TRI-VALLEY TRANSPORTATION COUNCIL

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If you have any questions related to the Tri-Valley Transportation Council meeting agenda. Please contact Sai Midididdi. TVTC Administrative staff at (925)833-6630 or email at sai.midididdi@dublin.ca.gov

TVTC MEETING

Monday, August 15, 2022
4:00 p.m.

Join Zoom Meeting
https://dublinca.zoom.us/j/88579865694

Meeting ID: 885 7986 5694
One tap mobile
+16699009128,88579865694# US (San Jose)
+12532158782,88579865694# US (Tacoma)

Pursuant to Government Code section 54953(e), members of the Tri-Valley Transportation Council may conduct this meeting via teleconference. Teleconference locations are not open to the public pursuant to Section 54953(e).

For this meeting, there will be no physical location from which members of the public may observe/comment. There will be no physical location for members of the public to participate in the meeting. We encourage members of the public to access the meeting online using the web-video communication application, Zoom.

Zoom participants will have the opportunity to speak during the Public Comment period (for topics not on the agenda), in addition to each of the items on the agenda.

If you are submitting a public comment via email, please do so **by 12:00 p.m. on Thursday, August 15, 2022,** to sai.mididdi@dublin.ca.gov Please include **"Public Comment "08/15/22"** in the subject line. In the body of the email, please include your name and the item you wish to speak on. Public comments submitted will be read during Public Comment and will be subject to the regular three-minute time restriction.

Members of the Public may participate and provide public comments to teleconference meetings as follows:

Public testimony will be taken at the direction of the Chair and members of the public may only comment during times allotted for public comments. If you wish to request a disability-related modification or accommodation, please contact the Administrator by email at sai.mididdi@dublin.ca.gov.

TRI-VALLEY TRANSPORTATION COUNCIL

AGENDA

1. Call to Order

2. Roll Call and Self Introductions

3. Public Comment

4. Consent Calendar

    a. APPROVE August 04, 2022, Minutes
    b. APPROVE Resolution No. 2022-17 to continue conducting remote teleconference meetings for all meetings of the legislative bodies of the Tri-Valley Transportation Council ("TVTC"), pursuant to the authority set forth in AB 361 (Government Code Section 54953[e][1]), due to a proclaimed state of emergency and imminent risks to the health and safety of attendees if meetings are held in person*

5. Old Business
    a. RECEIVE Tri-Valley Action Plan Working Draft Components Memorandum and receive verbal update on Tri-Valley Transportation Action Plan for Routes of Regional Significance

6. New Business

7. Administrative Business

8. Informational Items

    Find a date for the next special meeting to extend teleconference meetings.

    TVTC Regularly Scheduled Board Meeting on October 17 at 4:00 p.m.

9. Adjournment

*** Attachment(s)***

TRI-VALLEY TRANSPORTATION COUNCIL

Item 4

TRI-VALLEY TRANSPORTATION COUNCIL

Item 4.a - DRAFT - MEETING MINUTES

TRI-VALLEY TRANSPORTATION COUNCIL SPECIAL MEETING

Zoom Teleconference Call
Wednesday, August 4, 2022

1. CALL TO ORDER, ROLL CALL, AND SELF-INTRODUCTIONS

The Tri-Valley Transportation Council (TVTC) was called to order at 4:06 p.m. by Chair, Jean Josey, City of Dublin.

TVTC Members in Attendance:

Jean Josey, Chair, Vice Mayor, Dublin
Newell Arnerich, Vice-chair, Mayor, Town of Danville
David Haubert, Supervisor District 1, Alameda County (absent)
Candace Andersen, Supervisor District 2, Contra Costa County
Brittni Kiick, City of Livermore (absent)
Karla Brown, Mayor, City of Pleasanton
Scott Perkins, Chair, Councilmember, San Ramon

TVTC Staff in Attendance:

Sai Midididdi, Dublin
Chris Weeks, San Ramon
Cedric Novenario, Pleasanton (absent)
Pratyush Bhatia, City of Dublin (absent)
Andy Dillard, Danville (absent)
Joan Liu, City of Livermore (absent)
Robert Sarmiento, Contra Costa County (absent)

Others in Attendance

Lindsay D'Andrea, General Counsel's Office

1. PUBLIC COMMENT

None

2. CONSENT CALENDAR

1. APPROVE minutes from July 18th meeting
2. APPROVE Resolution No. 2022-16 to continue conducting remote teleconference meetings for all meetings of the legislative bodies of the Tri-Valley Transportation Council ("TVTC"), pursuant to the authority set forth in AB 361 (Government Code Section 54953[e][1]), due to a proclaimed state of

emergency and imminent risks to the health and safety of attendees if meetings are held in person*

Motion to Approve Consent Calendar Items by Council Member Perkins; Second by Mayor Arnerich

Approved (Ayes 5; Noes 0; Abstain 0) Kiick and Haubert Absent

3. OLD BUSINESS

N/A

4. NEW BUSINESS

N/A

5. INFORMATIONAL ITEMS

Ms. Midididdi reminded of the upcoming TVTC on August 15 at 4:00 p.m. to present the Action Plan update.

TVTC Board instructed staff to bring the item to extend the tele-conference meeting to the August 15th meeting.

6. ADJOURNMENT

The meeting was adjourned by Chair Josey at 4:12 p.m.

TRI-VALLEY TRANSPORTATION COUNCIL

Item 4.b

To: Tri-Valley Transportation Council (TVTC)

From: Steve Mattas, General Counsel

Date: August 15, 2022

Subject: Resolution to continue conducting remote teleconference meetings for all meetings of the legislative bodies of the Tri-Valley Transportation Council, pursuant to the authority set forth in AB 361 (Government Code Section 54953[e][1]), due to a proclaimed state of emergency and imminent risks to the health and safety of attendees if meetings are held in person

RECOMMENDATION

Adopt a resolution to continue conducting remote teleconference meetings for all meetings of the legislative bodies of the Tri-Valley Transportation Council ("TVTC"), pursuant to the authority set forth in AB 361 (Government Code Section 54953[e][1]), due to a proclaimed state of emergency and imminent risks to the health and safety of attendees if meetings are held in person.

BACKGROUND

On March 4, 2020, Governor Newsom declared a State of Emergency in response to COVID-19. On March 10, 2020, Contra Costa County similarly declared a state of emergency. On March 17, 2020, Alameda County also declared a state of emergency, and Governor Newsom issued Executive Order N-29-20, which suspended certain provisions of the Brown Act in order to allow local legislative bodies to conduct remote meetings. Pursuant to this executive order, TVTC's legislative bodies began conducting teleconference meetings to carry out TVTC business from remote locations while ensuring the public's continued access to meetings in a safe manner.

On June 11, 2021, Governor Newsom issued Executive Order N-08-21, extending the term of Executive Order N-29-20 to September 30, 2021. Since the Governor issued Executive Order N-08-21, the highly contagious Delta and Omicron variants emerged, which caused spikes in cases throughout the state and within Alameda County and Contra Costa County. Additional highly contagious subvariants have emerged, including BA.5 and BA.4, and there is an ongoing risk that new variants will emerge. The State, as well as the Alameda County Health Officer and Health Officer of Contra Costa County, have issued public health orders requiring all people, regardless of vaccination status, to wear

face coverings in certain high-risk settings and strongly recommending that all people, regardless of vaccination status, wear face coverings in public indoor settings. The Division of Occupational Safety and Health of the California Department of Industrial Relations ("Cal/OSHA") has also imposed similar requirements and recommendations for physical distancing and masking in response to the spread of the virus.

On September 16, 2021, Governor Newsom signed Assembly Bill 361 (2021) ("AB 361"), which amended the Brown Act to allow local legislative bodies to continue meetings by teleconference during a declared Stated of Emergency by following specific rules regarding notice and attendance. AB 361 took full effect on October 1, 2021.

DISCUSSION

During a proclaimed state of emergency, AB 361 allows local legislative bodies to continue to meet remotely.

Under AB 361, TVTC will be allowed to continue to meet remotely when:

1. The local agency holds a meeting during a proclaimed state of emergency;
2. State or local health officials have imposed or recommended measures to promote social distancing;
3. The local agency has determined that as a result of the emergency, there is a need to meet remotely due to present imminent risks to the health or safety of attendees.

TVTC meets the requirements to continue holding meetings remotely in order to ensure the health and safety of the public:

- The Governor has declared a state of emergency, and the Alameda County and Contra Costa County Board of Supervisors each adopted resolutions proclaiming a state of emergency due to COVID-19, pursuant to Section 8625 of the California Emergency Services Act;
- State and County health officers strongly recommend that individuals in indoor public spaces wear face coverings, and Cal/OSHA and the Center for Disease Control and Prevention (CDC) recommend social distancing of at least six feet and face coverings due to COVID-19;
- The highly-infectious Delta and Omicron variants of COVID-19, and the subvariants BA.4 and BA.5, continue to circulate within the state and throughout Alameda County and Contra Costa County and there is an ongoing risk of new variants emerging;
- Meeting in person would present imminent risks to the health and/or safety of attendees.

Under AB 361, TVTC is required to make certain findings, by majority vote, in order to continue teleconferencing without complying with the pre-AB 361 Brown Act provisions (i.e. posting agendas at each teleconference location and allowing such locations to be accessible to the public):

(1) The Board has reconsidered the circumstances of the state of emergency.
(2) Either of the following circumstances exist:
    (i) The state of emergency continues to directly impact the ability of the members to meet safely in person.
    (ii) State or local officials continue to impose or recommend measures to promote social distancing.

If TVTC makes these findings, TVTC's legislative bodies may continue to hold meetings in the current remote manner with opportunities for the public to observe and address the legislative bodies in real time. TVTC is required to revisit these findings every 30 days in order to continue holding teleconference meetings while the proclaimed state of emergency is in effect.

RECOMMENDATION

Adopt resolution to continue conducting remote teleconference meetings for all meetings of the legislative bodies of the Tri-Valley Transportation Council, pursuant to the authority set forth in AB 361 (Government Code Section 54953[e][1]), due to a proclaimed state of emergency and imminent risks to the health and safety of attendees if meetings are held in person.

TRI-VALLEY TRANSPORTATION COUNCIL
RESOLUTION NO. 2022-17

A RESOLUTION OF THE TRI-VALLEY TRANSPORTATION COUNCIL (TVTC) FINDING THAT A PROCLAIMED STATE OF EMERGENCY EXISTS AND THAT MEETING IN PERSON WOULD PRESENT IMMINENT RISKS TO THE HEALTH OR SAFETY OF ATTENDEES IF MEETINGS OF THE LEGISLATIVE BODIES ARE HELD IN PERSON; AND AUTHORIZING TELECONFERENCE MEETINGS FOR ALL LEGISLATIVE BODIES

WHEREAS, all meetings of the legislative bodies of the Tri-Valley Transportation Council ("TVTC") are open and public, as required by the Ralph M. Brown Act, Government Code Section 54950, *et seq.*, and any member of the public may observe, attend, and participate in the business of such legislative bodies;

WHEREAS, on March 4, 2020, Governor Newsom declared a State of Emergency as a result of the rapid spread of the novel coronavirus disease 2019 ("COVID-19");

WHEREAS, on March 4, 2020, the Alameda County Health Officer declared a local emergency due to COVID-19;

WHEREAS, on March 17, 2020, the Alameda County Board of Supervisors adopted a Resolution ratifying the Health Officer's Declaration of Local Emergency;

WHEREAS, on March 10, 2020, the Contra Costa County Board of Supervisors adopted a Resolution proclaiming a state of emergency to deal with the potential spread of COVID-19;

WHEREAS, on March 17, 2020, in response to the COVID-19 pandemic, Governor Newsom issued Executive Order N-29-20 suspending certain provisions of the Ralph M. Brown Act ("Brown Act") in order to allow local legislative bodies to conduct meetings telephonically or by other means, after which TVTC staff implemented virtual meetings for all meetings of legislative bodies within the TVTC;

WHEREAS, all legislative bodies of TVTC established remote meetings, which have allowed the bodies to continue to conduct TVTC business from remote locations while ensuring the public's continued access to government meetings in a safe manner;

WHEREAS, on June 11, 2021, Governor Newsom issued Executive Order N-08-21, which terminated the provisions of Executive Order N-29-20 that allows local legislative bodies to conduct meetings telephonically or by other means effective September 30, 2021;

WHEREAS, on September 16, 2021, Governor Newsom signed Assembly Bill 361 ("AB 361"), which amended the Brown Act to allow local legislative bodies to continue to conduct meetings by teleconference under specified conditions and pursuant to special rules on notice, attendance, and other matters;

WHEREAS, AB 361, pursuant to Executive Order N-15-21, took full effect on October 1, 2021 and requires the Board to make specific findings to continue meeting under special teleconference rules;

WHEREAS, in addition to finding the Governor has declared a State of Emergency pursuant to Government Code section 8625, such findings include that state or local officials have imposed or recommended measures to promote physical distancing, or, in the alternative, that the legislative body determines that meeting in person would present imminent risks to the health and safety of attendees;

WHEREAS, Governor Newsom has declared a State of Emergency due to COVID-19, the Counties of Alameda and Contra Costa have similarly proclaimed states of emergency, state and county officials have imposed or recommend measures to promote masking and physical distancing, and TVTC has determined that meeting in person would present imminent risks to the health and safety of attendees;

WHEREAS, in response to the emergence of the highly contagious Delta and Omicron variants of COVID-19, including subvariants BA.4 and BA.5, and the ongoing risk of the emergence of new variants, State, the Alameda County and Contra Costa County Health Officers have issued orders for nearly all individuals to wear masks in certain indoor settings and strongly recommending that all individuals, regardless of vaccination status, wear masks when inside all public spaces;

WHEREAS, the Centers for Disease Control and Prevention ("CDC") continues to recommend physical distancing of at least six feet from others outside of the household;

WHEREAS, Title 8, Section 3205, subdivision (c)(5)(D) of the California Code of Regulations, promulgated by the Division of Occupational Safety and Health of the California Department of Industrial Relations ("Cal/OSHA"), requires employers to provide instruction to employees on using a combination of "physical distancing, face coverings, increased ventilation indoors, and respiratory protection" to decrease the spread of COVID-19;

WHEREAS, "Protecting Workers: Guidance on Mitigating and Preventing the Spread of COVID-19 in the Workplace," promulgated by the Occupational Safety and Health Administration ("OSHA") under the United States Department of Labor, provides that "[m]maintaining physical distancing at the workplace for [unvaccinated and at-risk] workers is an important control to limit the spread of COVID-19" and recommends that employers train employees about the airborne nature of COVID-19 and importance of exercising multiple layers of safety measures, including physical distancing, and that employers implement "physical distancing in all communal work areas for unvaccinated and otherwise at-risk workers," including physical distancing from members of the public, as a "key way to protect such workers";

WHEREAS, due to the continued threat of COVID-19, TVTC continues to implement multiple layers of protection against COVID-19, including physical distancing, for the safety of Board members, employees and members of the public;

WHEREAS, TVTC recognizes the recommendations by state and local officials to use physical distancing as a layer of protection against COVID-19 and desires to continue to provide a safe workplace for its Board members, employees and a safe environment for the open and public meetings of all legislative bodies of TVTC;

WHEREAS, TVTC hereby finds that the presence of COVID-19 and continued circulation of the Delta and Omicron variants, including subvariants BA.4 and BA.5, as well as the ongoing risk of the emergence of new variants, present imminent risks to the health or safety of attendees should meetings of the legislative bodies of TVTC be held in person; and

WHEREAS, TVTC shall ensure meetings of all legislative bodies comply with the special teleconference rules under the Brown Act, as amended by Assembly Bill 361.

NOW, THEREFORE, BE IT RESOLVED by the Tri-Valley Transportation Council, as follows:

Section 1. Recitals. The above recitals are true and correct and hereby incorporated into this Resolution.

Section 2. State of Emergency and Imminent Risks to Health and Safety. In compliance with the special teleconference rules of Section 54953 of the Government Code, as established by Assembly Bill 361 (2021), TVTC hereby makes the following findings:

a. TVTC has considered the circumstances of the state of emergency; and

b. The states of emergency, as declared by the Governor, Alameda County, and Contra Costa County continue to impact directly the ability of all legislative bodies of TVTC to safely meet in person; and

c. The CDC, Cal/OSHA, and OSHA continue to recommend physical distancing of at least six feet to protect against transmission of COVID-19; and

d. Meeting in person would present imminent risks to the health and safety of meeting attendees due to the continued presence and threat of COVID-19.

Section 3. Remote Teleconference Meetings. All legislative bodies of TVTC are hereby authorized and directed to take all actions necessary to carry out the intent and purpose of this Resolution including, conducting open and public teleconference meetings in accordance with Government Code section 54953, as amended by Assembly Bill 361 (2021), and other applicable provisions of the Brown Act, in order to protect the health and safety of the public.

Section 4. Effective Date of Resolution. This Resolution shall take effect immediately upon its adoption and shall be effective until the earlier of September 14, 2022, or such time TVTC adopts a subsequent resolution in accordance with Government Code section

54953(e)(3) to extend the time during which the legislative bodies may continue to teleconference without compliance with paragraph (3) of subdivision (b) of section 54953.

PASSED, APPROVED, AND ADOPTED at the meeting of August 15, 2022, by the following votes:

AYES:
NOES:
ABSENT:
ABSTAIN:

_____

Jean Josey, Chair
Tri-Valley Transportation Council

ATTEST:

_____

Sai Midididdi, TVTC Administrative Staff

Item 5

MEMORANDUM

DATE August 5, 2022

TO TVTC Policy Board Members

FROM John Hoang and Matt Kelly, CCTA
David Early and Torina Wilson, PlaceWorks
Erin Vaca, DKS Associates
Julie Morgan and Terence Zhao, Fehr and Peers

SUBJECT Tri-Valley Action Plan Working Draft Components Memorandum

The Tri-Valley Transportation Council (TVTC) Technical Advisory Committee (TAC) began updating the Tri-Valley Action Plan in the fall of 2021 with assistance from the Contra Costa Transportation Authority (CCTA) and technical consultants PlaceWorks, DKS, and Fehr and Peers. This update process precedes the update of the CCTA Countywide Transportation Plan (CTP) which will begin later this year. CCTA and the Regional Transportation Planning Committees (RTPCs) are beginning the CTP process with the Action Plan updates which will "roll-up" into the CTP. This bottoms-up approach will ensure that the needs and interests of the local jurisdictions, elected representatives, and the public are addressed in detail.

This memorandum lists the various components that will make up the Tri-Valley Action Plan and includes working draft content for several of the components. The working draft content has been drafted over the past year with assistance from the TVTC TAC and with general comment from the TVTC Policy Board. The project team has met with these groups several times over the past year to discuss and review the content.

The working draft components of this memorandum include:

- Proposed Action Plan definitions
- Proposed Action Plan outline
- Proposed Action Plan goals
- Proposed Corridor and Routes of Regional Significance (RRS) maps
- Proposed Action Plan Regional Transportation Objectives (RTOs) and RTOs considered but not recommended
- Proposed Action Plan actions
- Public outreach summary

The project team requests that the TVTC Policy Board review the materials within this memorandum which we will discuss at the August 15th Policy Board meeting. Comments at the meeting are welcome and comments via email are encouraged. The project team will ask for comments again when the Draft Tri-Valley Action Plan is ready for review in the fall.

Proposed Action Plan Definitions

- **Goal:** A goal is a statement that describes in general terms a condition or quality of service desired that is in line with the policies. For example, a common goal from past Action Plans was to "provide and encourage the use of alternatives to the single-occupant auto." This goal would be in line with a policy that calls for "an efficient transportation system."
- **Policy:** The policies of an Action Plan help guide its overall direction. Decisions regarding investments, program development, and development approvals are based on these policies.
- **Action**: Actions are the specific programs or projects that are recommended for implementation to meet the RTOs set forth in the Action Plan. The responsibility of carrying out the actions may fall to an individual local jurisdiction, to the Regional Committee as a whole, to CCTA, or to another agency such as Caltrans. All actions are either Projects or Programs (defined below) and shall be organized as such in each Action Plan.
- **Project**: Projects are Actions that involve the development, structural modification, or redevelopment of infrastructure, commercial uses, industrial uses, residential uses, or other properties. Projects may include clearing or land grading, improvements to existing structures, construction activities, and other activities requiring public agency issuance of a construction permit.
- **Program**: Programs are Actions that do not involve construction and instead involve education, research, funding or other non-construction activities and are carried out in response to adopted policy to achieve a specific goal or objective.
- **Route of Regional Significance**: Routes of Regional Significance are roadways, transit routes or facilities, and bike or pedestrian routes or facilities that connect two or more subareas of Contra Costa, cross County boundaries, carry significant through traffic, and/or provide access to a regional center, a regional highway or a transit facility. These routes provide vital connections that support economic and recreational activities throughout the County. These are also routes for which the subregion wants to share regional responsibility with neighboring jurisdictions.
- **Regional Transportation Objective (RTO):** RTOs are specific, quantifiable objectives that describe a desired level of performance for a component of the transportation system. They were previously referred to as Multimodal Transportation Service Objectives (MTSOs) but have been renamed because they cover more topics than individual modes, and because not all of them refer to service levels. An RTO consists of a Metric and a Standard.
- **Metric**: The unit of measurement by which an RTO is measured, such as "Level of Service," "Delay" or "Vehicle Miles Traveled per Capita."
- **Standard:** The level or increment of a metric that is required by an RTO. For example, the Standard for Level of Service might be "D," and the Standard for VMT per Capita might be "20 trips per person per day."

Proposed Action Plan Outline

The outline below reflects all components of the Tri-Valley Action Plan and how they are broken down. This outline includes new topics included in each subregional Action Plan, including dedicated chapters for active and public transportation and for non-modal topics safety, equity, climate change, and technology.

1. Introduction
    a. The Measure J Transportation and Growth Management Program
    b. Action Plan Purpose and how the Action Plans will influence the CTP
    c. Routes of Regional Significance: Definition and Usage in this Action Plan
    d. Action Plan Chapters
    e. Definition of Terms
2. Current Conditions, Trends, and Travel Patterns
    a. Population and Employment Conditions and Forecasts
    b. Commute Patterns and Traffic Forecasts
        i. Roadways
            1. Traffic Volumes and Conditions
            2. VMT
            3. Traffic Speed and Delay
            4. Recently Completed and On-Going Actions
        ii. Transit
            1. Existing Facilities
            2. Service Levels
            3. Recently Completed and On-Going Actions
        iii. Bike and Pedestrian Facilities
            1. Existing Facilities
            2. Recently Completed and On-Going Actions
    c. Safety Trends and Forecasts
    d. Climate Change and GHG Trends and Forecasts
    e. Equity Concerns
    f. Conclusions from Existing Transportation Conditions
3. Action Plan Vision and Goals
    a. Overall Vision
        i. Holistic approach
        ii. Shared mobility
        iii. Technology and innovation
    b. Roadway Goals
    c. Transit Goals
    d. Bike and Pedestrian Goals
    e. Safety Goals
    f. Climate Change Goals
    g. Equity Goals

    h. Technology Goals
4. Roadways
    a. Policies
        i. Gateway Constraints Policies (in some subareas)
    b. RTOs
    c. Actions Needed to Achieve RTOs (projects or programs)
    d. Preliminary Analysis Results of Actions
5. Transit
    a. Policies
    b. RTOs
    c. Actions Needed to Achieve RTOs (projects or programs)
    d. Preliminary Analysis Results of Actions
6. Bike and Pedestrian
    a. Policies
    b. RTOs
    c. Actions Needed to Achieve RTOs
    d. Preliminary Analysis Results of Actions
7. Safety
    a. Policies
    b. RTOs
    c. Actions Needed to Achieve RTOs (projects or programs)
    d. Preliminary Analysis Results of Actions
8. Climate Change
    a. Policies
    b. RTOs
    c. Actions Needed to Achieve RTOs (projects or programs)
    d. Preliminary Analysis Results of Actions
9. Equity
    a. Policies
    b. RTOs
    c. Actions Needed to Achieve RTOs (projects or programs)
    d. Preliminary Analysis Results of Actions
10. Technology
    a. Policies
    b. RTOs
    c. Actions Needed to Achieve RTOs (projects or programs)
    d. Preliminary Analysis Results of Actions
11. Financial Outlook/Financial Plan *[note: final outline of this section TBD.]*
    a. Overview
    b. Sub-Regional Transportation Impact Fee *(This may not be a section that applies to all subareas, and may look different in each subregion depending on existing funding structure)*

c. Shared Facilities
d. Subregional Transportation Mitigation Program (STMP) *(This may not be a section that applies to all subareas)*
e. Local Traffic Fees in Subarea Jurisdictions

12. Procedures for Notification, Review, and Monitoring /Plan Implementation, Monitoring, and Review
    a. Role of Sub-Area Transportation Committees *(TVTC, LPMC, TRANSPLAN, TRANSPAC, WCCTAC)*
    b. Circulation of Environmental Documents
    c. Review of General Plan Amendments
    d. Schedule for Action Plan Review (to include information on how to amend an Action Plan)
    e. Implications for Compliance with the Measure J Growth Management Program (GMP)
    f. Regional Traffic Management and Conflict Resolution

Appendix A: RTO Values for Observed and Forecasted Conditions
Appendix B: Summary of Actions (by Route or similar)
Appendix C: RTO Calculation and Values

Proposed Action Plan Goals

The working draft goals listed below include revisions to existing Tri-Valley goals and proposed new goals to address new Action Plan topics. These revisions reflect comments from TVTC TAC members during meetings with CCTA and PlaceWorks staff on January 5, 2022, along with various email comments received from TAC members. Edits to existing goals are shown in ~~strikethrough~~ and double underline. New goals are in double underline.

- Integrate transportation planning with planning for air quality, community character, and other environmental factors.
- Support corridor management programs to make the most efficient, effective, and safe use of existing facilities and services.
- ~~Consider both the need for vehicular mobility and congestion reduction, and such livability concepts as walkability, bicycle access, and community character.~~
- Maintain and actively pursue enhanced and expanded public transit service, ~~ridesharing, and non-motorized mode options and trip reduction programs in order to increase accessibility, to~~ and increase the transit share of travel in the Tri-Valley area~~, and to increase average vehicle occupancy~~.
- ~~Maintain and actively pursue enhanced and expanded public transit service, ridesharing, and~~ Enhance non-motorized ~~mode~~ transportation options~~ and trip reduction programs in order to increase accessibility, to increase the transit share of travel in the Tri-Valley, and to increase average vehicle occupancy~~.

