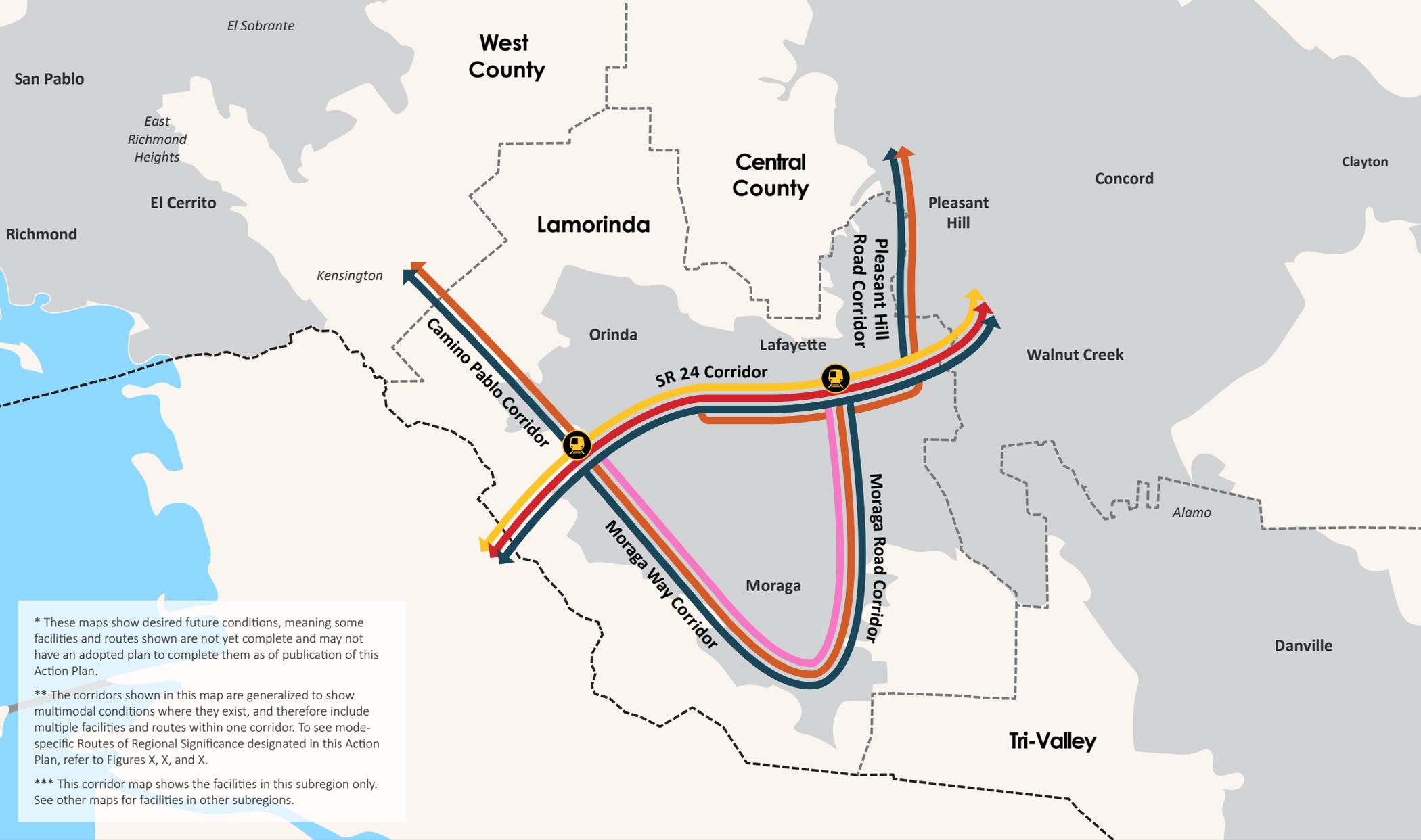


West Contra Costa County Corridor Map

- | | | |
|--|--|---|
|  Rail |  Existing Ferry Terminal |  Existing BART Station |
|  Bus |  Potential Ferry Terminal |  Existing Heavy Rail Station |
|  Freeway |  Transit Hub |  Existing BART/Heavy Rail Transfer Station |
|  Surface Streets | | |
|  Bike/Pedestrian | | |

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





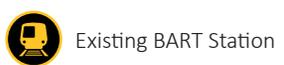
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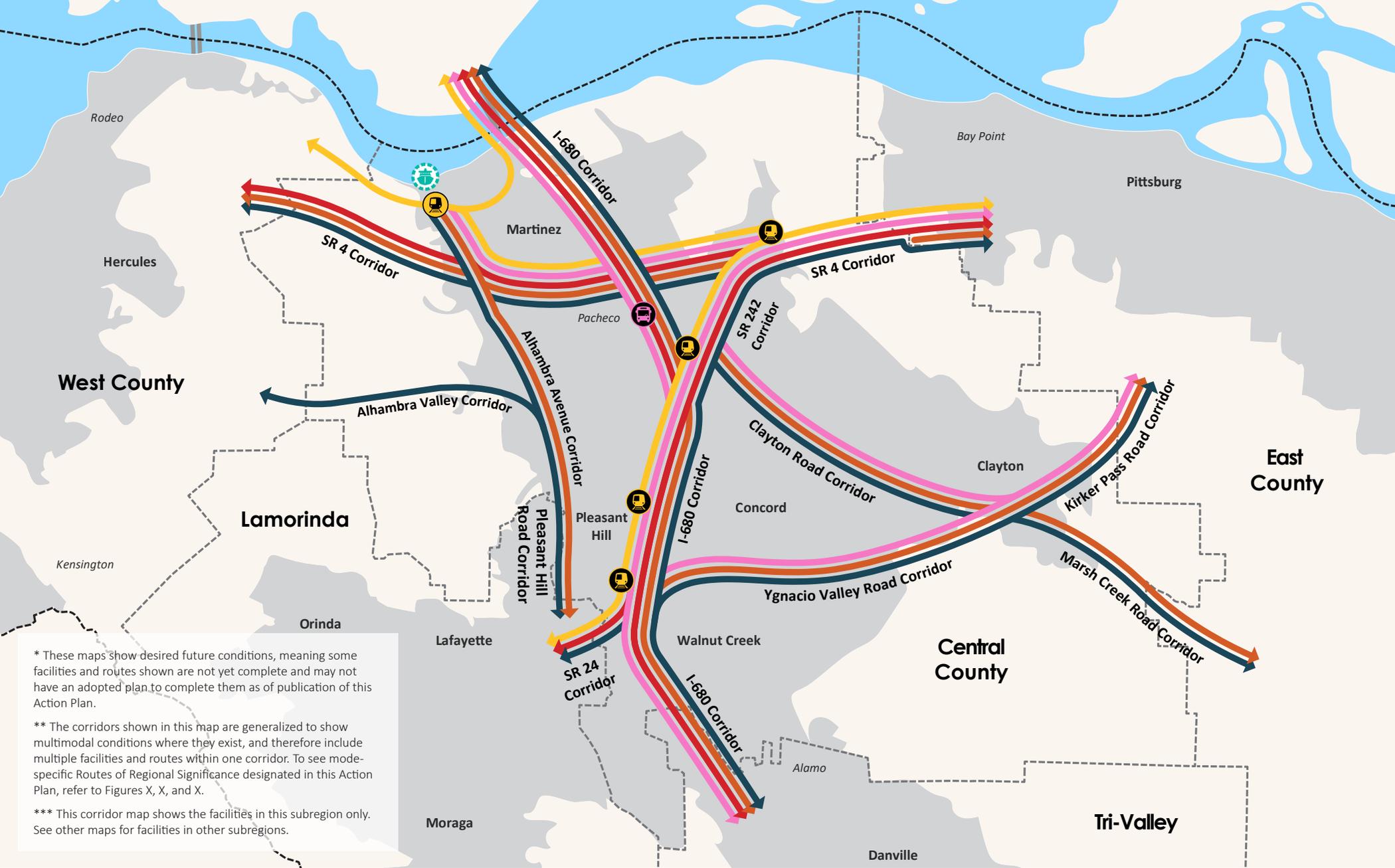
Lamorinda Area Corridor Map

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



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



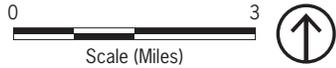


* These maps show desired future conditions, meaning some facilities and routes shown are not yet complete and may not have an adopted plan to complete them as of publication of this Action Plan.

** 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.

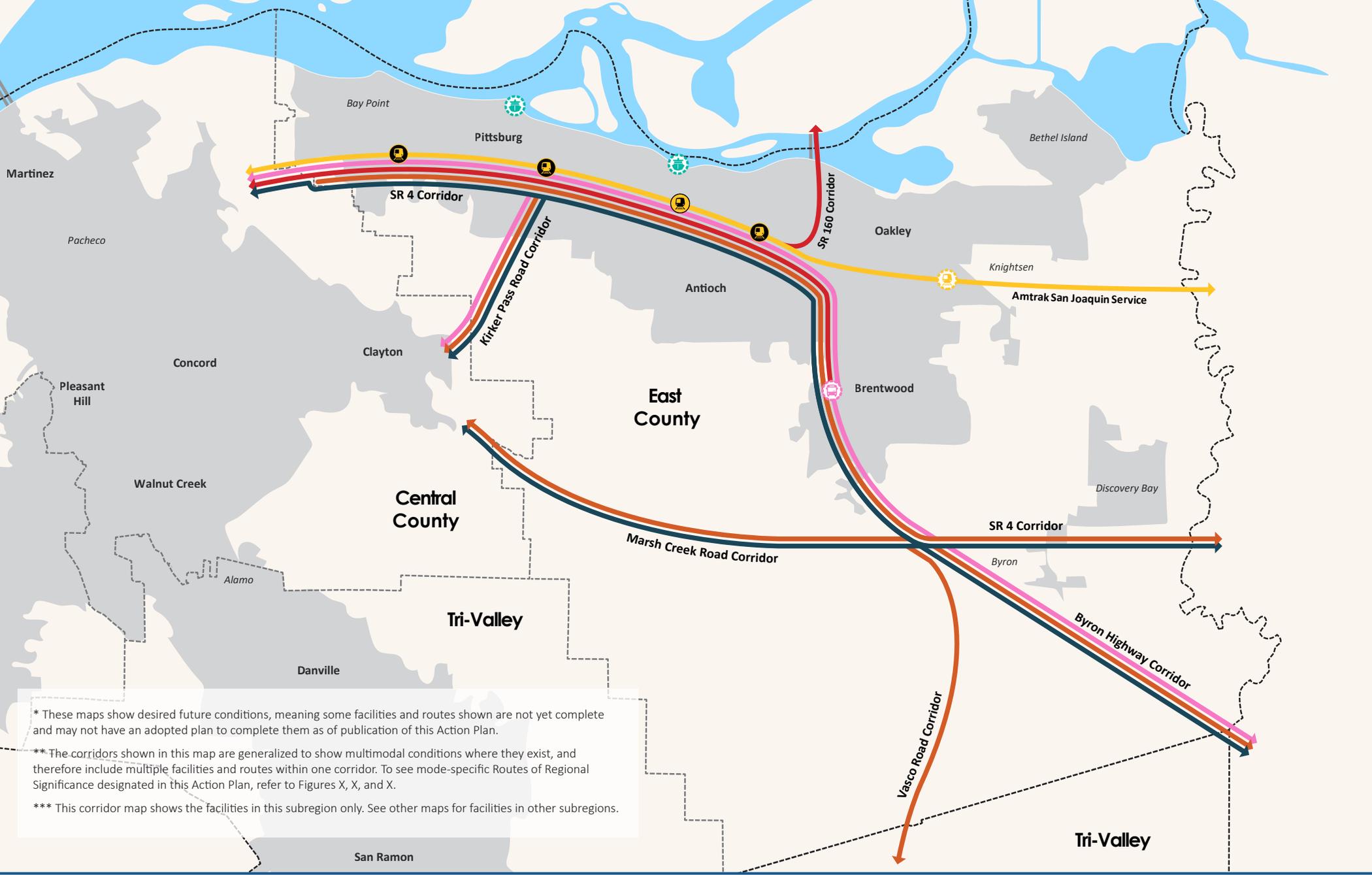
*** This corridor map shows the facilities in this subregion only. See other maps for facilities in other subregions.

Central Contra Costa County Corridor Map



- Rail
- Bus
- Freeway
- Surface Streets
- Bike/Pedestrian
- Potential Ferry Terminal
- Transit Hub
- Existing BART Station
- Existing Heavy Rail Station

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



* 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.

