TRI-VALLEY TRANSPORTATION COUNCIL

TRI-VALLEY TRANSPORTATION COUNCIL
RESOLUTION NO. 2023-04

A RESOLUTION OF THE TRI-VALLEY TRANSPORTATION COUNCIL APPROVING THE DRAFT TRI-VALLEY ACTION PLAN AND MAKING A RECOMMENDATION THAT THE CONTRA COSTA COUNTY TRANSPORTATION AUTHORITY INCORPORATE THE ACTION PLAN INTO THE 2023 COUNTYWIDE TRANSPORTATION PLAN

WHEREAS, the Contra Costa Transportation Authority (CCTA) began the process of updating the five subregional Action Plans for Routes of Regional Significance (Action Plans) in late 2021, working through the Regional Transportation Planning Committees (RTPC's); and

WHEREAS, Section 5(b) of the TVTC Joint Exercise of Powers Agreement (JEPA) provides that the preparation and adoption of the Tri-Valley Action Plan, which coordinates transportation planning efforts in the Tri-Valley area, is one of the specific powers of TVTC; and

WHEREAS, Section 3(d)(ii) of the JEPA provides that approval of the Tri-Valley Action Plan requires a vote of at least five (5) TVTC Board members; and

WHEREAS, on January 23, 2023, CCTA presented the draft Tri-Valley Action Plan to the TVTC Board for review and approval and outlined the role of the Tri-Valley Action Plan in the broader Countywide Transportation Plan.

NOW THEREFORE, the Tri-Valley Transportation Council resolves as follows:

1. Approves the draft Tri-Valley Action, as amended by the errata memo provided by CCTA staff at January 23, 2023, TVTC Board Meeting, attached hereto and incorporated herein as Exhibit A; and

2. Makes a recommendation to CCTA that the Tri-Valley Action Plan be incorporated into the 2023 Contra Costa Countywide Transportation Plan; and

TRI-VALLEY TRANSPORTATION COUNCIL

PASSED, APPROVED AND ADOPTED at the meeting of January 23, 2023, by the following votes:

AYES: Testa, Anderson, Haubert, Verose, Arnerich, Josey
NOES:
ABSENT:
ABSTAIN:

DocuSigned by:
5CBCFE12F63F448...

Jean Josey, Chair
Tri-Valley Transportation Council

ATTEST:

DocuSigned by:
Sai Midididdi
FAA6458A7AE046C...

Sai Midididdi, TVTC Administrative Staff

TRI-VALLEY TRANSPORTATION COUNCIL

EXHIBIT A

Draft Tri-Valley Action Plan + Errata Memo

MEMORANDUM

DATE January 23, 2023

TO TVTC Policy Board Members

FROM David Early and Torina Wilson, PlaceWorks

SUBJECT Errata Memo for Changes Made to the Tri-Valley Action Plan

This memorandum lists revisions to be made to the Draft Tri-Valley Action Plan. These changes were requested by TVTC TAC members and local transit service providers after the Tri-Valley Action Plan Draft for TVTC Review was submitted for the January 23rd, 2023 agenda packet. The existing Draft Action Plan text is shown below, and ~~strikethrough~~ and double underline are used to show the changes to be made.

1. Acknowledgements (page i)

CCTA and PlaceWorks staff recommend that the titles of two advisory board members be revised as follows:

- Karen Stepper, ~~Council Member~~ Vice Mayor, Town of Danville
- Newell Arnerich, ~~Mayor~~ Council Member, Town of Danville

2. Transit RTO-4: High-Quality Transit

Both the Central Contra Costa Transit Authority (also known as 3CTA and County Connection) and the Livermore Amador Valley Transit Authority (also known as LAVTA and Wheels) have provided revised data on their pre- and post-pandemic routes, particularly in regard to "high-quality transit," which in the case of bus service is defined as services with headways of no more than 15-minutes. This revised information will lead to new analyses and results, which will necessitate changes to Transit RTO-4.

This section of this memorandum contains revised maps that show the correct pre- and post-pandemic routes.

Unfortunately, the analysis of this new information could not be completed in time for the January 23 TVTC meeting. Therefore, CCTA and PlaceWorks staff request that the TVTC Board approve the following changes, which will be made after the analysis is complete and before forwarding the Draft Action Plan to CCTA for incorporation into the Draft Countywide Transportation Plan.

- The text and Table 5-4 regarding RTO-4 that appears on page 46 of the Action Plan be revised to show the correct percentage of land served by high-quality transit that exists today.

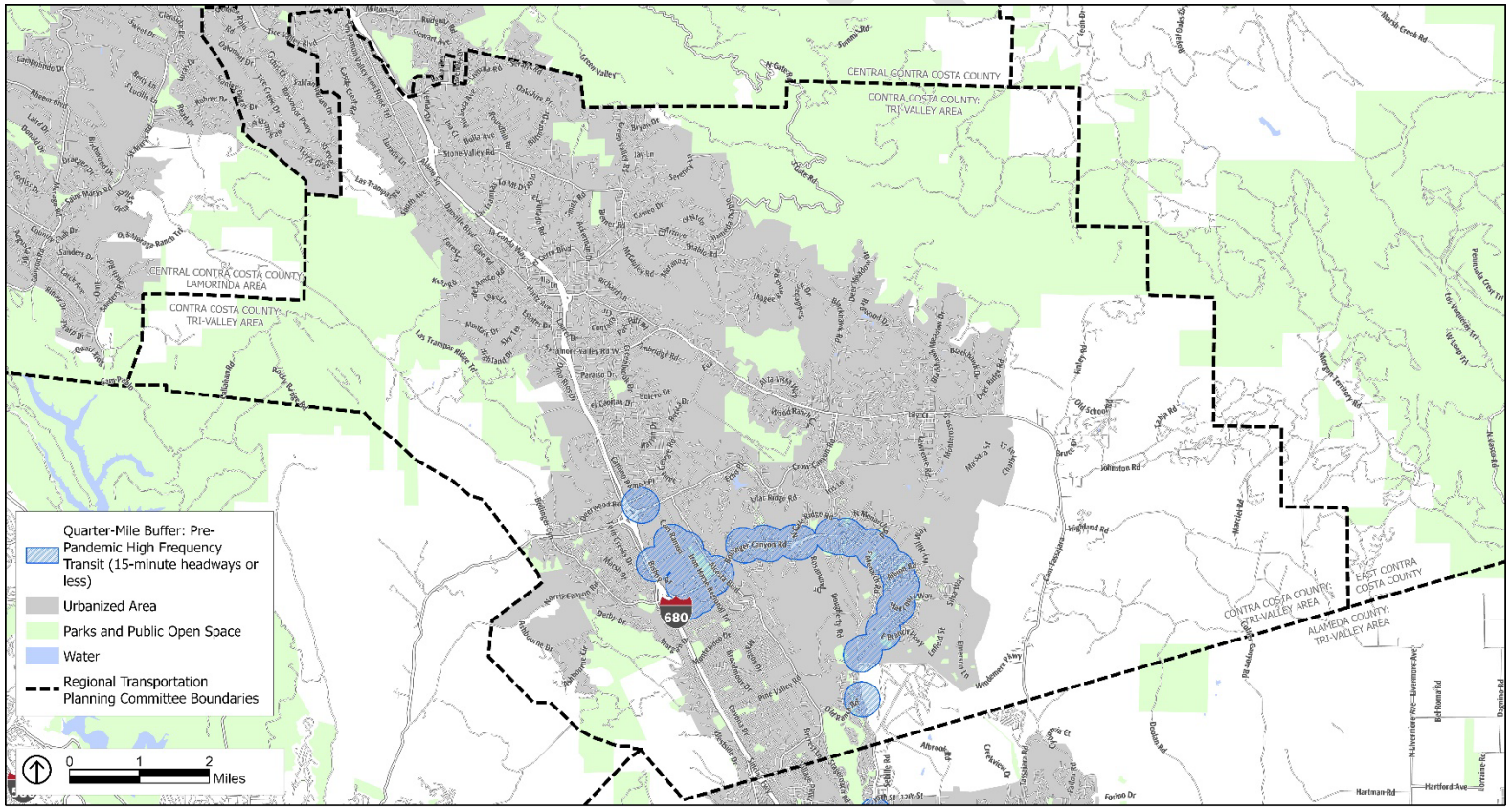
It will also be revised to set the 2027 target to the same percentage land coverage served by high-quality transit that existed before the pandemic. The 2050 target will be revised to be 30% more than the 2027 target.