- ~~Maintain and actively pursue enhanced and expanded public transit service, ridesharing, and non-motorized mode options and trip reduction programs in order to increase accessibility, to increase the transit share of travel in the Tri-Valley, and to~~ iIncrease average vehicle occupancy and reduce vehicle miles traveled (VMT).
- Provide support for Priority Development Areas.
- Manage school-related traffic to enhance safety and reduce peak period traffic impacts.
- ~~Classify the Routes of Regional Significance as either interregional or intraregional in order to recognize the different trip types served on each Route. Interregional Routes provide linkages between the Tri-Valley and other sub-areas and include I-680, I-580, SR-84, Vasco Road, and Crow Canyon Road. Intraregional Routes connect communities within the Tri- Valley and include all other Routes of Regional Significance.~~
- ~~Maintain established MTSOs on Routes of Regional Significance.~~
- Minimize congestion and enhance mobility on routes of regional significance within the Tri-Valley area. ~~Maintain established capacity constraints to limit interregional traffic at Tri-Valley gateways on I-580, I-680, Crow Canyon Road, and Vasco Road.~~
- ~~Encourage through-trips and interregional travel to stay on Interregional Routes and discourage diversion of these trips to intraregional routes as a mechanism for ensuring intraregional mobility.~~
- ~~Recommendations from the SR 239 Study should adhere to the TVTC Gateway Constraint Policy.~~
- Support arterial traffic management strategies that address hotspots at critical intersections and approaches.
- ~~Respect past regional commitments in the prioritization of funding of projects.~~
- ~~Work cooperatively with regional transportation partners to maximize funding opportunities.~~
- Maintain transportation funding for transportation projects.
- Ensure a safe and low stress transportation system for all modes of travel
- Minimize transportation impacts on the climate.
- Ensure the transportation system is resilient in the face of climate change.
- Support equitable mobility for all income groups, racial and ethnic groups, and all ages and abilities across all modes of transportation.
- Continue the process of innovation and the development of new technologies in transportation.

Proposed Corridor and Routes of Reginal Significance (RRS) Maps

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 (described in detail in the "Proposed Action Plan Definitions" section above) and were nominated by local staff. The maps will help CCTA, 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 RTPCs.

After extensive discussions with RTPC TACs and various community stakeholders, the project team created a series of maps that show RRS's both as a multimodal network of travel corridors, and for individual modes. These maps are described below.

CORRIDOR MAPS

PlaceWorks has created multimodal RRS "Corridor Maps" that show five different transportation modes (bus, rail, bike, freeway, and surface roadways) 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 a total of six Corridor Maps: one countywide and one for each RTPC subregion. The countywide and Tri-Valley Corridor Maps are enclosed as Figure 1 and Figure 2 within this memorandum for review.

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 the subregion's geography. 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.

MODE SPECIFIC RRS MAPS

In addition to the Corridor Maps, each Action Plan will include three mode-specific maps that will illustrate mode specific RRS and may be tied to specific Regional Transportation Objectives (RTOs).[1] Readers of each Action Plan will be able to refer to these maps for a detailed depiction of existing and desired facilities. The draft Tri-Valley mode specific RRS maps are shown in Figure 3, Figure 4, Figure 5, Figure 6, and Figure 7. Descriptions of these maps are included below.

- 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.
- 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.
- Vehicular Routes and Intersections. 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.

[1] Some RTOs will include special maps beyond the mode specific RRS maps, which are shown in Attachment 2 of this memorandum.

FIGURE 1. COUNTYWIDE CORRIDOR MAP

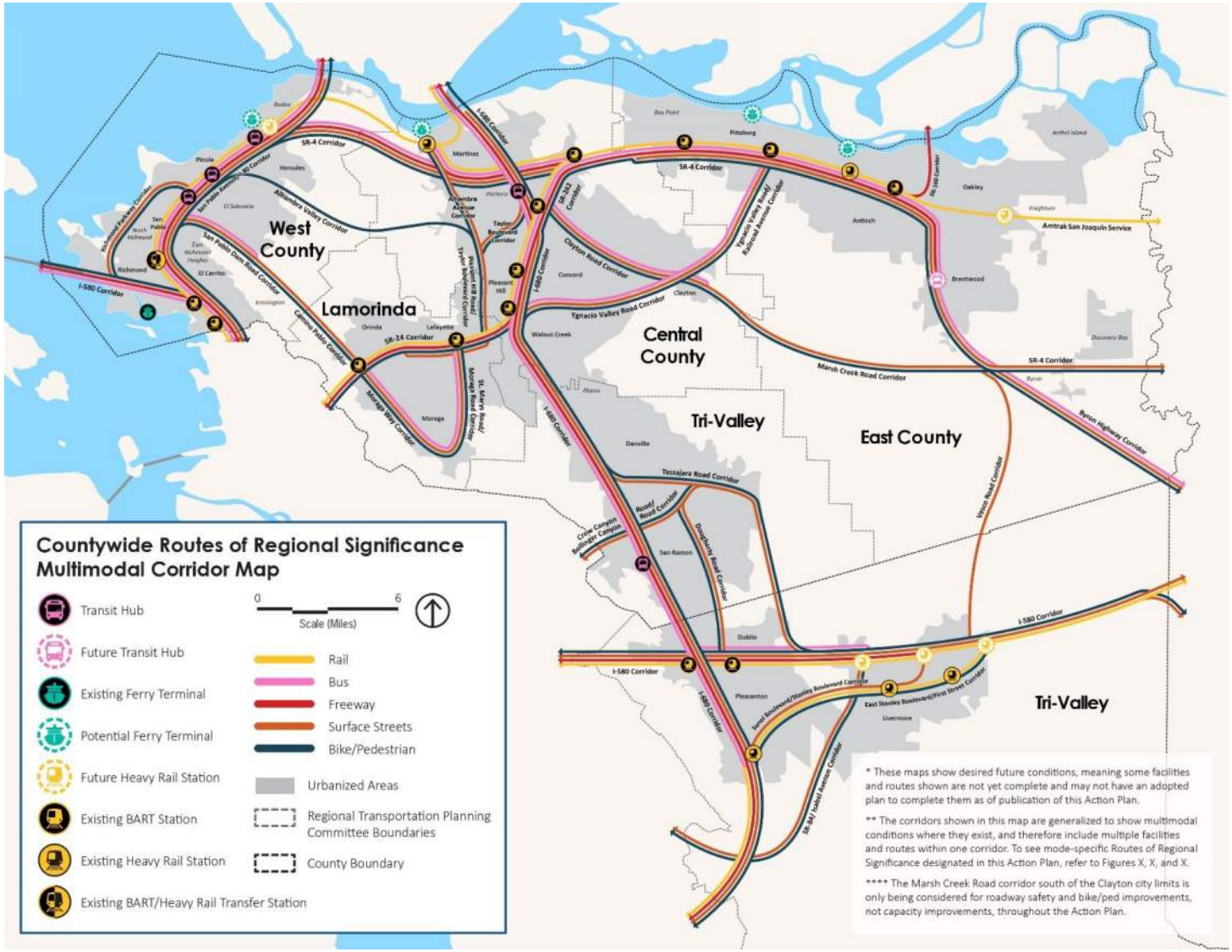


FIGURE 2. TRI-VALLEY CORRIDOR MAP

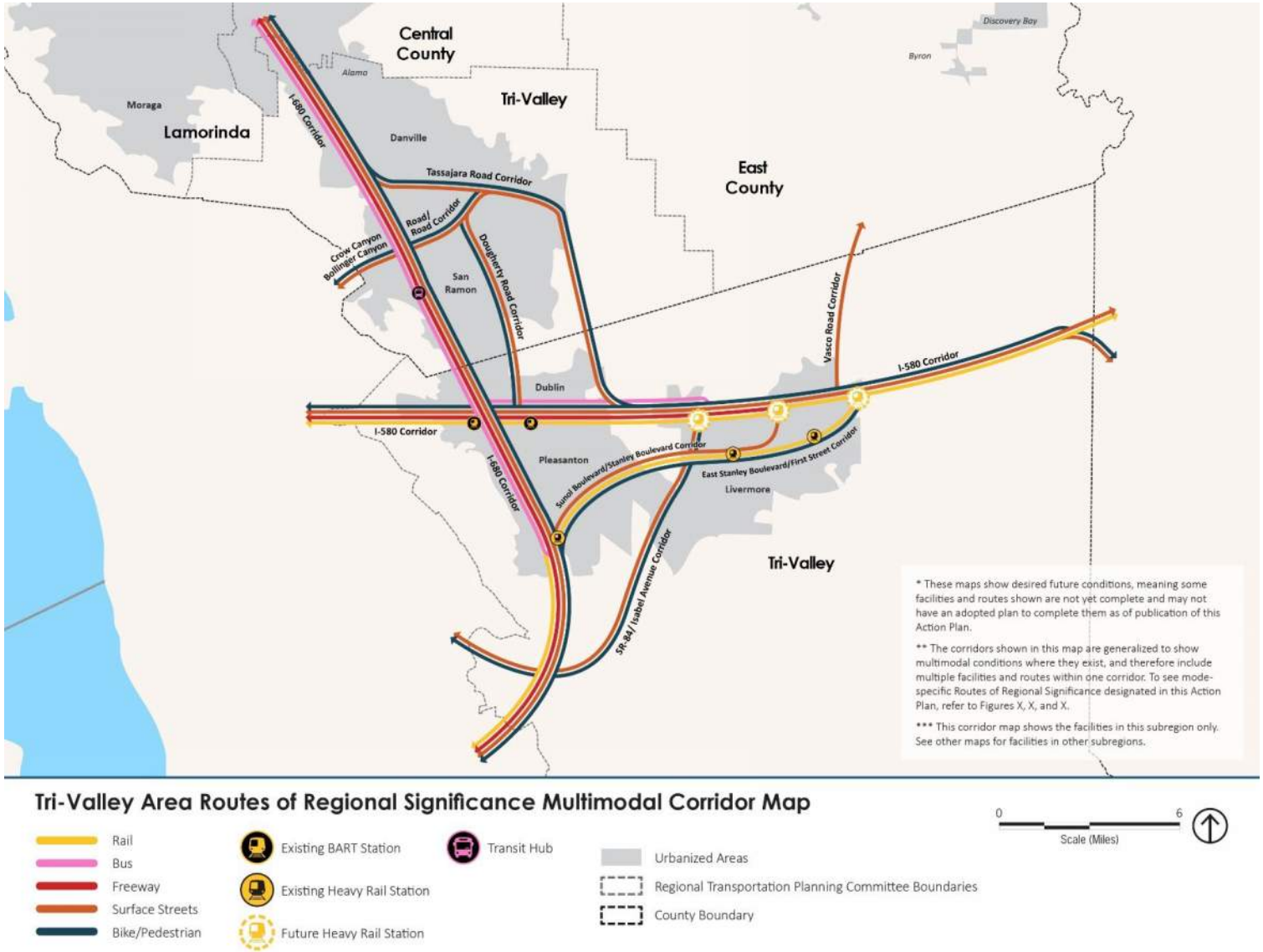
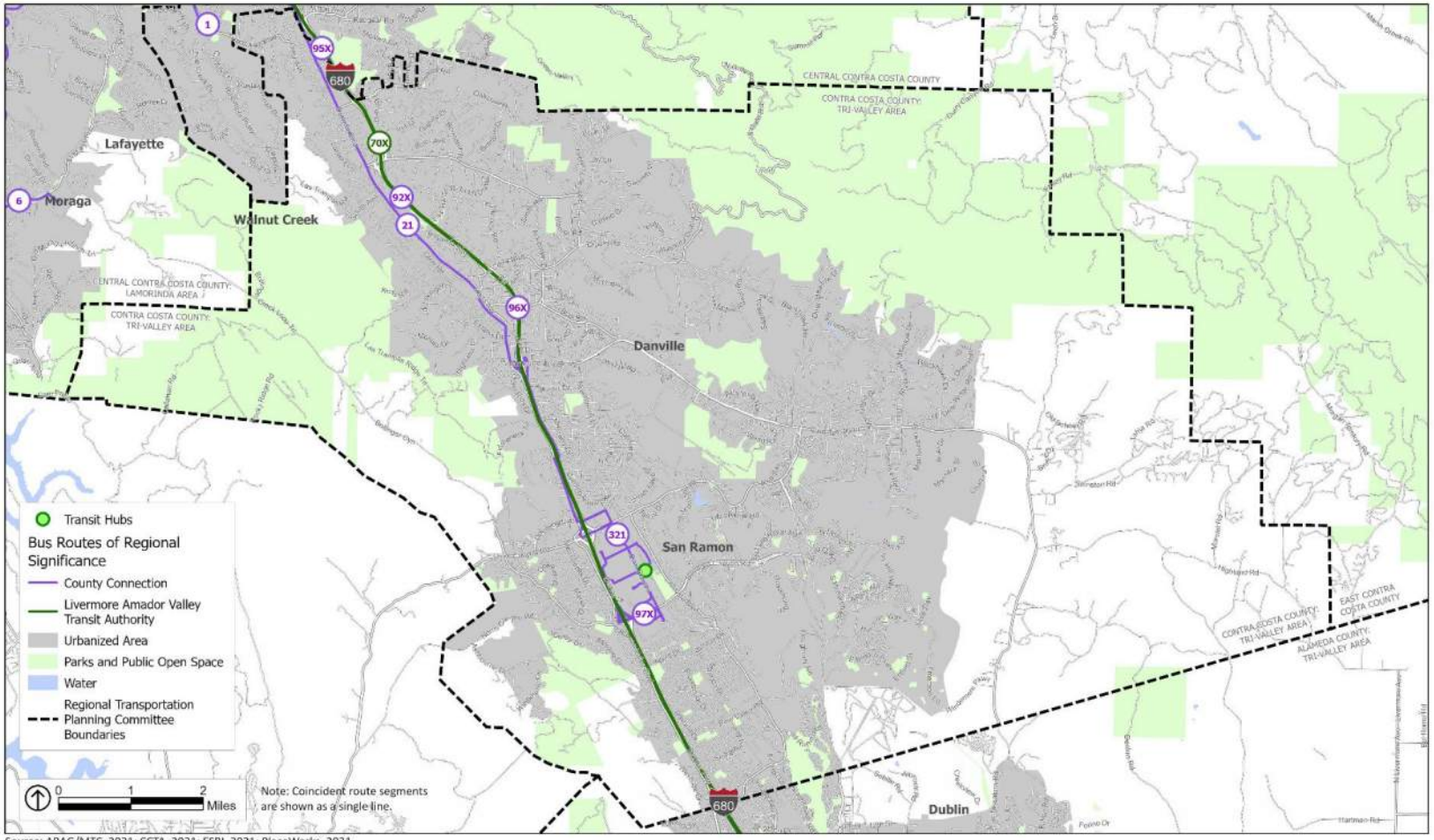


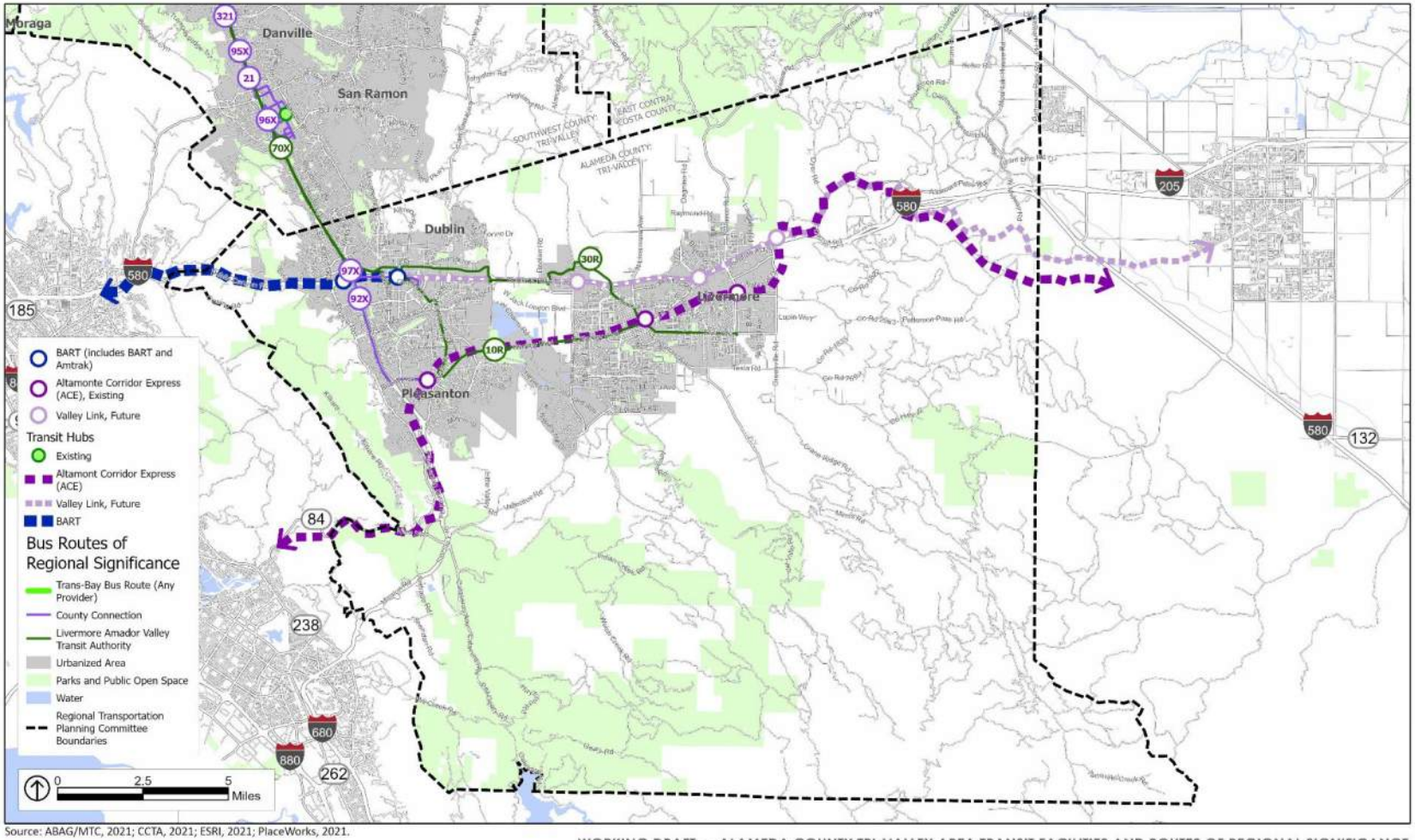
FIGURE 3. TRANSIT FACILITIES AND RRS MAP FOR THE CONTRA COSTA COUNTY PORTION OF THE TRI-VALLEY



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

WORKING DRAFT — CONTRA COSTA COUNTY TRI-VALLEY AREA TRANSIT FACILITIES AND ROUTES OF REGIONAL SIGNIFICANCE

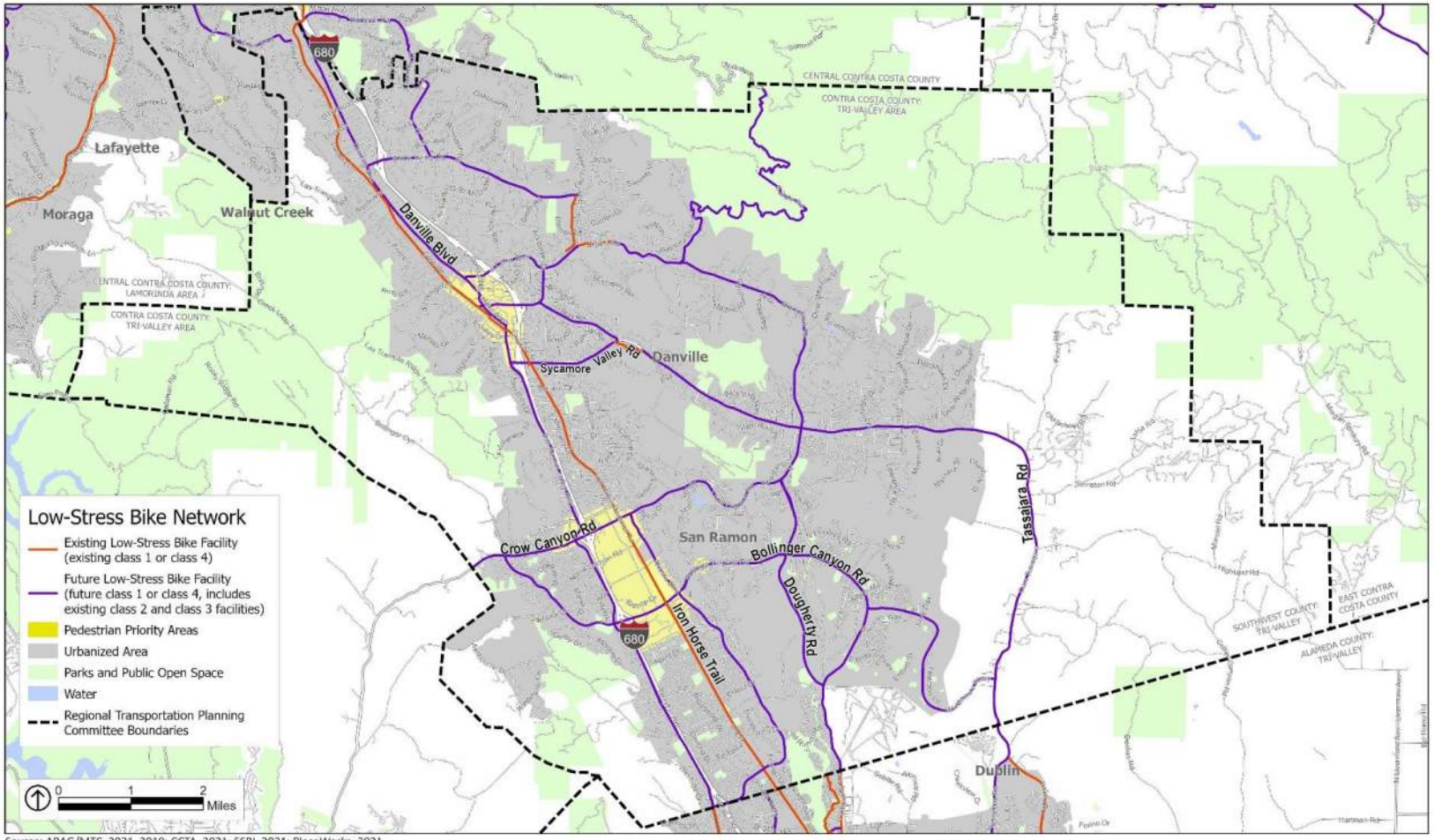
FIGURE 4. TRANSIT FACILITIES AND RRS MAP FOR THE ALAMEDA COUNTY PORTION OF THE TRI-VALLEY



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

WORKING DRAFT — ALAMEDA COUNTY TRI-VALLEY AREA TRANSIT FACILITIES AND ROUTES OF REGIONAL SIGNIFICANCE

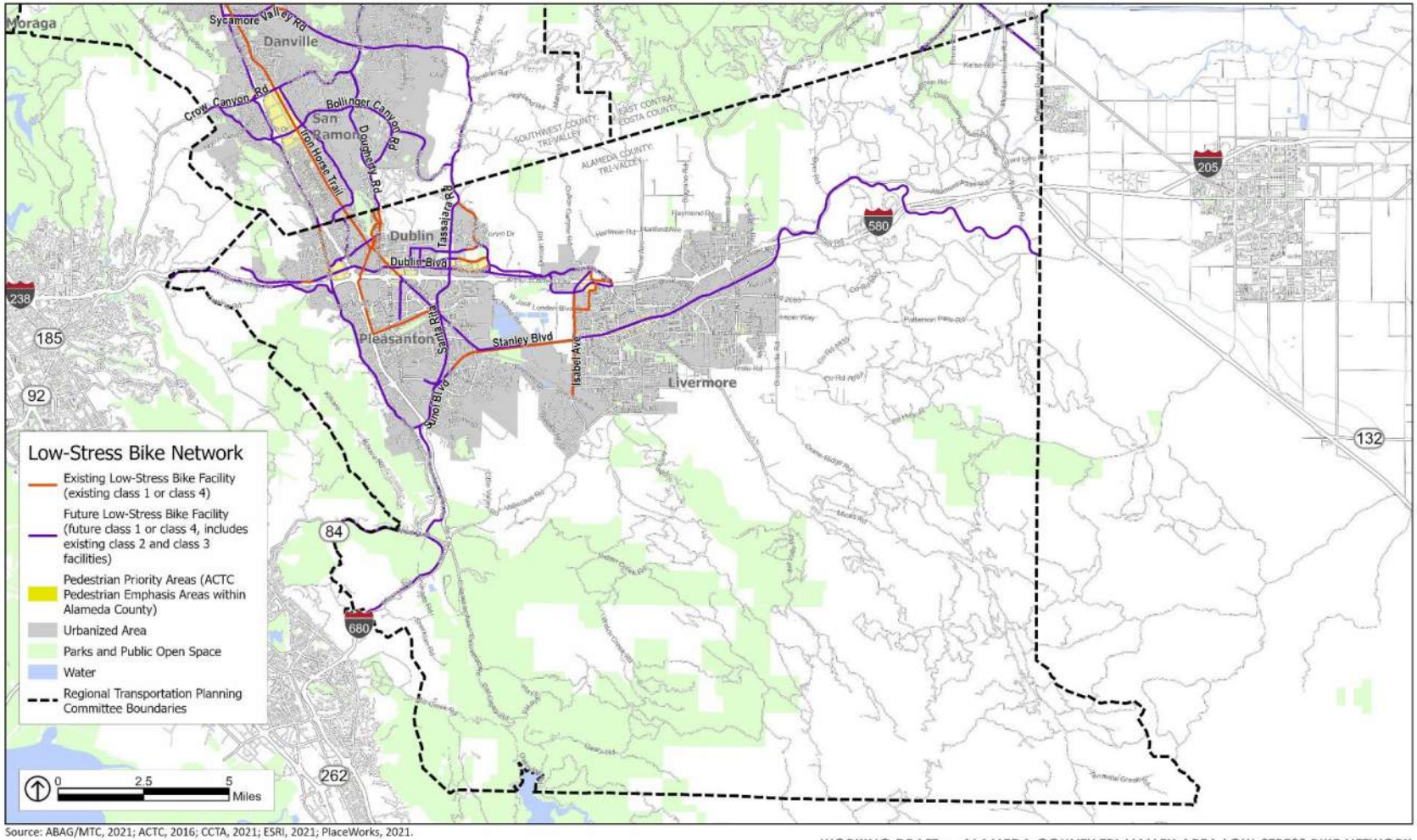
FIGURE 5. LOW STRESS BIKE NETWORK RRS MAP FOR THE CONTRA COSTA COUNTY PORTION OF THE TRI-VALLEY



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

WORKING DRAFT — CONTRA COSTA COUNTY TRI-VALLEY AREA LOW-STRESS BIKE NETWORK

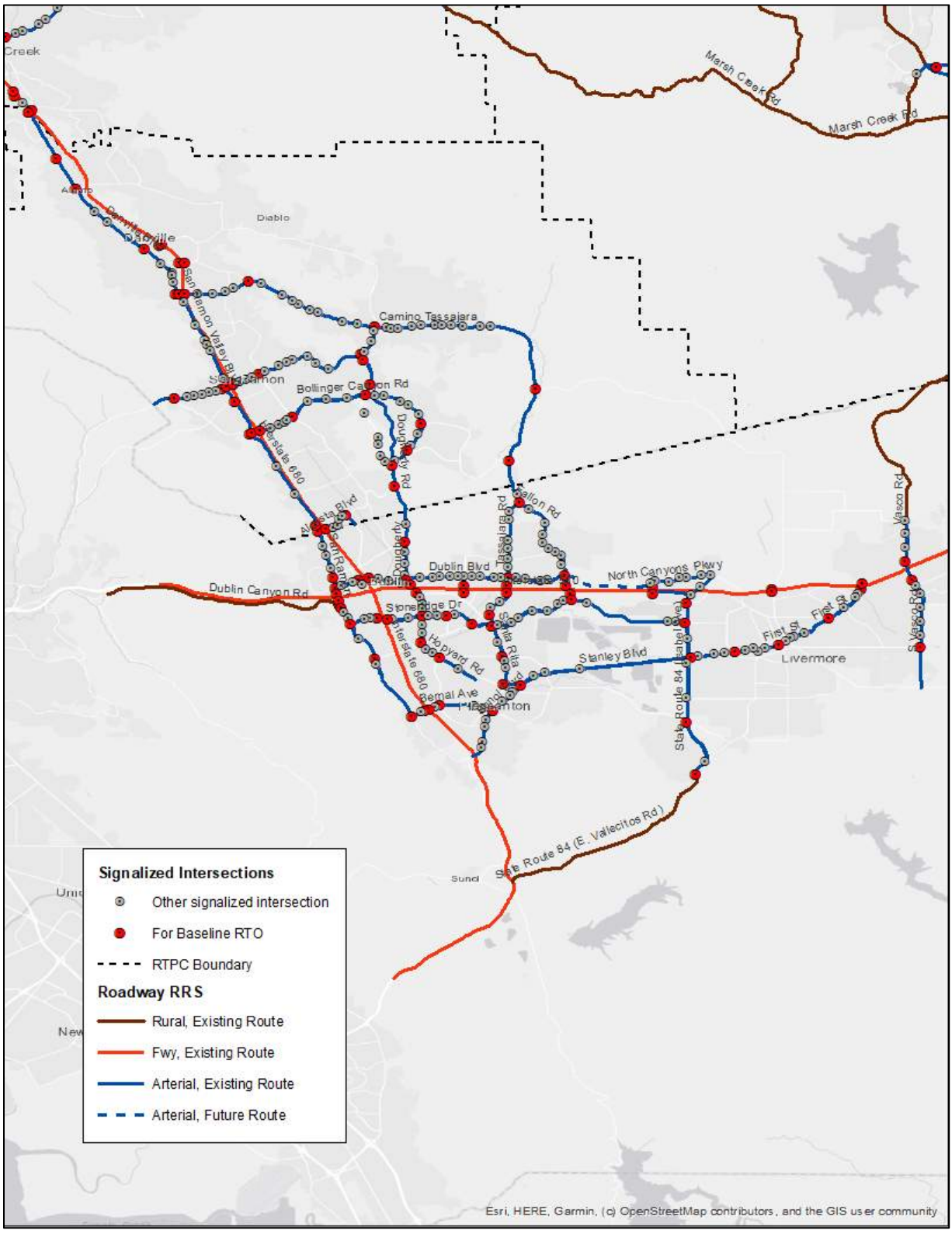
FIGURE 6. LOW STRESS BIKE NETWORK RRS MAP FOR THE ALAMEDA COUNTY PORTION OF THE TRI-VALLEY



Source: ABAG/MTC, 2021; ACTC, 2016; CCTA, 2021; ESRI, 2021; PlaceWorks, 2021.