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



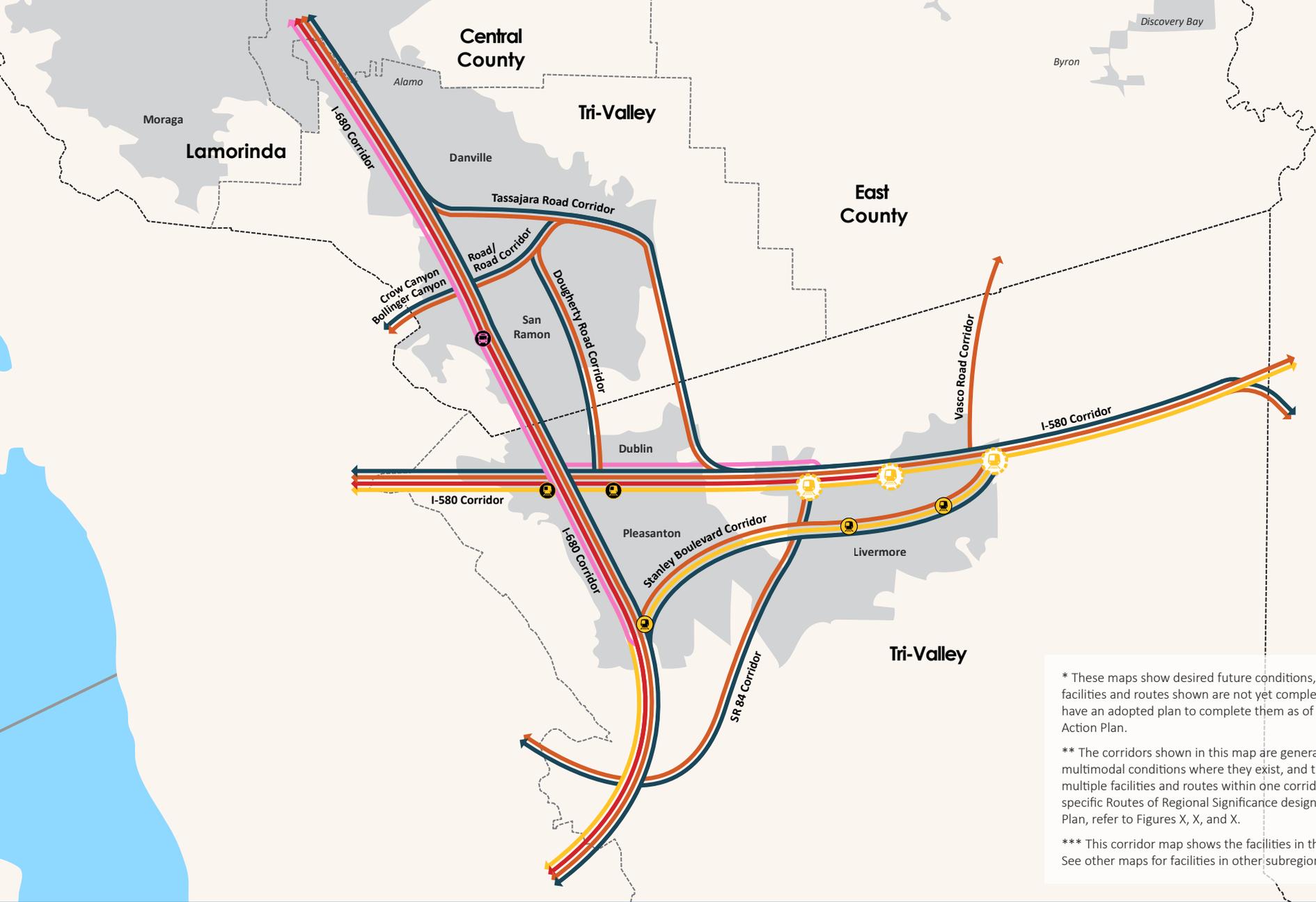
Future Transit Hub

Urbanized Areas

Regional Transportation Planning Committee Boundaries

County Boundary





* 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.

Tri Valley Area Corridor Map

- Rail
- Bus
- Freeway
- Surface Streets
- Bike/Pedestrian
- Existing BART Station
- Existing Heavy Rail Station
- Future Heavy Rail Station
- Transit Hub
- 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.

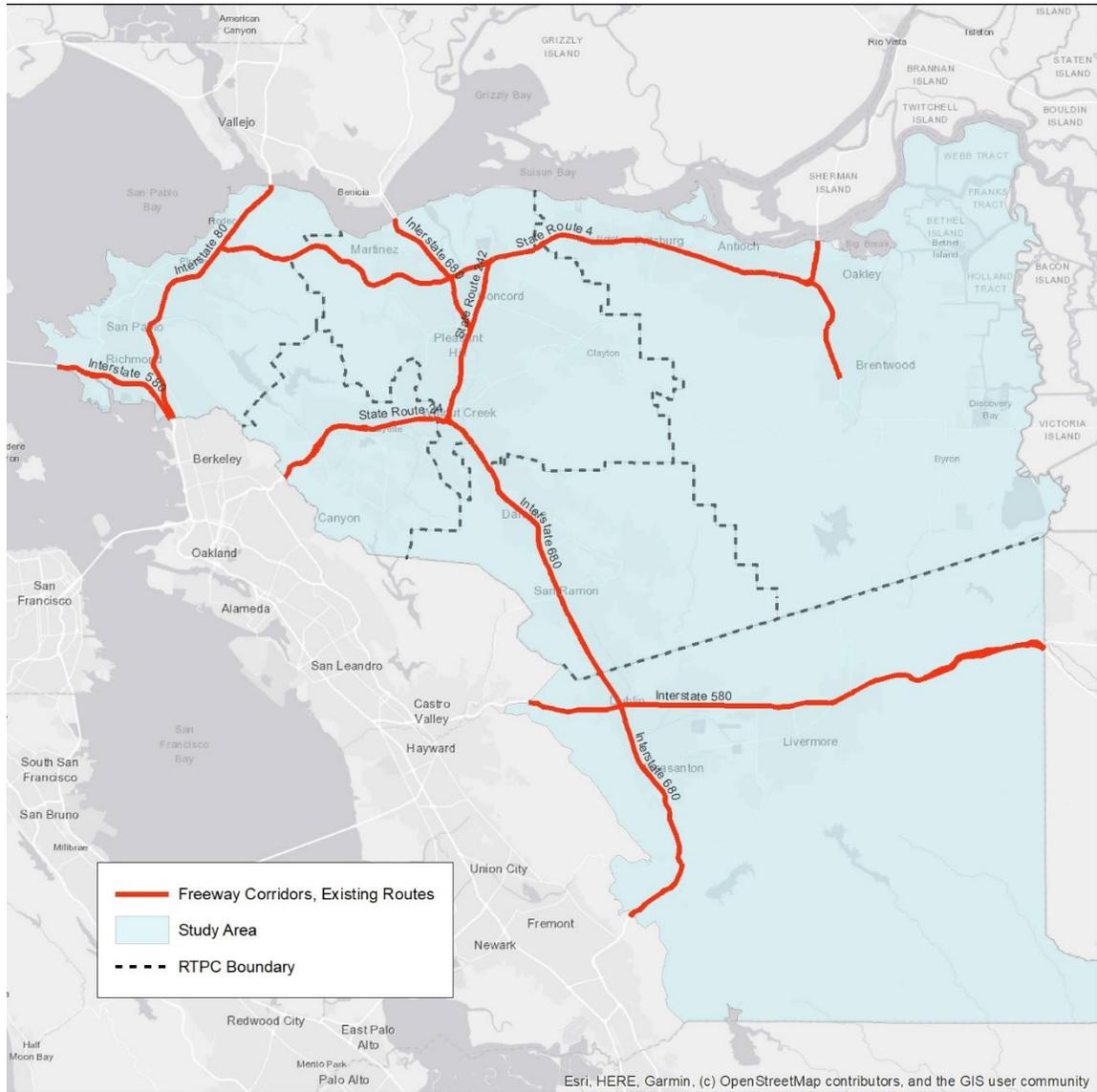
All previous CCTA Action Plans used delay index as MTSOs for freeway facilities. Table 1 lists the specific facilities to be evaluated with this metric for the current Action Plan updates; these segments are mapped in Figure 1. The performance targets used in the previous round of Action Plans are provided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

TABLE 1. FREEWAY FACILITIES AND PREVIOUS PERFORMANCE TARGETS

RTPC	Facility	From	To	Previous Performance Target
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 monitoring¹ and 2021 Congestion Management Plan (CMP) monitoring.² 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.

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

² 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.³ 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, 6th 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.

³ The Highway Capacity Manual 6th 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"> • Appian Way • Carlson Boulevard • Central Avenue • Cummings Skyway • Interstate 580 (I-580) • Richmond Parkway • San Pablo Avenue • San Pablo Dam Road • State Route 4 (SR-4) • 23rd Street 	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"> • Alhambra Avenue • Bailey Road • Clayton Road • Contra Costa Boulevard • Geary Road • North Main Street • Pacheco Boulevard • Pleasant Hill Road • Taylor Boulevard • Treat Boulevard • Ygnacio Valley Road/Kirker Pass Road 	LOS F on all intersections. ^a
TRANSPLAN (East County)	<ul style="list-style-type: none"> • Auto Center Drive • Bailey Road • Balfour Road • Brentwood Boulevard/Main Street • Buchanan Road • Deer Valley Road (improved portion) • East 10th Street/Harbor Street (in Pittsburg) • East 18th Street • Fairview Avenue • Hillcrest Avenue • James Donlon Boulevard (including future extension) • Laurel Road 	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"> • Leland Road (both West and East)/Delta Fair Boulevard • Lone Tree Way/A Street • Oak Street/Walnut Boulevard (within Brentwood) • Ninth Street/Tenth Street (in Antioch) • Pittsburg-Antioch Highway • Railroad Avenue/Kirker Pass Road • Sand Creek Road/Dallas Ranch Road • Somersville Road • Wilbur Avenue • Willow Pass Road 	
Lamorinda (LPMC and Southwest County)	<ul style="list-style-type: none"> • Camino Pablo/San Pablo Dam Road • Pleasant Hill Road 	Side Street Delay, no LOS rating.
Tri-Valley (TVTC and Southwest County)	<ul style="list-style-type: none"> • Alcosta Boulevard • Bernal Avenue • Bollinger Canyon Road • Camino Tassajara • Danville Boulevard • Dougherty Road • Dublin Boulevard • Fallon Road • First Street/Railroad Avenue • Hopyard Road • Iron Horse Trail • Jack London Boulevard • San Ramon Road • San Ramon Valley Boulevard • Santa Rita Road • Stanley Boulevard • Stoneridge Drive • Sunol Boulevard • Sycamore Valley Road • Tassajara Road • Vasco Road 	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
Total	299	163	61	918	355

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

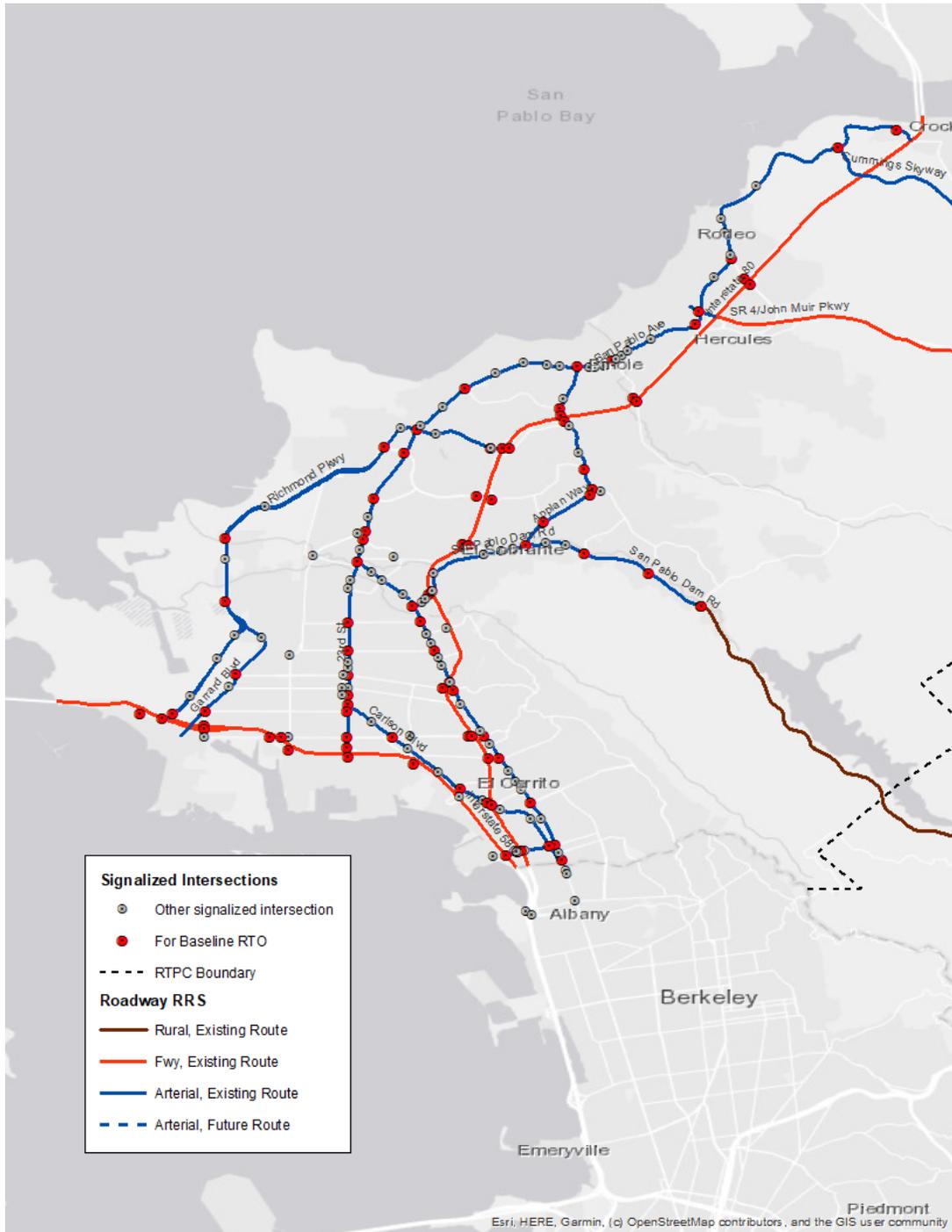


FIGURE 3. ARTERIAL INTERSECTIONS AND ROADWAY RRS (CENTRAL COUNTY)