- CCTA and PlaceWorks staff recommend that Figures 5-3 and 5-4 be amended as shown on the following two pages.

PLACEWORKS

Change to Figure 5-3: Contra Costa County Portion of the Tri-Valley High-Quality Transit (page 47)

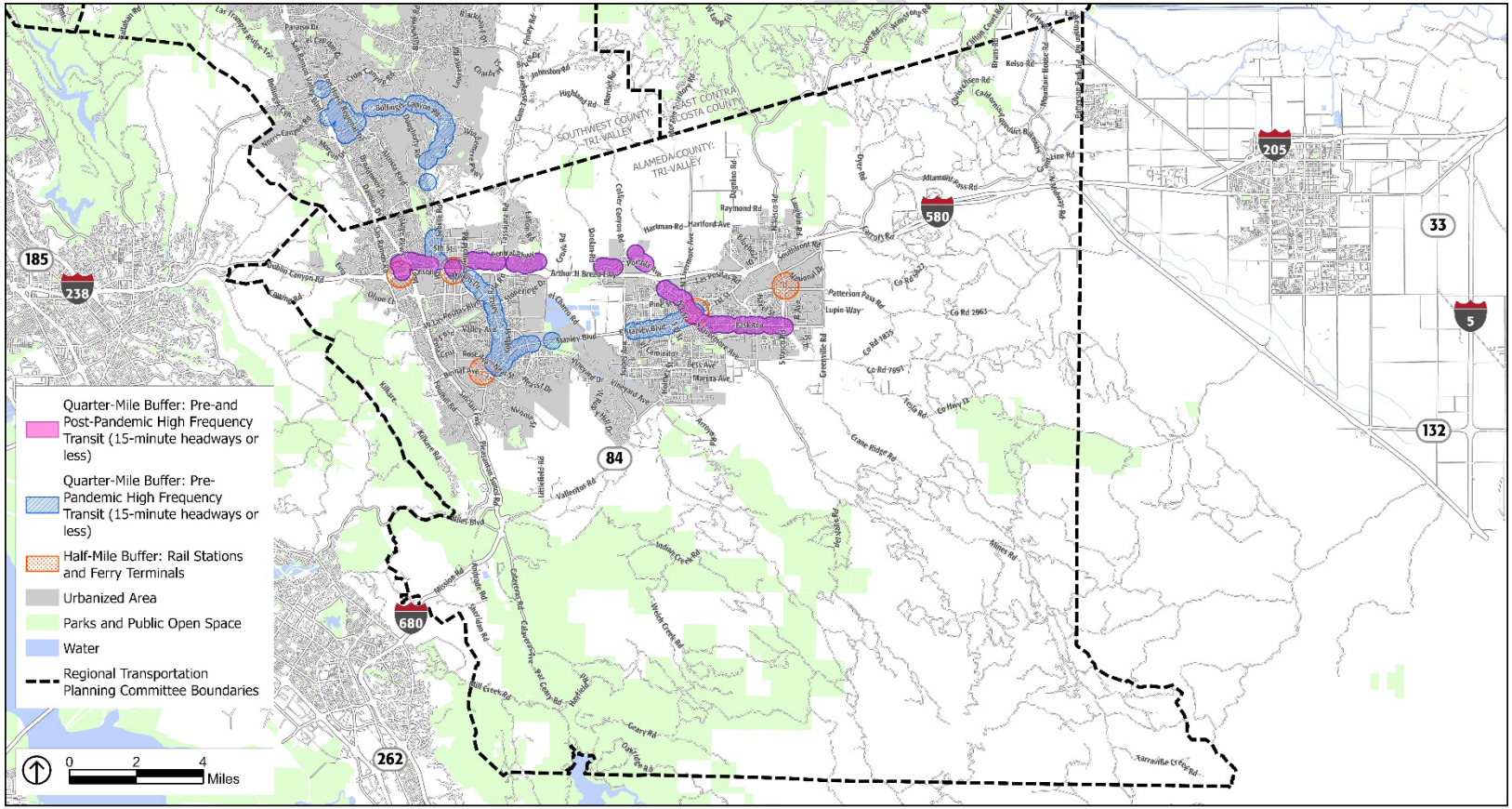
CCTA and PlaceWorks staff recommend that Figure 5-3 on page 47 be replaced with the following figure:



Source: CCTA, 2021; ESRI, 2021; PlaceWorks, 2022.

Change to Figure 5-4: Alameda County Portion of the Tri-Valley High-Quality Transit (page 49)

CCTA and PlaceWorks staff recommend that Figure 5-4 on page 49 be replaced with the following figure:



Source: CCTA, 2021; ESRI, 2021; PlaceWorks, 2022.

3. Active Transportation Action 7

Edit to Page 69:

CCTA and PlaceWorks staff recommend that Action Active Transportation-7 be removed from the list of Actions on page 69. This Action refers to facilities in Central County.

- ~~Active Transportation-7: Continue to implement the Cowell Road/Willow Pass Road Complete Street Feasibility Study.~~

Edit to Page 125:

CCTA and PlaceWorks staff recommend that Action Active Transportation-7 be removed from Table B-1 on page 125. This Action refers to facilities in Central County.

Agency	Lead Agency	Partner Agency	Timeline
~~**Active Transportation-7:** Continue to implement the Cowell Road/Willow Pass Road Complete Street Feasibility Study.~~	~~CCTA~~	~~Tri-Valley Member Jurisdictions~~	~~Ongoing~~

4. Appendix F (pages 201 and 202)

PlaceWorks mistakenly included information about the Lamorinda Gateway Constraints Policy in Appendix F, instead of information about the Tri-Valley Gateway Constraints Policy. CCTA and PlaceWorks staff recommend that Appendix F be replaced with the following excerpt directly from the 2017 Tri-Valley Transportation and Action Plan:

The following text is excerpted from the 2017 Tri-Valley Transportation Plan and Action Plan for Routes of Regional Significance, September 2017

5.2 Roadways

The plan includes many improvement projects for freeways, interchanges, arterials, and intersections. These are all based on the reality of *gateway constraints*.

Gateway Constraint Policy: In the development of the first Tri-Valley Transportation Plan/Action Plan in 1995, analysis of alternatives through the planning process showed that the TVTC's mobility and accessibility would not be improved by widening any of the gateways for single-occupant vehicles leading into the area.