WORKING DRAFT — ALAMEDA COUNTY TRI-VALLEY AREA LOW-STRESS BIKE NETWORK

FIGURE 7. TRI-VALLEY ROADWAY RRS MAP AND INTERSECTIONS



Proposed Regional Transportation Objectives (RTOs) and RTOs Considered but not Recommended

As described in the "Proposed Action Plan Definitions" section of this memorandum, RTOs are specific, quantifiable objectives that describe a desired level of performance for a component of the transportation system. They were previously referred to as Multimodal Transportation Service Objectives (MTSOs) but have been renamed because the Action Plan RTOs will cover more topics than individual modes, and because not all of them refer to service levels. An RTO consists of a Metric and a Standard which are further defined in the "Proposed Action Plan Definitions" section above.

Historically, each RTPC has had latitude to select a set of 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. The project team met with the TVTC TAC on March 2, 2022, to discuss a long list of potential RTOs that the project team could consider for modeling and analysis. After this meeting, the project team took TAC feedback and narrowed down the list of RTOs to 29 that we felt were able to be modeled and could result in quantifiable and attainable RTOs. Throughout the process of modeling, 8 of these RTOs did not yield significant enough results, or resulted in modeling issues, and are not recommended for the Action Plans.

The project team moved forward in modeling and analyzing the 21 RTOs that could be adequately modeled and presented those RTOs to the TVTC TAC on August 3, 2022. These 21 preliminary RTOs, and their relevant chapter topics are listed below along with the 8 RTOs that were considered but not recommended to move forward in any Action Plan. Table 1 lists each RTO along with its metric, definition, existing target, and proposed targets. Detailed memos describing each RTO are included as attachments to this memorandum. Attachment 1 provides an RTO Methodology Memorandum, and Attachment 2 includes an RTO Analysis Memorandum. Attachments 1 and 2 were presented to Tri-Valley on August 3, 2022, and detail the methodology, analysis results, and proposed targets for each RTO listed below.

PROPOSED RTOS

- 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 (LSBN) that has been completed.
- Number of locations where the LSBN 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 (not included in the Lamorinda or Tri-Valley subregions)
  - 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.
  - Proportion of EPC acres that are not within a quarter-mile buffer 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 ethernet-based signal interconnection.

RTOS CONSIDERED BUT NOT RECOMMENDED

RTOs that were considered but are note recommended for inclusion in the Action Plans are listed below. The reasoning behind these decisions is described in detail in Attachment 1.

- 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.

TABLE 1. RTOS FOR TRI-VALLEY 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: ≤2.0	Delay index: 2.5	Delay index: 2.5
	Freeway Buffer Index	Proportion of added travel time between the 95th percentile and the average	Buffer index: None	Buffer index: 0.5	Buffer index: 0.5
	Intersection Level of Service (LOS)	Average control delay during peak hours	Maintain LOS E or better, no standard for intersections exempted by adopted General Plans	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 – SR-84 LOS E – Vasco Road No standard – Dublin Canyon Road	LOS D – SR-84 LOS E – Vasco Road No standard – Dublin Canyon Road
Transit	Transit Mode Share	Proportion of daily person trips using transit	None	6% for commute trips	12% for 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	12% all trips 2.5% commute trips	16% all trips 5% for commute trips
	Low Stress Bike Network (LSBN)	Proportion of the LSBN that is complete	None	50%	100%
	LSBN Crossings	Number of locations the LSBN crosses a roadway and is considered to be unprotected	None	Zero semi-protected crossings	Zero semi-protected crossings
Safety	KSI Collisions	Number of crashes resulting in fatality or injury	None	Zero fatality and severe injury crashes	
	Bike-Ped Collisions	Number of KSI crashes involving a bicyclist of pedestrian	None		

Facility Type or Planning Focus	Metric	Definition	Existing Target	Proposed 2027 Target	Proposed 2050 Target
	Bike-Ped Collisions near Schools	Number of bicycle or pedestrian involved KSI collisions occurring within 500 feet of schools	None		
Climate Change	Single-Occupant Vehicle (SOV) Mode Share	Proportion of daily person trips made by single occupant vehicle	None	72% for commute trips	68 % for commute trips
	Greenhouse Gas (GHG) Emissions per Capita	Tons of CO_2 emissions	None	28 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	30.9 VMT	21 VMT
Technology	Level of Ethernet-based Signal Interconnection	Number of connected signals	None	42	42

Proposed Action Plan Actions

The project team worked on a revised list of actions for each subregion to ensure that each Action Plan would include actions appropriate to achieve the RTOs. A list of proposed actions for the Tri-Valley Action Plan was presented to the TVTC TAC on August 3, 2022. This list of actions is included in this memorandum as Table 2. The revisions proposed in Table 2 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 address topics requested by TVTC TAC members or through other subregional TAC members that are also applicable to the Tri-Valley subregion.

The middle column of Table 1 lists the existing Tri-Valley 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 Tri-Valley Action Plan.

TABLE 2 RECOMMENDED REVISIONS TO THE TRI-VALLEY ACTION PLAN ACTIONS

New Action Number	Proposed Action Language Revisions	Notes
Freeways		
Freeways-1	Improve the operational efficiency of freeways and arterial streets through effective corridor management strategies, such as ramp metering, traffic operations systems, Intelligent Transportation Systems (ITS) improvements, HOV/HOT lane and bypass lanes, among others, to support a cohesive transportation system for all modes. ~~These strategies could include traffic operations systems and ramp metering, provided studies show that metering would effectively reduce overall delay within the corridor and not adversely affect operations of adjacent intersections. Provide HOV bypass lanes wherever space permits. (Regional 2)~~	Revised to be more general and to mention a cohesive system
	~~Implementation of ramp metering must balance the congestion along freeways and congestion along local jurisdiction streets due to ramp metering operations. (Regional 7)~~	Removed because this is an operational improvement that would be included under the general action
	~~I-580: Construct HOV Lanes, Greenville Road to San Joaquin County line.~~	Removed because this is an operational improvement that would be included under the general action

TABLE 2 RECOMMENDED REVISIONS TO THE TRI-VALLEY ACTION PLAN ACTIONS

New Action Number	Proposed Action Language Revisions	Notes
	~~Construct a direct access HOV Ramp on I-680 at Norris Canyon Road or Executive Parkway (location to be determined).~~	TAC members indicated this is complete
	~~Construct a northbound I-680 HOV Lane connection from Rudgear Road, through the SR 24 junction to the existing HOV lane at North Main Street. This element involves the construction of a new HOV flyover structure over the SR 24 interchange.~~	Removed because this is an operational improvement that would be included under the general action
Freeways-2	Evaluate ramp-metering on I-580 and I-680 in Contra Costa County as a method for maintaining an acceptable level for the delay index on both the freeway as well as the local roadway network.	Revised to add I-580
	~~I-680—Improve geometrics of intersection of Crow Canyon Road/I-680 southbound off-ramp adding another lane on the approach to Crow Canyon Road.~~	Removed because this is an operational improvement that would be included under the general action
	~~SR-84—SR-84 Expressway.~~	Removed
	~~Vasco Road —I-580/Vasco Road Interchange - Improve to ultimate configuration which will be a partial cloverleaf with loop ramps for traffic entering westbound I-580 from northbound Vasco Road and eastbound I-580 from southbound Vasco Road.~~	Removed because this is an operational improvement that would be included under the general action
	~~I-580 Westbound: HOV Lane from Foothill Road to E. of Vasco Road~~	TAC members indicated this is complete
	~~I-580 Eastbound: through lane #5 from Santa Rita Road to Vasco Road~~	TAC members indicated this is complete
	~~I-580 Westbound: Aux Lane from Airport Boulevard to Tassajara Road~~	Removed because this is an operational improvement that would be included under the general action above
	~~I-580 Eastbound: HOV conversion to express lane — Hacienda Drive to Greenville Road (Double lane form El Charro Road to Vasco Road)~~	TAC members indicated this is complete
	~~I-580 Westbound: HOV/Express lane —Greenville Road to San Ramon Road/Foothill Road Overcrossing~~	Removed because this is an operational improvement that would be included under the general action above
	~~I-580 Eastbound: auxiliary lanes — Isabel Avenue and North Livermore Ave North Livermore and First Street~~	Removed because this is an operational

TABLE 2 RECOMMENDED REVISIONS TO THE TRI-VALLEY ACTION PLAN ACTIONS

New Action Number	Proposed Action Language Revisions	Notes
		improvement that would be included under the general action above
	~~I-580: Traffic Operations System~~	Removed because this is an operational improvement that would be included under the general action above
	~~I-580: Park and Ride Lots~~	Removed because this is an operational improvement that would be included under the general action above
	~~I-580: Interchange Improvements – Phase 2 – El Charro Road and Fallon Road~~	Removed because this is an operational improvement that would be included under the general action above
	~~I-580: Corridor right-of-way preservation~~	Removed because this is an operational improvement that would be included under the general action above
	~~I-580: Eastbound truck climbing lane~~	Removed because this is an operational improvement that would be included under the general action above
	~~I-580: Greenville Road Interchange improvements~~	Removed because this is an operational improvement that would be included under the general action above
	~~I-580: BART extension to Livermore~~	Removed because it's listed under the transit section
	~~I-680: Construct Auxiliary Lanes — Sycamore to Crow Canyon~~	TAC members indicated this is complete
	~~I-680: HOV/Express lane over Sunol Grade (northbound) — Northbound HOV/Express lane from SR 237 to Rt. 85~~	TAC members indicated this is complete
	~~I-680: Southbound I-680 HOV Lane Extension — North Main to Livorna~~	Removed because this is an operational

TABLE 2 RECOMMENDED REVISIONS TO THE TRI-VALLEY ACTION PLAN ACTIONS

New Action Number	Proposed Action Language Revisions	Notes
		improvement that would be included under the general action above
	~~I-680: Transportation Operations System on I-680 South of I-580 — I-580 to Santa Clara County Line~~	Removed because this is an operational improvement that would be included under the general action above
	~~I-680/SR-84 Interchange improvements – I-680/SR-84 Interchange~~	TAC members indicated this is complete
	~~I-680/I-580 Interchange: Widen I-680 in each direction for HOV/Express lanes~~	Removed because this is an operational improvement that would be included under the general action above
	~~I-680: Widening for and implementation of NB/SB HOV/Express lanes Between SR-84 and Alcosta Road~~	Removed because this is an operational improvement that would be included under the general action above
	~~I-680: Direct Access HOV Ramps Near Bishop Ranch in San Ramon~~	Removed from Measure J and Action Plan already
	~~SR-84: Isabel Avenue widening to four lanes — Stanley Boulevard to Ruby Hills Drive~~	Removed because this is an operational improvement that would be included under the general action above
	~~SR-84: Isabel Avenue widening to six lanes — Airway Boulevard To Stanley Boulevard~~	Removed because this is an operational improvement that would be included under the general action above
	~~SR-84: Phase 2 of Isabel Interchange—Widen Isabel Avenue Overcrossing to 6 lanes~~	Removed because this is an operational improvement that would be included under the general action above
	~~SR-84: SR-84/I-680 interchange and SR-84 widening~~	Removed because this is an operational improvement that would be included under the general action above

TABLE 2 RECOMMENDED REVISIONS TO THE TRI-VALLEY ACTION PLAN ACTIONS

New Action Number	Proposed Action Language Revisions	Notes
	~~SR-84: Niles Canyon Road/Polama Way/Pleasanton-Sunol Road Intersection Improvements~~	Removed because this is an operational improvement that would be included under the general action above
	~~SR-84: Sunol Circulation Improvements~~	Removed because this is an operational improvement that would be included under the general action above
	~~Vasco Road: I-580/Vasco Road interchange – I-580 at Vasco~~	Removed because this is an operational improvement that would be included under the general action above
Freeways-3	Work with CCTA and local jurisdictions to study the feasibility of bus on shoulder pilot and long term programs on subregional freeways such as I-580 and I-680.	Added using language drafted for all action plans
Freeways-4	Work with CCTA, Caltrans, and California Highway Patrol to track HOV/HOT and Fastrak lane violators.	Added using language drafted for all action plans
Freeways-5	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.	Added using language drafted for all action plans
Freeways-6	Work with CCTA, Caltrans, and other applicable agencies to conduct Integrated Corridor Management (ICM) studies to improve multimodal function of countywide facilities.	Added using language drafted for all action plans
Freeways-7	Identify appropriate location for park and ride facilities, including shared-use agreements at activity centers with underutilized parking spaces.	Added using language drafted for all action plans
Freeways-8	Work with CCTA, neighboring subregions, 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.	Added using language drafted for all action plans

TABLE 2 RECOMMENDED REVISIONS TO THE TRI-VALLEY ACTION PLAN ACTIONS

New Action Number	Proposed Action Language Revisions	Notes
Freeways-9	Implement park and ride facilities at appropriate locations, including shared-use agreements at activity centers with underutilized parking spaces.	Added using language drafted for all action plans
Surface Roadways		
Surface Roadways-1	Develop subarea corridor management plans for selected regional routes to ~~ensure~~ provide adequate roadway capacity for local and subregional travel, including both public and active transportation modes and nonmodal transportation issues such as equity, climate change, safety, and technology.	Edited to be more general and to include other topics to be included in the Action Plan Update
Surface Roadways-2	Complete necessary operational improvements (i.e. protected turn lanes, synchronized signal timing, and auxiliary lanes, among others) at select intersections or roadway segments, while ensuring that the improvements are balanced against the objectives and actions set forth elsewhere in this Action Plan.	Added using language drafted for all action plans
	~~Vasco Road widening to six lanes — Scenic Avenue to Northfront Road~~	Removed because this is an operational improvement that would be included under the general action above
	~~Vasco Road widening to eight lanes — Northfront Road to Las Positas Drive~~	Removed because this is an operational improvement that would be included under the general action above
	~~Vasco Road Safety improvements — Livermore city limit to the Alameda/Contra Costa line~~	Removed because this is an operational improvement that would be included under the general action above
	~~Crow Canyon: Road widening to six lanes from Alcosta to Dougherty Road~~	Removed because this is an operational improvement that would be included under the general action above
	~~Crow Canyon Road: Safety Improvements from Castro Valley Boulevard to Alameda County/San Ramon limit line~~	Removed because this is an operational improvement that would be included under the general action above

TABLE 2 RECOMMENDED REVISIONS TO THE TRI-VALLEY ACTION PLAN ACTIONS

New Action Number	Proposed Action Language Revisions	Notes
	~~Bernal Avenue: Interchange Improvements~~	Removed because this is an operational improvement that would be included under the general action above
	~~Bernal Avenue: Second Bridge Construction~~	Removed because this is an operational improvement that would be included under the general action above
	~~Camino Tassajara Widening from East Blackhawk Drive to county line~~	Removed because this is an operational improvement that would be included under the general action above
	~~Dougherty Road: Widen to 8 lanes — I-580 to Dublin Boulevard~~	Removed because this is an operational improvement that would be included under the general action above
	~~Dougherty Road: Widen to 6 lanes north of Dublin Boulevard — Contra Costa county line to Dublin Boulevard~~	Removed because this is an operational improvement that would be included under the general action above
	~~Dublin Boulevard: Widen from 5 to 6 lanes — Civic Drive/Sierra Lane to Dublin Court~~	Removed because this is an operational improvement that would be included under the general action above
	~~Dublin Boulevard: Widen from 4 to 6 lanes — Brannigan Street to Fallon Road~~	Removed because this is an operational improvement that would be included under the general action above
	~~Dublin Boulevard: Dublin Boulevard Extension — Tassajara Road to Doolan Road/North Canyons Parkway~~	Removed because this is an operational improvement that would be included under the general action above
	~~Fallon Road: Widen from 2 to 4 lanes — Silvera Ranch Drive to Tassajara Road~~	Removed because this is an operational

TABLE 2 RECOMMENDED REVISIONS TO THE TRI-VALLEY ACTION PLAN ACTIONS

New Action Number	Proposed Action Language Revisions	Notes
		improvement that would be included under the general action above
	~~First Street: First Street interchange — I-580 at First Street~~	Removed because this is an operational improvement that would be included under the general action above
	~~First Street: Add Median — Scott Street/Portola Avenue~~	Removed because this is an operational improvement that would be included under the general action above
	~~Jack London Boulevard: Widen to 4 lanes — SR-84 to El Charro Road~~	Removed because this is an operational improvement that would be included under the general action above
	~~San Ramon Road: I-580/Foothill/San Ramon I/C — At Foothill interchange~~	Removed because this is an operational improvement that would be included under the general action above
	~~San Ramon Valley Boulevard: Widen to 4 lanes through Danville — Sycamore Valley Road to Fountain Springs Drive~~	Removed because this is an operational improvement that would be included under the general action above
	~~Santa Rita Road: Santa Rita Road/Tassajara Road interchange — Santa Rita Road/ Tassajara Road at I-581~~	Removed because this is an operational improvement that would be included under the general action above
	~~Stanley Boulevard: Widening from Murrieta Boulevard to west city limit~~	Removed because this is an operational improvement that would be included under the general action above
	~~Stoneridge Drive: Widening improvements — Overcrossing at I-681~~	Removed because this is an operational improvement that would

TABLE 2 RECOMMENDED REVISIONS TO THE TRI-VALLEY ACTION PLAN ACTIONS

New Action Number	Proposed Action Language Revisions	Notes
		be included under the general action above
	~~Tassajara Road: Santa Rita Road/Tassajara Road interchange — Santa Rita Road/ Tassajara Road at I-581~~	Removed because this is an operational improvement that would be included under the general action above
	~~Tassajara Road: Widen to 8 lanes — I-580 to Dublin Boulevard~~	Removed because this is an operational improvement that would be included under the general action above
	~~Tassajara Road: Widen to 4 to 6 lanes north of Dublin Boulevard — Dublin Boulevard to County line~~	Removed because this is an operational improvement that would be included under the general action above
Surface Roadways-3	Construct Tesla Road~~:~~ ~~S~~safety improvements ~~—~~from South Livermore Avenue to Greenville Road.	Revised to begin with action verb
Transit		
	~~Increase AVR for peak hour trips from 1.1 to 1.2 through increased number or frequency of express buses, new HOV lanes, other transit improvements and local TDM programs. (Regional 1)~~	Removed because this is an RTO-level threshold, and the general components of this action are addressed in other actions
	~~Support new funding sources to support commute alternatives and alternative-fueled vehicles for transit operators to fund needed transportation projects. The extension of county sales tax measures is one potential source of such funding. The State legislature has also passed enabling legislation that would allow MTC to propose a regional gasoline tax in the Bay Area that would focus on providing increased funding for commute alternatives and other transportation projects. (Regional 4)~~	Removed, funding is addressed in funding section
Transit-1	~~Support~~ ~~d~~Conduct a study to develop~~ment of~~ a seamless HOV/HOT/Express Lane network in the Tri-Valley, with connections to adjoining areas, including new facilities on I-580 and I-680. ~~to encourage the use of carpools and bus transit, and explore the possibility of connecting the HOV/Express Lane network to adjoining areas. (Regional 6)~~	Revised to be a more concrete action and to merge two existing Action Plan actions

TABLE 2 RECOMMENDED REVISIONS TO THE TRI-VALLEY ACTION PLAN ACTIONS

New Action Number	Proposed Action Language Revisions	Notes
	~~Encourage increases in public transit service to meet the needs of the Tri-Valley, particularly the needs of the transit-dependent population. (Regional 8)~~	Merged with an action below
	~~Support transit agencies' efforts to find sources of stable funding to support ongoing transit operations and to support new or enhanced express bus service. (Regional 10)~~	Removed, funding is addressed in the funding section
Transit-2	~~Support increased coordination of bus services between transit operators (both inter- and intra-county) with input and collaboration by representatives from LAVTA, CCCTA, ACE, BART, and the Tri-Valley jurisdictions. (Regional 11)~~ Work with CCTA, local jurisdictions, and local public transit operators to: -Develop a Tri-Valley Transit Plan to identify future community transit needs and set a shared vision for viable, sustainable public transit service for all. - Link transit service in the entire subregion and to adjacent communities. - Standardize operations, regional mapping, and wayfinding. - Implement traffic signal management and bus prioritization technology on regionally significant transit routes to improve bus speed and reliability.	Revised to consolidate with another action and to include broader topics of the Action Plan
	~~Proactively support efforts by local public transit agencies and regional policymakers to create a vision for viable, sustainable public transit service for the Tri-Valley. This effort will include formulating a vision for the San Ramon Valley portion of the Tri-Valley. (Regional 13)~~	Merged with action above
	~~Encourage the coordination of public transit operator's short-range and long-range transit plans with county-level and regional-level planning documents. Incorporate relevant components of the SRTP's of LAVTA, CCCTA, ACE, BART, and TRAFFIX into TVTC documents. (Regional 17)~~	Merged with action above
	~~Encourage the development of long-range transit infrastructure needs assessment to enhance public transit service along arterials. (Regional 18)~~	Merged with action above
Transit-3	Complete a study to e~~E~~xplore the ~~F~~feasibility of a Regional Express Bus Program and expansion and enhancement of Bus Rapid Transit along the I-680 and other key corridors. ~~(Recommended Action 1)~~	Revised to consolidate with another action and to ensure it is a more concrete action
Transit-4	~~Extend BART to Livermore.~~ Explore additional connections or extensions of Valley Link system in the Tri-Valley and	Revised to be more general for rail connectivity

TABLE 2 RECOMMENDED REVISIONS TO THE TRI-VALLEY ACTION PLAN ACTIONS

New Action Number	Proposed Action Language Revisions	Notes
	opportunities to connect riders to existing BART stations. ~~(Recommended Action 2)~~	
	~~Support Increased Connectivity and Accessibility among Transit Modes. (Recommended Action 3)~~	Removed because this is now addressed in above actions
	~~Solidify Expansion and Enhancement of Bus Rapid Transit Project. (Recommended Action 4)~~	Consolidated above
Transit-5	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. ~~(Recommended Action 5)~~	Revised to include other broad transit improvement topics
Transit-6	~~Support Expansion of Paratransit Services.~~ 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. ~~(Recommended Action 5)~~	Replaced with general action language drafted for all action plans relating to the CCTA Accessible Transportation Strategic Plan
Transit-7	~~Support~~ Participate in a joint TVTC/TRANSPLAN study to examine feasibility of t~~T~~ransit s~~S~~ervice in the Vasco Road Corridor. ~~(Recommended Action 7)~~	Revised to include TRANSPLAN staff in the discussion
Transit-8	~~Support and p~~Participate in a joint TVTC/TRANSPAC I-680 corridor high-capacity transit study to relieve congestion on I-680. ~~(Recommended Action 5)~~	Revised to create a more concrete action
	~~I-680—Expand I-680 Express Bus System.~~	Consolidated with the I-680 specific action above
Transit-9	~~Support active promotion of~~ Work with local transit agencies, regional policymakers, and private entities to promote pooled regional ridesharing services ~~and commute incentives (Regional5)~~.	Revised to be more concrete
Transit-10	Work with CCTA, regional, and local transit operators to explore financial incentives and reduced fares for public transportation, including a feasibility study to explore a subregional or countywide Universal Basic Mobility program.	Added using language drafted for all action plans
Transit-11	Work with local jurisdictions to develop intermodal transportation facilities ("Mobility Hubs") that serve major activity centers and connect transit, pedestrian, bicycle facilities, and car/ride share in their planning documents, and site park and ride facilities, where appropriate.	Added using language drafted for all action plans