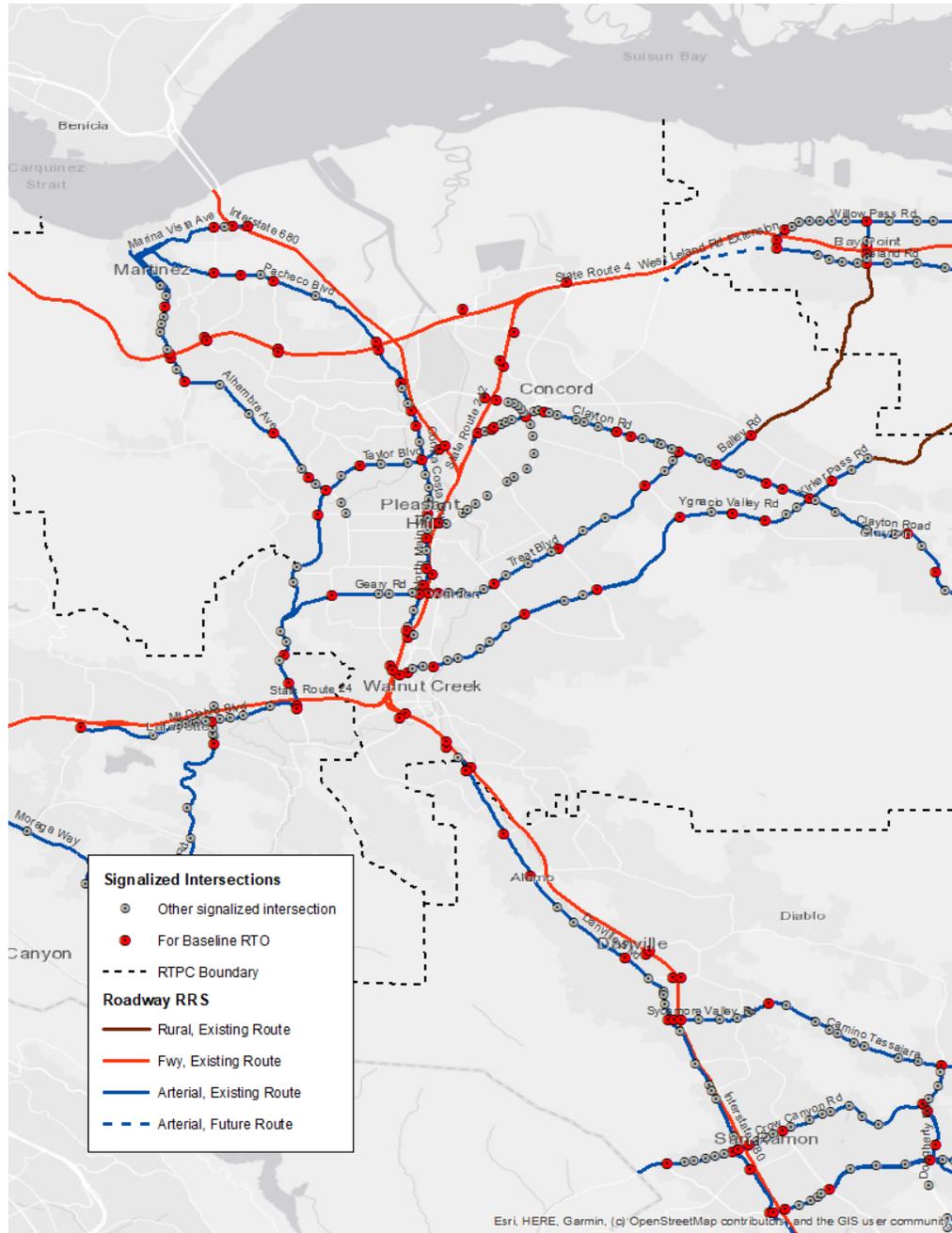


FIGURE 4. ARTERIAL INTERSECTIONS AND ROADWAY RRS (EAST COUNTY)

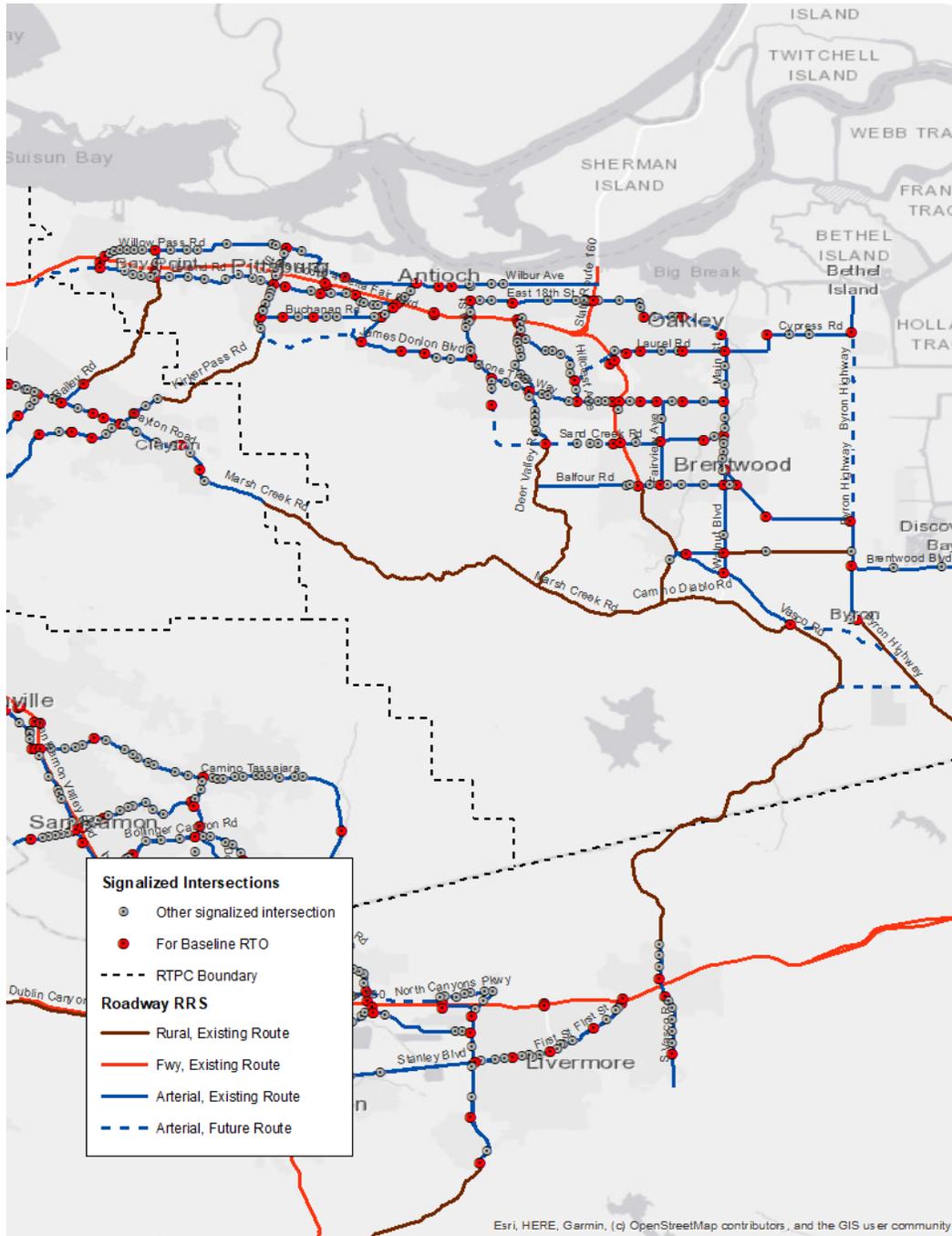


FIGURE 5. ARTERIAL INTERSECTIONS AND ROADWAY RRS (SOUTHWEST COUNTY – LAMORINDA)

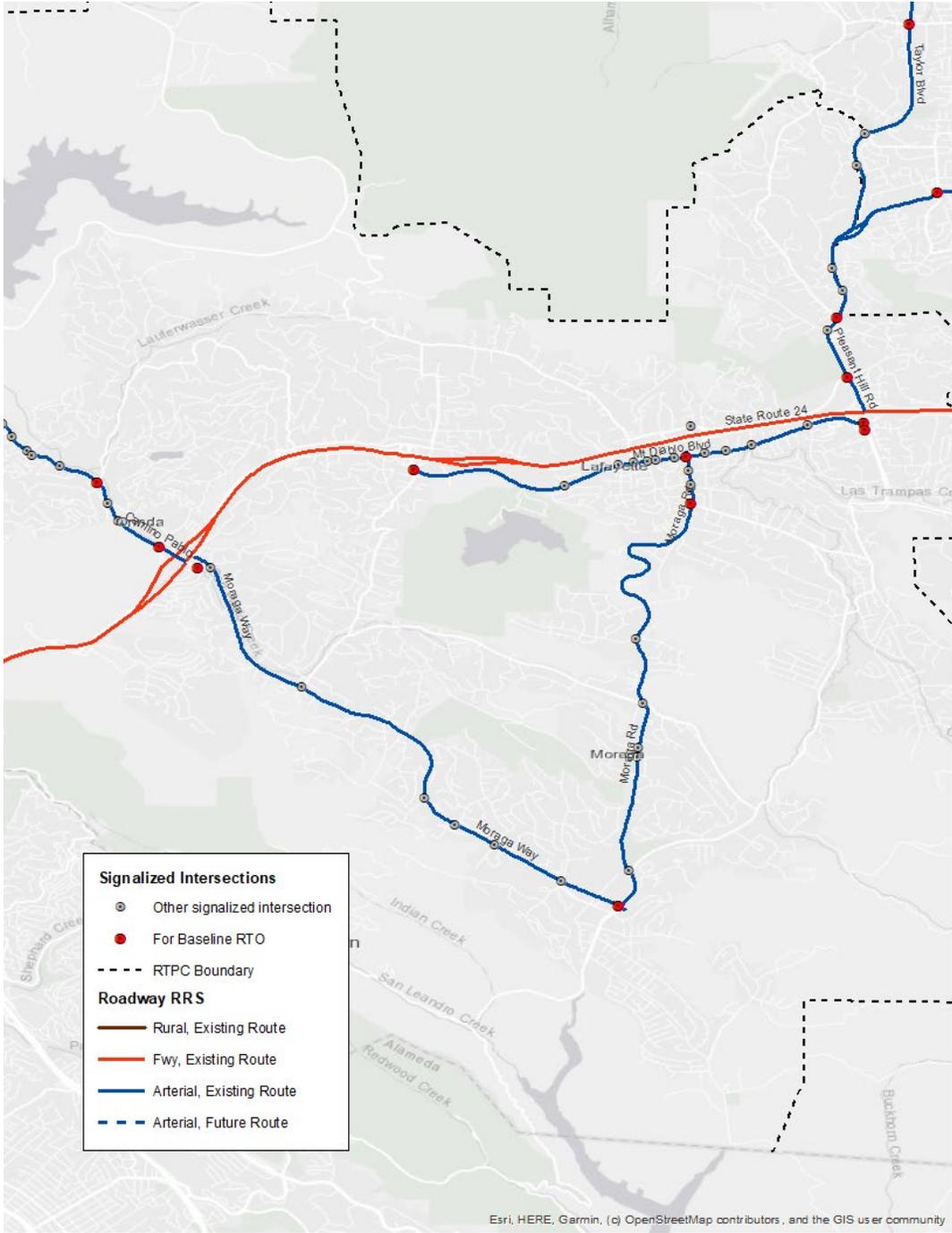
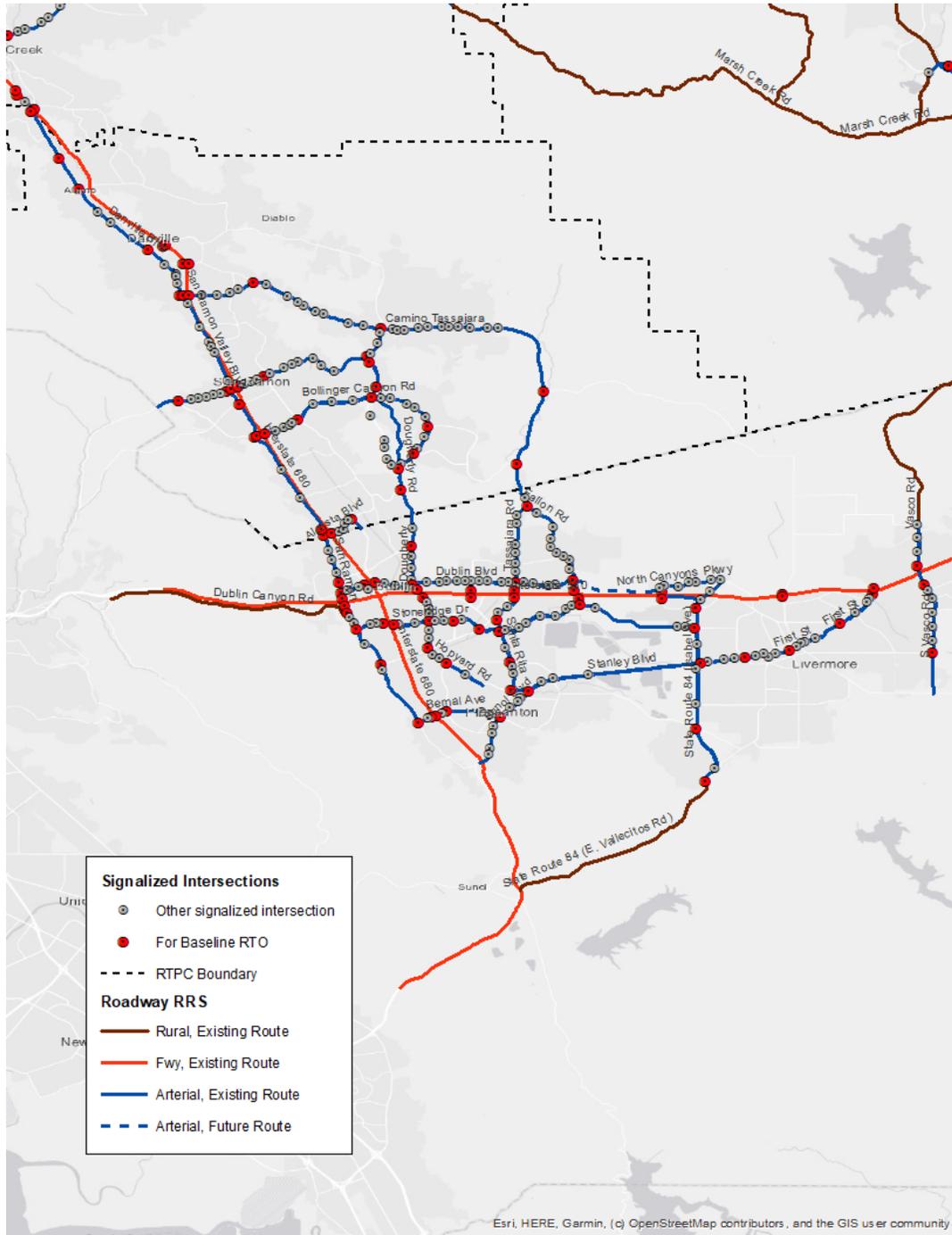


FIGURE 6. ARTERIAL INTERSECTIONS AND ROADWAY RRS (SOUTHWEST COUNTY – TRI-VALLEY)



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
East County	Vasco Road	Walnut Boulevard	Alameda 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

Subarea	Origin-Destination Pairs
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

VMT 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 West 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 WEST 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: I-580 – 2.5 or less I-80 – 3.0 or less SR-4 – 2.0 or less	Delay index: I-580 – 2.5 or less I-80 – 3.0 or less SR-4 – 2.0 or less	Delay index: I-580 – 2.5 or less I-80 – 3.0 or less SR-4 – 2.0 or less
	Freeway Buffer Index	Proportion of added travel time between the 95 th percentile and the average	Buffer index: 0.5	Buffer index: 0.5	Buffer index: 0.5
	Intersection Level of Service (LOS)	Average control delay during peak hours	LOS D LOS E on San Pablo Avenue and San Pablo Dam Road	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 Transit Priority Areas (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 D (40-45 miles per hour (mph))	LOS D (40-45 mph)
	Transit Mode Share	Proportion of daily person trips using transit	None	21% commute trips	40% of commute trips
	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	60.5%	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		
	Bike-Ped Collisions	Number of KSI crashes involving a bicyclist or pedestrian	None	Zero fatality and severe injury crashes	
	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	

Facility Type or Planning Focus	Metric	Definition	Existing Target	Proposed 2027 Target	Proposed 2050 Target
	Job Share Accessible by driving in EPCs	Share of jobs accessible by EPCs residents with a 30-minute drive	None	68%	75%
	Job Share Accessible by transit in EPCs	Share of jobs accessible by EPCs residents with a 45-minute transit trip	None	31%	39%
	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	30%	100%
Climate Change	Single-Occupant Vehicle (SOV) Mode Share	Proportion of daily person trips made by single occupant vehicle	None	50%	40%
	Greenhouse Gas (GHG) Emissions per Capita	Tons of CO ₂ emissions	None	15 lbs per capita	Zero transportation related
	Electric Vehicle 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	22.7 VMT	21 VMT
Technology	Level of Signal Interconnection	Number of connected signals	None	54	54

DRAFT

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 and shows the commute mode share for Contra Costa County and the West County subregion. As shown in Table 2, about 79 percent of the work trips in Contra Costa County are made by automobile either driving alone or by carpool, while 78 percent are made by automobile in the West County subregion, with a higher share accounted for by carpooling.