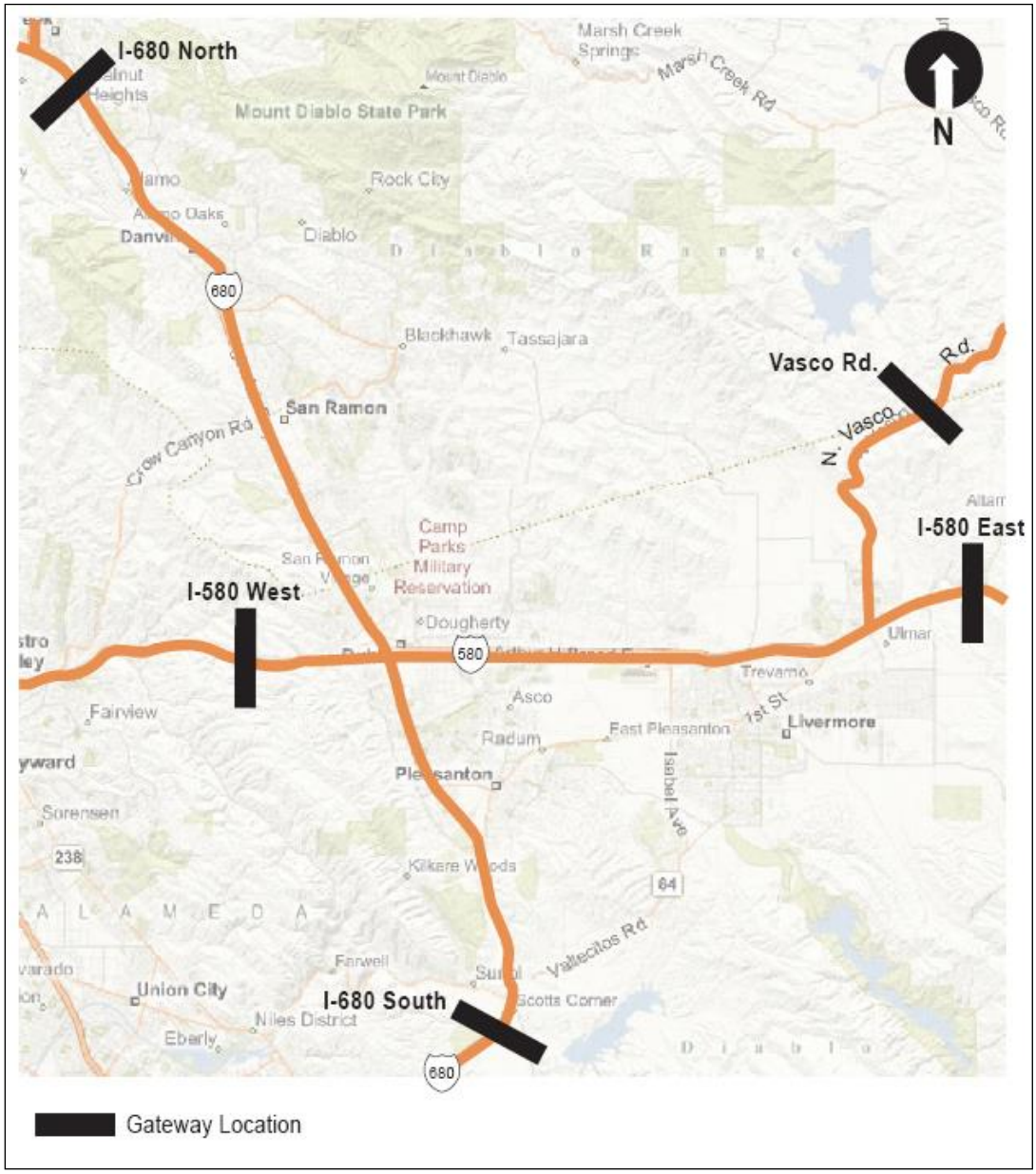
The gateways include I-680 north and south, I-580 east and west, Crow Canyon Road to Castro Valley, and Vasco Road in Alameda County. Their locations are illustrated in Figure 13. Widening of these gateways would leave the freeways congested, lead to more through traffic, and increase traffic volumes on other Tri-Valley roads. This is because of the Tri-Valley's strategic location between San Joaquin County and the Bay Area and also between Central and Eastern Contra Costa County and Santa Clara County.

The implication of gateway constraints for roadway planning is that the interior freeways and arterials should be sized to handle only what traffic can get through the gateways. Thus, the TVTC Plan recognizes that congestion will occur for several hours each weekday at the gateways, but this will have the positive effect of metering single-occupant vehicle travel to and from the area. Within the Tri-Valley area, the road system is designed to function with these gateways constrained to minimize congestion. The roadway plan, when combined with a balance between jobs and housing, and given expected financial constraints and forecast travel demands, produces the best conditions that can reasonably be expected.

The rationale for the TVTC Gateway Constraint Policy is described below:

- **I-680 North.** The section north of Diablo Road cannot be widened beyond the HOV/Express Lanes without overcoming several significant constraints: the widening would require additional right-of-way, construction of new retaining structures, and the costly reconstruction of existing overpasses and undercrossings, as well as increase impacts on adjoining land uses. The gateway constraint assumption recognizes these constraints. This concept should not be construed as an effort to preclude all potential solutions to mitigate increasing congestion on I-680 between Interstate 580 and SR-24. TVTC and SWAT should work cooperatively with TRANSPAC and CCTA to identify and pursue strategies that are mutually beneficial.
- **I-680 South.** The section south of SR-84 has limited room to be widened, and this limited widening would help accommodate and balance increased flows into this section from both I-680 and the new planned SR-84 project. Accordingly, the plan recommends the addition of northbound HOV/Express Lanes. It is important to note that Alameda CTC has undertaken this project and is in project development stage. Gateway constraints would still apply for single-occupant vehicles.

Figure 13: Locations Where Gateway Capacity Constraint Policy Applies



Source: DKS Associates, 2009

- **I-580 West.** The topographic constraints along the Dublin Grade and the limits imposed at the I-680/I-580 interchange make widening beyond the current mixed flow lanes and planned HOV/Express Lanes prohibitively expensive. The 1997 opening of the Dublin – Pleasanton BART line provided a new alternative to vehicular use of I-580. The Plan relies on the HOV/Express Lanes and BART to provide needed additional capacity through the gateway.
- **I-580 East (Altamont Pass).** Alameda County policy, in recognition of the need to encourage shorter commuter trips and not overload Tri-Valley roads with regional traffic, opposes increases to capacity for single-occupant vehicles across this gateway. The gateway constraint policy also applies to Patterson Pass Road, Tesla Road, and Old Altamont Road. The plan, however, includes HOV/Express Lanes as a priority project, in recognition of the importance of I-580 as a regional facility. The Plan also relies on and supports the continuation of the recent ACE service across this gateway.
- **Crow Canyon Road (to Castro Valley).** Safety improvements are planned for this section of Crow Canyon Road, although, the TVTC supports maintaining the two-lane cross-section.
- **Vasco Road.** The Plan includes safety improvements to Vasco Road. Any future upgrade should include future accommodation of public transit or other improvements as subsequently determined appropriate.

Accordingly, the TVTC Plan includes the following Gateway Constraint Policy, which establishes maximum roadway widths for the freeways and major arterials that access the Tri-Valley:

- **I-680 North:** Six lanes plus HOV/Express Lanes and auxiliary lanes
- **I-680 South:** Six lanes plus HOV/Express Lanes and auxiliary lanes
- **I-580 West:** Eight lanes with HOV/Express Lanes
- **I-580 East (Altamont Pass):** Eight lanes plus HOV/Express Lanes
- **Crow Canyon Road (to Castro Valley):** Two lanes with safety improvements
- **Vasco Road:** Two lanes with safety improvements

Any departure from these assumptions would require amending the TVTC Plan.

To address the technical challenges raised by incorporation of the Gateway Constraints Policy into the TVTC Plan, CCTA has established a gateway constraint

analysis methodology as part of its *Technical Procedures*.[2] This methodology takes into account physical roadway constraints, queuing, and recurrent delay at the gateways.

Current gateways are established by two factors: geographic constraints and financial constraints. To some degree, the geographic constraints can be overcome through significant capital investments in new highway projects. However, the TVTC Plan is based upon the assumption that significant capacity enhancements to the gateways serving Tri-Valley are not financially feasible. The policy of the TVTC is to work closely with neighboring jurisdictions, Congestion Management Agencies, Caltrans, and MTC to resolve capacity problems at the gateways and, as needed, through the partnership activities and to subsequently adjust Tri-Valley Transportation Plan should funding of mutually acceptable facilities become possible.

Corridor Management Congestion Strategies. A number of alternative strategies to adding new lanes or building new roads are available for addressing congestion. These strategies focus on improving the efficiency of traffic flow on roads, and thereby increasing the number of vehicles or people that can move through that corridor. The range of potential strategies is broad. They can include the addition of auxiliary lanes to freeways, incident management programs such as the Freeway Service Patrol, changeable message signs that provide information to travelers on travel alternatives, ramp metering, and support for travel alternatives such as park-and-ride lots and HOV bypass lanes at freeway ramps. In a sense, the gateway constraint concept is a strategy for managing the main travel corridors within the Tri-Valley.

Caltrans, with support from MTC, is in the process of implementing Traffic Operations Systems (TOS) along freeway corridors within the Bay Area. These systems will provide information to travelers on accidents and other delays on freeways, alternative routes to avoid these delays, and other information to encourage traveler decisions that would improve efficient roadway operations.

Ramp metering controls the volume of traffic entering a freeway at selected ramps to avoid break-down in the flow on the freeway. By avoiding breakdown, the freeway is able to maintain the highest level of throughput and the system is kept as efficient as possible. Although a single freeway lane can carry as many as 2,000 to 2,200 vehicles per hour under optimal conditions (maximum throughput generally occurs at a level of service E), as demand exceeds those optimal conditions, the volumes carried actually drop. Under the most congested conditions (level of service F), travel lanes have been observed to carry only

around 1,600 to 1,700 vehicles per hour. One source of this congestion is the "turbulence" caused by the merging of vehicles at freeway ramps. By smoothing out this merging, ramp metering can help make the flow of traffic on the freeway lanes more efficient and thus increase the vehicle throughput and speeds.