TABLE 2 RECOMMENDED REVISIONS TO THE TRI-VALLEY ACTION PLAN ACTIONS

New Action Number	Proposed Action Language Revisions	Notes
Transit-12	Create and adopt a transit hub toolkit to optimize station design and connectivity that includes coordination with local government access plans and policies.	Added using language drafted for all action plans
Transit-13	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.	Added using language drafted for all action plans
Transit-14	Participate in any current or future studies regarding rail options for the Tri-Valley area and continue exploring development of new rail stations.	Added using language drafted for all action plans
Transit-15	Assist local jurisdictions in reviewing and considering options for improving curb management and bus and truck loading on public streets.	Added using language drafted for all action plans
Transit-16	Provide educational awareness of public transportation options through outreach, education, and advertising, particularly in local schools.	Added using language drafted for all action plans
Transit-17	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.	Added using language drafted for all action plans
Bike/Ped		
Bike/Ped-1	~~Iron Horse Trail: Segment improvements — Dougherty Road to Dublin/Pleasanton BART~~ Complete gaps in the Countywide Low Stress Bike Network.	Revised to be more general and inclusive of all gaps in the LSBN
	~~Iron Horse Trail: Completion of the Trail in Alameda County — Dublin/Pleasanton BART to Greenville Road~~	Removed since this is captured under the general gap closure action above
	~~Iron Horse Trail: Crossing improvements at High traffic volume crossings~~	Removed since this is captured under the general gap closure action above
Bike/Ped-2	~~Iron Horse Trail: Overcrossing at Bollinger Canyon Road~~ Complete bicycle and pedestrian crossing improvements at the following intersections: - Overcrossing at Bollinger Canyon Road - Semi-protected intersections identified in the Action Plan	Revised to include other unprotected crossings to fulfill the proposed RTO

TABLE 2 RECOMMENDED REVISIONS TO THE TRI-VALLEY ACTION PLAN ACTIONS

New Action Number	Proposed Action Language Revisions	Notes
	~~Close gaps and enhance access along regional trails that provide direct access to regional public transit services, transit centers and transfer points. (Regional 16)~~	Removed because of specific gap closing actions above
Bike/Ped-3	Work with local jurisdictions to adopt and update 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.	Added using language drafted for all action plans
Bike/Ped-4	Develop a program to provide educational awareness of active transportation options and safety through outreach, education, and advertising.	Added using language drafted for all action plans
Bike/Ped-5	Continue the program to reduce the cost of bicycles, pedal-assist bicycles, and electric bicycles for low income populations or students.	Added using language drafted for all action plans
Bike/Ped-6	Work with CCTA and other regional agencies to develop a method of tracking the Pavement Condition Index (PCI), implementing rehabilitation improvements, and identifying funding for those improvements on the countywide low stress bike and pedestrian facilities in addition to roadway facilities.	Added using language drafted for all action plans
Safety		
Safety-1	~~Support the preparation by Caltrans of~~ Work with Caltrans to prepare an incident management plan for the State highways in the Tri-Valley. ~~The TVTC recognizes that incidents can have a profound effect on traffic conditions both on the freeways and on the arterials. (Regional 12)~~	Revised to ensure it is a more concrete action
Safety-2	~~Encourage~~ Develop a program to provide funds for implementation of Complete Streets policies of the local jurisdictions. ~~(Regional 19)~~	Revised to ensure it is a more concrete action
Safety-3	Develop a program to coordinate the collection and analysis of safety data, identify areas of concern, and propose safety-related improvements and user awareness that support state and federal safety programs and performance measures.	Added using language drafted for all action plans
Safety-4	Work with CCTA to implement the Countywide Vision Zero Framework.	Added using language drafted for all action plans
Safety-5	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.	Added language from another Action Plan
Safety-6	Monitor and evaluate traffic speed and other safety issues, particularly around schools, on an annual basis.	Added using language from another Action Plan

TABLE 2 RECOMMENDED REVISIONS TO THE TRI-VALLEY ACTION PLAN ACTIONS

New Action Number	Proposed Action Language Revisions	Notes
Safety-7	Conduct a study to identify all transportation improvements needed within 500 feet of schools to enhance safety and reduce traffic impacts.	Added using language from another Action Plan
Safety-8	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.	Added using language from another Action Plan
Equity		
Equity-1	Conduct a study to identify strategies to increase low-income resident access to transit hubs, jobs, and areas with goods and services, such as enhancing access to existing transit hubs, constructing new transit hubs, and first/last mile solutions.	Added using language drafted for all action plans
Equity-2	Increase express bus service to regional job centers, particularly those with low-income workers, inside and outside of the subregion.	Added using language drafted for all action plans
Equity-3	Increase access to car sharing services for low-income residents and support financial incentives for using them.	Added using language drafted for all action plans
Climate Change		
	~~Support feasibility studies regarding the use of high-capacity or alternative-fueled public transit options, wherever it might be appropriate. (Regional 9)~~	Consolidated with another action above
Climate Change-1	Continue to implement a program to support deployment of high-quality, fast and diverse electrical vehicle chargers in the subregion, with an emphasis on areas where deployment is lagging behind other parts of the subregion.	Added using language drafted for all action plans
Climate Change-2	Continue to promote electric vehicle ownership through establishing sources of financial incentives, educational programs, and demonstrations~~, such as during National Electric Vehicle Week~~.	Added using language drafted for all action plans
Climate Change-3	~~Work with regional agencies and local employers to reduce traffic congestion peak hours through increased tele-work, compressed work weeks, alternative work locations, flex schedules, or employer pre-tax benefit programs.~~ 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.	Added using language drafted for all action plans

TABLE 2 RECOMMENDED REVISIONS TO THE TRI-VALLEY ACTION PLAN ACTIONS

New Action Number	Proposed Action Language Revisions	Notes
Climate Change-4	Work with 511 Contra Costa and local jurisdiction Transportation Demand Management Advisory Councils to expand Transportation Demand Management (TDM) programs, adopt local TDM plans, and conduct regular monitoring and reporting for program effectiveness.	Added using language drafted for all action plans
Technology		
Technology-1	~~Support coordination with~~ Coordinate with ~~Tri-Valley~~ CCTA and local jurisdictions ~~in accommodating~~ to identify solutions to their Intelligent Transportation System (ITS) communications needs during the development and implementation of a Regional ITS Communications Plan and/or regional communications infrastructure, including expanding fiber to link all traffic signals and bolster communications for signals, etc. ~~Operation and maintenance of the regional communication infrastructure to be provided by the most appropriate and cost-effective level of government.~~ (Regional 15)	Revised to be more concrete
Technology-2	~~Conduct a study of the feasibility of a pilot Dynamic Personal Micro Transit systems somewhere in the Tri-Valley area.~~ Conduct a study of the feasibility of a pilot Dynamic Personal Micro Transit System or Automated Driving System somewhere in the Tri-Valley area.	Added using language drafted for all action plans
Technology-3	Upgrade the signal system along certain Routes of Regional Significance, including the 42 signals identified for interconnection.	Added using language drafted for all action plans
Technology-4	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.	Added using language drafted for all action plans
Funding		
Funding-1	Continue to participate and periodically update the Tri-Valley Transportation Development Fee (TVTDF) structure to ensure it will produce sufficient funds in light of current and anticipated growth rates and construction costs.	Added using language drafted for all action plans
Misc.		
	~~Support growth that achieves an overall jobs-housing balance within the Tri-Valley. (Regional 3)~~	Propose to remove because the actions is not specific enough, TAC members could come up

TABLE 2 RECOMMENDED REVISIONS TO THE TRI-VALLEY ACTION PLAN ACTIONS

New Action Number	Proposed Action Language Revisions	Notes
		with more actionable language if desired. This can be retained as a policy instead.
	~~Encourage regional and local multimodal access to PDAs. (Regional 20)~~	Propose to remove because the actions is not specific enough, TAC members could come up with more actionable language if desired. This can be retained as a policy instead.

Public Outreach Summary

The final component of this memorandum is Attachment 3, Public Outreach Summary. This document outlines the first round of public outreach conducted by CCTA and PlaceWorks during March and April 2022. Outreach was conducted to the general Contra Costa community and the Alameda County portion of the Tri-Valley area. Input from this outreach was incorporated into development of the Plan actions.

Next Steps

The contents of this memorandum will be summarized in a PowerPoint presentation for the August 15, 2022 TVTC Policy Board meeting. Comments on the components can be received before, during, or after the meeting. Comments on the components will be incorporated into the Draft Tri-Valley Action Plan which will be ready for review in the fall.

ATTACHMENT 1:
RTO METHODOLOGY MEMORANDUM

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 (LSBN) that has been completed.
    - Number of locations where the LSBN 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.
    - Proportion of EPC acres that 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 ethernet-based 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.

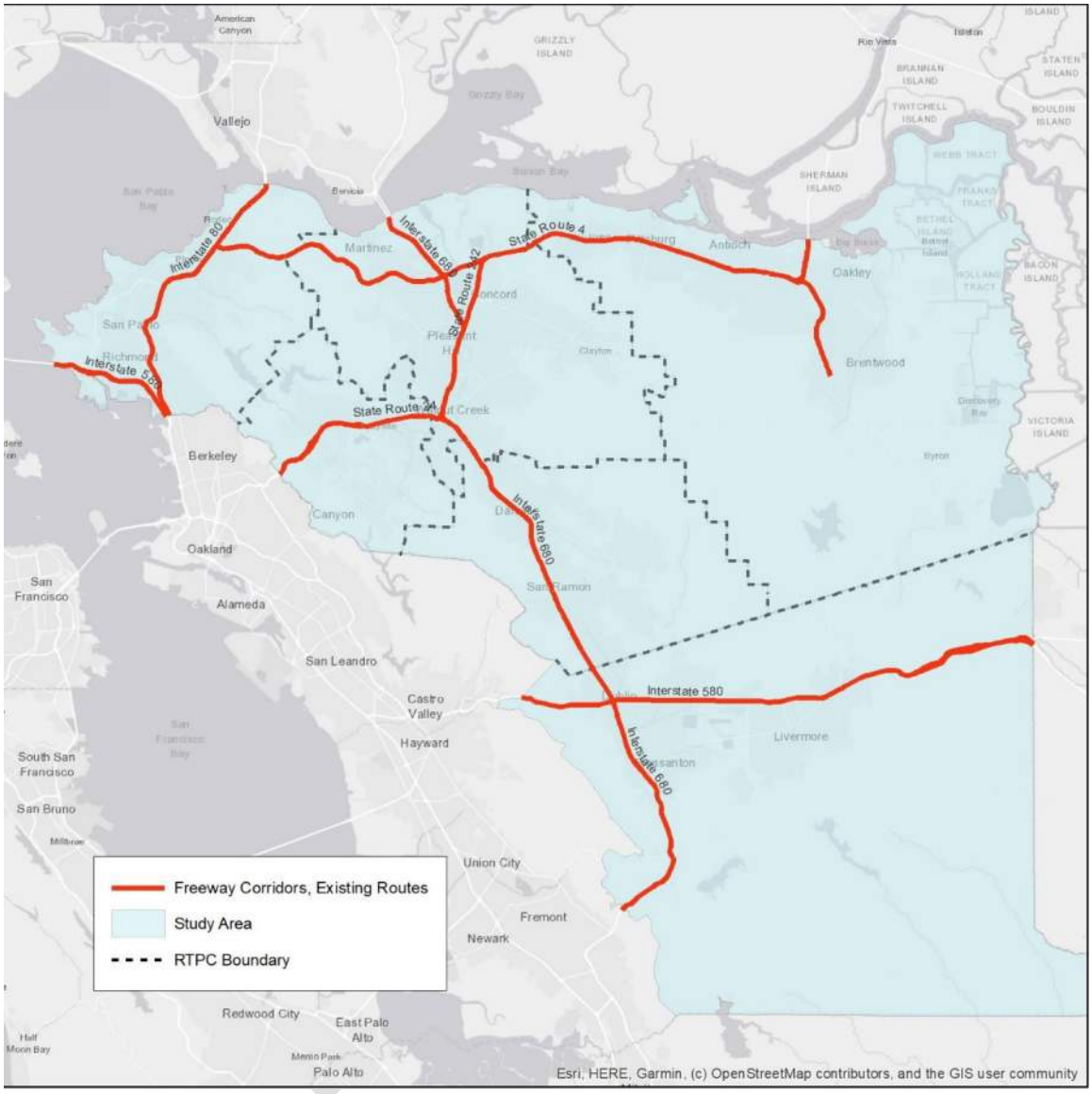
All previous CCTA Action Plans used delay index as MTSOs for freeway facilities. Table 1 lists the specific facilities to be evaluated with this metric for the current Action Plan updates; these segments are mapped in Figure 1. The performance targets used in the previous round of Action Plans are provided 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
Tri-Valley (Southwest County)	Interstate 680	Livorna Road	I-580	DI≤2.0
	Interstate 680	I-580	SR-80	DI≤2.0
	Interstate 580	Eden Canyon Road	I-680	DI≤2.0
	Interstate 580	I-680	N Midway Road	DI≤2.0

* DI = Delay index
Source: RTPC Action Plans.

FIGURE 1. FREEWAY FACILITIES



The delay index (and the related average speed) will be calculated for both the 2019 Base Year and 2050 Baseline scenarios, pivoting from observed data. The source of observed data for this RTO will be speed data from INRIX Roadway Analytics, which was also used in the 2017 MTSO monitoring[1] 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)	• 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)	• 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)	• 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
	• 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)	• Camino Pablo/San Pablo Dam Road • Pleasant Hill Road	Side Street Delay, no LOS rating.
Tri-Valley (TVTC and Southwest County)	• 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**

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

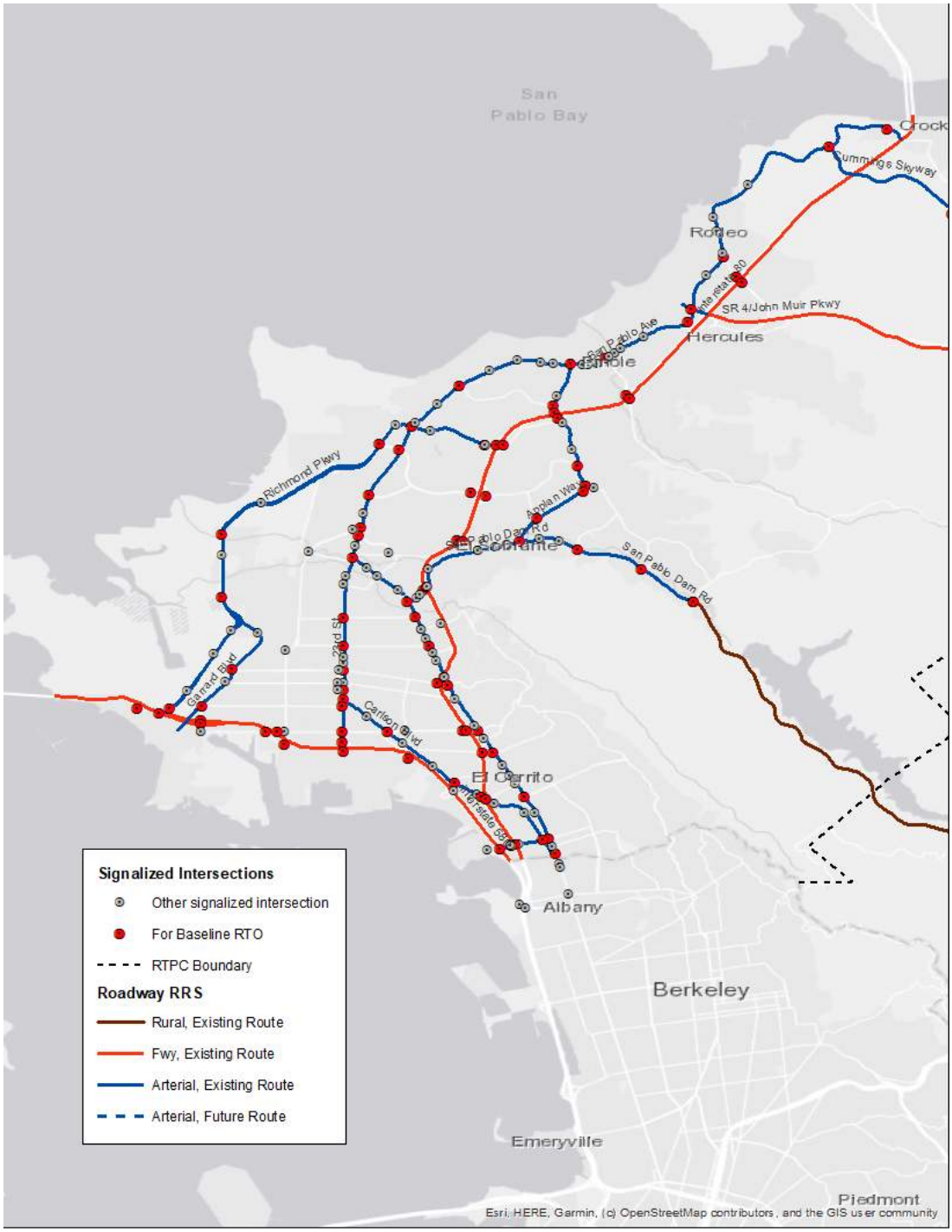


FIGURE 3. ARTERIAL INTERSECTIONS AND ROADWAY RRS (CENTRAL COUNTY)

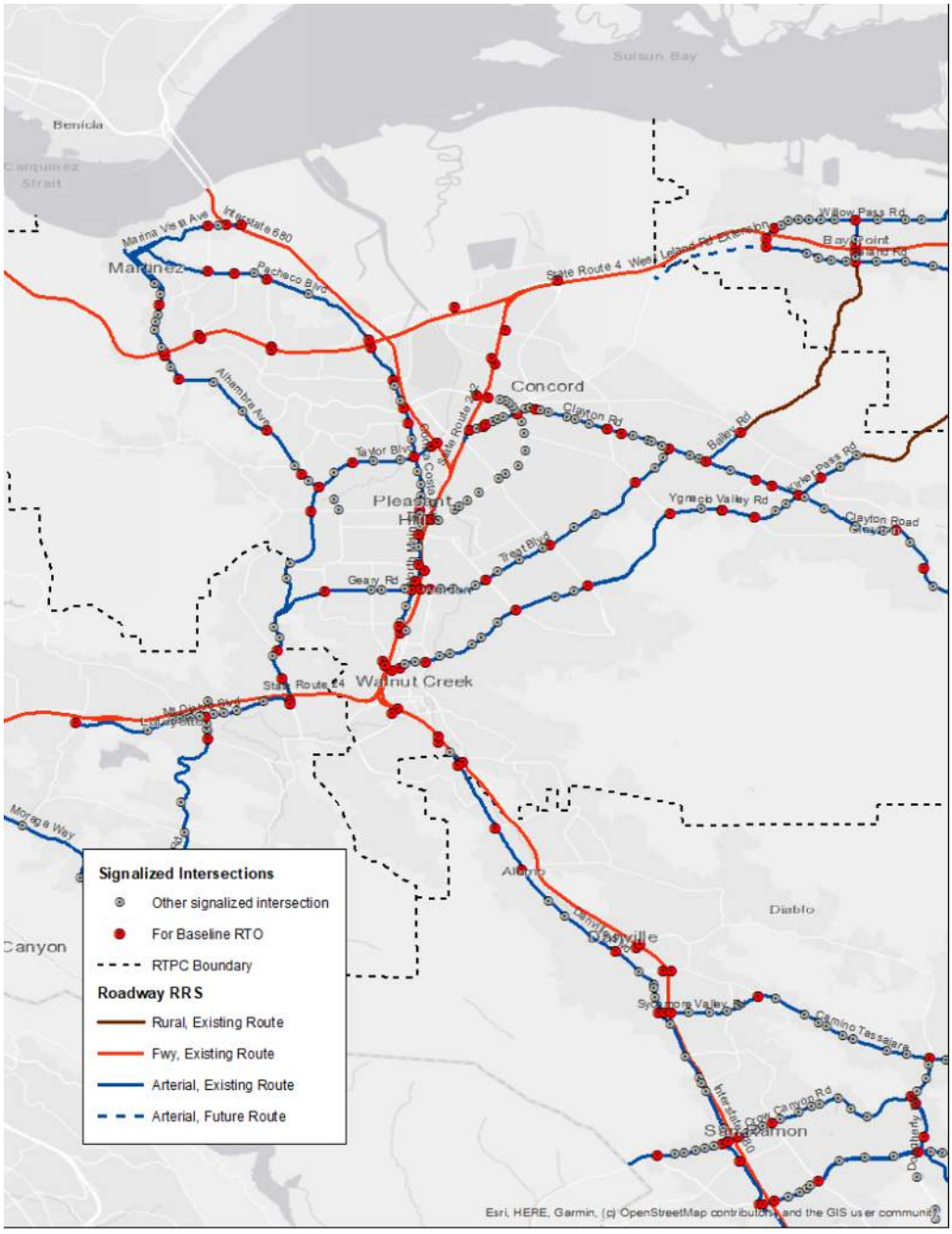


FIGURE 4. ARTERIAL INTERSECTIONS AND ROADWAY RRS (EAST COUNTY)

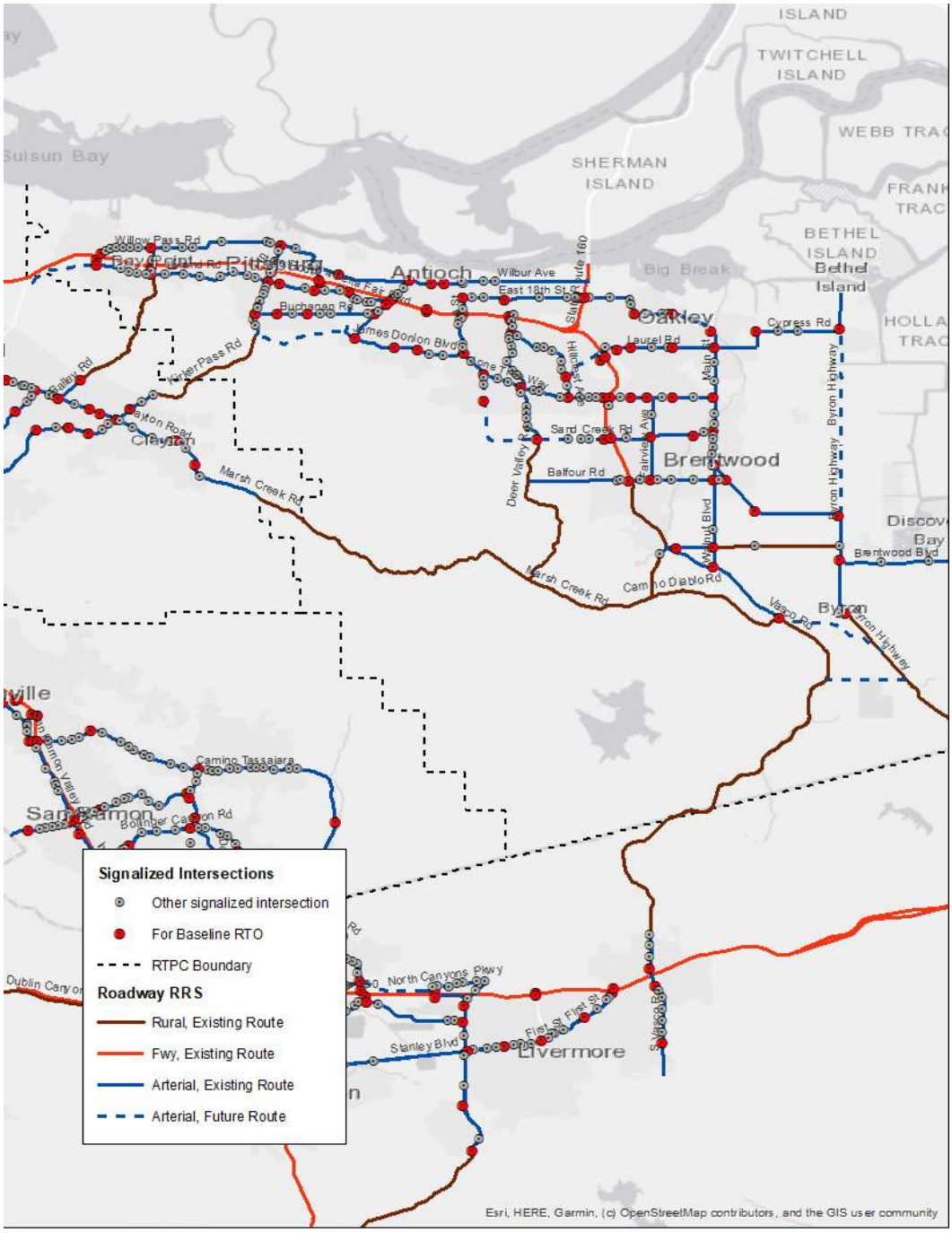


FIGURE 5. ARTERIAL INTERSECTIONS AND ROADWAY RRS (SOUTHWEST COUNTY – LAMORINDA)