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

Mode	Contra Costa County			West County Subregion		
	Estimate	Margin of Error	Percentage Mode Share	Estimate	Margin of Error	Percentage Mode Share
Total:	544,376	±3,447		133,436	±3,074	
Car, truck, or van - drove alone	367,467	±3,409	68%	85,367	± 2,435	64%
Car, truck, or van - carpoled	62,385	±2,486	11%	18,606	±1,123	14%
Public transportation (excluding taxicab)	59,068	±1,981	11%	17,726	± 1,011	13%
Taxicab, motorcycle, bicycle, walked, or other means	19,344	±2,462	4%	4,556	± 641	3%
Worked from home	36,112	±1,310	7%	7,179	±607	5%

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 West County and Contra Costa County as a whole. The modeling results show that most work trips by West County residents are made by automobile, specifically driving alone. West County's transit mode share for work trips is higher than the County's, reflecting the availability of Bay Area Rapid Transit (BART) service. Bicycling and walking account for a very small portion of commute trips made by West 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 within West 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. Commute mode shares are predicted to remain much the same by 2050, with only a small increase in the transit mode share.

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

	Planning Area		West County	
	2019	2050 Baseline	2019	2050 Baseline
Drive Alone Auto	73%	73%	63%	66%
Carpool	14%	13%	14%	13%
Transit	11%	12%	21%	19%
Bike	0.4%	0.5%	0.3%	0.4%
Walk	1.3%	1.4%	1.4%	2%

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 WEST COUNTY

	Planning Area		West County	
	2019	2050 Baseline	2019	2050 Baseline
Drive Alone Auto	83%	81%	78%	76%
Carpool	12%	12%	14%	14%
Transit	2%	3%	5%	7%
Bike	0.6%	0.7%	0.4%	0.5%
Walk	2%	2%	3%	2%

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 less than 14 percent of all trips, respectively.

By 2050, the mode shares are expected to remain like existing conditions, with only a slight decrease in drive alone and transit and an increase in the walk mode share.

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

	Planning Area		West County	
	2019	2050 Baseline	2019	2050 Baseline
Drive Alone Auto	63%	62%	58.9%	58.7%
Carpool	27%	27%	27.5%	28.0%
Transit	3%	4%	7.1%	6.4%
Bike	1%	1%	0.6%	0.6%
Walk	6%	6%	6.0%	6.2%

Source: CCTA travel demand model and DKS Associates.

Note: Totals may not add due to rounding.

Freeway RTOs

Freeway Routes of Regional Significance (RRS) in the West County subregion include:

- Interstate 580 from I-80 to the Marin County Line;
- Interstate 80 from the Carquinez Bridge to the Solano County Line; and
- State Route 4 from I-80 to Cummings Skyway.

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 RRS are shown in Table 6. As shown, freeway corridors with especially high levels of delay (greater than 1.5 delay index) include I-80 (westbound in the morning and eastbound in the afternoon) and I-580, where the delay index is greater than 3.0 in the westbound direction in the morning.

The existing West County Action Plan set delay index standards for the freeways as follows:

- I-580 – 2.5 or less
- I-80 – 3.0 or less
- SR-4 – 2.0 or less

The current performance of these freeway corridors falls within these performance targets except for I-580 in the a.m. westbound direction, which is currently operating with a delay index over 3.0. 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 95th 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 0.04 to 0.35, reflecting a high degree of travel time variability in some of the corridors. In particular, the I-580 morning a.m. operations seem especially variable.

The existing West 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 (MPH) ^a	Delay Index	Buffer Index	Avg Speed (MPH) ^a	Delay Index
Interstate 580					
Eastbound – a.m.	50.9	1.28	0.44	58.3	1.11
Eastbound – p.m.	58.8	1.10	0.09	59.8	1.09
Westbound – a.m.	19.8	3.28	0.85	34.7	1.87
Westbound – p.m.	60.6	1.07	0.08	58.8	1.11
Interstate 80					
Eastbound – a.m.	60.8	1.07	0.04	61.7	1.05
Eastbound – p.m.	28.8	2.26	0.51	39.1	1.66
Westbound – a.m.	38.2	1.70	0.45	42.8	1.52
Westbound – p.m.	61.5	1.06	0.17	62.5	1.04
State Route 4					
Eastbound – a.m.	56.6	1.15	0.11	57.8	1.12
Eastbound – p.m.	59.3	1.10	0.15	59.4	1.09
Westbound – a.m.	60	1.08	0.12	62.7	1.04
Westbound – p.m.	63	1.03	0.09	64.6	1.01

Notes: a) Average speed over corridor as a whole.

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.¹ 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 West County Action Plan incorporates a LOS D standard for signalized intersection delay with a LOS E standard applying to San Pablo Avenue and San Pablo Dam Road. It further specifies that improvements necessary to bring intersections up to standard shall be evaluated for their impact on bicyclists and pedestrians in areas around transit stations.

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 West County subregion is as follows:

- LOS D in all areas except downtowns, at key schools, and freeway on-ramps.
- LOS E at freeway on-ramps.
- No LOS standard for downtowns, key schools, or TPAs.

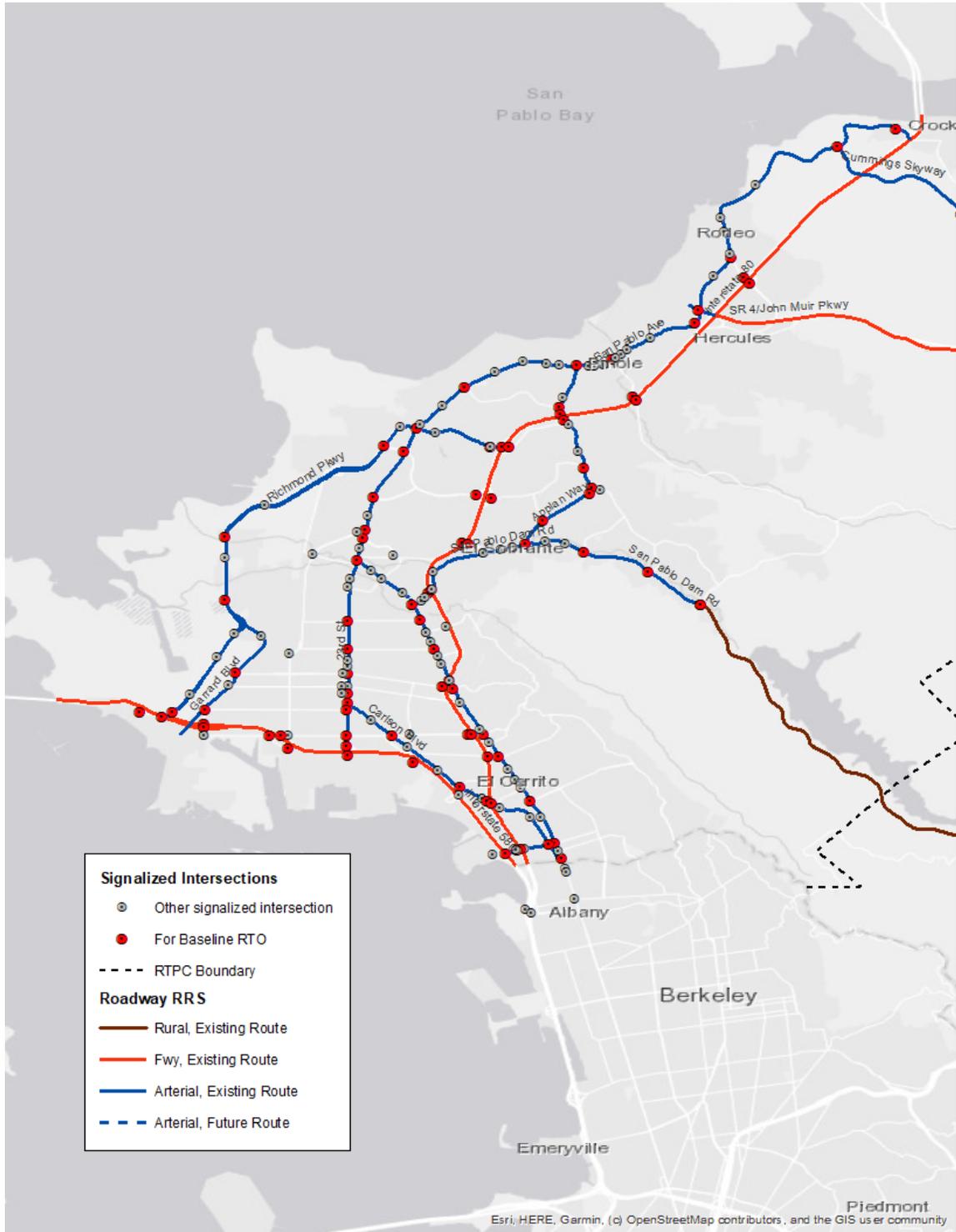
TABLE 7. INTERSECTION LOS DEFINITIONS

Control Delay (Seconds/Vehicle)	LOS
≤10	A
>10-20	B
>20-35	C
>35-55	D
>55-80	E
>80	F

Source: *Highway Capacity Manual*, 6th Edition, Exhibit 19-8

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

FIGURE 1. SIGNALIZED INTERSECTIONS AND ROADWAY RRS - WEST 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 West County subregion, this metric is applied only to San Pablo Dam Road from Castro Ranch Road to Bear Creek Road.

The segment LOS is related to average speed, as shown in Table 9. Table 10 lists the two-lane roadway corridors analyzed for the West County subregion and reports the existing and forecasted LOS. The observed average speed for existing conditions varies between 41 and 49 mph, corresponding to LOS C and D. The modeled average speeds for 2050 are very similar to the observed 2019 average speeds.

The existing West 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 D on San Pablo Dam Road, which appears to be achievable through 2050, which corresponds to an average speed across the corridor of 40-45 mph.

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 URBAN AREAS

Route of Regional Significance	Time of Day	Direction	2019		2050	
			Avg Speed (MPH)	LOS	Avg Speed (MPH)	LOS
San Pablo Dam Rd	A.M.	EB	41.6	D	41.6	D
San Pablo Dam Rd	P.M.	EB	49.4	C	49.5	C
San Pablo Dam Rd	A.M.	WB	47.3	C	47.3	C
San Pablo Dam Rd	P.M.	WB	46.3	C	46.9	C

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 RTOs”), 21 percent of West County residents commute to work using transit, compared to 12 percent of residents in the CCTA Planning Area (Contra Costa County plus the Tri-Valley portion of Alameda County, herein referred to as the “Planning Area”). Table 3 and Table 4 illustrate that the model output predicts that this number will decrease to 19 percent of home-based work mode share based on residence location and increase to 7 percent based on job location. Meanwhile, the model predicts that around 6 percent of all trips (not strictly commute trips) will be taken by transit by 2050.

The existing West County Action Plan does not have an adopted transit mode share target. The COVID-19 pandemic has greatly reduced transit trips, so the proposed performance target for transit mode share in the West County subregion is to return to pre-pandemic levels of 21 percent of home-based work trips by 2027. We also propose a target is to almost double the level of home-based work transit trips to 40 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 West 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, travel by BART is not currently quicker than driving between the Pleasant Hill BART station and the Richmond BART station but is expected to be by 2050 in the morning eastbound and afternoon westbound directions. Between the Hercules Transit Center and Salesforce Transit Center in San Francisco, transit via the Lynx route compares favorably to driving in the morning westbound and afternoon eastbound directions. By 2050, these advantages will become more pronounced.

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

Corridor	Median Drive Time (Minutes) ^a	Scheduled Transit Time (Minutes) ^b	2050 Drive Alone ^c	Transit/Drive Alone Time	
				Existing	2050
NORTH RICHMOND BART AND CONTRA COSTA CENTER (PLEASANT HILL BART STATION)					
Morning – Westbound	31.56	46.00	40.66	1.46	1.13
Morning – Eastbound	31.73	46.00	67.22	1.45	0.68
Afternoon- Westbound	28.89	46.00	58.50	1.59	0.79
Afternoon- Eastbound	36.43	46.00	46.18	1.26	1.00

HERCULES TRANSIT CENTER AND SALESFORCE TRANSIT CENTER IN SAN FRANCISCO					
Morning – Westbound	47.55	38.00	119.61	0.80	0.32
Morning – Eastbound	23.93	58.00	32.28	2.42	1.80
Afternoon- Westbound	31.64	55.00	38.79	1.74	1.42
Afternoon- Eastbound	48.38	50.00	127.11	1.03	0.39

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 RTOs”), less than 2 percent of West 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 2 percent of home-based work trips based on residence location as well as job location. As shown in Table 5, the model predicts that about 6 percent of all trips (not strictly commute trips) would be by walking or biking in 2019 and 2050.

The existing West 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 West County subregion is to double the combined mode share for all trips for bikes and walking to 12 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 six percent. Further, the project team proposes the West 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 2.5 percent by 2027 and 5 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 West County portion of the LSBN is shown in Figure 2. If the entire LSBN in the West County subregion were completed, it would result in 145.6 miles of Class I and Class IV facilities.