An additional benefit from ramp metering is a decrease in the accident rate. Reductions from 20 to 50 percent have been achieved through improved merging operations. The reduction of accidents not only improves the safety of the freeway, but also reduces non-recurring delay and increases freeway throughput. Ramp meters can also encourage the peak spreading that needs to occur to keep the gateways flowing. This happens because motorists are generally willing to accept no more than about a 10-minute wait at the meters. Beyond that, they tend to adjust their trip making (i.e., choose to travel at a different time or choose a different mode). This peak spreading helps to get the most out of the system when gateway constraints are a reality. When combined with HOV bypasses, ramp metering can also provide an additional incentive for carpooling and can help buses increase average speeds. When combined with HOV lanes on the freeways, the ramp metering-with-bypass system allows carpools and buses to achieve real travel time advantages compared to single-occupant vehicles.

Ramp metering has two potential drawbacks: backups on the local street system and rewarding long-distance commuters. The potential for backups on local streets can be minimized through ramp widening and strategic placement of the meters. Where these mitigation measures are not possible, ramp metering can significantly reduce levels of service adjoining intersections and along adjacent streets. Backup onto local streets can also be avoided by installing detectors at the end of ramps and adjusting metering rates to avoid backups beyond the end of the ramp. Some of the recent ramp-metering implementations in the Bay Area have proceeded with formal agreements between Caltrans and the local jurisdictions that spill-back detectors and metering rates will be used to prevent the backups onto local streets.

Ramp metering can result in a disproportional benefit to long-distant commutes when there is a high percentage of through travelers and the metering rates in the corridor are set low to maintain the highest possible speeds on the freeway through lanes. The risk of rewarding long-distance commutes can be minimized by implementing the following three policies: 1) deploy the system of ramp metering for the entire length of a freeway corridor rather than in isolated locations, 2) meter to achieve maximum throughput rather than maximum freeway speed, and 3) set upper limits on the delay imposed at individual ramps.

Ramp metering has recently been implemented in the Tri-Valley on the eastbound and westbound ramps of I-580. An evaluation of the benefits and impacts of the ramp metering will continue. The Contra Costa jurisdictions have not reached consensus on the implementation of ramp metering on I-680. Ramp me-

tering should not be implemented on I-680 until a general consensus is reached among affected jurisdictions on a workable and equitable implementation plan for the I-680 corridor. Consideration should be given to how ramp metering would affect the local roadway network as well as the effect it would have on the freeway.

Freeway HOV and Express Lanes. Significant changes to freeway operations are underway in the Tri-Valley. Significant portions of I-580 and I-680 within the Tri-Valley will be part of a 550 miles Bay Area Express Lanes Network. The Bay Area Express Lanes Network is part of Plan Bay Area, the Regional Transportation Plan adopted by MTC's Commissioners in July 2013. It designates a network of existing or planned HOV lanes that will be converted to Express Lanes, in which drivers not eligible for use of the HOV lanes will be allowed to pay a toll to use the lane.

Planning for the Bay Area Express Lanes Network has been coordinated by MTC, but has included the direct planning and design work of the Congestion Management Agencies and Transportation Authorities of the counties in which the lanes will operate. Included in the network is the existing southbound Express Lane on I-680 between SR-84 and SR-237 which opened in September 2010, and the eastbound and westbound I-580 Express Lanes that are under construction by Alameda CTC. Eastbound I-580 Express Lanes will be double express lanes while the westbound direction will include a single express lane. The southbound I-680 express lane is the first Express Lane in the Bay Area was planned and designed by the Alameda CTC, in cooperation with the Santa Clara Valley Transportation Authority, Caltrans and the local jurisdictions along the route. It is operated by Sunol JPA. Since the opening of the Express Lane on I-680, a second Express Lane was opened at the interchange of SR-237 and I-880 in Santa Clara County.

The plans for the Bay Area Express Lanes Network identify three stages of Express Lanes system development: existing lanes, near-term projects (by 2020) and long-term projects. Included in the near-term projects are the conversion of the planned northbound HOV lane on I-680 between SR-237 and SR-84; the conversion of the westbound HOV lane on I-580 between Greenville Road and San Ramon Road/Foothill Road (construction underway); the conversion of the existing eastbound HOV lane on I-580 between Hacienda Drive and Greenville Road; the addition of a second Express Lane eastbound between El Charro Road and Vasco Road (construction underway); and the conversion of existing HOV lanes on I-680 between Alcosta Road and Livorna Road in the northbound direction and Alcosta Road and Rudgear Road in the southbound direction. Other portions on I-680 north of Rudgear Road are also planned for near-term implementation but are outside of the Tri-Valley. The long-term plans for the Bay Area Express Lane Network within the Tri-Valley include the portion of I-680 between the Contra

Costa/Alameda county line and SR-84, and the portion of I-580 between Greenville Road and the Alameda/San Joaquin county line.

HOV and Express Lanes provide the advantage of reducing travel times for ridesharers and transit patrons. They also enhance mobility during off-peak hours by being available for all vehicles. This is especially important when considering truck traffic, which increasingly relies on off-peak hours to reach destinations without undue delays. The TVTC recognizes the benefits of HOV and Express Lanes, but realizes that take-a-lane programs do not work. Thus, HOV and Express Lanes must be added to the freeways.

Arterial Issues. The planned arterial system has been designed to provide smooth circulation in and between the Tri-Valley cities and to provide access to the freeway system. Intersections and freeway interchanges are the focal points of the arterial system. All of the widenings and extensions are necessary to serve new development, so the plan calls for direct developer construction or at least funding. The primary issue is how to share costs between jurisdictions having joint responsibility for a particular road. This is discussed further in the Financing Plan chapter.

There are two major arterials in the Tri-Valley that do not provide direct access to planned development but rather serve interregional traffic between Alameda County and Contra Costa County: Crow Canyon Road and Vasco Road.

Crow Canyon Road. The portion of Crow Canyon Road west of Bollinger Canyon Road is a two-lane rural road that lies within the jurisdiction of Alameda County and Contra Costa County. While once used by its adjacent residents to bring goods to the market, today Crow Canyon Road is being used by commuters as an alternate to the I-580/I-680 freeways. Development in the vicinity of Crow Canyon Road, especially in the fast-growing San Ramon Valley area, has generated a significant increase in traffic on this roadway. The expected forecast for this roadway is LOS F.

The roadway, which is a narrow and winding road, was not designed to handle commuter traffic and does not have adequate width or alignment. Alameda County, in collaboration with Contra Costa County and the City of San Ramon, prepared and developed a project study report, pursuant to California Senate Bill 1149. The report recommended the construction of widened shoulders, climbing lanes, left-turn lanes, safety measures, and road realignment eliminating short-radii curves.

Contra Costa County has in its Measure C program the improvement of Crow Canyon Road within Contra Costa County. Alameda County, how-

ever, is seeking funds to improve the two-lane section of the roadway. Unfortunately, improvement of this portion of Crow Canyon Road cannot be directed to a particular developer construction. But since the traffic forecast clearly indicates that traffic increase on this roadway is development-related, it is recommended that subregional transportation impact fees be used to improve the section of Crow Canyon Road within the Tri-Valley.

Vasco Road. Vasco Road is a narrow and winding rural road that is a major commuter and truck route linking the Tri-Valley with eastern Contra Costa County. Approximately 17 miles of Vasco Road, starting at a point on Vasco Road approximately one-half mile south of the county line to the intersection of Camino Diablo in Contra Costa County, has been relocated as a result of the construction of the Los Vaqueros Reservoir. This portion of Vasco Road is designed to State and County standards. The remaining section of the roadway in Alameda County needs to be upgraded to these standards as well to improve traffic flow and safety. Alameda County is currently seeking funds to improve the section of the roadway from the new Vasco Road to the Livermore City limit. This proposed improvement includes realignment of the roadway, widening of shoulders, installing median barriers, installing guardrails, and installing passing lanes without increasing its capacity, consistent with the standards being used in the Los Vaqueros-Vasco Road project.