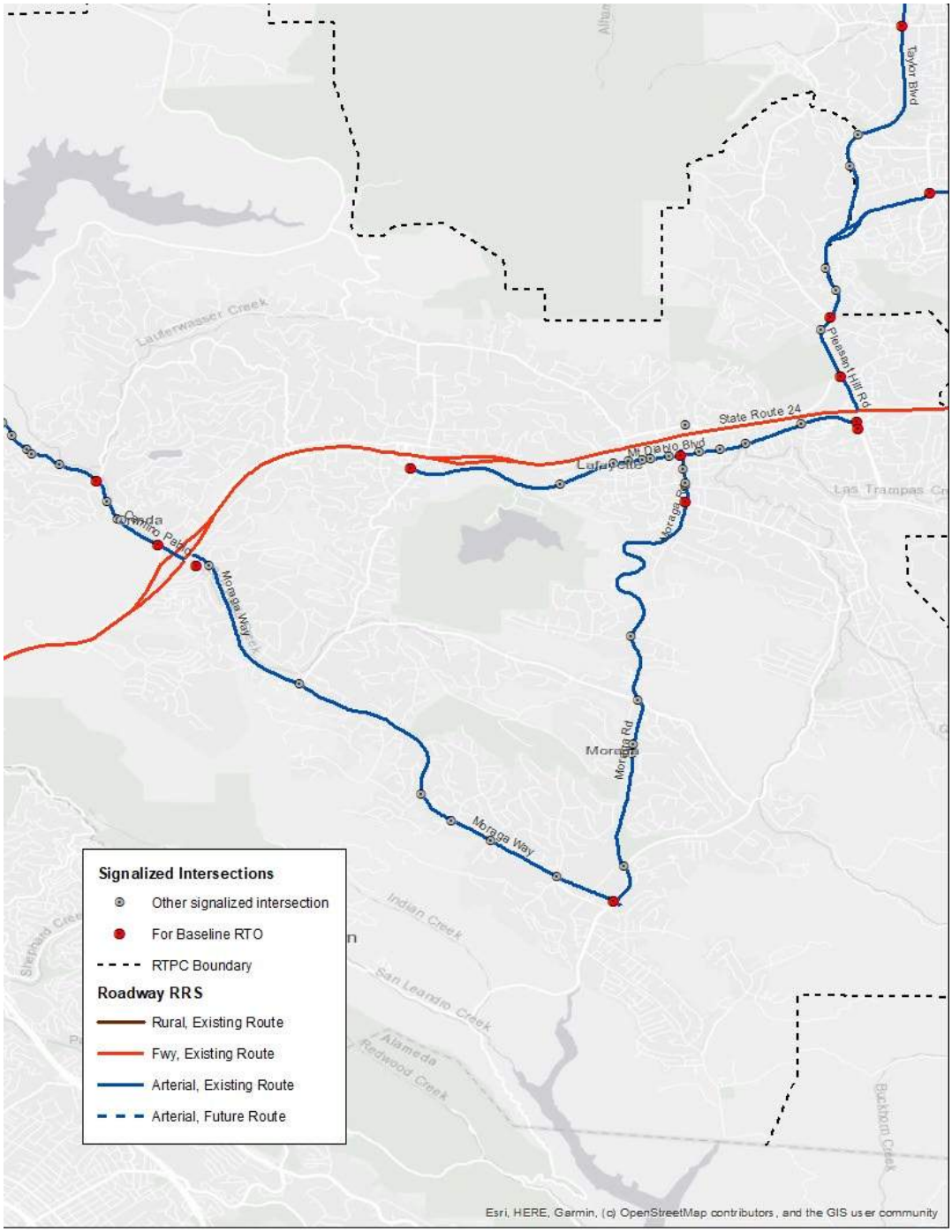
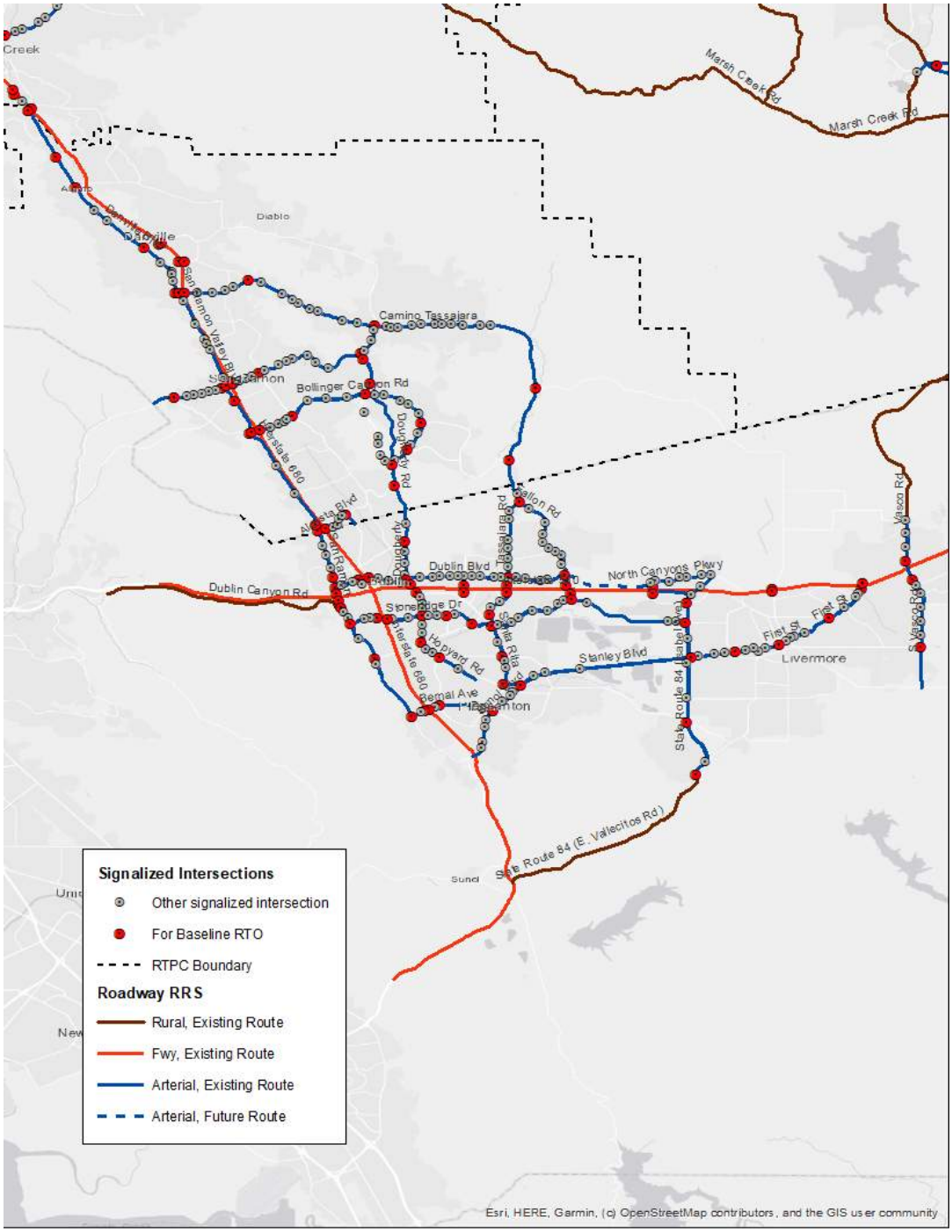


FIGURE 6. ARTERIAL INTERSECTIONS AND ROADWAY RRS (SOUTHWEST COUNTY – TRI-VALLEY)



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
East County	Byron Highway	State Route 4	Alameda County
	Camino Diablo Road	Marsh Creek Road	Vasco Road
	Marsh Creek Road	Deer Valley Road	Vineyard Parkway
	Vasco Road	Walnut Boulevard	Alameda County
	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. It is assumed that the LSBN includes only Class I and Class IV facilities.

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 (Class I and Class IV facilities) 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" on "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.

ATTACHMENT 2:
RTO ANALYSIS MEMORANDUM

MEMORANDUM

DATE July 27, 2022; Revised August 4, 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 Tri-Valley area, 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 THE TRI-VALLEY AREA

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: ≤2.0	Delay index: 2.5	Delay index: 2.5
	Freeway Buffer Index	Proportion of added travel time between the 95th percentile and the average	Buffer index: None	Buffer index: 0.5	Buffer index: 0.5
	Intersection Level of Service (LOS)	Average control delay during peak hours	Maintain LOS E or better, no standard for intersections exempted by adopted General Plans	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 – SR-84 LOS E – Vasco Road No standard – Dublin Canyon Road	LOS D – SR-84 LOS E – Vasco Road No standard – Dublin Canyon Road
Transit	Transit Mode Share	Proportion of daily person trips using transit	None	6% for commute trips	12% for commute trips
	Travel Time Ratio	Ratio of peak commute hour and direction 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	12% all trips 2.5% commute trips	16% all trips 5% for commute trips
	Low Stress Bike Network (LSBN)	Proportion of the LSBN that is complete	None	50%	100%
	LSBN Crossings	Number of locations the LSBN crosses a roadway and is considered to be unprotected	None	Zero semi-protected crossings	Zero semi-protected crossings
Safety	KSI Collisions	Number of crashes resulting in fatality or injury	None	Zero fatality and severe injury crashes	
	Bike-Ped Collisions	Number of KSI crashes involving a bicyclist of pedestrian	None		
	Bike-Ped Collisions near Schools	Number of bicycle or pedestrian involved KSI collisions occurring within 500 feet of schools	None		

Facility Type or Planning Focus	Metric	Definition	Existing Target	Proposed 2027 Target	Proposed 2050 Target
Climate Change	Single-Occupant Vehicle (SOV) Mode Share	Proportion of daily person trips made by single occupant vehicle	None	72% for commute trips	68 % for commute trips
	Greenhouse Gas (GHG) Emissions per Capita	Tons of CO_2 emissions	None	28 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	30.9 VMT	21 VMT
Technology	Level of Ethernet-based Signal Interconnection	Number of connected signals	None	42	42

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 the Planning Area (Contra Costa County and portions of Alameda County within the Tri-Valley Subregion) and the Tri-Valley subregion. As shown in Table 2, about 79 percent of the work trips in the Planning Area are made by automobile either driving alone or by carpool, while 80 percent are made by automobile in the Tri-Valley subregion.

TABLE 2. MEANS OF TRANSPORTATION TO WORK IN THE PLANNING AREA AND THE TRI-VALLEY AREA (2019)

	Planning Area			Tri-Valley area		
Mode	Estimate	Margin of Error	Percentage Mode Share	Estimate	Margin of Error	Percentage Mode Share
Total:	**687,673**	**±6,731**		**202,219**	**±3,043**	
Car, truck, or van - drove alone	469,620	±5,488	68%	145,089	±2,573	72%
Car, truck, or van - carpooled	75,233	±2,512	11%	16,394	±1,097	8%
Public transportation (excluding taxicab)	72,172	±2,049	10%	17,530	±901	9%
Taxicab, motorcycle, bicycle, walked, or other means	24,381	±1,564	4%	6,261	±869	3%
Worked from home	46,255	±1,581	7%	16,941	±914	8%

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 Tri-Valley and the planning area as a whole. The modeling results show that most work trips by Tri-Valley residents are made by automobile, specifically driving alone. Bicycling and walking account for a very small portion of commute trips made by Tri-Valley residents (note that the bicycle mode share only reflects those trips made by bicycle from beginning to end and does not count access trips to and from transit stops).

Commuters to jobs located within Tri-Valley predominantly use the automobile modes to get to work, specifically driving alone. Transit, bicycling, and walking account for relatively 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 – TRI-VALLEY AREA RESIDENTS

	Planning Area		Tri-Valley area	
	2019	2050 Baseline	2019	2050 Baseline
Drive Alone Auto	73%	71%	79%	75%
Carpool	14%	15%	13%	15%
Transit	11%	12%	6%	8%
Bike	0.4%	0.7%	0.8%	1.2%
Walk	1.3%	1.5%	1%	1%

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 TRI-VALLEY AREA

	Planning Area		Tri-Valley area	
	2019	2050 Baseline	2019	2050 Baseline
Drive Alone Auto	83%	79%	83%	79%
Carpool	12%	14%	12%	14%
Transit	2%	4%	2%	4%
Bike	0.6%	1%	0.9%	1.7%
Walk	2%	3%	1.2%	1.7%

Source: CCTA travel demand model and DKS Associates.

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

MODE SHARE FOR ALL TRIP PURPOSES

Table 5 reports the mode share calculated for all trip purposes included in the CCTA travel demand model – home-based work, home-based shopping, home-based social/recreation, non-home-based, home-based grade school, home-based high school, and home-based college. The modeling results show that most trips are currently made by automobile, with transit and active transportation modes accounting for about 3 percent of all trips.

By 2050, the mode shares are expected to remain similar to existing conditions, with only a modest increase in the transit and carpool shares and slight decrease in active transportation shares.

TABLE 5. MODE SHARE FOR ALL TRIPS– TRI-VALLEY AREA RESIDENTS

	Planning Area		Tri-Valley area	
	2019	2050 Baseline	2019	2050 Baseline
Drive Alone Auto	63%	62%	66%	60%

Carpool	27%	28%	25%	28%
Transit	3%	3%	2%	5%
Bike	0.6%	0.9%	0.8%	0.6%
Walk	6%	6%	7%	6%

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 Tri-Valley area include:

- I-580 from Eden Canyon Road to I-680
- I-580 from I-680 to N Midway Road
- Interstate 680 (I-680) from Livorna Road to Interstate 580 (I-580)
- I-680 from I-580 to Fremont City Limit

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 I-580 and I-680 are shown in Table 6. The observed delay index for existing conditions is generally higher in the a.m. westbound direction and p.m. eastbound direction for I-580. For I-680, higher delay index values are seen for the p.m. northbound direction and a.m. southbound direction (south of I-580). The 2050 modeled delay index values are similar to the 2019 with somewhat lower values for the peak directions.

The previous Tri-Valley Action Plan set a delay index standard of 2.0 or better for the freeway Routes of Regional Significance. The observed 2019 delay index meets this standard with the exception of I-580 west of I-680 for the eastbound pm, which is currently at 2.75. Because the modeled 2050 delay index for this corridor is forecasted to improve somewhat, we propose a standard of 2.5 for this Action Plan.

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 .05 to 0.45, reflecting a high degree of travel time variability on certain corridors, including I-680 (north of I-580) in the p.m. northbound direction and I-680 (south of I-580) in the a.m. southbound direction.

The existing Tri-Valley 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.

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
I-580 (EAST OF I-680)					
A.M. Eastbound	62.3	1.04	0.05	62.3	1.04
A.M. Westbound	41.3	1.57	0.22	46.1	1.41
P.M. Eastbound	32.9	1.98	0.28	47.3	1.37
P.M. Westbound	61.5	1.06	0.11	61.0	1.07
I-580 (WEST OF I-680)					
A.M. Eastbound	59	1.10	0.05	64.5	1.0
A.M. Westbound	59.7	1.09	0.22	65.0	1.00
P.M. Eastbound	23.6	2.75	0.28	38.1	1.7
P.M. Westbound	57.4	1.13	0.11	62.7	1.04
I-680 (NORTH OF I-580)					
A.M. Northbound	59.4	1.09	0.24	59.3	1.10
A.M. Southbound	63.6	1.02	0.12	59.1	1.10
P.M. Northbound	51.8	1.25	0.43	52.0	1.25
P.M. Southbound	60.6	1.07	0.24	59.8	1.09
I-680 (SOUTH OF I-580)					
A.M. Northbound	61.2	1.06	0.35	63.0	1.03
A.M. Southbound	39.8	1.63	0.45	53.7	1.21
P.M. Northbound	41.3	1.57	0.20	56.0	1.16
P.M. Southbound	65.1	1.00	0.07	64.7	1.00

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 are listed in Table 8. However, the project team requires more time to analyze the LOS of these intersections and they will be available at a later date.

The existing Tri-Valley Action Plan adopted an LOS D threshold for all arterial intersections except for Bailey Road where LOS E is acceptable.

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 Tri-Valley subregion is as follows:

- LOS D in all areas except downtowns, at key schools, and freeway ramps.
- LOS E at freeway 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.

TABLE 8. SIGNALIZED INTERSECTION PEAK-HOUR LOS [DATA IN PROGRESS AND IS FORTHCOMING]

Intersection	2019 A.M.		2019 P.M.		2050 A.M.		2050 P.M.	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
AIRWAY BLVD & ISABEL AVE								
ALCOSTA BLVD & BOLLINGER CANYON RD								
ALCOSTA BLVD & CROW CANYON RD								
ALCOSTA BLVD & NB 680 RAMPS								
ALCOSTA BLVD & VILLAGE PKWY								
BERNAL AVE & I-680 NB RAMPS								
BERNAL AVE & I-680 SB RAMPS								
BERNAL AVE & VALLEY AVE								
BOLLINGER CANYON RD & BRANCH PKWY								
BOLLINGER CANYON RD & CROW CANYON RD								
BOLLINGER CANYON RD & DOUGHERTY RD								
BOLLINGER CANYON RD & DOUGHERTY RD								
BOLLINGER CANYON RD & NB 680 RAMPS								
BOLLINGER CANYON RD & SB 680 RAMPS								
BOLLINGER CANYON RD & WINDEMERE PKWY								
CAMINO TASSAJARA & BLACKHAWK RD								
CAMINO TASSAJARA & HIGHLAND RD								
CAMINO TASSAJARA & SYCAMORE VALLEY RD								
CAMINO TASSAJARA & WINDEMERE PKWY								
CROW CANYON RD & NB 680 RAMPS								
CROW CANYON RD & SB 680 RAMPS								
DANVILLE BLVD & EL CERRO BLVD								
DANVILLE BLVD & LIVORNA RD								
DANVILLE BLVD & STONE VALLEY RD								
DOUGHERTY RD & AMADOR VALLEY BLVD								
DOUGHERTY RD & CROW CANYON RD								

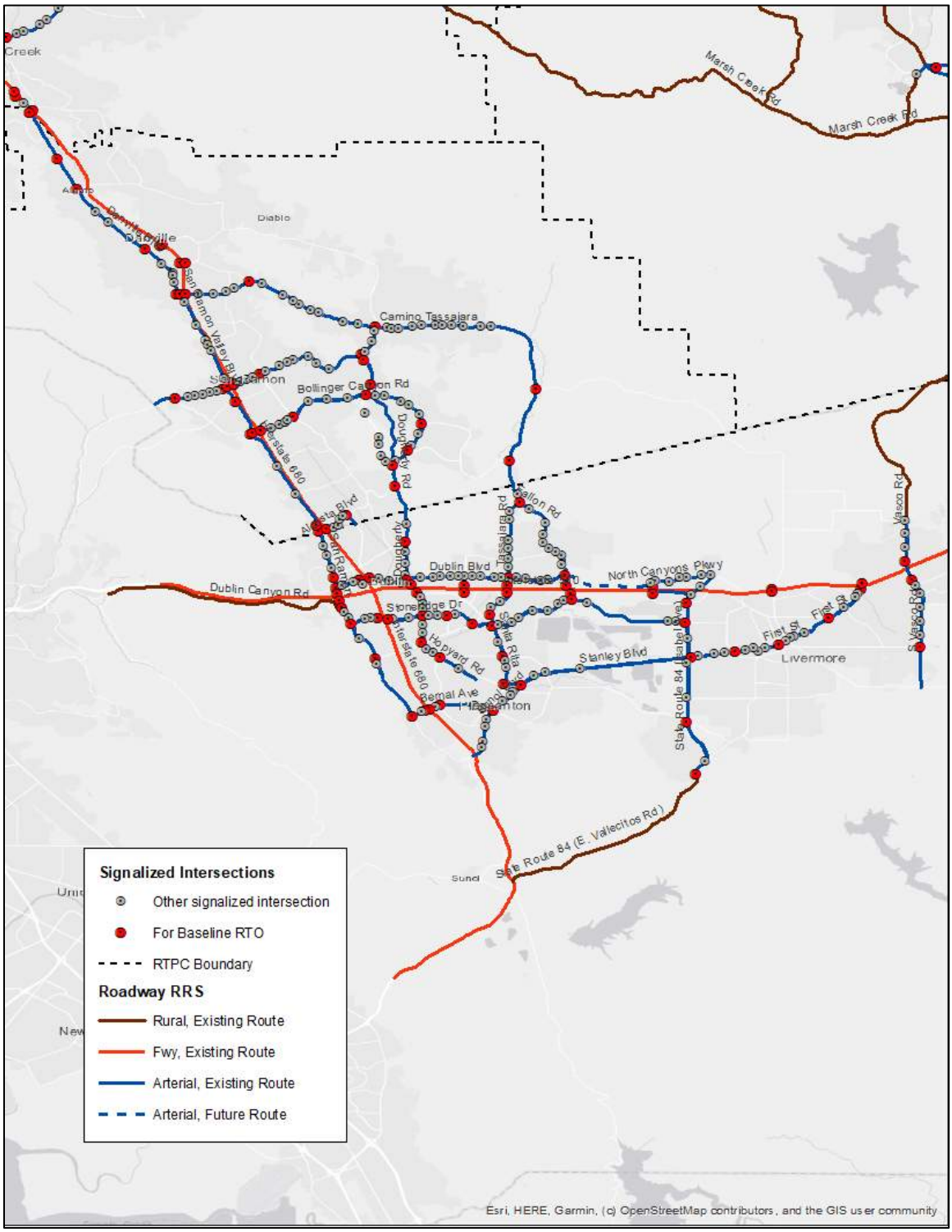
DOUGHERTY RD & DUBLIN BLVD
DOUGHERTY RD & MONARCH RD
DOUGHERTY RD & OLD RANCH RD
DOUGHERTY RD & RED WILLOW RD
DOUGHERTY RD & WB I-580 RAMP
DUBLIN BLVD & AMADOR PLAZA RD
DUBLIN BLVD & FALLON RD
DUBLIN BLVD & VILLAGE PKWY
EB I-580 OFF RAMP & AIRWAY BLVD
EB I-580 OFF RAMP & EL CHARRO RD
EB I-580 OFF RAMP & HACIENDA DR
EB I-580 RAMPS & LIVERMORE AVE
FIRST ST & EB I-580 RAMP
FIRST ST & PORTOLA AVE
FIRST ST & S L ST
FOOTHILL RD & BERNAL AVE
FOOTHILL RD & DUBLIN CANYON RD
FOOTHILL RD & EB I-580 RAMPS
FOOTHILL RD & LAS POSITAS BLVD
FOOTHILL RD & STONERIDGE DR
FOOTHILL RD & WB I-580 OFF RAMP
HOPYARD RD & EB I-580 RAMP
HOPYARD RD & LAS POSITAS BLVD
HOPYARD RD & STONERIDGE DR
HOPYARD RD & VALLEY AVE
I-680 NB OFF RAMP & DIABLO RD
I-680 NB RAMPS & DIABLO RD
I-680 NB RAMPS & EL CERRO BLVD
I-680 SB RAMPS & EL CERRO BLVD
JACK LONDON BLVD & ISABEL AVE

SAN RAMON RD & AMADOR VALLEY BLVD
SAN RAMON RD & DUBLIN BLVD
SAN RAMON VALLEY BLVD & ALCOSTA BLVD
SAN RAMON VALLEY BLVD & BOLLINGER CANYON RD
SAN RAMON VALLEY BLVD & CROW CANYON RD
SAN RAMON VALLEY BLVD & NORRIS CANYON RD
SAN RAMON VALLEY BLVD & SB 680 RAMPS
SAN RAMON VALLEY BLVD & SYCAMORE VALLEY RD
SANTA RITA RD & LAS POSITAS BLVD
SANTA RITA RD & STANLEY BLVD
SANTA RITA RD & STONERIDGE DR
SANTA RITA RD & VALLEY AVE
STANLEY BLVD & BERNAL AVE
STANLEY BLVD & I84 RAMP
STANLEY BLVD & MURRIETA BLVD
STANLEY BLVD & STANLEY BLVD
STATE ROUTE 84 (E. VALLECITOS RD) & VINEYARD AVE
STONERIDGE DR & EL CHARRO RD
STONERIDGE DR & HACIENDA DR
STONERIDGE DR & I-680 NB OFF RAMP
STONERIDGE DR & I-680 SB OFF RAMP
STONERIDGE DR & LAS POSITAS BLVD
SYCAMORE VALLEY RD & NB 680 RAMPS
SYCAMORE VALLEY RD & SB 680 RAMPS
TASSAJARA RD & DUBLIN BLVD
TASSAJARA RD & EB I-580 OFF RAMP
TASSAJARA RD & FALON RD
TASSAJARA RD & WB I-580 OFF RAMP
VALLECITOS RD & RUBY HILL DR
VASCO RD & EAST AVE

VASCO RD & INDUSTRIAL WAY
VASCO RD & NORTHFRONT RD
WB I-580 OFF RAMP & HACIENDA DR
WB I-580 ON RAMP & 1ST ST
WB I-580 RAMPS & AIRWAY BLVD
WB I-580 RAMPS & EL CHARRO RD
WB I-580 RAMPS & LIVERMORE AVE

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

FIGURE 1. SIGNALIZED INTERSECTIONS AND ROADWAY RRS - TRI-VALLEY AREA



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 non-urban areas that motorists expect to traverse at relatively high speed).

For the Tri-Valley subregion, this metric is applied to:

- State Route 84 (E. Vallecitos Rd) from I-680 to Ruby Hill Drive;
- Dublin Canyon Road from Palo Verde Rd to Foothill Road; and
- Vasco Road from Dalton Avenue to County Line.

The segment LOS is related to average speed, as shown in Table 9. Table 10 lists the non-urban roadway corridors analyzed for the Tri-Valley subregion and reports the existing and forecasted LOS.

The existing Tri-Valley Action Plan does not have an adopted LOS threshold for any two-lane non-urban roadways. The recommended performance target for this metric is LOS D for SR-84 which corresponds to an average speed across the corridor of 40-45 mph. While Dublin Canyon Road operates below 40 mph, it should be noted that the speed limit on this corridor is 35 mph which is appropriate given the roadway geometry and surrounding land uses. Vasco Road sees heavy traffic and slower speeds in the peak directions and this condition is forecasted to continue. Therefore, the recommended performance target for the non-urban portions of Vasco Road is LOS E.

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	LOS	Avg Speed	LOS
SR-84 (E. Vallecitos Rd.)	A.M.	EB	55.1	A	55.1	A
SR-84 (E. Vallecitos Rd.)	A.M.	WB	23.3	E	48.6	C
SR-84 (E. Vallecitos Rd.)	P.M.	EB	41.4	D	65.0	A
SR-84 (E. Vallecitos Rd.)	P.M.	WB	53.9	B	65.0	A
Dublin Canyon Road	A.M.	EB	38.4	E[1]	38.4	E
Dublin Canyon Road	A.M.	WB	35.1	E[1]	35.0	E

Dublin Canyon Road	P.M.	EB	37.4	E[1]	35.0	E[1]
Dublin Canyon Road	P.M.	WB	34.4	E[1]	45.8	C
Vasco Road	A.M.	NB	52.5	B	50.0	C
Vasco Road	A.M.	SB	18.4	E	19.1	E
Vasco Road	P.M.	NB	33.0	E	34.7	E
Vasco Road	P.M.	SB	54.4	B	50.0	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"), 6 percent of Tri-Valley area residents commute to work using transit, compared to 11 percent of Planning Area residents. Table 3 and Table 4 illustrate that the model output predicts that this number will increase to 8 percent of home-based work mode share based on residence location and 4 percent based on job location. Meanwhile, Table 5 illustrates that the model predicts that 5 percent of all trips (not strictly commute trips) will be taken by transit by 2050.

The existing Tri-Valley Action Plan does not have an adopted transit mode share target. Covid has greatly reduced transit trips, so the proposed performance target for transit mode share in the Tri-Valley area is to return to pre-pandemic levels of 6 percent of home-based work trips by 2027. We also propose a target is to double the level of home-based work transit trips to 12 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 and peak direction 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 Tri-Valley subregion along with the comparative travel times include:

- Vasco Station (Altamont Corridor Express or "ACE") and San Jose Diridon station
- Dublin-Pleasanton BART station and Montgomery Street (San Francisco) BART station

The proposed performance target is that transit travel time during peak hours and in the peak direction should be less than or equal to auto time, when measured from transit station to transit station. As shown in Table 11, travel by ACE is slower than driving in all cases and BART travel between Dublin-Pleasanton and Montgomery Steet BART is faster for the peak direction trips.

In 2050, the congested travel times predicted by the travel demand model will give ACE transit an advantage in the morning westbound direction and in all directions for BART except for the morning eastbound commute (assuming ACE and BART service remains constant).

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

	Median Drive Time (min:sec) [a]	Scheduled Transit Time (min) [b]	2050 Drive Alone (min:sec)[c]	Existing Ratio	2050 Ratio [d]
VASCO STATION AND SAN JOSE DIRIDON STATION					
Morning – Westbound	55	72.00	88	1.30	0.82
Afternoon- Eastbound	61	67.00	85	1.10	0.79
DUBLIN-PLEASANTON BART STATION AND MONTGOMERY STREET (SAN FRANCISCO) BART STATION					
Morning – Westbound	53	47	112	0.88	0.42
Afternoon- Eastbound	52	47	120	0.89	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 skim

d) CCTA travel demand model "best path" transit skim

Bike/Pedestrian RTOs

MODE SHARE OF BICYCLING AND WALKING

As shown in Table 3 in the first section of this memo ("Mode Share RTOs"), about 0.9 percent of Tri-Valley area residents commute to work through active transportation such as biking or walking. Table 3 and Table 4 illustrate that these shares will increase slightly to 1.3 percent of home-based work trips based on residence location and 3.4 percent based on job location. As shown in Table 5, the model predicts that about 7.8 percent of all trips (not strictly commute trips) were taken by walking or biking in 2019 and that it will decrease to 6.6 percent in 2050.