Table 12 shows that 38 percent of West County’s LSBN is already completed. A further 15 percent of low stress facilities are incomplete yet have an adopted plan to complete the facility. There are projects

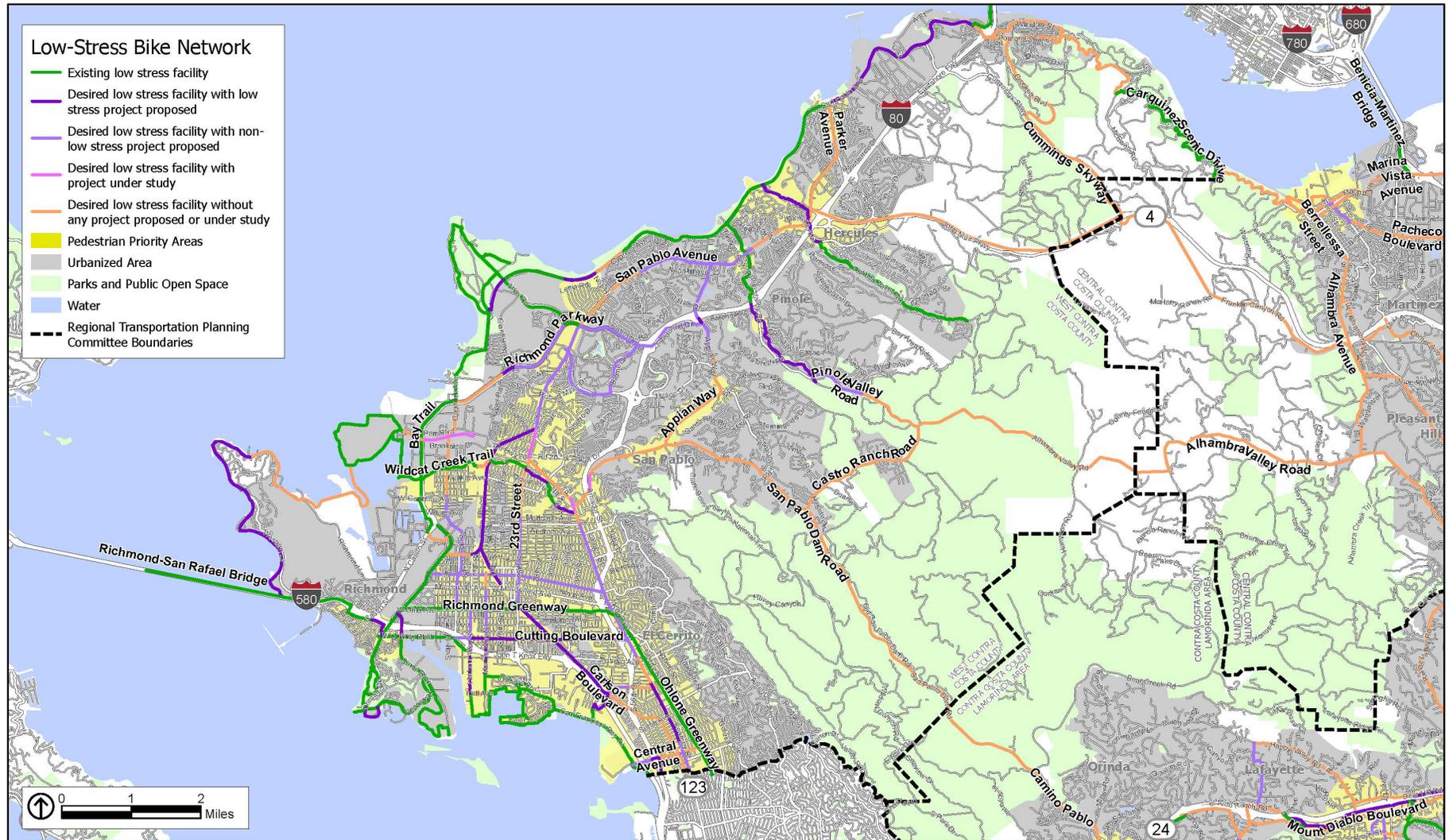
proposing improvements that would not result in low-stress facilities on an additional 15 percent of the LSBN while one additional percent is designated as “under study”. A total of 32 percent of the total LSBN miles are incomplete and do not have a plan to complete them or to study them further.

We suggest that the region aim to achieve 100 percent completion of the LSBN by 2050. We also propose an interim target of 60.5 percent (88 miles) completion by 2027. This is the sum of existing completed facilities (38 percent) and 150 percent of the already proposed low-stress additions to the network (15 percent x 150 percent = 22.5 percent). This would require completion of the low-stress projects that already have an adopted plan, and completion of additional projects on 7.5 percent (11 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 WEST COUNTY SUBREGION LSBN THAT IS COMPLETE

Status of Facility	Miles	Percentage
Existing Low Stress Facility	54.6	38%
Desired Low Stress Facility with Low Stress Project Proposed	21.9	15%
Desired Low Stress Facility with Non-Low Stress Project Proposed	21.4	15%
Desired Low Stress Facility with Project Under Study	1.7	1%
Desired Low Stress Facility without any Project Proposed or Under Study	46.1	32%

FIGURE 2. STATUS OF THE WEST COUNTY LSBN



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

WORKING DRAFT — WEST 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.

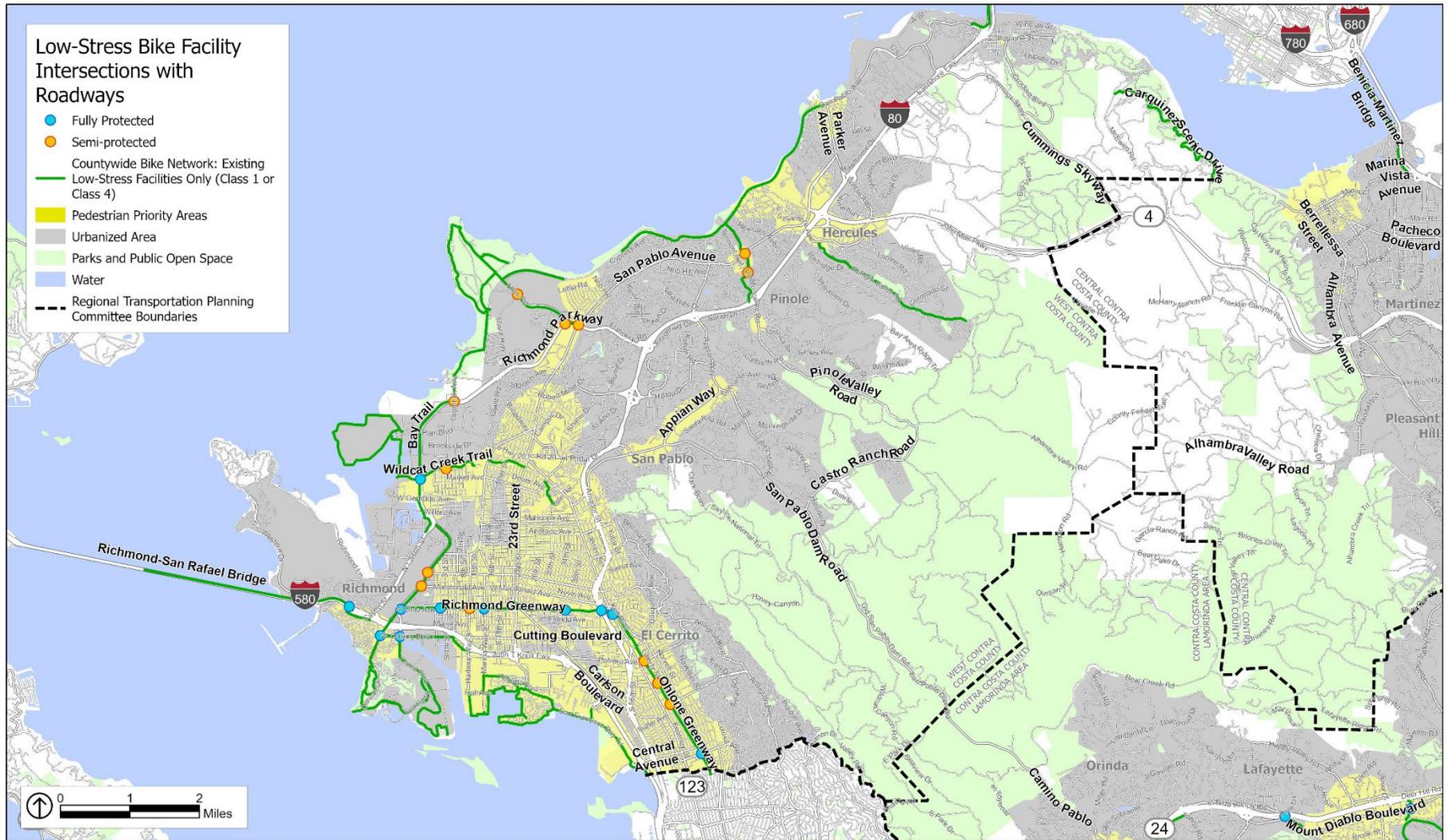
As illustrated in Figure 3, there are no study intersections in the West County subregion that are currently unprotected. There are 12 existing intersections that are already fully protected and 13 that are semi-protected. The semi-protected intersections are:

- Atlas Road and Giant Highway
- Richmond Greenway crossing at Harbor Way South
- Richmond Parkway and West Barret Avenue
- Richmond Parkway and West Macdonald Avenue
- Richmond Parkway and Goodrick Avenue
- Ohlone Greenway at Manila Avenue
- Ohlone Greenway at Moeser Lane
- Ohlone Greenway at Potrero Avenue
- Wildcat Creek Trail at Fred Jackson Way
- Richmond Parkway at San Pablo Avenue
- Richmond Parkway at Atlas Road
- Pinole Creek bike facility at Tennant Avenue
- Pinole Valley Creek at San Pablo Avenue

We propose that the Action Plan set a target to modify these 15 semi-protected intersections to become fully protected by 2027.

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



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

WORKING DRAFT — WEST 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).² 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 almost 5,000 severe injury or fatality crashes throughout West County. The most common types of crash were rear-end and broadside collisions. These collisions resulted in over 100 fatalities and over 400 severe injuries.

NUMBER OF BIKE- OR PEDESTRIAN-INVOLVED COLLISIONS

The crash locations for the West County subregion are depicted in Figure 5 and summarized by severity in Table 14. During this timeframe, there were 686 bicycle or pedestrian involved crashes, accounting for about 14 percent of all crashes. Forty-two of the bicycle or pedestrian crashes resulted in fatalities and 120 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 79 crashes occurred near school campuses, 25 of which involved collision with a pedestrian and 54 with a bicyclist and resulting in three fatalities.

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

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

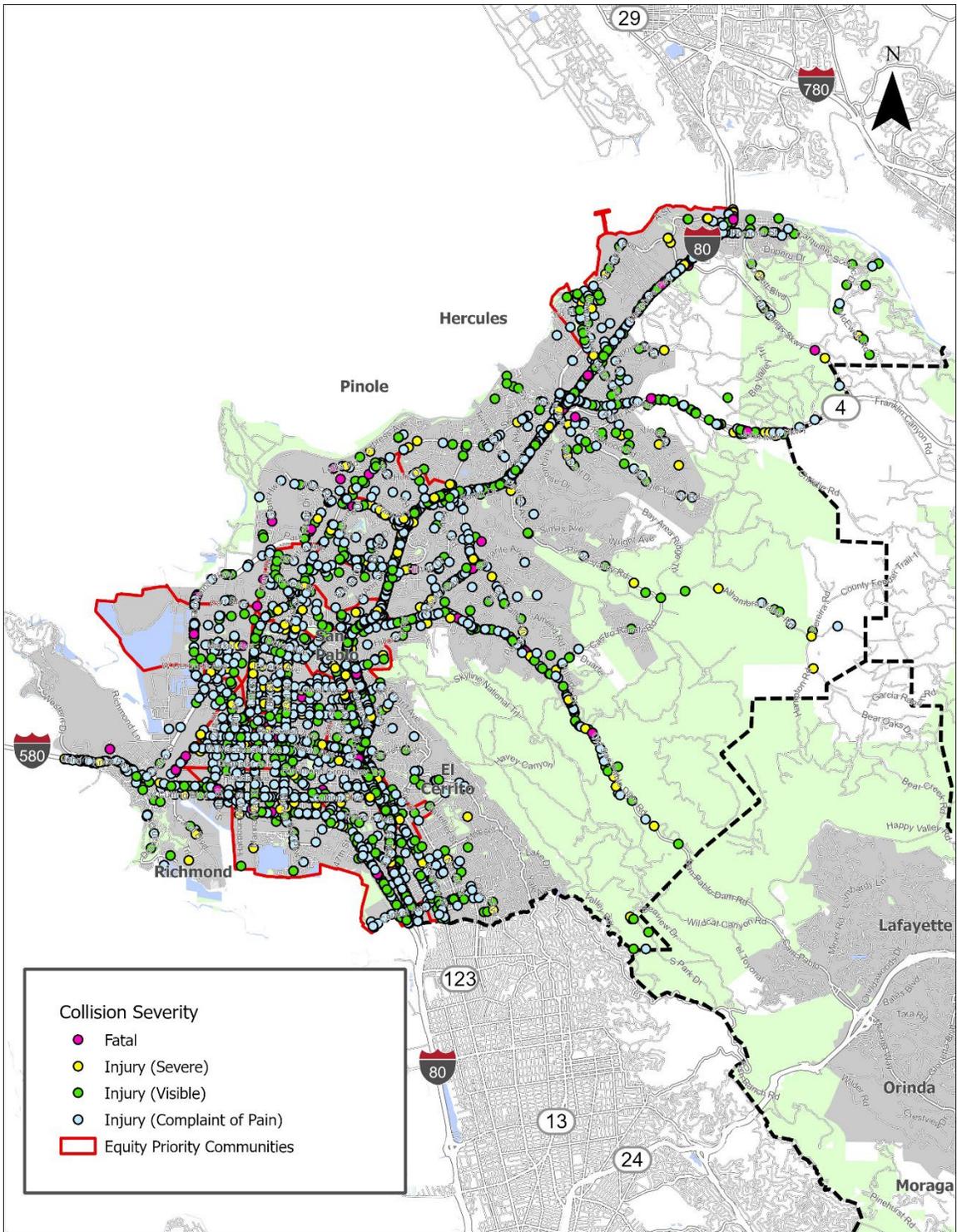


TABLE 13. INJURY AND FATALITY COLLISION BY CRASH TYPE - WEST COUNTY SUBREGION FROM JANUARY 1, 2016, THROUGH DECEMBER 31, 2020