There are also numerous rural roads within the Tri-Valley that are not Routes of Regional Significance but are significantly impacted by congestion on the designated Routes of Regional Significance. These rural routes often become reliever routes for the main roads during periods of heavy congestion or lane closures. It is important to monitor growth in traffic on these rural roads to determine whether new management actions are required on the Routes of Regional Significance to reduce the diversion of traffic.

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Planning for Tomorrow's Transportation

Tri-Valley Action Plan

Draft for TVTC Review | January 2023

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Tri-Valley Action Plan

Draft for TVTC Review | January 2023

SOUTHWEST AREA TRANSPORTATION COMMITTEE

TRI-VALLEY TRANSPORTATION COUNCIL

Member Jurisdictions:

San Ramon

DANVILLE CALIFORNIA

DUBLIN CALIFORNIA

LIVERMORE CALIFORNIA

THE CITY OF PLEASANTON

Tri-Valley Action Plan

Acknowledgements

This Action Plan is a culmination of work between many jurisdiction and agency representatives as listed herein. This list is not exhaustive of all partner agencies that assisted in formulating this plan in one form or another.[1]

Southwest Area Transportation Committee (SWAT) Members

- Candace Anderson, District 2 Supervisor, Contra Costa County
- Karen Stepper, Council Member, Town of Danville
- Teresa Gerringer, Mayor, City of Lafayette
- Renata Sos, Council Member, Town of Moraga
- Amy Worth, Council Member, City of Orinda
- David Hudson, Mayor, City of San Ramon

Swat Technical Advisory Committee (TAC) Member Agency Representatives

- Robert Sarmiento, Contra Costa County
- Andrew Dillard, Town of Danville
- Mike Moran, City of Lafayette
- Bret Swain, Town of Moraga
- Sivakumar Natarajan, City of Orinda
- Chris Weeks, City of San Ramon, Swat Administrator

Tri-Valley Transportation Council (TVTC) Members

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

TVTC TAC Member Agency Representatives

- Chris Weeks, City of San Ramon
- Julie Chiu, City of Livermore
- Cedric Novenario, City of Pleasanton
- Andrew Dillard, Town of Danville
- Robert Sarmiento, Contra Costa County
- Amber Lo, P.E, Alameda County Public Works Agency
- Sai Midididdi, City of Dublin, TVTC Administrator

[1] This Action Plan was funded by the Contra Costa Transportation Authority, which also provided technical assistance throughout the process. Technical consultants PlaceWorks, Fehr and Peers, and DKS Associates assisted CCTA, SWAT TAC, TVTC TAC, member jurisdictions, and the SWAT and TVTC Policy Boards in plan preparation.

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Tri-Valley Action Plan

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Abbreviations

BART	Bay Area Rapid Transit
BATA	Bay Area Transportation Authority
CCWD	Contra Costa Water District
CEQA	California Environmental Quality Act
CBPP	Countywide Bicycle and Pedestrian Plan
CCTA	Contra Costa Transportation Authority
CMP	Congestion Management Plan
CO_2	carbon dioxide
CTC	County Transportation Commission
CTP	Countywide Transportation Plan
DPMT	dynamic personal micro transit
EB	eastbound
EBRPD	East Bay Regional Parks District
EIR	Environmental Impact Report
EPC	Equity Priority Community
EV	electric vehicle
GHG	greenhouse gas
GMP	Growth Management Program
GPA	General Plan amendment
HOV	high-occupancy vehicle
HOT	high-occupancy toll
I-	Interstate
ICM	Integrated Corridor Management
ITS	Intelligent Transportation System
JEPA	Joint Exercise Powers Agreement
KSI	Killed or Severely Injured

LAVTA	Livermore Amador Valley Transit Authority
LOS	Level of Service
LSBN	Low Stress Bicycle Network
MPH	miles per hour
MTC	Metropolitan Transportation Commission
MTSO	Multimodal Transportation Service Objectives
NNPHVTs	Net New Peak Hour Vehicle Trips
NOC	Notice of Completion
NOP	Notice of Preparation
OBAG	One Bay Area Grant
PBT	Pedestrian-Bicycle-Transit
PCI	Pavement Condition Index
PDA	Priority Development Area
RFP	request for proposal
RRS	Routes of Regional Significance
RTO	Regional Transportation Objective
RTMP	Regional Transportation Mitigation Program
RTPC	Regional Transportation Planning Committee
SB	Senate Bill
SOV	Single-Occupant Vehicle
SR-	State Route
STMP	Subregional Transportation Mitigation Program
SWAT	Southwest Area Transportation Commission
TAC	Technical Advisory Committee
TDM	Transportation Demand Management
TEP	Transportation Expenditure Plan
TIMS	Transportation Injury Mapping System
TLC	Transportation for Livable Communities
TRANSPAC	Transportation Partnership and Cooperation

TSM	Transportation Systems Management
TVTC	Tri-Valley Transportation Council
ULL	Urban Limit Line
VMT	vehicle miles traveled
WB	westbound
ZEV	zero-emission vehicles

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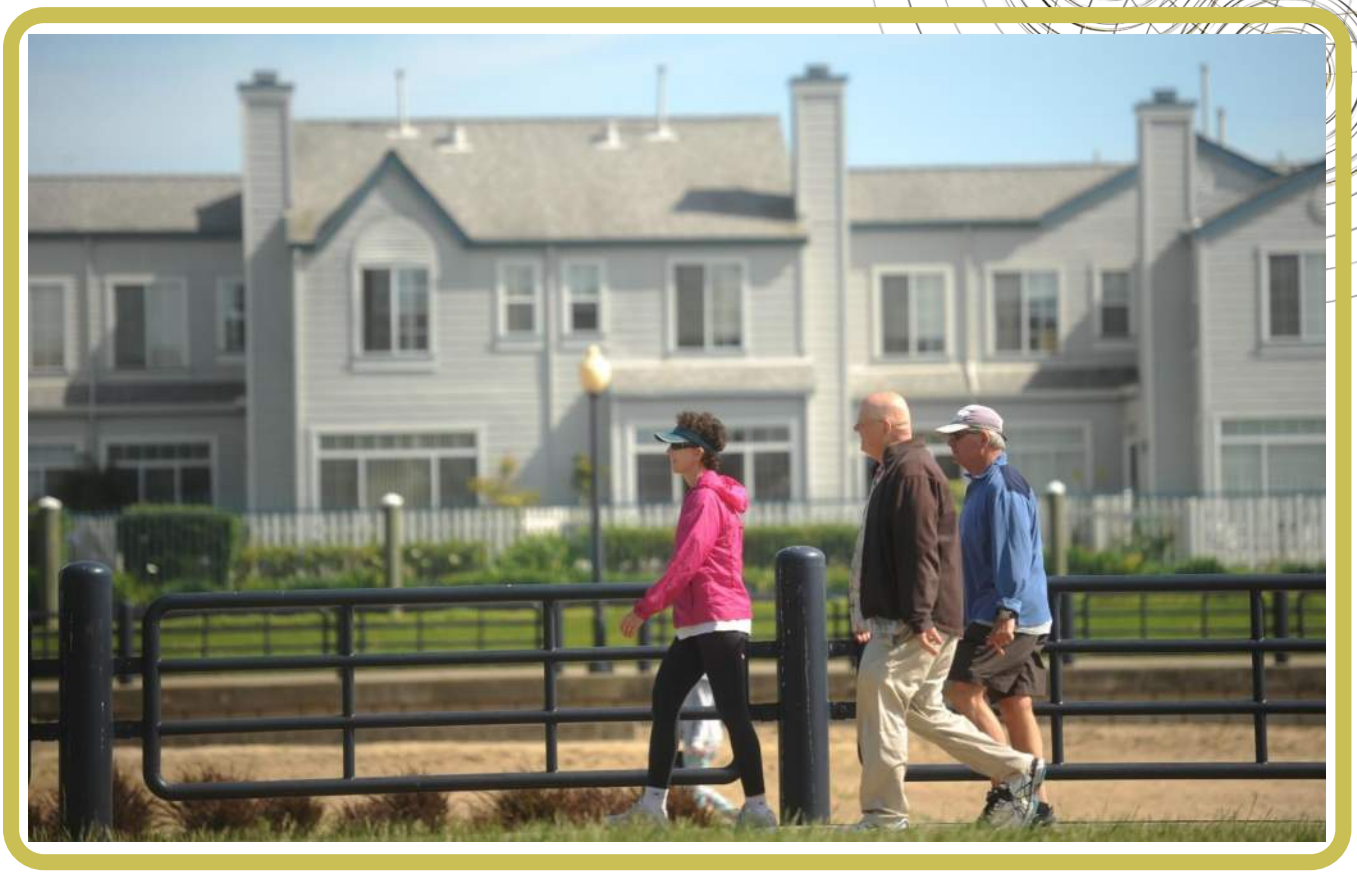
Tri-Valley Action Plan

Chapter 1: Introduction



This document is the Action Plan covering the incorporated and unincorporated communities throughout the Tri-Valley subregion of Contra Costa County and Alameda County, prepared in compliance with the voter-approved Measure J Growth Management Program (GMP) of the Contra Costa Transportation Authority (CCTA).[2] This chapter provides background information about CCTA, Measure J, the GMP, and this Action Plan.