The existing Tri-Valley Transportation 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 Tri-Valley area is to approximately double the combined mode share for all trips for bikes and walking to 16 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 12 percent. Further, the project team proposes the Tri-Valley 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 Tri-Valley area portion of the LSBN is shown in Figure 2. If the entire LSBN in the Tri-Valley area were completed, it would result in 252.7 miles of Class I and Class IV facilities (100 miles in the Contra Costa County portion of the Tri-Valley and 152.7 in the Alameda County portion).

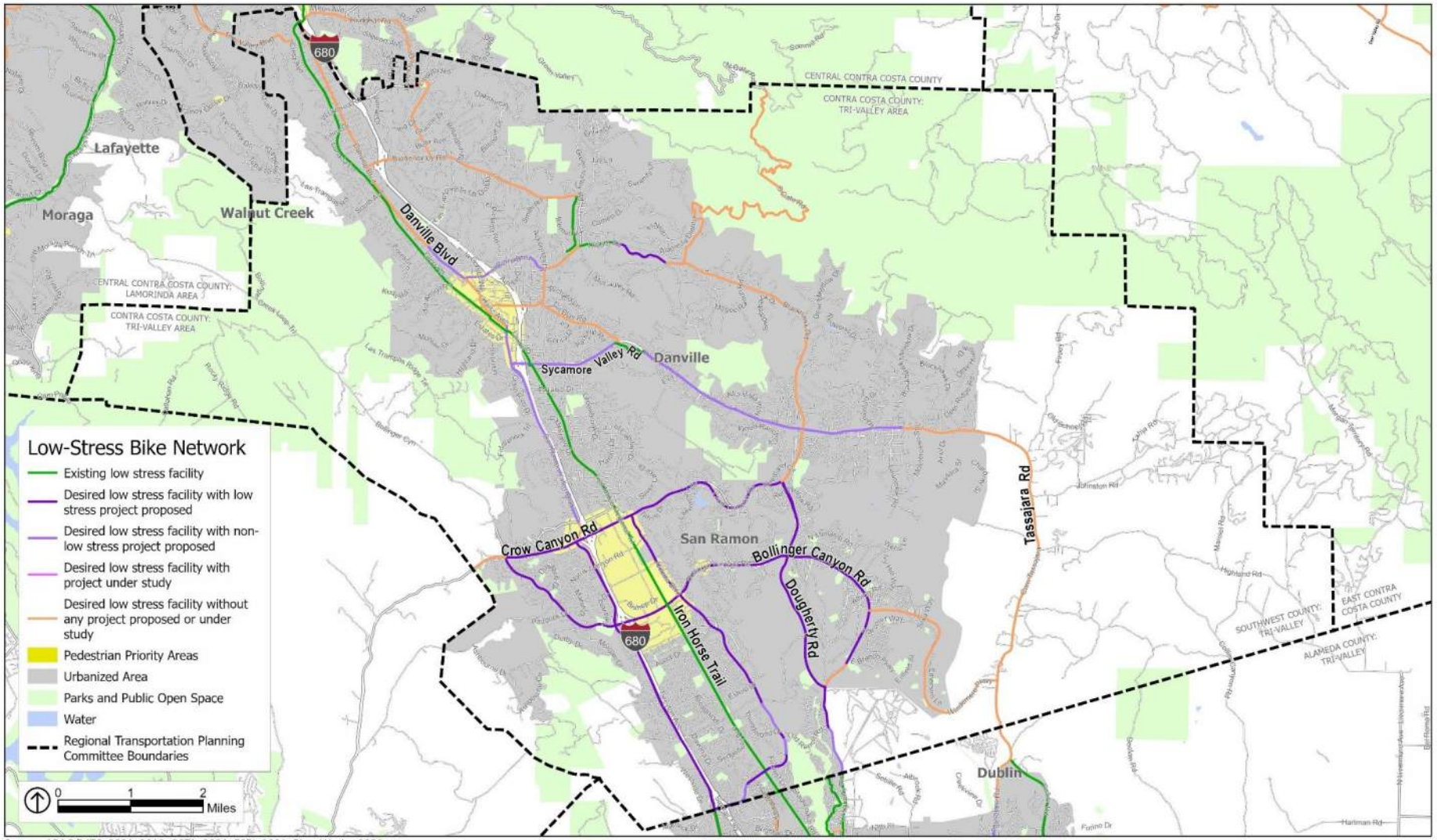
Table 12 shows that 24 percent of entire Tri-Valley area's LSBN is already completed. A further 17 percent of low stress facilities are incomplete yet have an adopted plan to complete the facility. There are projects proposing improvements that would not result in low-stress facilities on an additional 6 percent of the LSBN while an additional 7 percent is designated as "under study". A total of 46 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 50 percent (124.8 miles) completion by 2027. This is the sum of existing completed facilities (61.8 miles) and 150 percent of the already proposed low-stress additions to the network (42 miles x 150 percent = 63 miles). This would require completion of the low-stress projects that already have an adopted plan.

TABLE 12. PROPORTION OF THE TRI-VALLEY AREA LSBN THAT IS COMPLETE

Status of Facility	Contra Costa County Portion of Tri-Valley Miles	Alameda County Portion of Tri-Valley Miles	Total Miles	Total Percentage
Existing Low Stress Facility	45.9	15.9	61.8	24%
Desired Low Stress Facility with Low Stress Project Proposed	17.2	24.8	42	17%
Desired Low Stress Facility with Non-Low Stress Project Proposed	2.3	11.9	14.3	6%
Desired Low Stress Facility with Project Under Study	18.3	0	18.3	7%
Desired Low Stress Facility without any Project Proposed or Under Study	68.8	47.3	116.1	46%

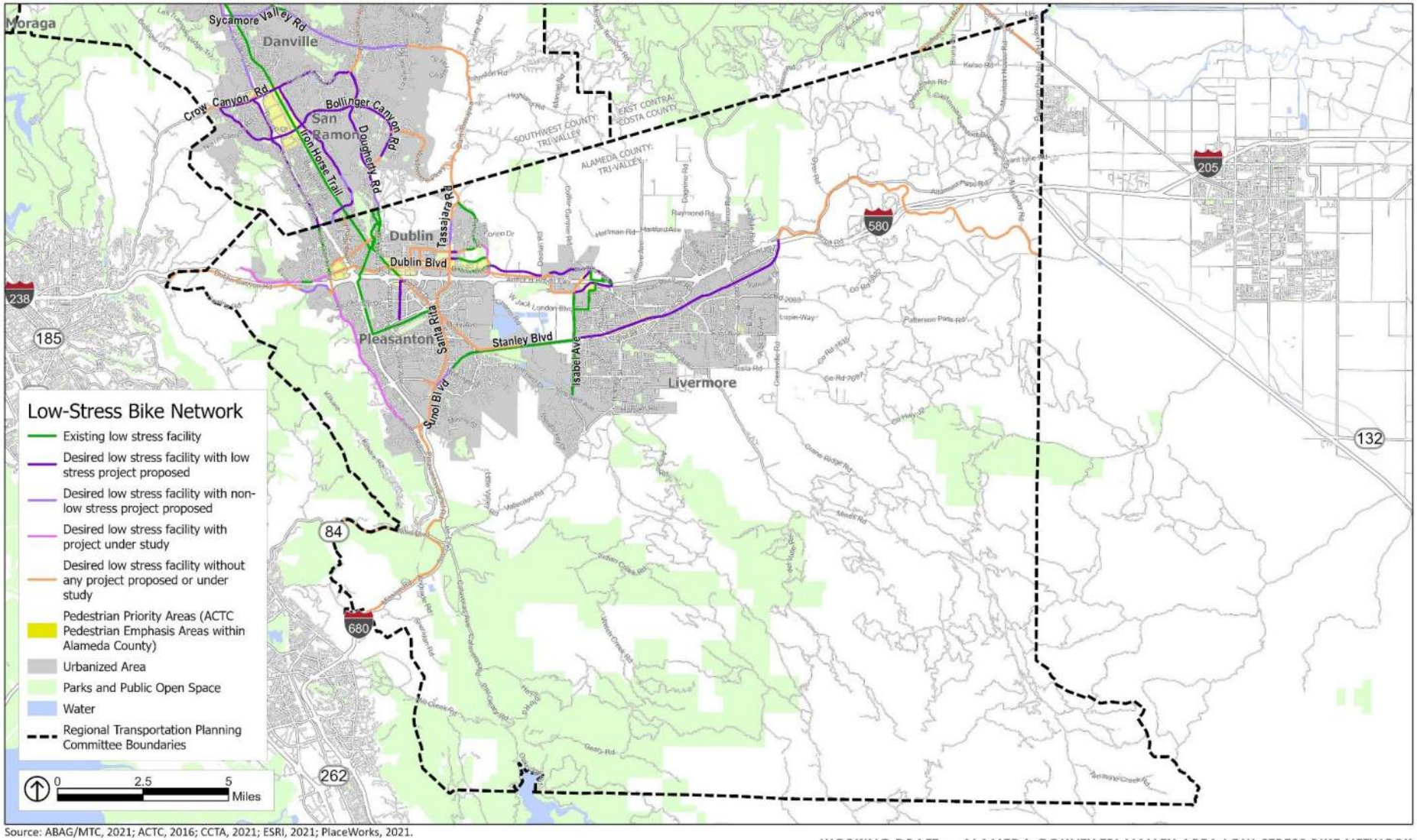
FIGURE 2. STATUS OF THE CONTRA COSTA COUNTY PORTION OF THE TRI-VALLEY AREA LSBN



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

WORKING DRAFT — CONTRA COSTA COUNTY TRI-VALLEY AREA LOW-STRESS BIKE NETWORK

FIGURE 3. STATUS OF THE ALAMEDA COUNTY PORTION OF THE TRI-VALLEY AREA LSBN



Source: ABAG/MTC, 2021; ACTC, 2016; CCTA, 2021; ESRI, 2021; PlaceWorks, 2021.

WORKING DRAFT — ALAMEDA COUNTY TRI-VALLEY AREA 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 4 and Figure 5, 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.

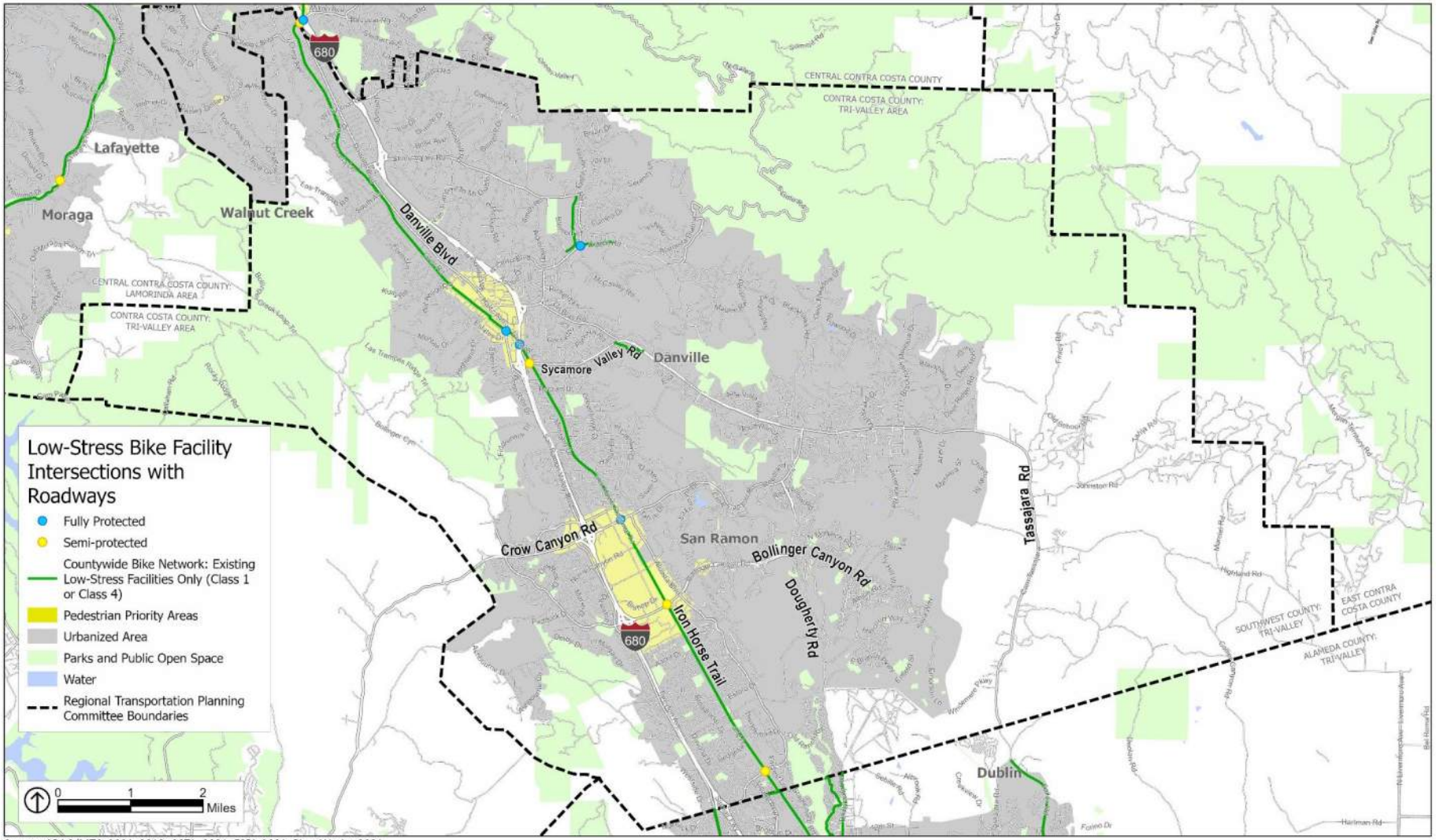
As illustrated in Figure 4 and Figure 5, there are no intersections in the entire Tri-Valley area that are currently unprotected. There are 8 crossings that are considered semi-protected (3 in the Contra Costa portion of the Tri-Valley and 5 in the Alameda County portion), including:

- Contra Costa County portion: Iron Horse Trail at Sycamore Valley Road
- Contra Costa County portion: Iron Horse Trail at Bollinger Canyon Road
- Contra Costa County portion: Iron Horse Regional Trail at Alcosta Boulevard
- Alameda County portion: Arroyo Bike Trail crossing with Airway Boulevard
- Alameda County portion: Arroyo Bike Trail crossing with East Jack London Boulevard
- Alameda County portion: Arroyo Bike Trail crossing with Stanley Boulevard
- Alameda County portion: Centennial Trail at Stoneridge Drive
- Alameda County portion: Iron Horse Regional Trail at Dublin Boulevard

We propose that the Action Plan set a target to modify these 8 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.

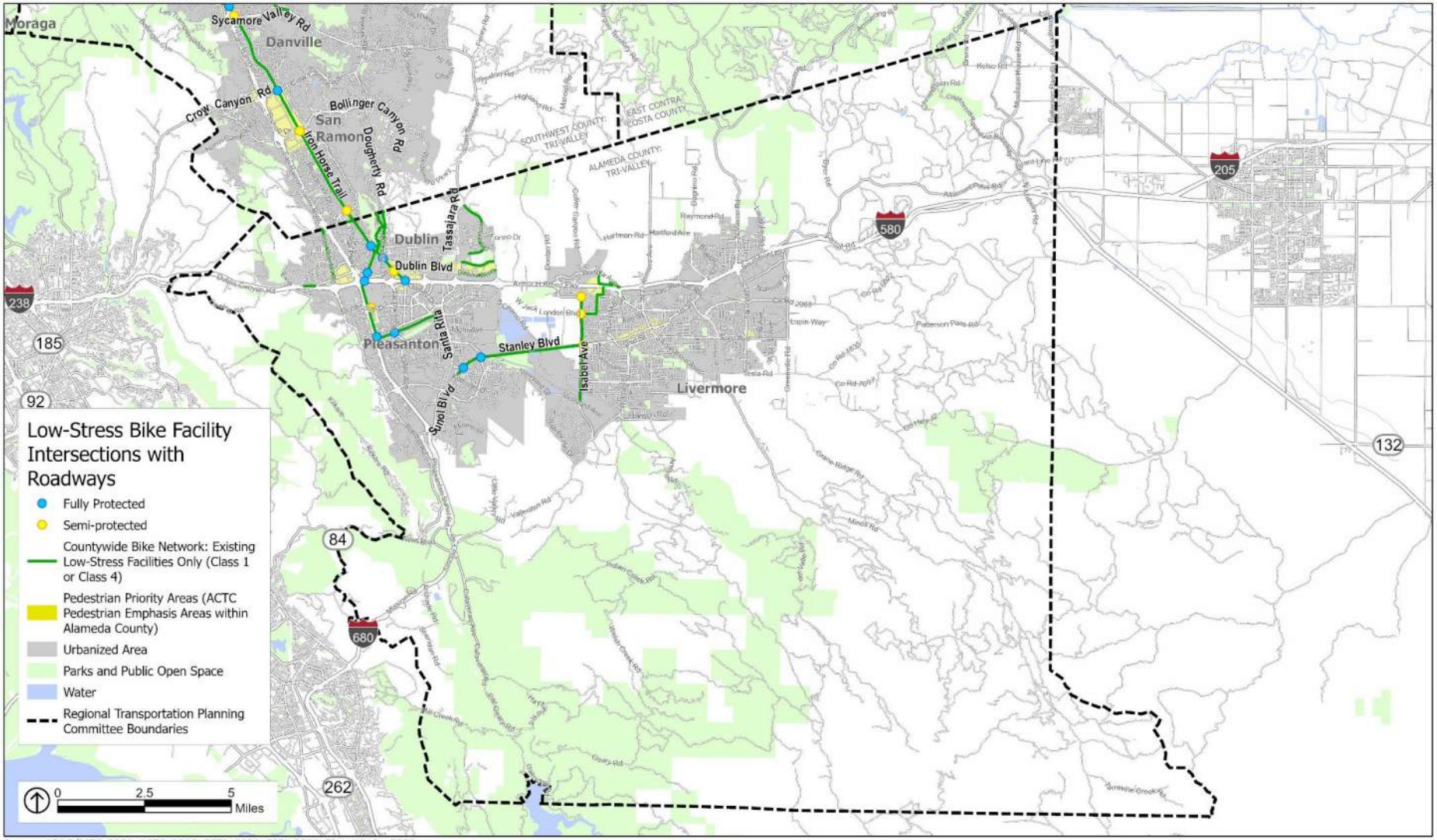
FIGURE 4. TYPES OF CROSSINGS AT INTERSECTIONS OF THE LSBN AND A HEAVILY TRAVELED ROADWAY IN THE CONTRA COSTA COUNTY PORTION OF THE TRI-VALLEY



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

WORKING DRAFT — CONTRA COSTA COUNTY TRI-VALLEY AREA LOW-STRESS BIKE NETWORK AND SIGNIFICANT ROADWAY INTERSECTIONS

FIGURE 5. TYPES OF CROSSINGS AT INTERSECTIONS OF THE LSBN AND A HEAVILY TRAVELED ROADWAY IN THE ALAMEDA COUNTY PORTION OF THE TRI-VALLEY



Source: ABAG/MTC, 2021; ACTC, 2016; CCTA, 2021; ESRI, 2021; PlaceWorks, 2021.

WORKING DRAFT —ALAMEDA COUNTY TRI-VALLEY AREA AREA 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 *Vison Zero & Systemic Transportation Safety "How To" Policy and Implementation Guide* and encourages local jurisdictions to adopt and implement Vison 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 6. Table 13 summarizes the crashes by type and Table 14 summarizes the crashes by severity.

During the reporting period there were 8,361 KSI crashes in the Tri-Valley area. As shown, many of the crashes occurred along the freeway corridors, although clusters also occur along surface roadway RRS, and other facilities. The most common type of crash was rear-end, followed by broadside collisions and vehicles hitting objects. During this timeframe, there were 107 fatal crashes and 444 severe injury crashes, accounting for about 1 percent and 5 percent of all crashes, respectively.

NUMBER OF BIKE- OR PEDESTRIAN-INVOLVED COLLISIONS

The crash locations for the Tri-Valley subregion are depicted in Figure 7 and summarized by severity in Table 14. During this timeframe, there were 739 bicycle or pedestrian involved crashes, accounting for about 9 percent of all crashes. Of these bicycle or pedestrian crashes, 19 of them resulted in fatalities and 90 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 7. A total of 105 crashes occurred near school campuses in the Tri-Valley subarea, 41 of which involved collision with a pedestrian and 64 with a bicyclist.

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

FIGURE 6. FATALITY AND INJURY COLLISIONS (2016-2020)

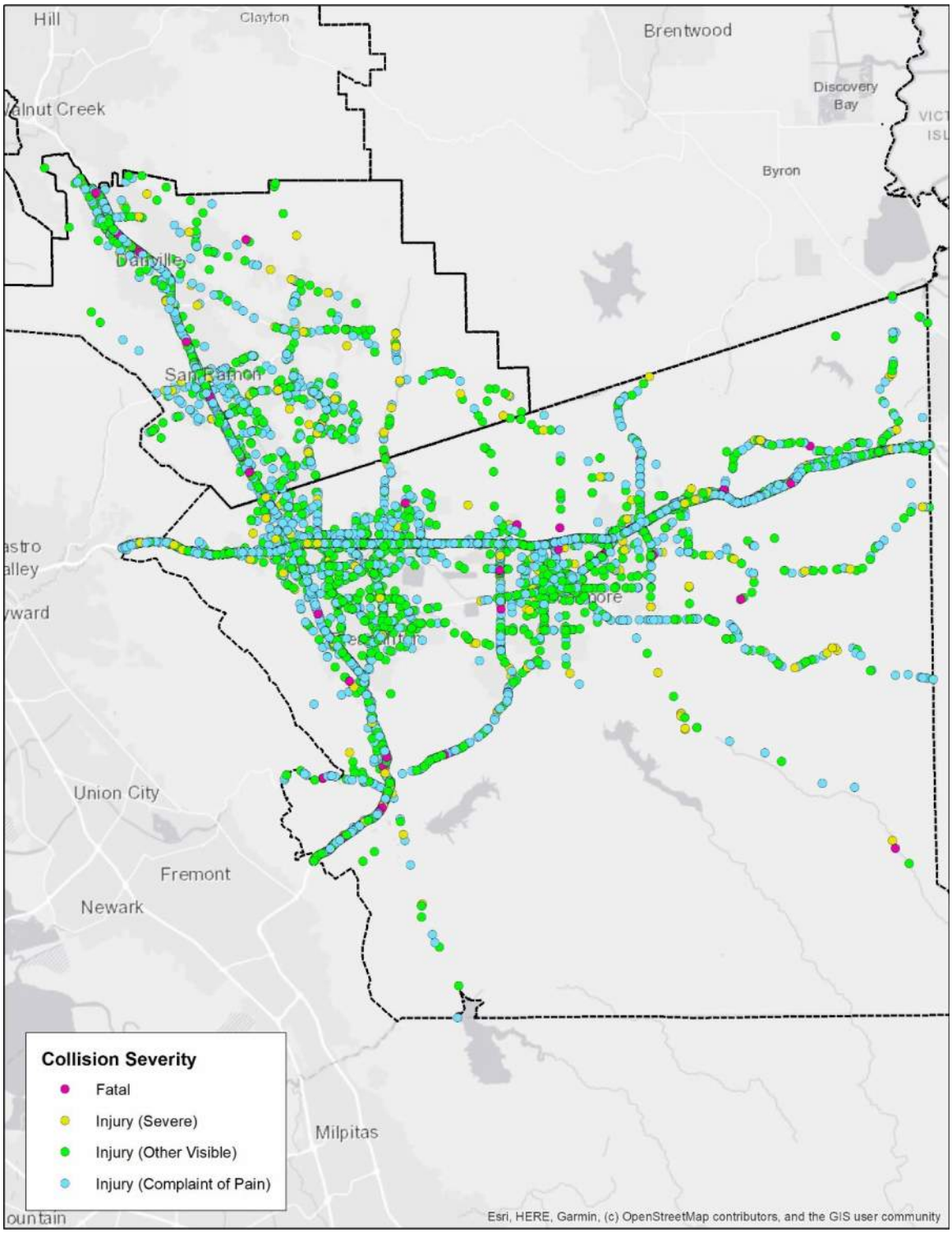


TABLE 13. INJURY AND FATALITY COLLISION BY CRASH TYPE - TRI-VALLEY AREA FROM JANUARY 1, 2016, THROUGH DECEMBER 31, 2020

Crash Type	Number of Crashes
Not Stated	15
Head-on	309
Sideswipe	844
Rear-End	3,848
Broadside	1,288
Hit Object	1,257
Overturned	378
Vehicle/Pedestrian	261
Other	161
Total	**8,361**

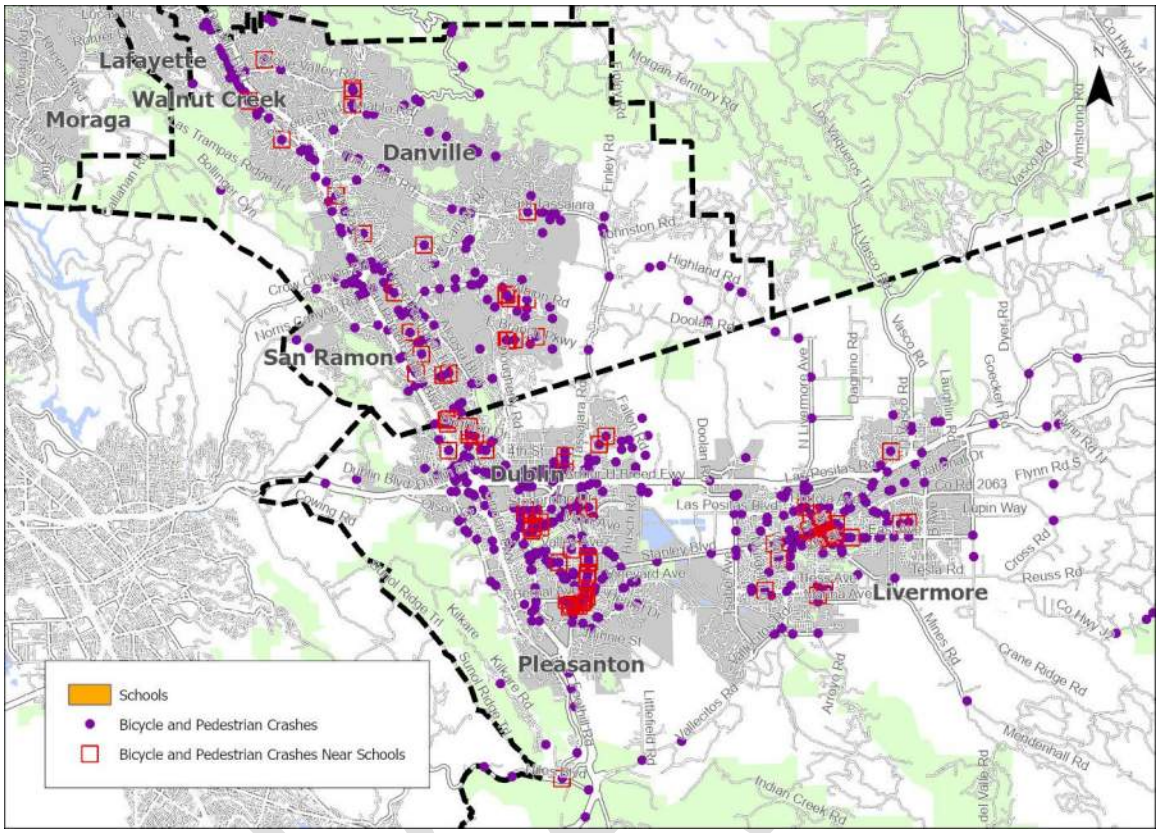
Source: Transportation Injury Mapping System and DKS Associates

TABLE 14. NUMBER OF CRASHES BY SEVERITY - TRI-VALLEY AREA FROM JANUARY 1, 2016, THROUGH DECEMBER 31, 2020

Severity	Number of Total Crashes	Bike and Ped Crashes
Fatal	107	19
Injury (Severe)	444	90
Injury (Other Visible)	2,770	426
Injury (Complaint of Pain)	5,040	204
Total	**8,361**	**739**

Source: Transportation Injury Mapping System and DKS Associates

FIGURE 7. BICYCLE- AND PEDESTRIAN-INVOLVED CRASHES INCLUDING WITHIN 500 FEET OF SCHOOLS



Climate Change RTOs

SINGLE-OCCUPANT VEHICLE MODE SHARE

As shown in Table 3 in the first section of this memo ("Mode Share RTOs"), 79 percent of total Tri-Valley area work trips were taken by driving alone, compared to 73 percent of Planning Area residents. Table 3 and Table 4 illustrate that the model output predicts that this number will decrease to 75 percent of home base work mode share based on Tri-Valley area residence location and 79 percent based on Tri-Valley area job location. Meanwhile, the model predicts that 60 percent of all trips made by Tri-Valley area 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 Tri-Valley subregion is 72 percent for home-based work trips in 2027 and 68 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 the carpooling (multiple-occupant vehicle) mode share remains at 15 percent.