Crash Type	Number of Crashes
Not Stated	94
Head-on	293
Sideswipe	638
Rear-End	1,483
Broadside	1,165
Hit Object	660
Overtuned	157
Vehicle/Pedestrian	412
Other	61
Total	4,963

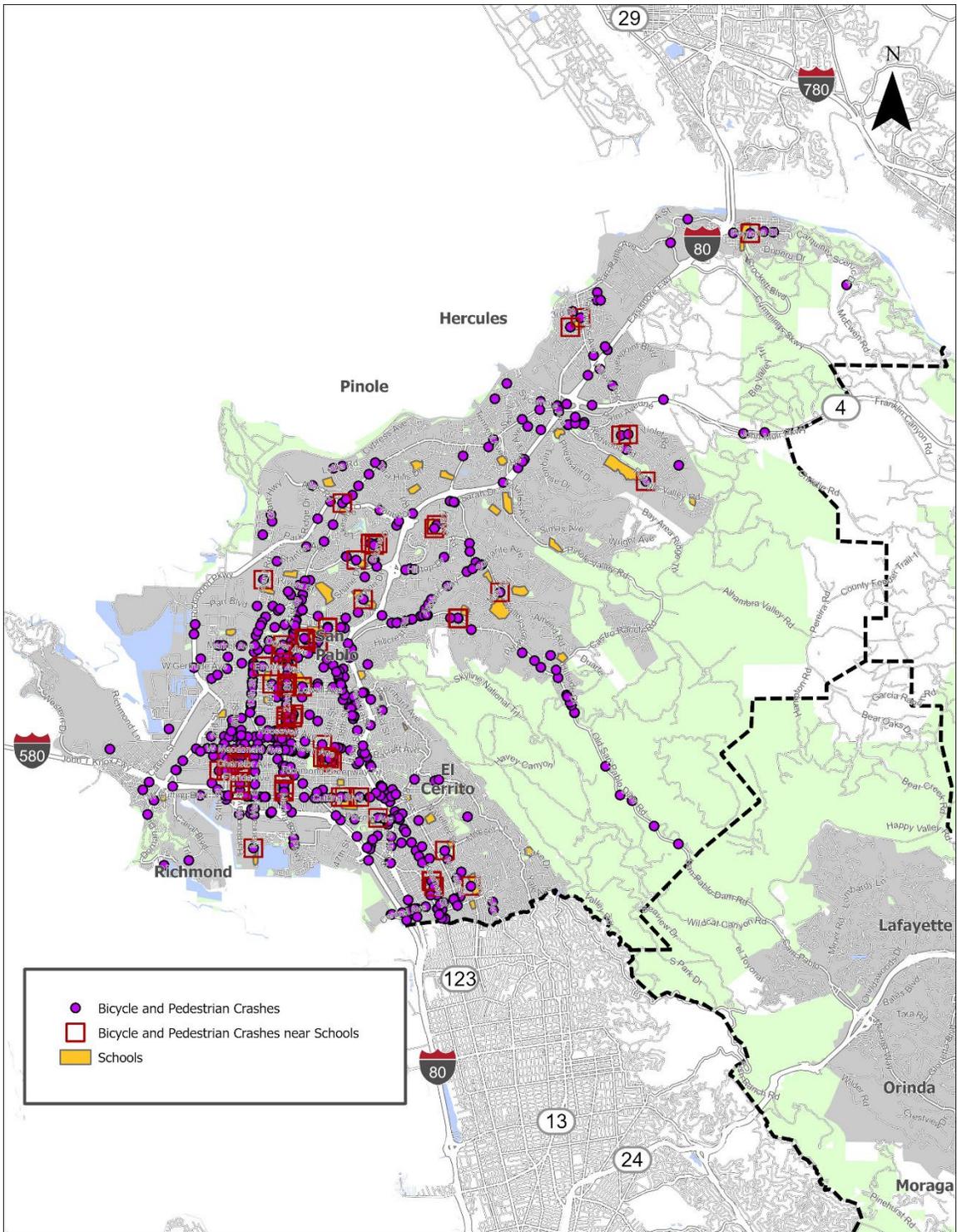
Source: Transportation Injury Mapping System and DKS Associates

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

Severity	Number of Total Crashes	Bike and Ped Crashes
Fatal	101	42
Injury (Severe)	408	120
Injury (Other Visible)	1,299	229
Injury (Complaint of Pain)	3,155	295
Total	4,963	686

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 4,963 crashes summarized under Safety RTOs, 2,673 or almost 54 percent occurred within West 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 75% of County jobs are reachable from the West County subregion, only 66% of County jobs are reachable from within the EPCs. By 2050, the share of County jobs reachable from the West County region is forecasted to increase to 80% while the EPC share rises to 70%.

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 West 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
West County	303,926	75%	949	426,998	80%	980
West County EPCs	265,364	66%	821	370,876	70%	845

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, only 31 percent of County jobs are reachable from the West County subregion, and only 28 percent of County jobs are reachable from within the West County EPCs. By 2050, transit accessibility shares rise for both the West County subregion and its EPCs to 39 and 35 percent, respectively.

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 West County should rise to 31% 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
West County	126,700	31%	708	206,393	39%	695
West County EPCs	112,737	28%	680	187,194	35%	664

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 a significant portion of EPC areas in West 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 19 percent of EPC acreage is within the high-quality transit buffer.

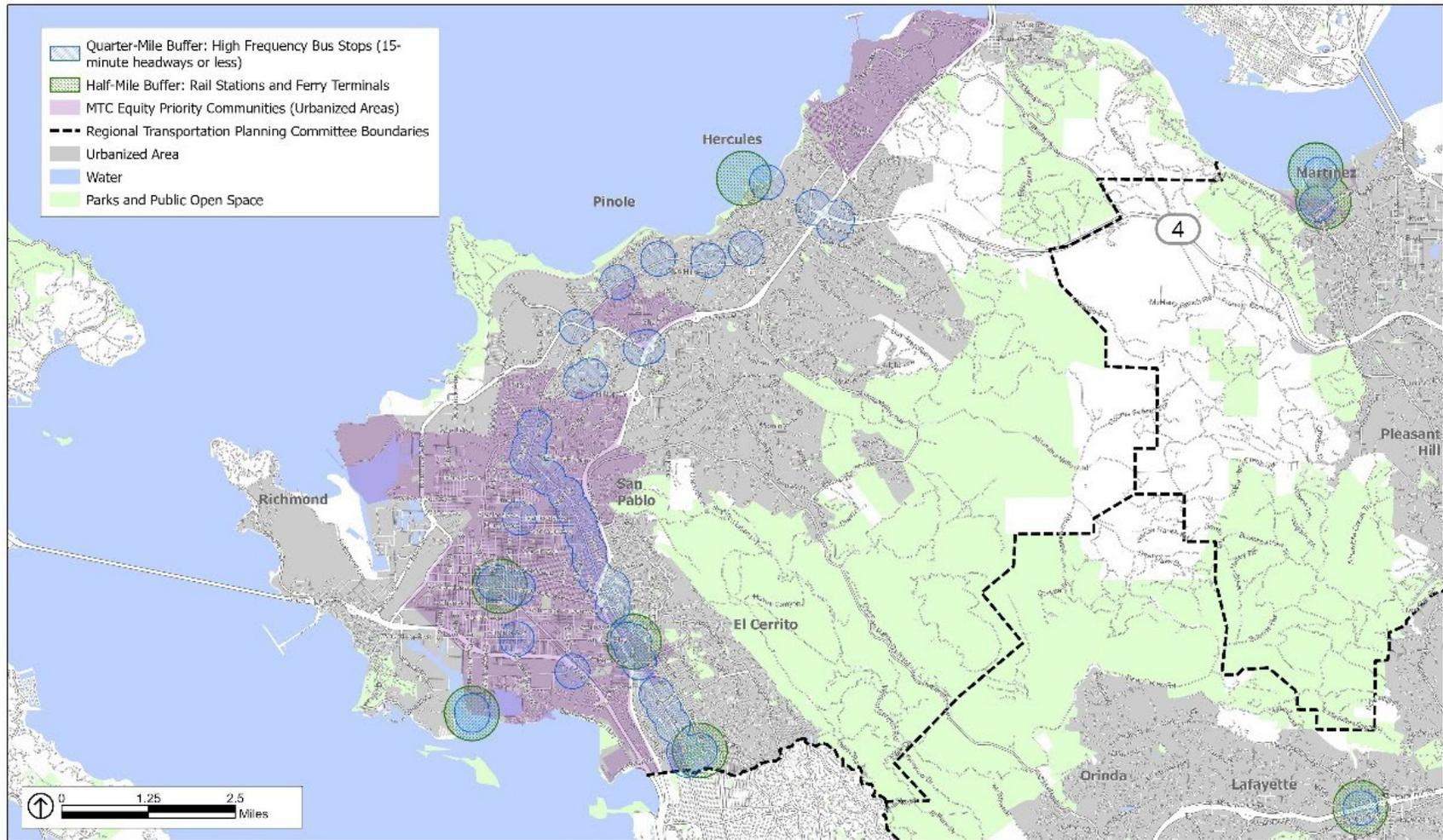
We suggest that the region should aim to achieve 100% of EPC acres within a quarter mile of high-quality transit by 2050. We know that this is an ambitious goal, especially in cases where EPC acreage includes industrial areas. However, this goal will help the subregion and CCTA meet broad transit goals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

We also propose an interim target of 30% completion by 2027 (a roughly 50% increase over the current condition).

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

	Acres	Proportion of Total Acres
Within high-quality transit buffer	2,132.2	19%
Not within high-quality transit buffer	8,983.6	81%
Total EPC acres in West County	11,115.8	100%

FIGURE 6. WEST COUNTY EPCs AND HIGH-QUALITY TRANSIT



Source: CCTA, 2021; ESRI, 2021; PlaceWorks, 2021.

EQUITY PRIORITY COMMUNITIES AND HIGH-QUALITY TRANSIT: WEST CONTRA COSTA COUNTY

Climate Change RTOs

SINGLE-OCCUPANT VEHICLE MODE SHARE

As shown in Table 2 in the first section of this memo (“Mode Share RTOs”), 64 percent of total West County work trips were taken by driving alone, compared to 68 percent of total 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 76 percent based on job location BY 2050. Meanwhile, the model predicts that 59 percent of all trips made by West 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 West County subregion is 50 percent for home-based work trips, in 2027 and 40 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 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 West County subregion was 23.5, and that the same number for Contra Costa County was 30.3 VMT per service population.

The California Air Resources Board’s (CARB’s) document entitled *2017 Scoping Plan-Identified VMT Reductions and Relationship to State Climate Goals* published in January 2019³ states that California 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 West County area. Using a straight-line projection for reductions from 2018 until 2045, this would mean a reduction of four percent to 22.7 VMT per capita by 2027.

TABLE 18. VMT PER SERVICE POPULATION

	2018	2050
West County	23.5	22.7
Contra Costa County	30.3	28.2

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

³ Available at https://ww2.arb.ca.gov/sites/default/files/2019-01/2017_sp_vmt_reductions_jan19.pdf

TRANSPORTATION GREENHOUSE GAS 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, CO₂)⁴. 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 23 pounds of GHG per capita, this translates to a 2027 target of about 15 pounds per capita. Although transportation related CO₂ 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 ₂ EMISSIONS (TONS)	CO ₂ EMISSIONS PER CAPITA (LBS)	POPULATION	CO ₂ EMISSIONS (TONS)	CO ₂ EMISSIONS PER CAPITA (LBS)
West County	268,649	3,038	22.62	306,763	1,926	12.56
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 electric vehicle (EV) penetration. Data as of April 2021, which is the most recent report date, are shown in Table 20 for West County as well as all of Contra Costa County for comparison. West County currently has 4,258 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 2035.⁵ 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 2030⁶. Since West County accounts for less than 1 percent of the state’s population, this suggests that the subregion should have about 6,800 EVs by 2025 and 34,000 EVs by 2030. A straight-line extrapolation of this number through 2050 suggests about 162,000 EVs in West County by 2050.

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

⁵ California Air Resources Board. Advanced Clean Cars II.

⁶ 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 2 percent. The estimated number of light duty vehicles currently based in West County is about 211,000.

TABLE 20. ELECTRIC VEHICLES BY SUBREGION AS OF APRIL 2021

Area	Battery Electric Vehicles
Central County	4,879
East County	2,926
Lamorinda	3,141
Tri-Valley	15,262
West County	4,258
Total Subregion	30,466
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 that 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 West County’s jurisdictions to interconnect a total of 54 signals in El Cerrito, Hercules, Pinole, Richmond, and San Pablo, using funding to come primarily from the Metropolitan Transportation Commission’s (MTC’s) OBAG3 program. Since this effort is already underway, the target for this RTO is the completion of all 54 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 West County Subregion Actions Memorandum

This Memorandum lists the existing West 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 WCCTAC TAC members or through other subregional TAC members that are also applicable to the West County subregion.