[2] The inclusion of Alameda County jurisdictions, and the role that CCTA planning documents have in relation to these jurisdictions, is explained in more detail in at the end of this section and in Chapter 12. Clarifications on the role of Alameda County jurisdictions and any responsibilities are included in this Action Plan as needed.

Measure J Transportation and Growth Management Program

In November 2004, Contra Costa voters approved the renewal of the original 1988 Measure C Transportation Improvement and GMP — a half-cent sales tax to fund transportation projects and programs—with a new ballot measure called Measure J. Measure J, which began expenditure implementation in April 2009, is anticipated to generate approximately $2 billion (in 2008 dollars) over a 25-year period through 2034.[3]

Measure J continues Contra Costa's innovative GMP that was originally adopted with Measure C, which voters approved in 1988. The goals of the GMP are as follows:

- Ensure that new residential, business, and commercial growth pays for the facilities required to meet the demands resulting from that growth.
- Require cooperative transportation and land use planning among local jurisdictions.
- Support land use patterns in Contra Costa County that make more efficient use of the transportation system, consistent with the general plans of local jurisdictions.
- Support infill and redevelopment in existing urban and brownfield areas.

For Contra Costa jurisdictions to receive their formulaic share of 18 percent return to source local street maintenance and improvement funds and to become eligible for Transportation for Livable Communities (TLC) funds,[4] a local jurisdiction must comply with the GMP, which requires the following activities:

- **Adopt a Growth Management Element** as part of its general plan that outlines how the jurisdiction will comply with the other requirements in this list.
- **Adopt a local and regional Development Mitigation Program** that ensures new growth or remodel and reuse projects pay for their share of the costs associated with that growth.
- **Participate in an ongoing, cooperative, multi-jurisdictional planning process** with other jurisdictions and agencies in Contra Costa to create a balanced, safe, and efficient transportation system and to manage the impacts of growth.
- **Address housing options** and demonstrate reasonable progress in providing housing options for people of all income levels in a report on the implementation of actions outlined in the adopted housing element.

[3] For more information regarding funding, particularly for the Alameda County portion of the Tri-Valley area, refer to Chapter 11, Financial Outlook.

[4] The Contra Costa TLC Program funds transportation projects in communities to facilitate, support, and/or catalyze affordable housing, transit-oriented or mixed-use development, and encourage traffic-calming and the use of non-vehicular modes of transportation to minimize single-occupancy vehicle trips and make Contra Costa's communities more pedestrian-, bicycle-, and transit-friendly.

- **Develop a five-year Capital Improvement Program** outlining the capital projects needed to meet the goals of the local jurisdiction's general plan.
- **Adopt a Transportation Systems Management (TSM) Ordinance or Resolution** conforming to CCTA's model TSM Ordinance or Resolution and promotes carpools, vanpools, and park-and-ride lots.
- **Adopt a voter-approved Urban Limit Line (ULL)** complying with the countywide, voter-approved ULL or the local jurisdiction's voter-approved ULL.

Among these elements, preparing an Action Plan at the subregional level is included under the requirement to "Participate in an Ongoing, Cooperative, Multi-jurisdictional Planning Process." The specific requirements of this element, as defined in Measure J, are as follows:

> Each jurisdiction shall participate in an ongoing process with other jurisdictions and agencies, the Regional Transportation Planning Committees (RTPCs) and the Authority to create a balanced, safe, and efficient transportation system and to manage the impacts of growth. Jurisdictions shall work with the RTPCs to:
>
> - Identify Routes of Regional Significance (RRS) and establish Regional Transportation Objectives (RTOs)[5] for those routes and actions associated with achieving those objectives.
> - Apply the Authority's travel demand model and technical procedures to the analysis of General Plan Amendments (GPAs) and developments exceeding specified thresholds for their effect on the regional transportation system, including on Action Plan objectives.
> - Create a development mitigation program.
> - Assist with development of other plans, programs, and studies to address other transportation and growth management issues.
>
> In consultation with the RTPCs, each jurisdiction shall use the travel demand model to evaluate changes to local General Plans and the impacts of major development projects for their effects on the local and regional transportation system and the ability to achieve the RTOs established in the Action Plans.
>
> Jurisdictions shall also participate in the Authority's ongoing countywide transportation planning process. As part of this process, the Authority shall support countywide and subregional planning efforts, including the Action Plans for RRS, and shall maintain a travel demand model. Jurisdictions shall help maintain the Authority's travel demand modeling system by providing information on proposed improvements to the transportation system and planned and approved development within the jurisdiction."[6]

[5] As described later in this Action Plan, the old term "Multimodal Transportation Service Objectives" or "MTSOs" have been renamed to "Regional Transportation Objectives" or "RTOs" for this Action Plan.

[6] Measure J: Contra Costa's Transportation Sales Tax Expenditure Plan, Contra Costa Transportation Authority, July 21, 2004, pp. 24–25.

A separate Action Plan is prepared and adopted for each of the five subregions in Contra Costa. The Tri-Valley subregion, which is the subject of this Action Plan, encompasses the incorporated jurisdictions of Livermore, Pleasanton, San Ramon, Dublin, and Danville, as well as unincorporated portions of southwestern Contra Costa County and Alameda County. Although Alameda County jurisdictions are not subject to the Measure J GMP and the requirements related to the Action Plans therein, the TVTC Joint Exercise Powers Agreement (JEPA) requires those Alameda County jurisdictions to participate in the collaborative, cooperative Action Plan development process alongside the Contra Costa jurisdictions. The 2013 JEPA document is appended in this Action Plan and can be viewed in Appendix E.

CCTA is responsible for leading the development, and accepting of, the locally adopted Action Plans created in each subregion for inclusion in the Contra Costa Countywide Transportation Plan (CTP), and for evaluating whether each jurisdiction fully complies with the GMP. Needs and priorities for the Alameda County jurisdictions are incorporated in the Alameda CTP, prepared by the Alameda County Transportation Commission (Alameda CTC).

Alameda CTC is governed by a 22-member commission of elected officials from each of the 14 cities in Alameda County, all five members of the Alameda County Board of Supervisors, and elected representatives from AC Transit and Bay Area Rapid Transit (BART). Alameda CTC coordinates countywide transportation planning efforts; programs for local, regional, state, and federal funding; and delivers projects and programs, including those approved by voters in Alameda County transportation expenditure plans for Measure B, Measure BB, and the Vehicle Registration Fee. It is also the state-designated Congestion Management Agency for Alameda County. The mission of the Alameda CTC is to plan, fund, and deliver transportation programs and projects that expand access and improve mobility to foster a vibrant and livable Alameda County.

Action Plan Purpose

The purpose of the Action Plan is for each local jurisdiction in Contra Costa to participate in the multijurisdictional, cooperative planning process envisioned in Measure J to address regional transportation issues that span jurisdictional boundaries. The basic framework for this process is established through the RTPCs, which are defined in Measure J. As described previously, TVTC is the Authority-designated RTPC for the Tri-Valley area. The Action Plans establish overall goals, identify RRS, create a set of performance measures (now called “regional transportation objectives,” or RTOs), and establish a set of actions that will support achievement of the RTOs.

Action Plans are required to be prepared by the RTPC for each subregion of Contra Costa County (West; Central; East; Lamorinda; and the Tri-Valley, which includes a portion of Alameda County). CCTA is responsible for funding this effort and for coordinating and coalescing the individual Action Plans from each RTPC together to form the foundation of the CTP. Refer to Chapter 11, Financial Outlook, for more information on funding.