VEHICLE MILES TRAVELED PER CAPITA

The Action Plans will consider total VMT for County and subregion residents, along with per-capita targets.

The 2020 VMT study conducted for CCTA by Fehr & Peers found that 2018 VMT per service population in the Tri-Valley area was 35.9 VMT per service population, and that the same number for Contra Costa County was 30.3 VMT.

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 2019[3] 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 Tri-Valley area. Using a straight-line projection for reductions from 2018 until 2045, this would mean a reduction to 30.9 VMT per capita by 2027.

TABLE 15. VMT PER SERVICE POPULATION

	2018	2050
Tri-Valley area	35.9	36.9
Contra Costa County	30.3	25.6

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. DKS will use the EMFAC model to translate this total daily roadway VMT into GHG emissions.

This metric reflects the total daily VMT occurring on roadways within the planning area, including commercial vehicle trips and through traffic but does not include estimates of VMT occurring outside the travel demand model boundaries. The EMFAC emissions model has been used to translate this total daily roadway VMT into GHG emissions (specifically, CO_2)[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 42 pounds of GHG per capita, this translates to a 2027 target of about 28 pounds per capita. Although transportation related CO_2 emissions are projected to fall by 2050, more work is needed to reach the target of zero.

TABLE 16. 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)
Tri-Valley area	397,691	8,390	42.19	527,734	5,145	19.50
Contra Costa County	1,148,922	13,734	23.91	1,457,615	8,737	11.99

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

ZERO-EMISSION VEHICLE OWNERSHIP IN THE SUBREGION

This RTO tracks the number of battery electric vehicles "on the road," with the goal of increasing total EV penetration. Data as of April 2021, which is the most recent report date, are shown in Table 17 for Tri-Valley area as well as all of Contra Costa County for comparison. Tri-Valley area currently has 15,262 EVs, as compared to an estimated 30,466 in the Planning Area 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 2030[6]. Since Tri-Valley area accounts for less than one percent of the state's population, this

[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.

suggests that the subregion should have 10,100 EVs by 2025 and 20,700 EVs by 2030. A straight-line extrapolation of this number through 2050 suggests about 212,800 EVs in Tri-Valley area by 2050.

With all the above factors in mind, we propose a target of 100 percent of fleet, contrasted to the estimated existing EV fleet penetration of about 1 percent. The estimated number of light duty vehicles currently based in Tri-Valley area is about 315,590.

TABLE 17. 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 ETHERNET-BASED 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 Tri-Valley area's jurisdictions to interconnect a total of 42 signals in Antioch, Brentwood, Oakley, and Pittsburg, 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 42 signal improvements by 2027. This number of signals is likely to change as the project moves forward. Additionally, the project team is working with Alameda County jurisdictions to determine the number and location of existing ethernet-based intersection signals to add to the figure for the Contra Costa portion of the Tri-Valley. There is no additional target for 2050, since there are no plans for a further interconnection program.

ATTACHMENT 3:
ROUND 1 OUTREACH SUMMARY

CONNECT CONTRA COSTA

Planning for Tomorrow's Transportation

Outreach Summary

Action Plan and Countywide Transportation Plan Updates March - May 2022

CONTRA COSTA transportation authority

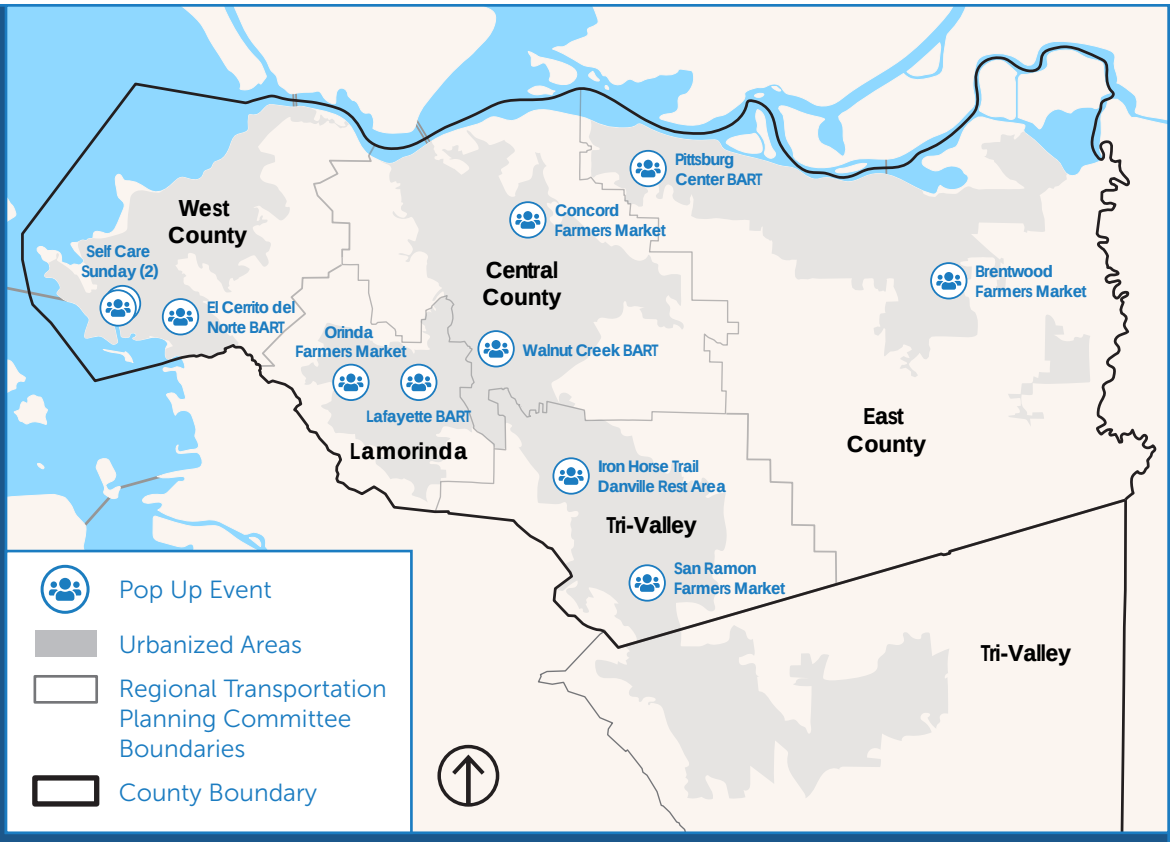
Prepared by:

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 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**

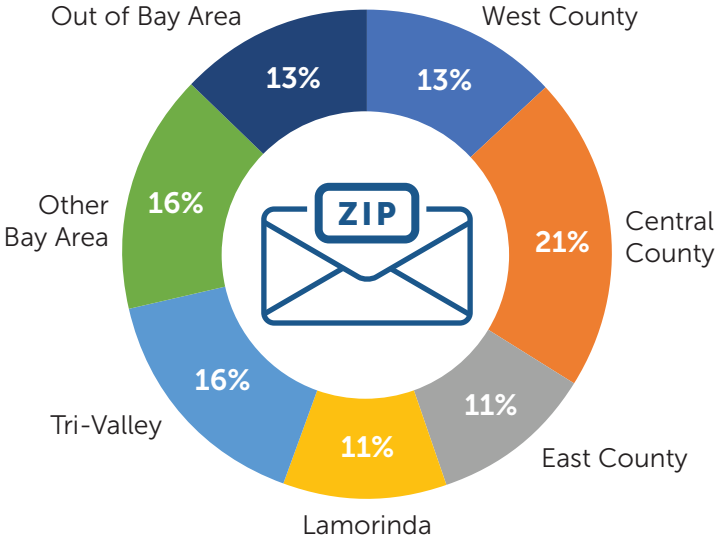
Demographic Breakdown

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.

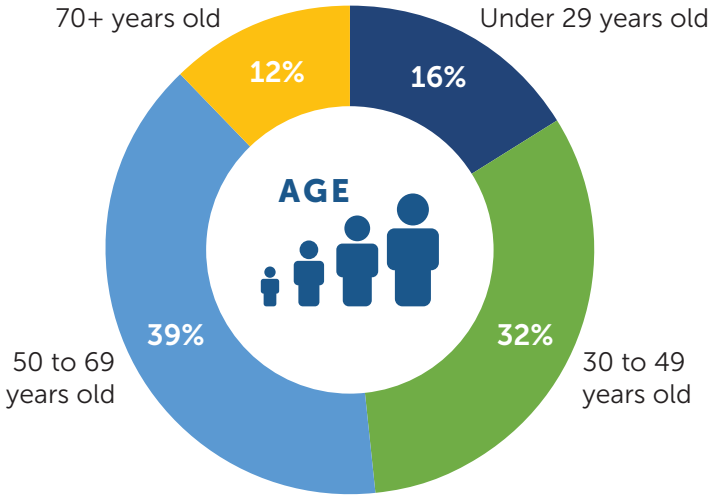
WEST COUNTY:
El Cerrito
del Norte BART

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

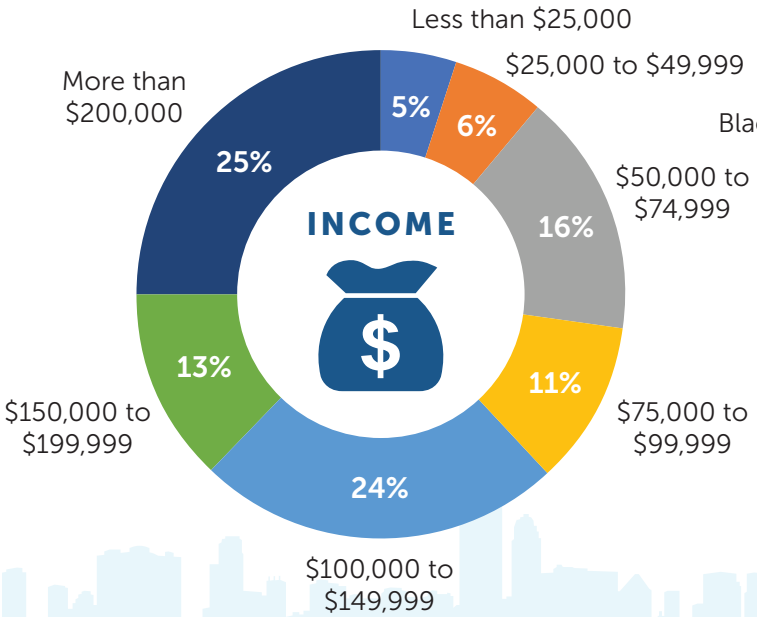
Zip Code - 38 Responses



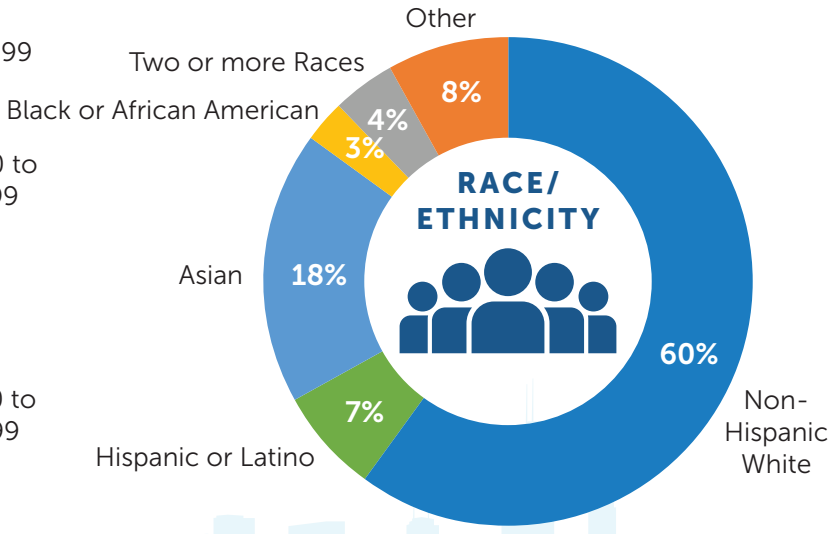
Age - 74 Responses



Household Income - 63 Responses



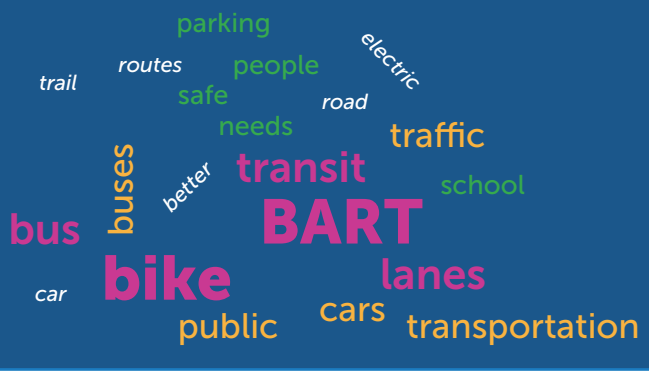
Race/ Ethnicity - 73 Responses



* **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

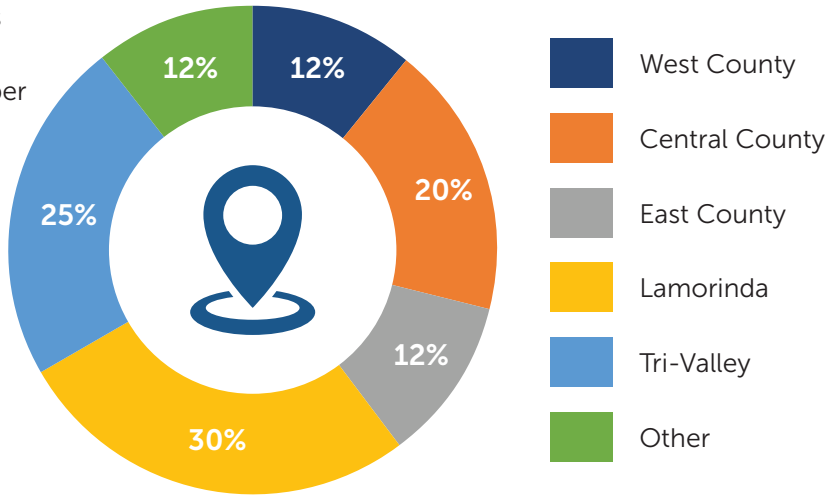
CENTRAL COUNTY:
Concord Farmers Market

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

Action Plan and Countywide Transportation Plan Update

TVTC -- Policy Board Meeting

CONTRA COSTA transportation authority

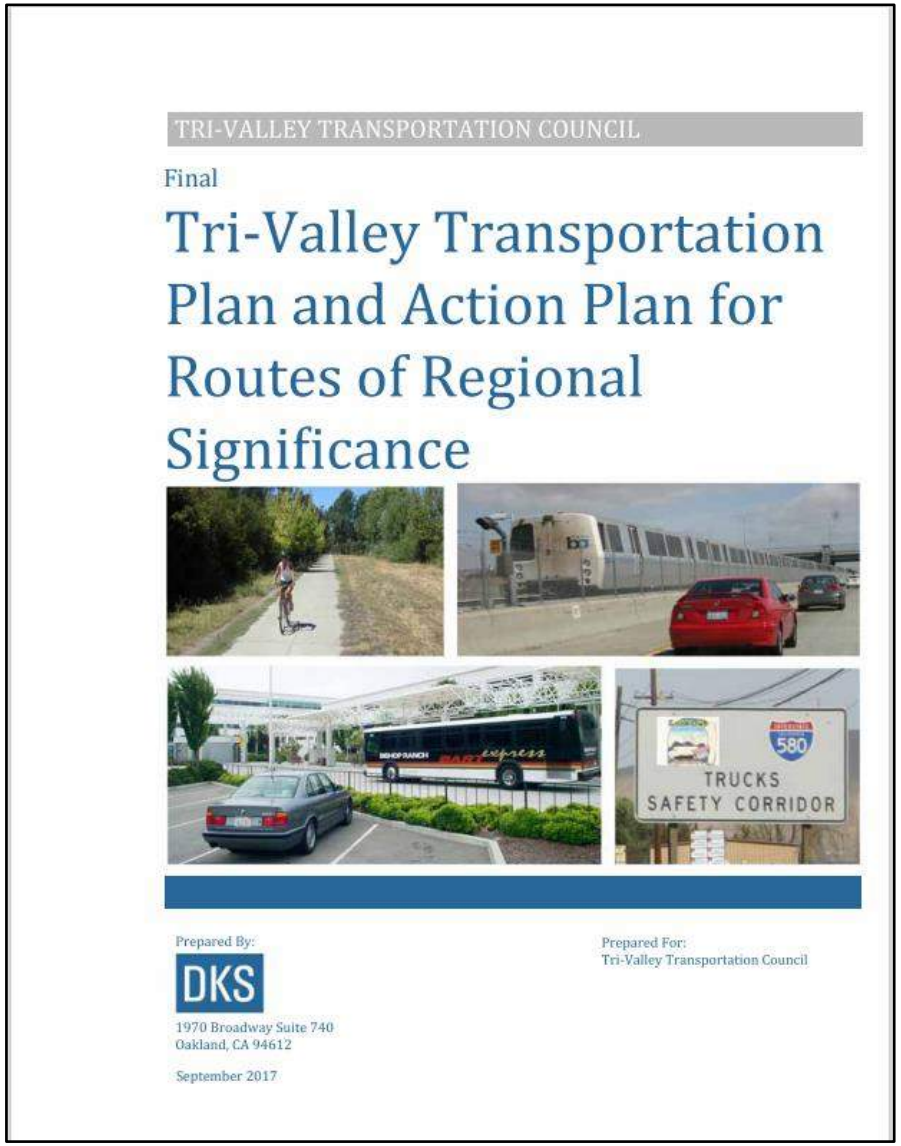
Agenda

- Presentation
  - Proposed Action Plan Components:
    - Outline
    - Goals
    - Multimodal Corridor Maps
    - Maps by Mode
    - Regional Transportation Objectives (RTOs)
      - Existing conditions
      - Potential future conditions
      - Proposed targets
    - Actions
  - Public Outreach
  - Next Steps
- Discussion

Presentation:
Proposed Action Plan Components

Proposed Action Plan Outline

- Introduction
- Current conditions, trends, and travel patterns
- Vision and goals
- Primary Topics
  - Transit
  - Bike and pedestrian
  - Roadways (Vehicles)
  - Safety
  - Climate change
  - Equity
  - Technology
- Financial Outlook/Financial Plan
- Procedures for notification, review, and monitoring
- Appendices
  - A: RTO values for observed and forecasted conditions
  - B: Summary of actions (by route or similar)
  - C: RTO calculation and values



Proposed Action Plan Goals

- Revised Tri-Valley Action Plan:
  - Integrate transportation planning with planning for air quality, community character, and other environmental factors.
  - Support corridor management programs to make the most efficient, effective, and safe use of existing facilities and services.
  - Maintain and actively pursue enhanced and expanded public transit service and increase the transit share of travel in the Tri-Valley area.
  - Enhance non-motorized transportation options.
  - Increase average vehicle occupancy and reduce vehicles miles traveled (VMT).
  - Provide support for Priority Development Areas.
  - Manage school-related traffic to enhance safety and reduce peak period traffic impacts.
  - Minimize congestion and enhance mobility on routes of regional significance within the Tri-Valley area.
  - Support arterial traffic management strategies that address hotspots at critical intersections and approaches.
  - Maintain transportation funding for transportation projects.

Proposed Action Plan Goals

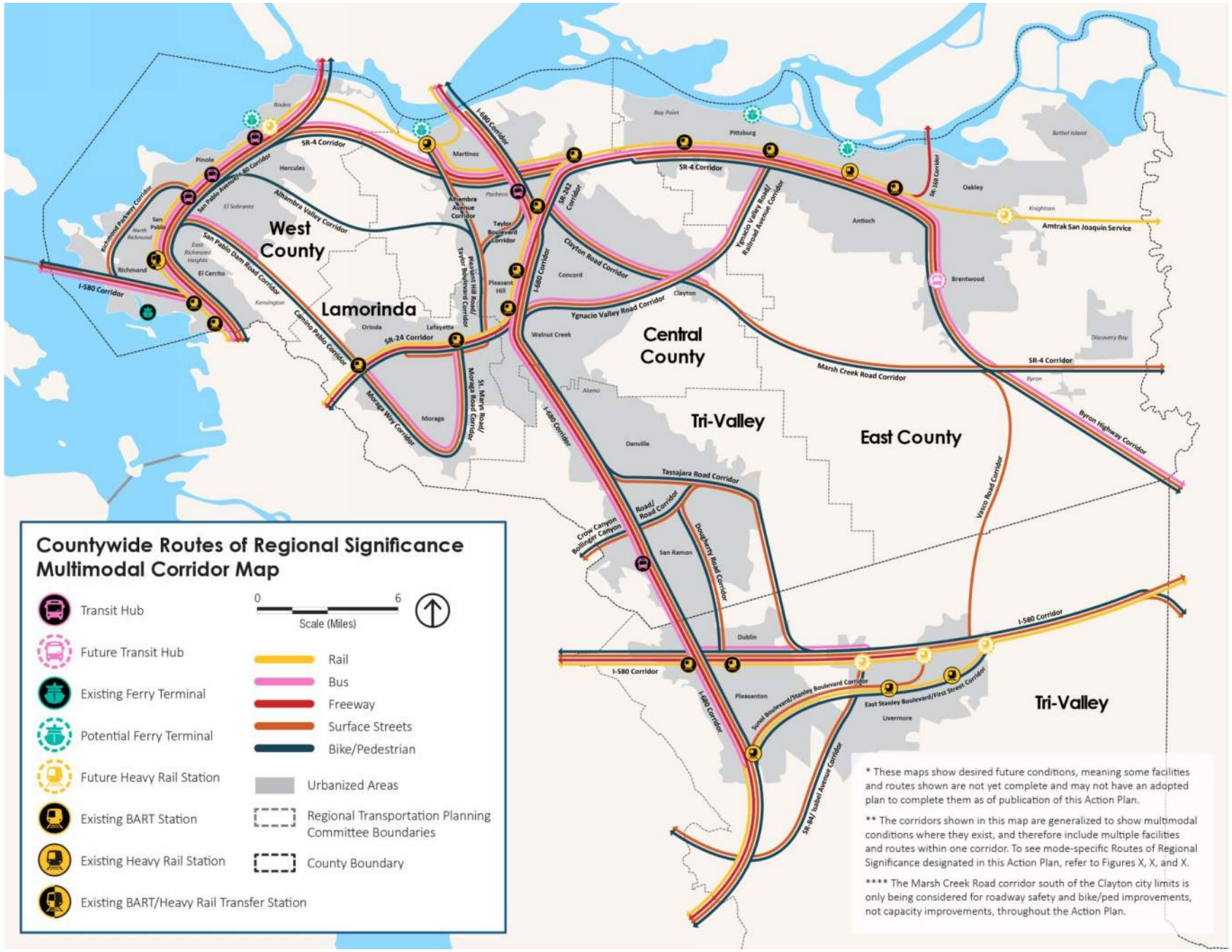
- New for this Action Plan:
  - Ensure a safe and low stress transportation system for all modes of travel
  - Minimize transportation impacts on the climate.
  - Ensure the transportation system is resilient in the face of climate change.
  - Support equitable mobility for all income groups, racial and ethnic groups, and all ages and abilities across all modes of transportation.
  - Continue the process of innovation and the development of new technologies in transportation.