The middle column of Table 1 lists the existing West 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 WEST COUNTY ACTION PLAN ACTIONS

New Action Number	Proposed Action Language Revisions	Notes
<i>Freeways</i>		
Freeways-1	Complete the reconstruction of the I-80/San Pablo Dam Road interchange. Complete necessary operational improvements (i.e. <u>protected turn lanes, synchronized signal timing, and auxiliary lanes, among others</u>) at select intersections or roadway segments, while <u>ensuring that the improvements are balanced against the objectives and actions set forth elsewhere in this Action Plan.</u>	Replaced with a general capacity improvement action
Freeways-2	Support implementation, operations and maintenance of the I-80 Integrated Corridor Mobility project. (21) <u>Support transit priority improvements in the WestCAT service area and continue to work with Caltrans on refinement and monitoring of the ICM program.</u>	Revised per TAC comments
	Enhance State Route 4 to a full freeway between I-80 and Cummings Skyway, including adding a connection between westbound I-80 and eastbound SR 4. (22)	Removed because this is included under general operational improvements that could occur under the new action above
Freeways-3	<u>Reconstruct part or all of the SR-4 and I-80 interchange to improve transit access to the Hercules Transit Center and work with local jurisdictions to identify any other ramp reconfiguring projects.</u>	Added based on TAC comment
	Implement recommendations of the State Route 4 Integrated Corridor Analysis.	Removed due to TAC comment
	Complete the improvements associated with the I-80/Central Avenue interchange. (26)	Removed because this is included under general operational improvements that could occur under the new action above
Freeways-4	Implement the recommended actions in the I-80 Corridor System Management Plan (CSMP). (43)	Kept as is
Freeways-5	Support broad-Continue to expand coordination between Contra Costa and neighboring counties (including Alameda, Solano, and Marin) to reduce single-occupant vehicle travel along the I-80 corridor. (46)	Revised to be more actionable
Freeways-6	<u>Complete a West County goods movement study, focused on ensuring efficient movement of goods while reducing impacts (environmental, health, quality of life) on West County residents (29). 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-7	<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</u>	Added using language drafted for all action plans

TABLE 1 RECOMMENDED REVISIONS TO THE WEST COUNTY ACTION PLAN ACTIONS

New Action Number	Proposed Action Language Revisions	Notes
	<u>(ITS) improvements, HOV/HOT lane and bypass lanes, among others, to support a cohesive transportation system for all modes.</u>	
Freeways-8	<u>Work with CCTA and local jurisdictions to continue studying the feasibility of bus on shoulder pilot and long-term programs.</u>	Added using language drafted for all action plans
Freeways-9	<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-10	<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-11	<u>Implement park and ride facilities at appropriate locations, including shared-use agreements at activity centers with underutilized parking spaces.</u>	Added using language drafted for all action plans
Freeways-12	<u>Conduct a study to develop a seamless HOV/HOT/Express Lane on West County freeways.</u>	Added using language drafted for all action plans
<i>Surface Roadways</i>		
Surface Roadways- 1	Maintain pavement management systems and schedules, and continue to seek additional funding for local roadway maintenance. (28)	Kept as is
Surface Roadways-2	Implement the recommendations of the specific plans along 23rd Street. (44)	Kept as is
Surface Roadways-3	Work with WCCTAC, local jurisdictions and CCTA to seek funding to implement recommendations of the North Richmond Truck Route Study (or other mutually agreed upon implementation measures), to improve connectivity to designated truck routes, discourage non-local heavy truck traffic on local streets, and improve public health and safety in West County communities. (25)	Kept as is
Surface Roadways-4	Explore options to extend the truck climbing lane on Cummings Skyway, and to implement a Class II bike lane on Cummings Skyway between San Pablo Avenue and Franklin Canyon Road. (24)	Kept as is
Surface Roadways-5	Participate in San Pablo Avenue Multimodal Corridor Project. <u>Implement any Board approved recommendations from the San Pablo Avenue Multimodal Corridor Study.</u>	Revised per TAC comments
Surface Roadways-6	<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>	Added using language drafted for all action plans
<i>Transit</i>		
Transit-1	Work with local transit providers and regional funding agencies to identify funding for and provide bus oriented improvements, <u>including operations and maintenance, supporting infrastructure for bus service in</u>	Revised per TAC comments

TABLE 1 RECOMMENDED REVISIONS TO THE WEST COUNTY ACTION PLAN ACTIONS

New Action Number	Proposed Action Language Revisions	Notes
	<u>West County</u> , and better bus stop amenities along local routes, and to improve headways and expand bus service along important corridors in West County.	
Transit-2	Pursue plans, programs, and projects that implement transit-oriented development <u>with pedestrian/bicycle access in urban areas</u> the designated Pedestrian Bicycle Transit (PBT) zones using design principles that support local bus services and pedestrian/bicycle access.	Revised per TAC comments
Transit-3	Encourage development of new or expanded <u>park n ride lots</u> <u>mobility hubs</u> along <u>major activity centers</u> and along <u>freeways</u> and other <u>important roadway corridors</u> and work with partners to address issues related to ownership and oversight of operations and maintenance, corridors and at major activity centers.	Revised per TAC comments
Transit-4	<u>Partner Work</u> with the Water Emergency Transportation Authority, CCTA, and other partners to ensure success of Richmond Ferry Service. <u>MTC to plan and fund ferry service in West County.</u>	Revised per TAC comments
Transit-5	Participate in studies regarding passenger rail improvements in West County, such as expansion of service on the Capital Corridor or San Joaquin Corridor. <u>Work with passenger rail operators in countywide and regional efforts to implement passenger rail improvements in West County, such as expansion of service on the Capital Corridor or San Joaquin Corridor and planning for LINK 21.</u>	Revised per TAC comments
Transit-6	Support projects and programs that improve the passenger experience, upgrade systems, <u>modernize stations</u> , and expand the capacity of BART stations in West County.	Revised per TAC comments
Transit-7	Improve the reliability, <u>efficiency, and travel time</u> and <u>efficiency</u> of bus service along San Pablo Avenue. (34)	Revised per TAC comments
Transit-8	Continue to evaluate long term solutions to congestion around the El Cerrito del Norte BART station, with particular attention to methods that could improve local and regional transit and auto access to the station, along with improving multimodal access and circulation for transit-oriented development and businesses in the area. <u>Work with CCTA and local jurisdictions to improve circulation near and multimodal access near the del Norte BART station.</u>	Revised per TAC comments
	Participate in a study of high occupancy transit options in the I-80 corridor in West County.	Removed because it is too vague and would be completed elsewhere in the proposed actions
	Enhance transportation services for mobility impaired West County residents, through improved coordination of existing services and consideration of expanded services. (47)	Revised using language drafted for all action plans
Transit-9	<u>Implement the recommendations of the Contra Costa Accessible Transportation Strategic Plan, including the establishment of a new Coordinating Entity and establishing a new, ongoing, dedicated funding stream.</u>	

TABLE 1 RECOMMENDED REVISIONS TO THE WEST COUNTY ACTION PLAN ACTIONS

New Action Number	Proposed Action Language Revisions	Notes
	<u>Support the coordination of transit services across all areas of Contra Costa to improve connectivity and access. (48)</u>	Removed because coordination of transit service is covered in action below
Transit-10	<u>Implement the Express Bus recommendations from the West County High Capacity Transit Study (50) 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>	Revised because WCCTAC has already completed this
	<u>Implement the San Pablo/Macdonald Avenues Bus Rapid Transit recommendations from the West County High Capacity Transit Study</u>	Removed per TAC comment
	<u>Implement the 23rd Street Bus Rapid Transit recommendations from the West County High Capacity Transit Study</u>	Removed per TAC comment
Transit-11	<u>Complete the West Contra Costa Transportation Investment Study, including evaluation of transit opportunities, roadway improvements, and other projects. Implement the recommendations of the West County High Capacity Transit Study.</u>	Revised per TAC comment
Transit-12	<u>Plan and implement enhanced railroad crossings to <u>improve pedestrian and bicycle access and to</u> reduce noise and quality-of-life impacts throughout West County; enhancements may involve implementing quiet zones, grade separations, train-traffic signal preemption systems, or other measures (19).</u>	Revised per TAC comment
Transit-13	<u>Complete the implementation of the Hercules Intermodal Station. <u>Support Work with the City of Hercules to ensure the success of the Regional Intermodal Transportation Center (RITC)</u></u>	Revised per TAC comments
Transit-14	<u><u>Assist local jurisdictions in reviewing and considering options for improving curb management and bus and truck loading on public streets.</u></u>	Added using language drafted for all action plans
Transit-15	<u><u>Participate in any current or future studies regarding rail options for the West County area and continue exploring development of new rail stations.</u></u>	Added using language drafted for all action plans
Transit-16	<u><u>Work with CCTA, local jurisdictions, and local public transit operators to:</u> <u>- Link transit service in the entire subregion, including more directly to communities within West County, between BART stations, and between adjacent West County communities.</u> <u>- Standardize operations, regional mapping, and wayfinding.</u> <u>- Implement traffic signal management and bus prioritization technology on regionally significant transit routes to improve bus speed and reliability.</u></u>	Added using language drafted for all action plans
Transit-17	<u><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></u>	Added using language drafted for all action plans
Transit-18	<u><u>Provide educational awareness of public transportation options through outreach, education, and advertising, particularly in local schools.</u></u>	
Transit-19	<u><u>Work with CCTA and local transit operators to explore financial incentives and reduced fares for public transportation, including a</u></u>	Added using language drafted for all action plans

TABLE 1 RECOMMENDED REVISIONS TO THE WEST COUNTY ACTION PLAN ACTIONS

New Action Number	Proposed Action Language Revisions	Notes
	<u>feasibility study to explore a subregional or countywide Universal Basic Mobility program.</u>	
Transit-20	<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
Transit-21	<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
<i>Bike/Ped</i>		
Bike/Ped-1	Continue to update and implement local and regional bicycle and pedestrian plans, and support the preparation of bicycle and pedestrian plans in those communities where they do not currently exist. (9) <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>	Replaced with language drafted for all action plans
	Consider bicycle and pedestrian needs in all neighborhood and roadway planning and design efforts, particularly within Priority Development Areas.	Removed per TAC comment
	Require new development projects to provide bike racks, lockers and other secure bike parking options at appropriate locations, and seek funding to provide bike parking at key activity centers throughout West County. (14)	Kept as is
	Support and fund programs, such as the Street Smarts Program, to increase the level of public education about bicycle safety and to reduce injuries due to pedestrian or bicycle collisions.	Removed per TAC comment
	Participate in planning studies for the Bay Trail extension along I-580, from Castro Street to the Richmond San Rafael Bridge.	Removed per TAC comment
Bike/Ped-2	Improve pedestrian and bicycle access <u>and safety</u> through freeway interchange areas.	Revised per TAC comment
Bike/Ped-3	Conduct feasibility study along Richmond Parkway to decrease development impacts, balance truck traffic with automobiles, and overall a-bicycle and pedestrian route improvements to close gaps, improve safety, and connectivity to the new Richmond San Rafael Bridge eastbound Bay Trail extension. <u>feasibility study along Richmond Parkway, and work to improve the Bay Trail crossing at Wildcat Creek and close other trail gaps along the Parkway.</u>	Revised per TAC comment
Bike/Ped-4	Complete the following gaps in the Countywide Low Stress Bike Network: Close gaps in the regional trail and bicycle route systems, and develop local bike route links to the Bay Trail and Richmond and Ohlone Greenways to facilitate longer distance bicycle travel through West County and to neighboring regions. (27) - Bay Ridge Trail. (42) <u>=[Additional gaps to be identified in Round 4 meeting]</u>	Revised 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

TABLE 1 RECOMMENDED REVISIONS TO THE WEST COUNTY ACTION PLAN ACTIONS

New Action Number	Proposed Action Language Revisions	Notes
Bike/Ped-5	Develop local bike route links to the Bay Trail and Richmond and Ohlone Greenways to facilitate longer-distance bicycle travel through West County and to neighboring regions. (27)	Action split from action above to be its own
Bike/Ped-6	Implement the recommendations of the Complete Streets plans that affect San Pablo Avenue. (35) <u>Develop a program to provide funds for implementation of Complete Streets policies of the local jurisdictions</u> Implement the San Pablo Avenue Complete Streets/Bay Trail project between Rodeo and Crockett. (36)	Replaced using language drafted for all action plans
Bike/Ped-7	Implement the recommendations of the Appian Way Alternatives Analysis and Complete Streets Study. (37) Support completion of the Wildcat Creek Trail, including the Bay Ridge Trail to Ridge Trail connector.	Kept as is Removed because part is complete and the Bay Ridge Trail portion is now listed under the gap closure action above
Bike/Ped-8	Implement the findings of <u>Participate in the countywide Safe Routes to School needs assessment, and use the results of that effort to identify and seek funding for bicycle and pedestrian improvements in West County school areas.</u>	Revised per TAC comments
Bike/Ped-9	Support and participate in the efforts of Contra Costa Health Services in providing Safe Routes to School education and encouragement programs in area schools. 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.	Replaced with language drafted for all action plans
Bike/Ped-10	<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-11	<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-12	<u>Work with CCTA and other regional agencies to develop a method of tracking the Pavement Condition Index (PCI) of bicycle facilities on the low-stress bike network, and implement rehabilitation improvements where needed.</u>	Added using language drafted for all action plans
Bike/Ped-13	<u>Complete bicycle and pedestrian crossing improvements at the following intersections:</u> <u>- Atlas Road and Giant Highway</u> <u>- Richmond Greenway crossing at Harbor Way South</u> <u>- Richmond Parkway and West Barret Avenue</u> <u>- Richmond Parkway and West Macdonald Avenue</u> <u>- Richmond Parkway and Goodrick Avenue</u>	Added using language drafted for all action plans and added semi-protected intersections that the RTO Analysis Memo suggests are to be improved by 2027

TABLE 1 RECOMMENDED REVISIONS TO THE WEST COUNTY ACTION PLAN ACTIONS

New Action Number	Proposed Action Language Revisions	Notes
	<u>- Ohlone Greenway at Manila Avenue</u> <u>- Ohlone Greenway at Moeser Lane</u> <u>- Ohlone Greenway at Potrero Avenue</u> <u>- Wildcat Creek Trail at Fred Jackson Way</u> <u>- Richmond Parkway at San Pablo Avenue</u> <u>- Richmond Parkway at Atlas Road</u> <u>- Pinole Creek bike facility at Tennant Avenue</u> <u>- Pinole Valley Creek at San Pablo Avenue</u>	
<i>Safety</i>		
Safety-1	<u>Work with regional and local agencies to increase the level of public education about bicycle safety and to reduce injuries due to pedestrian or bicycle collisions.</u>	Added using language drafted for all action plans
Safety-2	<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-3	<u>Work with Caltrans to prepare an incident management plan for West County freeways.</u>	Added using language drafted for all action plans
Safety-4	<u>Work with CCTA to implement the Countywide Vision Zero Framework.</u>	Added using language drafted for all action plans
Safety-5	<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-6	<u>Work with CCTA, MTC, and East Bay Regional Parks to study and avoid the impacts safety 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-2	<u>Increase the number of express bus service to regional job centers inside and outside of the subregion.</u>	Added using language drafted for all action plans
Equity-2	<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 West 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-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 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-5	<u>Increase high frequency transit lines and stops in EPC areas.</u>	Added using language drafted for all action plans
<i>Climate Change</i>		
Climate Change-1	<u>Support the WCCTAC TDM program in promoting commute methods and modes that reduce single occupant vehicle travel at peak times.</u> <u>Work with 511 Contra Costa to expand Transportation Demand</u>	Revised using language drafted for all action plans