This Action Plan requires collaboration among several agencies and jurisdictions. Completion of individual Actions depends on availability of funding and staff resources. For Contra Costa jurisdictions, requirements for compliance with the GMP are provided in the CCTA Implementation Guide, which

specifies that Contra Costa jurisdictions have an obligation to implement Actions consistent with the time frame of the Action Plans. Compliance with this requirement will be evaluated by CCTA every other year, based on a Compliance Reporting Checklist submitted by the Town of Danville, the City of San Ramon, and Contra Costa County. All Actions are enumerated in a summary table in Appendix B, which also lists the responsible agency, partner agencies, and proposed timeline for each Action.

Action Plan Contents

The Tri-Valley Action Plan contains the following components:[7]

- **Introduction (Chapter 1),** which outlines the Measure J GMP and the purpose of this document.
- **Current Conditions, Trends, and Travel Patterns (Chapter 2),** which looks at long-range land use and population changes and their anticipated impact to the transportation system.
- **Vision, Goals, and Policies (Chapter 3)** describes the overall vision, goals, and policies of the Action Plan.
- **Routes of Regional Significance (Chapter 4)** maps and describes the multimodal corridors that make up the RRS in Tri-Valley.
- **Transit (Chapter 5)** identifies the RTOs and Actions related to transit service.
- **Active Transportation (Chapter 6)** identifies the RTOs and Actions related to active transportation.
- **Roadways (Chapter 7)** identifies the RTOs and Actions related to roadways.
- **Safety (Chapter 8)** identifies the RTOs and Actions related to transportation safety.
- **Climate Change (Chapter 9)** identifies the RTOs and Actions related to climate change and transportation.
- **Innovation and Technology (Chapter 10)** identifies the RTOs and Actions related to innovation and new technology.
- **Financial Outlook (Chapter 11)** includes funding and multijurisdictional planning information.
- **Procedures for Notification, Review, and Monitoring (Chapter 12)** includes project notification procedures and the process for general plan review.

Chapters 5 to 10 include the RTOs for each mode or topic, and a list of actions that are needed to achieve the RTO targets and to implement other goals and policies of this Plan. A consolidated list of actions in this Action Plan can be found in Appendix B.

[7] Other CCTA Action Plans, including for West County, Central County, and East County, include an additional chapter for equity. This Tri-Valley Action Plan and the Lamorinda Action Plan do not include an equity chapter because there are no Metropolitan Transportation Commission (MTC)-designated Equity Priority Communities in either subregion.

Relationship of this Action Plan to the Countywide Transportation Plan

This update of the Tri-Valley Action Plan has been prepared simultaneously with updates to the other four subregional Action Plans and uses a comprehensive update approach that ensures the critical components of each Action Plan will be similar to one another, with modifications as needed due to the unique needs of the Tri-Valley area and the other subregions. All five Action Plans determine the policies and actions that the Authority can adopt into the 2023 CTP Update. The Authority will incorporate the policies and actions from all five action plans provided that consensus has been achieved among the affected jurisdictions and RTPCs.

Public Engagement for the Action Plan

Extensive public outreach was conducted with the Contra Costa County community as part of the Action Plan update process. Both in-person and online outreach occurred during the March and April 2022 period. Outreach events in the Tri-Valley area included two in-person pop-up events, one virtual workshop, and an online community survey. At each outreach event and the online community survey, participants were asked three questions:

- 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?

Of the 704 comments received during this public outreach effort, 25 percent of the responses were specific to the Tri-Valley area (the most of any subregion), and the remainder were either general to the county as a whole or to any of the other four subregions. Feedback regarding the Tri-Valley area focused on Interstate (I-) 580/I-680 corridor connections, bicycle and pedestrian improvements, general equity, and general safety concerns. Specific comments included:

- Increase traffic-calming techniques, especially near schools.
- Improve crossings of bicycle and pedestrian facilities with roadways.
- Implement shared bicycle and scooter share programs.
- Improve bicycle and pedestrian facilities, especially with better lighting and restroom facilities.

- Increase transit (e.g., bus) service to schools and other major facilities.
- Extend BART service route/line through the Tri-Valley area.
- Examine the success of high-occupancy vehicle (HOV) and toll lanes on I-680.

Input received from this outreach effort provided CCTA, its consultants, and Tri-Valley jurisdictions additional feedback to understand community priorities for consideration in the Action Plan update and the update of the CTP.

Definition of Terms

This Action Plan uses several terms to describe specific components of the Action Plan. These terms and their definitions are listed below.

- **Goal:** A statement that describes, in general terms, a condition or quality of service desired.
- **Policy:** A statement that guides action and overall direction. Decisions regarding investments, program development, and development approvals are based on these policies.
- **Route of Regional Significance (RRS):** RRS are roadways, publicly accessible transit facilities, and active transportation 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. They are also routes for which entities in the subregion want to share regional responsibility with neighboring jurisdictions. RRS provide vital connections that support economic and recreational activities throughout the county.
- **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 referred to as Multimodal Transportation Service Objectives (MTSOs) in Measure J, however, for this Action Plan update, they have been branded to reflect the broader, more comprehensive approach to incorporating not only all travel modes and facilities required to serve them, but also safety, climate change, and innovation and technology. RTOs consist of a quantifiable measure of effectiveness (a “metric” and a “standard)”, and include a target date for attaining the objective. More information on RTOs is found at the end of this chapter.
- **Metric:** The unit by which an RTO is measured, such as “level of service,” “delay index,” 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 vehicle miles traveled (VMT) per capita might be “20 miles per person per day.”
- **Action:** Actions are the specific programs or projects that are recommended for implementation to meet the RTOs in the Action Plan. Actions are either “projects” or “programs” (defined below).
- **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 physical construction.
- **Program:** Programs are actions that do not involve construction but instead involve education, research, funding, or other non-construction activities. Similar to projects, programs are carried out in response to an adopted policy to help achieve a specific goal or objective.

Regional Transportation Objectives

Historically, Action Plans have included MTSOs to express the quantifiable objectives that the RTPCs use to track progress. Although the MTSOs were by nature multimodal, they neither captured nor addressed new transportation imperatives that have recently come to the forefront. These imperatives include safety, climate change, and technology and innovations. This Action Plan carries forward the previously adopted MTSOs and rebrands them as "regional transportation objectives" to incorporate not only all modes of transportation, but new objectives such as safety, climate change, and innovation and technology.[8]

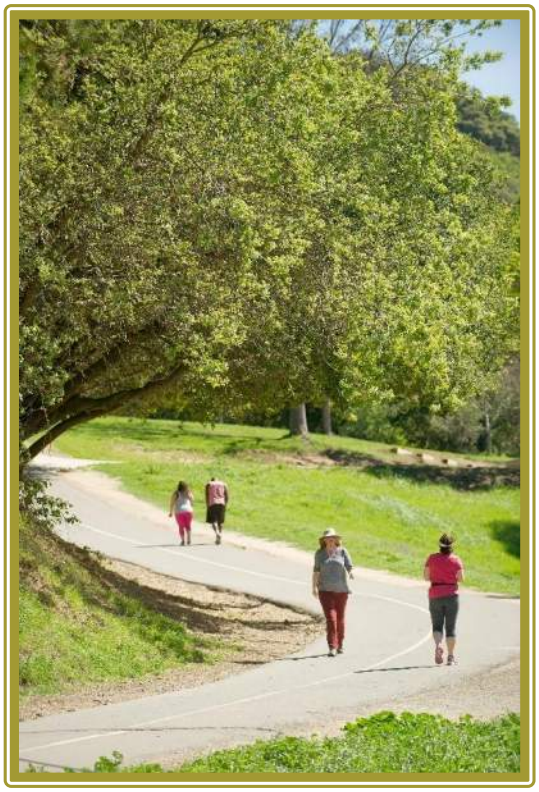
The CCTA's *Implementation Guide* defines the areas of consideration that should be addressed in each Action Plan, but also gives the RTPCs significant flexibility in choosing RTOs for their Action Plan. As long as the objective is quantifiable and includes a time frame for achievement of the objective, it can be proposed for inclusion in the Action Plan. Selection of the RTOs was based in part on whether the objective could be easily measured through observation and/or forecast through use of the Countywide Travel Demand Model.

There are a total of 21 RTOs identified in this Action Plan, listed below. These RTOs are summarized in tables and described in detail in Chapters 5 through 10. Refer to Appendix A to see RTOs that were considered but not recommended for adoption in this Action Plan.