Multimodal Corridor Maps

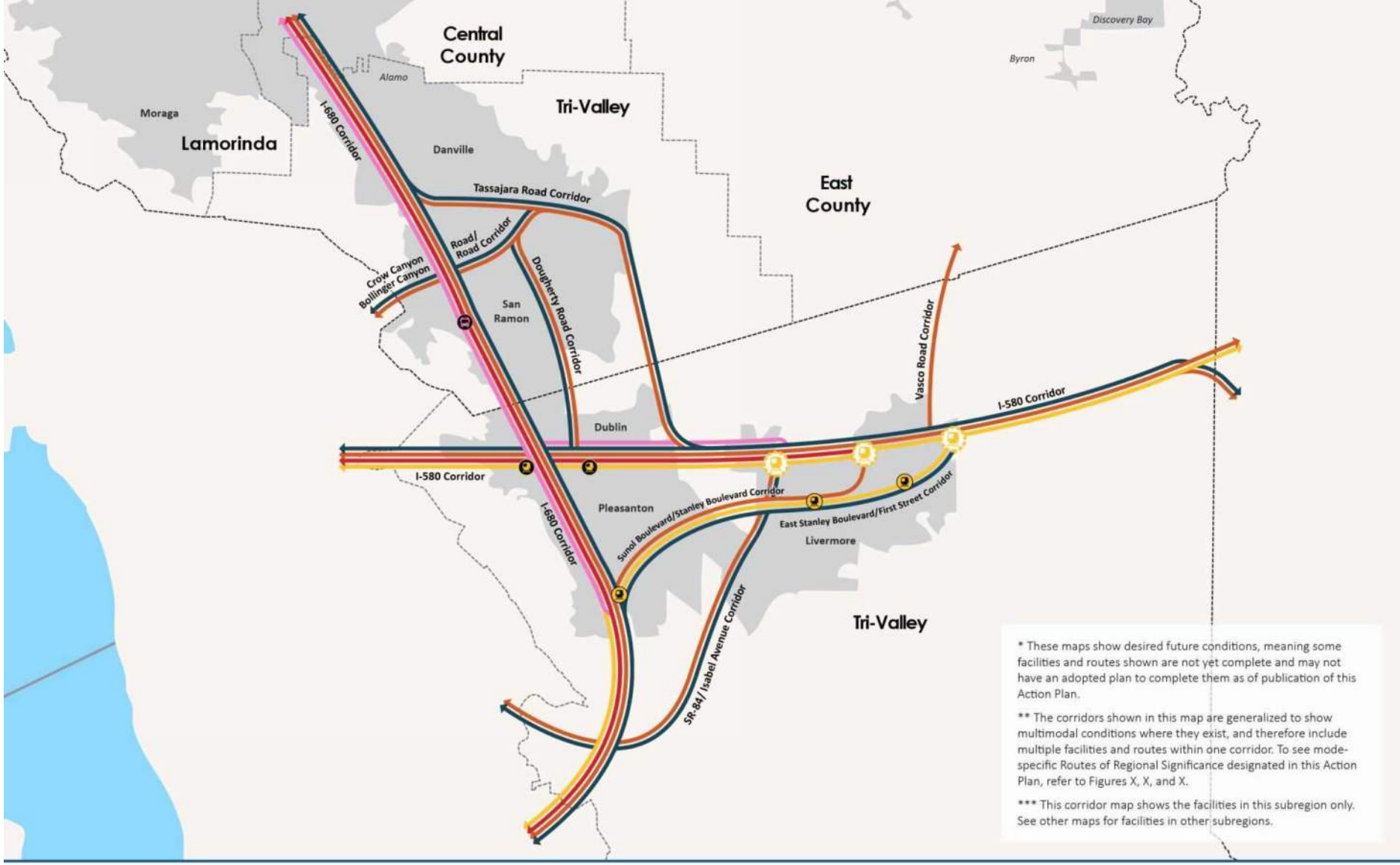
- Illustrate the multimodal nature of the transportation network
- Show desired future conditions
- Highly generalized to show multimodal conditions where they do or will exist

Partial multimodal conditions on DeMarcus Boulevard approaching the Dublin/Pleasanton BART Station, showing roadway, bus, BART, pedestrian facilities.

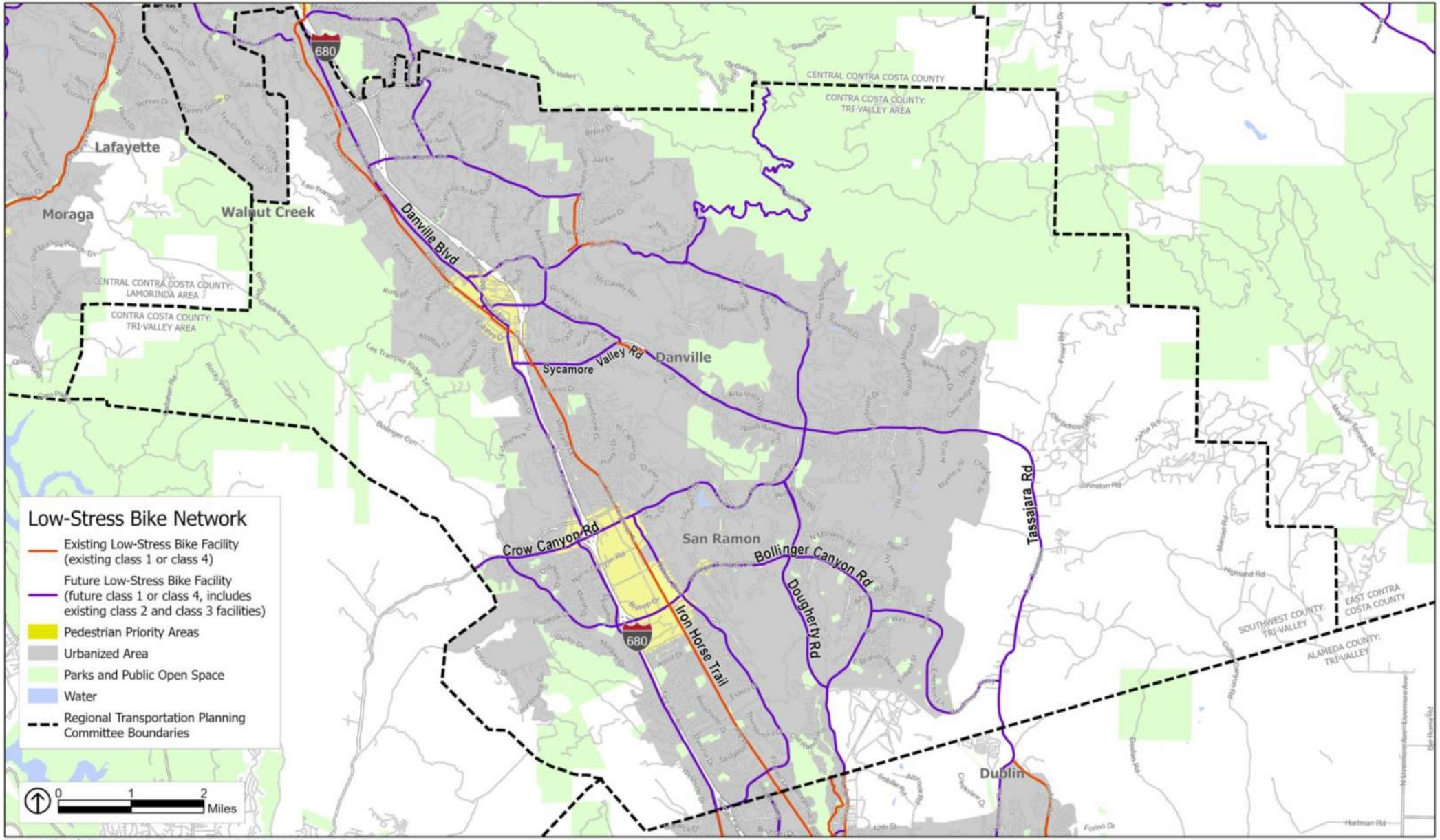
Countywide Multimodal Corridor Map



Tri-Valley Multimodal Corridor Map



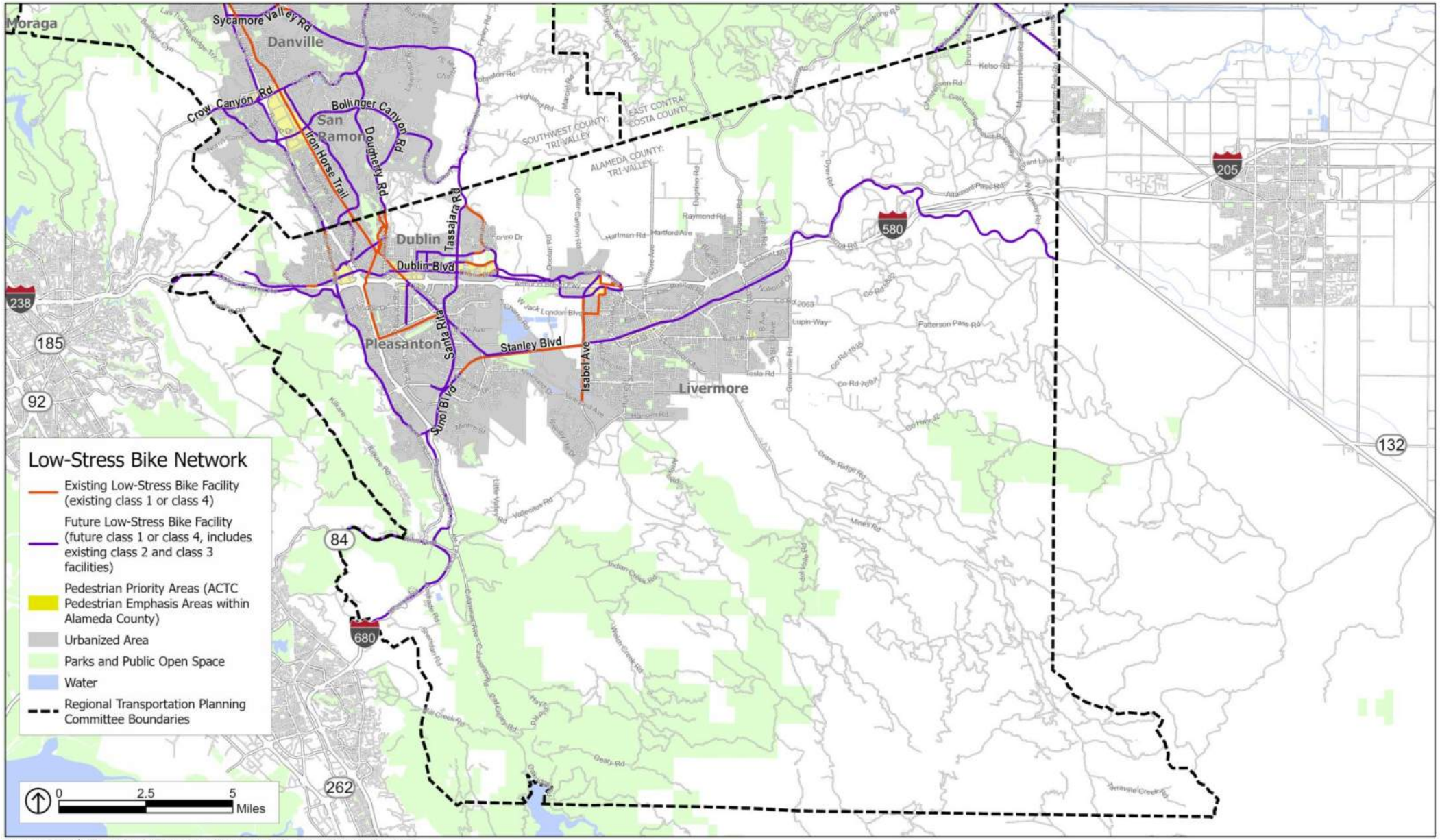
Low Stress Bike Network (Contra Costa County portion)



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

WORKING DRAFT — CONTRA COSTA COUNTY TRI-VALLEY AREA LOW-STRESS BIKE NETWORK

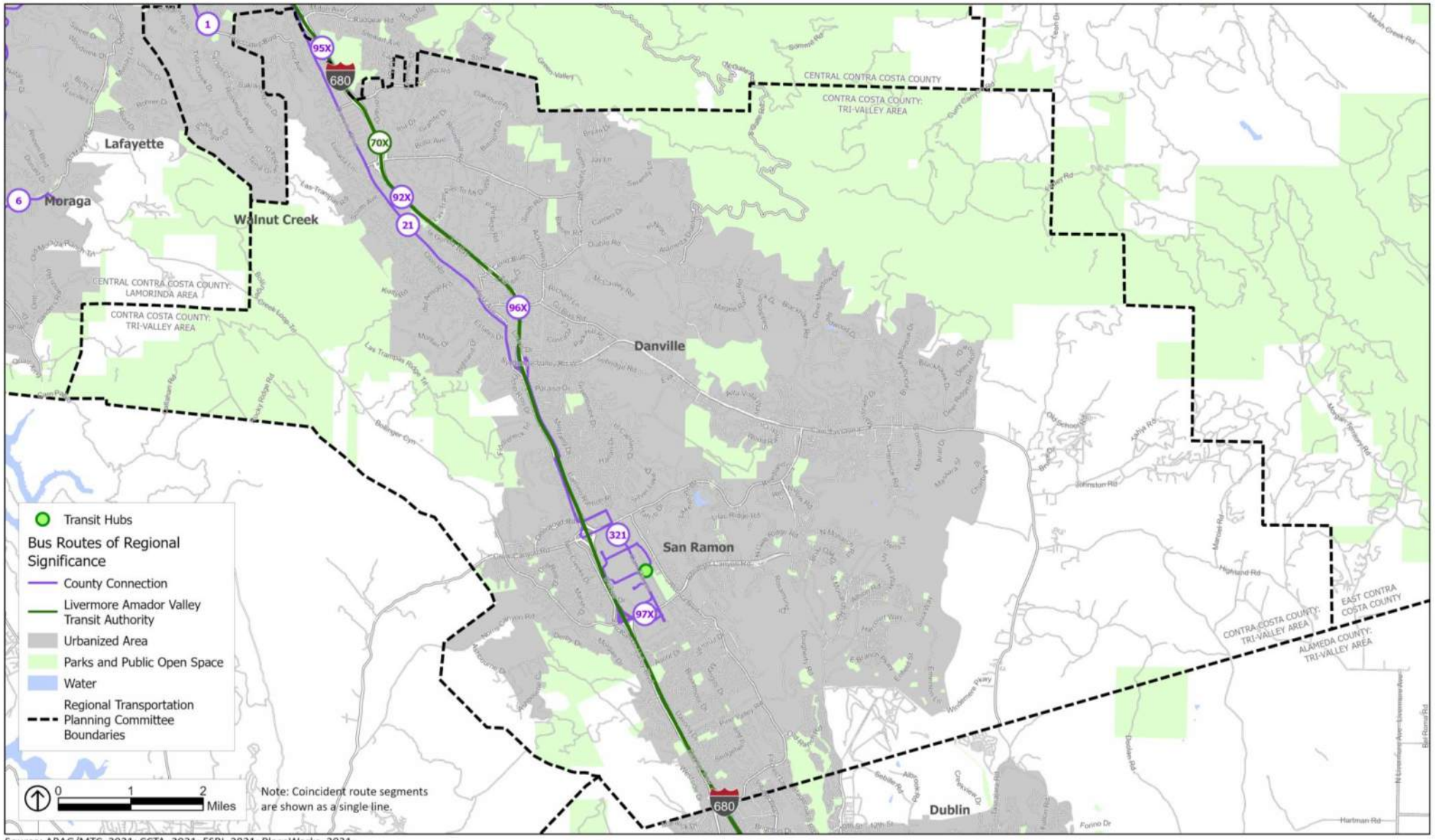
Low Stress Bike Network (Alameda County portion)



Source: ABAG/MTC, 2021; ACTC, 2016; CCTA, 2021; ESRI, 2021; PlaceWorks, 2021.

WORKING DRAFT — ALAMEDA COUNTY TRI-VALLEY AREA LOW-STRESS BIKE NETWORK

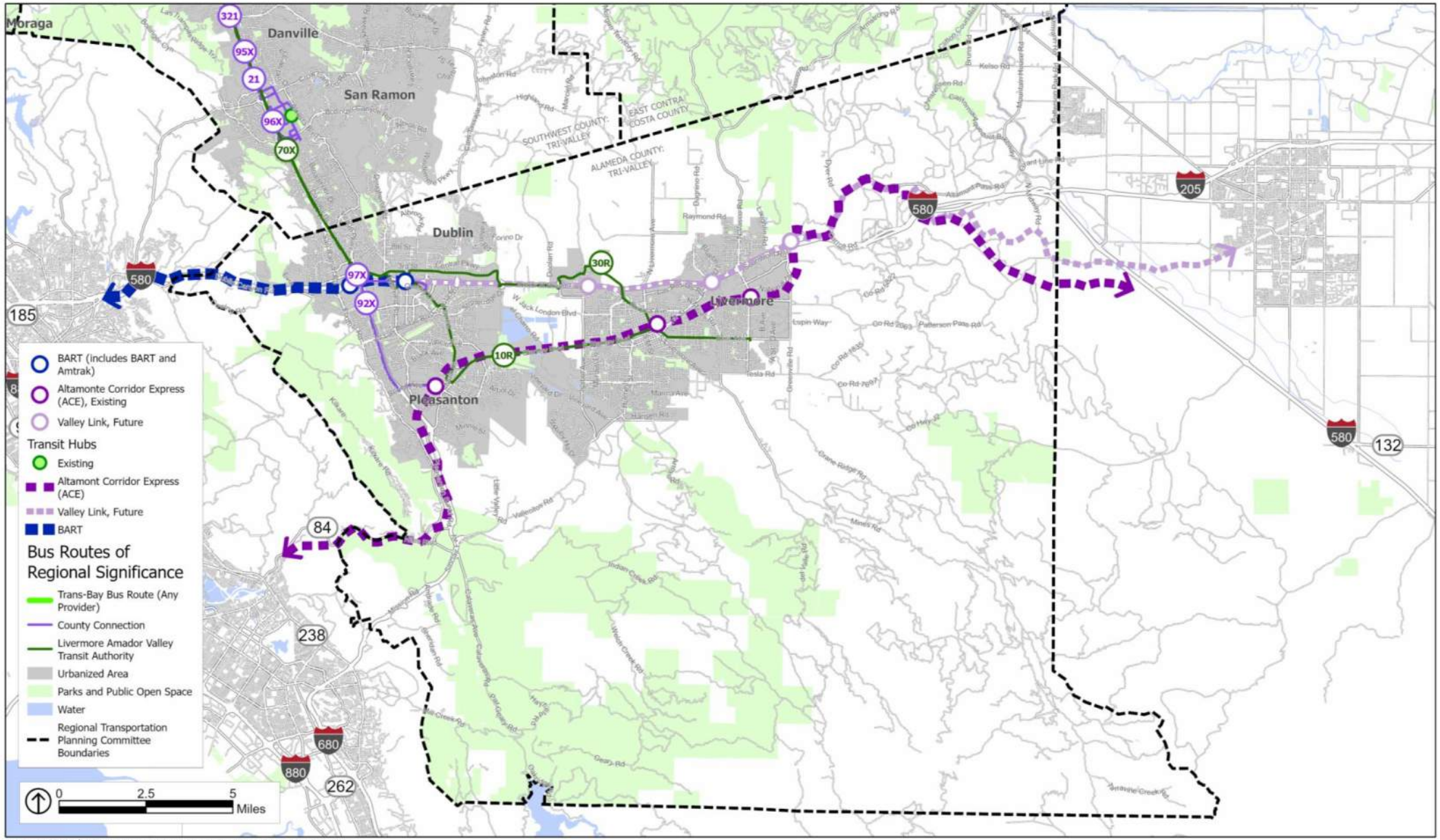
Key Transit Routes and Facilities (Contra Costa County portion)



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

WORKING DRAFT — CONTRA COSTA COUNTY TRI-VALLEY AREA TRANSIT FACILITIES AND ROUTES OF REGIONAL SIGNIFICANCE

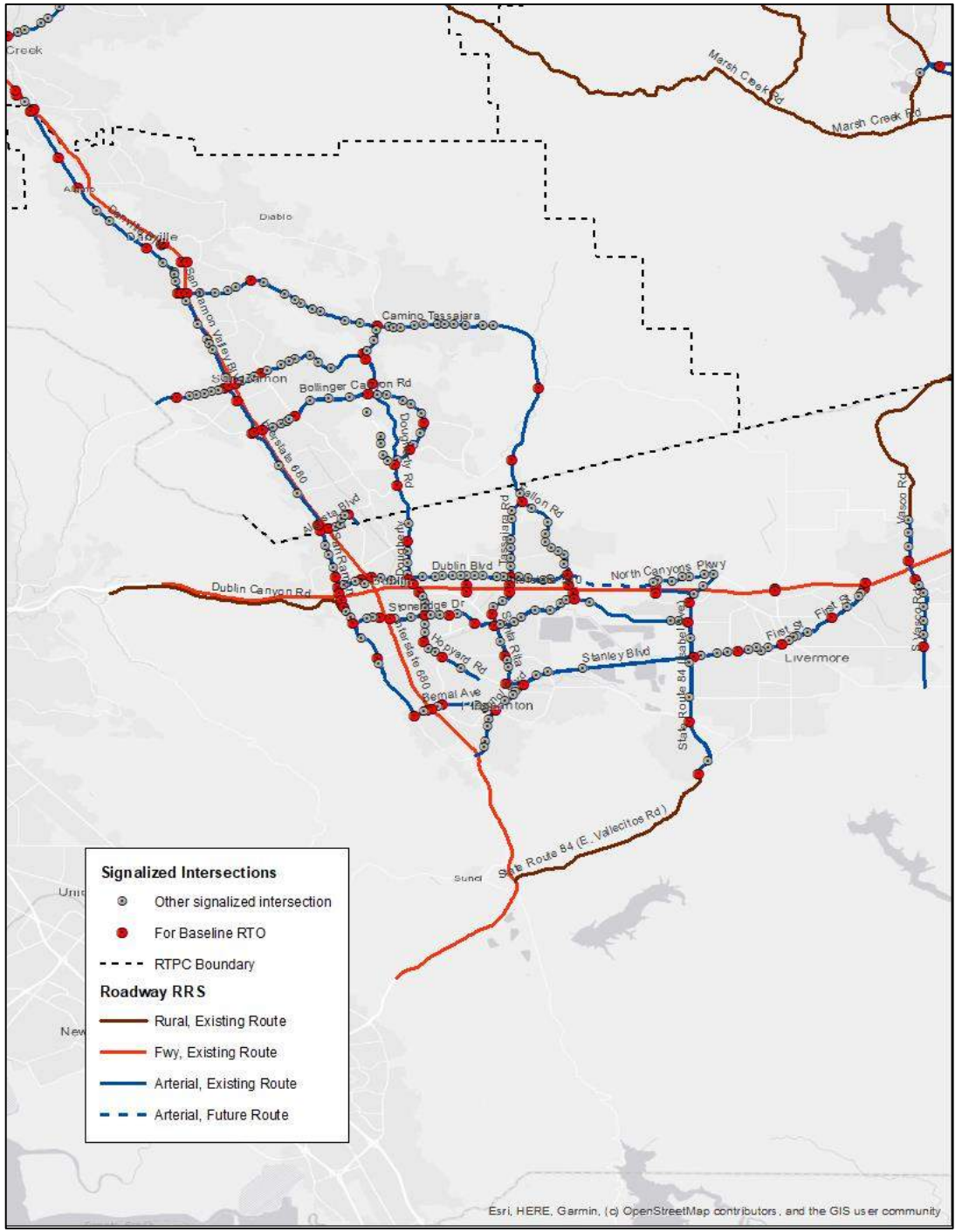
Key Transit Routes and Facilities (Alameda County portion)



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

WORKING DRAFT — ALAMEDA COUNTY TRI-VALLEY AREA TRANSIT FACILITIES AND ROUTES OF REGIONAL SIGNIFICANCE

Monitoring Intersections and Segments



Proposed Regional Transportation Objectives

- **Transit RTOs**
  - Mode share
  - Ratio of travel time for transit as compared to automobile travel time for select trips
- **Bike/Pedestrian RTOs**
  - Mode share
  - Proportion of the countywide low stress bike network (LSBN) that has been completed
  - Number of location where the LSBN makes an unprotected crossing over a heavily-traveled vehicle route
- **Freeway RTOs**
  - Delay index
  - Buffer index
- **Surface Roadway RTOs**
  - Peak hour LOS at select intersections in urban areas
  - Peak hour LOS on select two-lane highways outside of urban areas

Proposed Regional Transportation Objectives

- **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 (not included in the Tri-Valley or Lamorinda Action Plans)**
  - Proportion of KSI or bike- or pedestrian-involved collisions that occur in Equity Priority Communities (EPCs)
  - Share of county jobs that can be reached by EPC residents with a 30-minute drive or 45-minute transit trip, as compared to the county 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 stop
- **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 ethernet-based signal interconnection

Proposed Tri-Valley Actions- Methodology

- Sources:
  - Existing Action Plan
  - Recommended by the project team based on best practices
  - Necessary to achieve RTOs
  - Relevant to the Tri-Valley area

- Edits to existing Actions:
  - Consolidation
  - Edits for clarity and form
  - Deletion of actions that are complete

Proposed Tri Valley Actions- Summary

- Freeways- 9
- Surface Roadways- 5
- Transit- 14
- Bike/Pedestrian- 14
- Safety- 7
- Equity- 3
- Climate Change- 4
- Technology- 4
- Funding- 1

Outreach Summary

Outreach Summary

- Outreach conducted in March and April 2022
- In person Pop-up locations
  - San Ramon Farmers Market
  - Iron Horse Trail Danville Rest Area
- Virtual Workshop on April 28, 2022
- Online Community Survey
- Detailed Outreach Summary is available

Outreach Summary

- 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

Next Steps

Next Steps

- Fall 2022:
  - Preparation of Draft Action Plan
  - TAC Review
  - Public comment
- Winter 2022: Policy Board Review and Adoption
- Early 2023: Authority Board Acceptance

Action Plan and Countywide Transportation Plan Update

TVTC -- Policy Board Meeting 4

CONTRA COSTA transportation authority

RTOs Considered but Not Recommended

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

RTOs for Tri-Valley 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: ≤2.0	Delay index: 2.5	Delay index: 2.5
	Freeway Buffer Index	Proportion of added travel time between the 95th percentile and the average	Buffer index: None	Buffer index: 0.5	Buffer index: 0.5
	Intersection Level of Service (LOS)	Average control delay during peak hours	Maintain LOS E or better, no standard for intersections exempted by adopted General Plans	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 – SR-84 LOS E – Vasco Road No standard – Dublin Canyon Road	LOS D – SR-84 LOS E – Vasco Road No standard – Dublin Canyon Road
Transit	Transit Mode Share	Proportion of daily person trips using transit	None	6% for commute trips	12% for 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	12% all trips 2.5% commute trips	16% all trips 5% for commute trips
	Low Stress Bike Network (LSBN)	Proportion of the LSBN that is complete	None	50%	100%
	LSBN Crossings	Number of locations the LSBN crosses a roadway and is considered to be unprotected	None	Zero semi-protected crossings	Zero semi-protected crossings

RTOs for Tri-Valley Subregion

Facility Type or Planning Focus	Metric	Definition	Existing Target	Proposed 2027 Target	Proposed 2050 Target
Safety	KSI Collisions	Number of crashes resulting in fatality or injury	None	Zero fatality and severe injury crashes	
	Bike-Ped Collisions	Number of KSI crashes involving a bicyclist of pedestrian	None		
	Bike-Ped Collisions near Schools	Number of bicycle or pedestrian involved KSI collisions occurring within 500 feet of schools	None		
Climate Change	Single-Occupant Vehicle (SOV) Mode Share	Proportion of daily person trips made by single occupant vehicle	None	72% for commute trips	68 % for commute trips
	Greenhouse Gas (GHG) Emissions per Capita	Tons of CO_2 emissions	None	28 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	30.9 VMT	21 VMT
Technology	Level of Ethernet-based Signal Interconnection	Number of connected signals	None	42	42

Comments from TAC

- Corridor mapping comments
  - Revise location of Stanley Blvd. to I-580 to be west of Vasco Rd.
  - Rename several corridors to include smaller facility names.
- RTO comment
  - Review the freeway and roadway RTO for speed increases from 2019 to 2050
  - Consider non-rail segments to compare transit travel time for the Travel Time Ratio RTO.
  - Include language in the Action Plan listing intersections with approved future safety improvements.
  - Consider adding language to the action plan relating to autonomous vehicles and safety.