TABLE 1 RECOMMENDED REVISIONS TO THE WEST COUNTY ACTION PLAN ACTIONS

New Action Number	Proposed Action Language Revisions	Notes
	<u>Management (TDM) programs, adopt local TDM plans, and conduct regular monitoring and reporting for program effectiveness.</u>	
Climate Change-2	<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-3	<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-4	<u>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>	Added using language drafted for all action plans
Climate Change-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
Climate Change-6	<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-7	<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
<i>Technology</i>		
	Investigate and support opportunities for using new technologies to reduce single-occupant vehicle travel and to use existing system capacity more efficiently; examples may include real-time ridesharing programs, online traveler information systems, smart highways, connected vehicles, and other technologies. (32)	Removed because this general and covered by several actions
	Implement the recommendations of the WCCTAC Transit Enhancements and Wayfinding Study, which identifies specific local access improvements to the West County BART stations and intermodal transfer centers. (41)	Remove because wayfinding is covered in the general transit improvements action above
Technology-1	Support the investigation and development of innovative transportation-related technologies that <u>reduce emissions</u>, could improve air quality and public health; examples include fueling/charging stations for alternative fuel vehicles, new cleaner bus technology, software applications to facilitate ride-sharing, and many other opportunities.	Revised per TAC comment
Technology-2	<u>Upgrade the signal system along certain Routes of Regional Significance, including the 54 signals identified for interconnection.</u>	Added using language drafted for all action plans
Technology-3	<u>Conduct a study of the feasibility of a pilot Dynamic Personal Micro Transit System or Automated Driving System somewhere in the West County area.</u>	Added using language drafted for all action plans
Technology-4	<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
Technology-5	<u>Coordinate with CCTA and local jurisdictions to identify solutions to the Intelligent Transportation System (ITS) communications needs during</u>	Added using language drafted for all action plans

TABLE 1 RECOMMENDED REVISIONS TO THE WEST COUNTY ACTION PLAN ACTIONS

New Action Number	Proposed Action Language Revisions	Notes
Technology-6	<p><u>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></p> <p><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></p>	Added using language drafted for all action plans
<i>Funding</i>		
Funding-1	<p>Explore ways to increase revenue <u>Seek new sources of funding to maintain roads, transit facilities, trails, and all associated transportation infrastructure.</u></p>	Revised per TAC comment
Funding-2	<p>Support and implement the West County Subregional Transportation Mitigation Program, which generates funds to support specific capital improvements throughout West County. (33). Continue to participate and periodically update the West County Subregional Transportation Mitigation Program to ensure it will produce sufficient funds in light of current and anticipated growth rates and construction costs.</p>	Revised
<i>Misc.</i>		
	<p>Comply with the CCTA Growth Management Program through monitoring of new development proposals and General Plan amendments, and allowing for collaboration and comment from other jurisdictions. (30)</p>	Removed due to the nature and requirements of the Action Plan
	<p>Implement the recommendations of the Downtown El Sobrante Study. (38)</p>	Removed
	<p>Participate in studies and implement the plans related to the Lawrence Berkeley National Lab Second Campus.</p>	Removed
	<p>Implement Pinole San Pablo Avenue Bridge Replacement over BNSF Railroad – Complete Street (53)</p>	Removed
	<p>Encourage development of plans, programs and projects that support transit-oriented development within all Priority Development Areas.</p>	Removed because this is policy direction instead of an action



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:

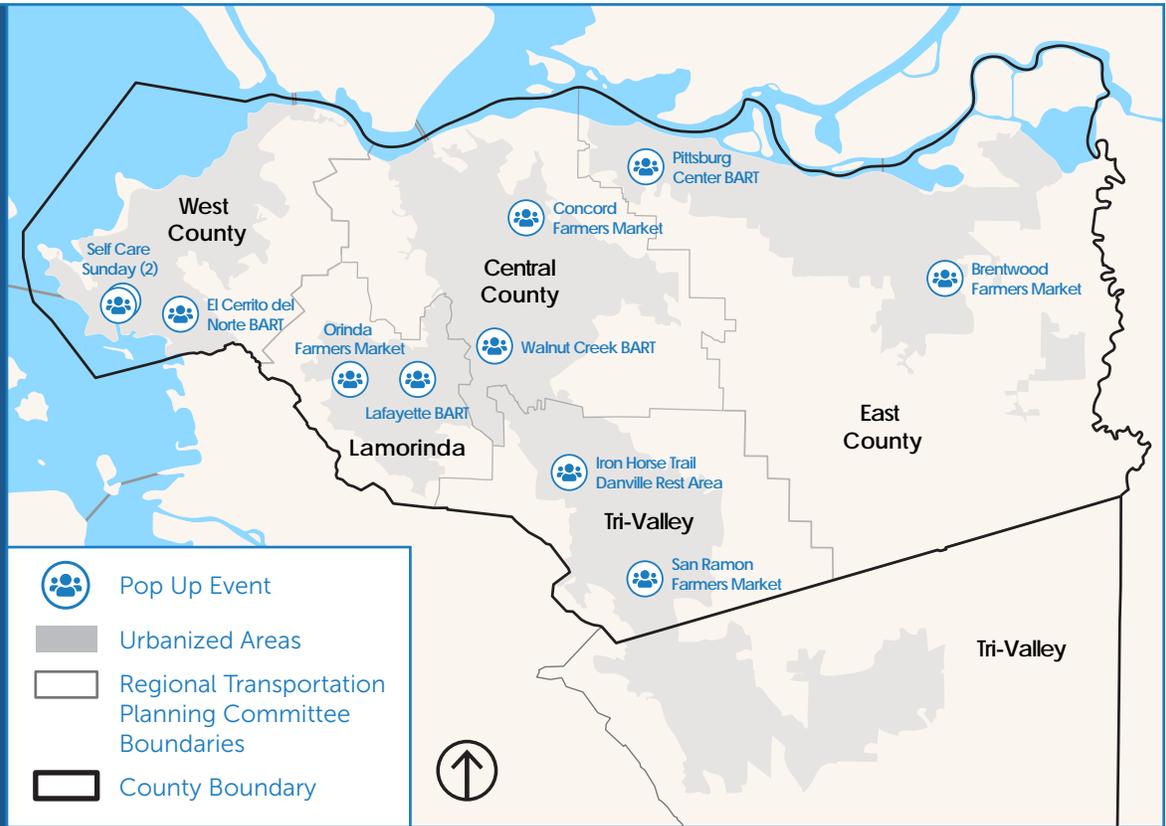


PLACEWORKS

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 5th 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



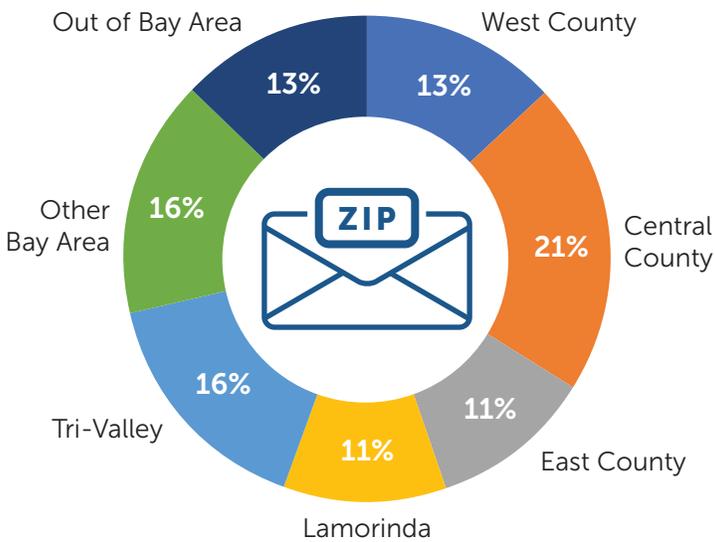
The project team collected optional demographic information on the written surveys at the pop-up events, during registration for the virtual workshops, and on the online community forum survey. Note that not all respondents chose to share demographic information. Percentages shown on this page indicate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



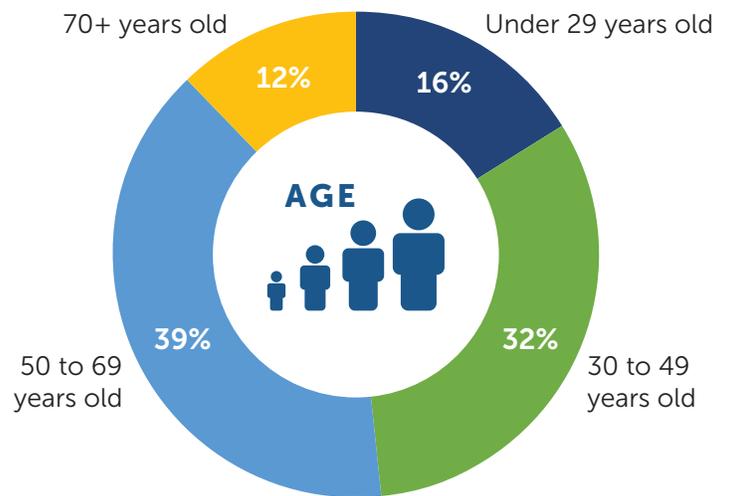
WEST COUNTY: El Cerrito del Norte BART

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

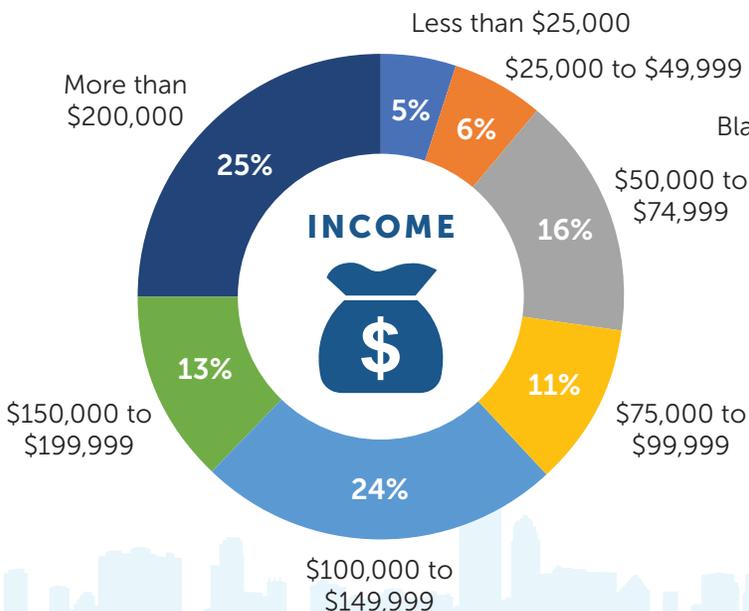
Zip Code - 38 Responses



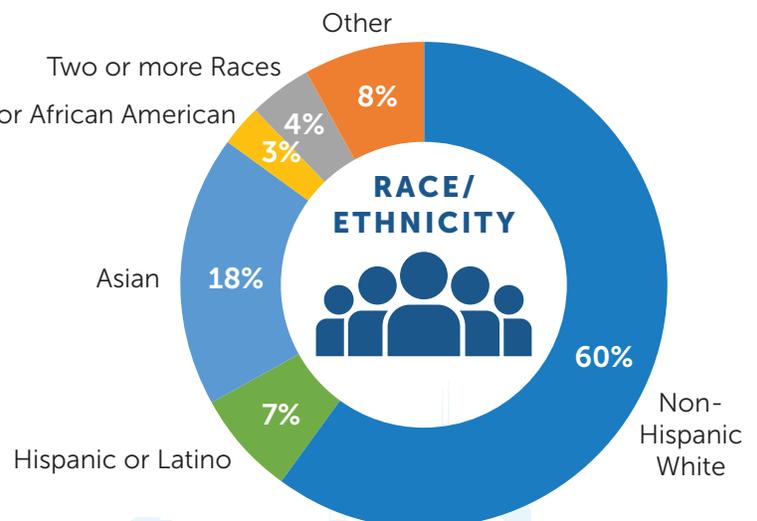
Age - 74 Responses



Household Income - 63 Responses



Race/ Ethnicity - 73 Responses



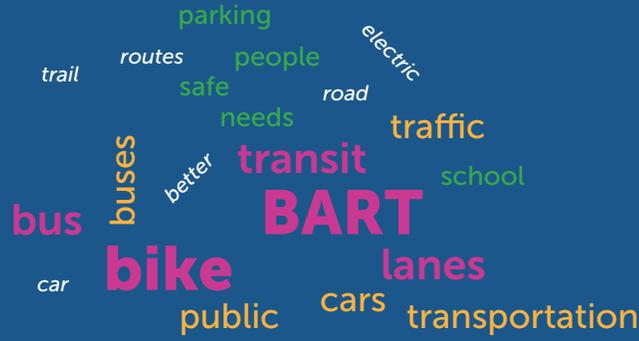
* 0% American Indian or Alaska Native
** 0% Native Hawaiian or Pacific Islander



General Comments



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 26th 2022
from 8:00 am to 12:00 pm
Oak Street and 1st Street,
Brentwood



CENTRAL COUNTY: Concord Farmers Market

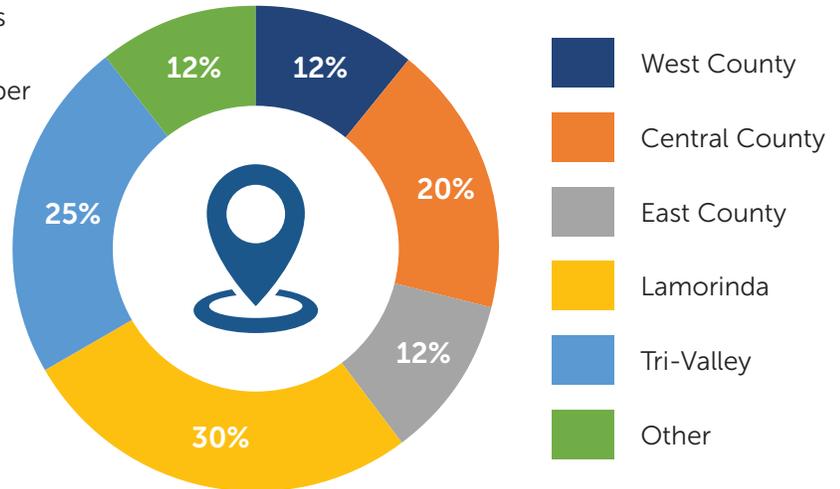
Tuesday, March 8th 2022
from 10:00 am to 2:00 pm
Todos Santos Plaza at 2175
Willow Pass Road,
Concord



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 12th 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 6th
2022 from 9:00 am to
12:00 pm