- **Transit RTO-1: Transit Mode Share.** Increase the mode share of transit trips in the subregion.
- **Transit RTO-2: Mode Share to BART.** Increase the number of riders who access BART using means other than automobiles, including transit and active transportation.
- **Transit RTO-3: Transit Trip Time.** Optimize peak-hour and peak-direction travel time for transit as compared to automobile travel time for the same trip.
- **Transit RTO-4: High-Quality Transit Access.** Increase the proportion of urbanized land area in the subregion served by high-quality transit.
- **Transit RTO-5: Paratransit and Community-Based Transportation Program Access.** Increase the number of rides by paratransit and community-based transportation programs.
- **Active Transportation RTO-1: Active Transportation Mode Share.** Increase the mode share of bicycling and walking in the subregion.
- **Active Transportation RTO-2: Low-Stress Bicycle Network.** Increase the proportion of the countywide Low-Stress Bicycle Network completed in the subregion.
- **Active Transportation RTO-3: Unprotected Trail Crossings.** Eliminate the number of locations where the low-stress bicycle network has an unprotected crossing of a heavily traveled vehicle route.

[8] Other CCTA Action Plans, including for West County, Central County, and East County, include an additional chapter for equity. This Tri-Valley Action Plan and the Lamorinda Action Plan do not include an equity chapter because there are no MTC-designated Equity Priority Communities in either subregion.

- **Roadways RTO-1: Freeway Delay Index.** Maintain peak-hour delay index on select freeway segments.
- **Roadways RTO-2: Freeway Buffer Index.** Maintain peak-hour freeway segment buffer index on select freeway segments.
- **Roadways RTO-3: Intersection Level of Service (LOS).** Maintain peak-hour LOS at RTO monitoring locations in urban areas.
- **Roadways RTO-4: Roadway Segment LOS.** Maintain peak-hour segment LOS on selected two-lane roadways outside of urban areas.
- **Safety RTO-1: KSI Collisions.** Eliminate killed or severely injured (KSI) collisions in the subregion.
- **Safety RTO-2: Active Transportation Collisions.** Eliminate collisions in the subregion that involve users of active transportation.
- **Safety RTO-3: Active Transportation Collisions Near Schools.** Eliminate active transportation collisions within 500 feet of a school.
- **Climate Change RTO-1: Single-Occupant Vehicle (SOV) Mode Share.** Reduce the mode share of SOVs in the subregion.
- **Climate Change RTO-2: Carpool Mode Share.** Increase the mode share of carpooling in the subregion.
- **Climate Change RTO-3: Vehicle Miles Traveled.** Reduce VMT per service population in the subregion.
- **Climate Change RTO-4: Greenhouse Gas (GHG) Emissions.** Reduce transportation GHG emissions per capita in the subregion.
- **Climate Change RTO-5: Zero-Emission Vehicles.** Increase the share of zero-emission vehicles in the subregion.



- **Technology and Innovation RTO-1: Signal Interconnect Project.** Complete the project to upgrade traffic signals to regional ethernet and/or fiber-optic interconnection.

Chapter 2: Current Conditions, Trends, and Travel Patterns

This chapter documents existing transportation conditions in the Tri-Valley area; these conditions are the basis for formulation of this Action Plan and include description of baseline and projected transportation conditions for the Tri-Valley area and the entire county. This information helps CCTA and the subregion to understand patterns in the transportation system and to make informed decisions on how to improve the system over time.

Travel Demand Modeling

Forecasts of future population and employment growth in Tri-Valley, as well as projections of future travel demand on major Tri-Valley area transportation facilities, are drawn from the most recent available regional Travel Demand Model maintained by the Authority. This four-step, trip-based model

was most recently revalidated to a 2019 base year. The version of the CCTA model applied for this analysis accommodates a 2050 horizon year and incorporates enhanced traffic assignment procedures for freeway express lanes.

For this Action Plan update, land use inputs for the horizon year of 2050 were based on the Metropolitan Transportation Commission's (MTC) Plan Bay Area's 2050 projections for Contra Costa County and Alameda County's portion of the Tri-Valley area. The transportation network assumptions for the Baseline 2050 scenario are derived from the latest CCTA Transportation Expenditure Plan (TEP) No Build scenario, to reflect only already-programmed improvements. In addition to the TEP projects, some additional express lanes are assumed on I-680, and the extension of BART service to Livermore was removed.

COVID-19 Effects

The Action Plan update process began in the summer of 2021, amid the COVID-19 pandemic. Although COVID-19 cases peaked nearly two years ago, from November 2020 to February 2021, COVID-19 impacts have been consistently present since March 2020. Specifically, shelter-in-place orders implemented by the Contra Costa County Health Officer and the State of California in March 2020 changed travel behavior significantly throughout the county and beyond. Commuters who were able to work remotely began to do so, recreational trips diminished, and our roadways were empty. As the pandemic slowed and mandates shifted, travel demand returned, but it is different than it was. These shifts in travel demand are important to acknowledge in the Action Plan update due to the uncertainties that the pandemic has produced.

Blue Ribbon Transit Recovery Task Force

The Blue Ribbon Transit Recovery Task Force is a 32-member group created to assist MTC to further understand the scale of the COVID-19 crisis and how it impacts the transit systems in the Bay Area. The task force helped develop Bay Area Transit Transformation Action Plan to reshape the region's transit system into a more connected, efficient, and user-focused mobility network across the entire Bay Area.

In September 2020, CCTA studied various effects on travel behavior resulting from COVID-19.[9] This study was intended to develop near-term mitigation measures to address post-COVID-19 impacts on anticipated traffic congestion in Contra Costa County. The study looked at data from March 2020 through June 2020 and showed that vehicle traffic volumes recovered after an initial decline and that transit ridership declined and remains low. CCTA also analyzed vehicle occupancy, unemployment, remote work rates, and BART data to predict traffic changes in the county. CCTA's analysis concluded that with an expected increase in the employment rate and a decrease in remote work, traffic volumes along Contra Costa corridors during peak conditions are expected to be higher than prior to COVID-19. The region should continue to track traffic trends to figure out what types of investments could address future changes.

[9] CCTA, *Impacts of COVID-19 on the Contra Costa Transportation System*, September 2020.

The 2020 CCTA COVID report found that about 35 percent of employees in Contra Costa County were working from home at the peak of the pandemic's shelter-in-place orders. That portion is expected to decrease to 25 percent (with no mitigation) to maintain remote work, or 30 percent with mitigation. As the effects of post-COVID-19 travel behavior evolve, it is unclear whether remote work will remain as prevalent, in part dependent on whether and how employers update current remote work policies.

Despite an initial decrease in vehicle traffic in 2020, Contra Costa County traffic volumes exceeded pre-pandemic levels by four percent as of July 2021. However, not all of the renewed traffic is for work purposes, as people have spread out the times during which they drive, including midday and weekends. In addition, the total number of collisions dropped in Contra Costa County, but fatalities have increased. The trend in increased fatalities is occurring throughout the United States and is not a phenomenon specific to Contra Costa.

CCTA's COVID-19 report shows that transit ridership experienced a serious decline, with BART, County Connection, and Tri-Delta losing high proportions of riders in the county. BART reduced service and hours from March 2020 until early 2022, including a 9:00 pm closing time for the first seven months of 2021. By February 2022, BART restored service hours to pre-COVID levels. According to BART's Monthly Ridership Report,[10] as of July 2022, although ridership is recovering, average weekday ridership is only 32 percent of pre-COVID levels. Some bus service in the Bay Area, especially AC Transit, showed a faster recovery than rail. The CCTA report concludes that even if the increase of people working from home is higher than pre-COVID conditions, overall congestion is likely to increase if transit ridership continues to be less than the pre-COVID levels.

One outcome of post-pandemic travel behavior patterns is higher demand for, and rate of use of, bicycle and pedestrian facilities, public spaces for outdoor activities, and reclaimed open streets. Regional residents have an increased appreciation for, and use of, the outdoors with an increase in visits to public parks. Cities across the country, including those in the Bay Area, have embraced car-free, or slow, streets. Berkeley, for example, closed north Telegraph Avenue to cars indefinitely in June 2022. In addition, businesses expanded parklets and patios to limit exposure to COVID-19 and have consequently changed how many public rights-of-way now operate.

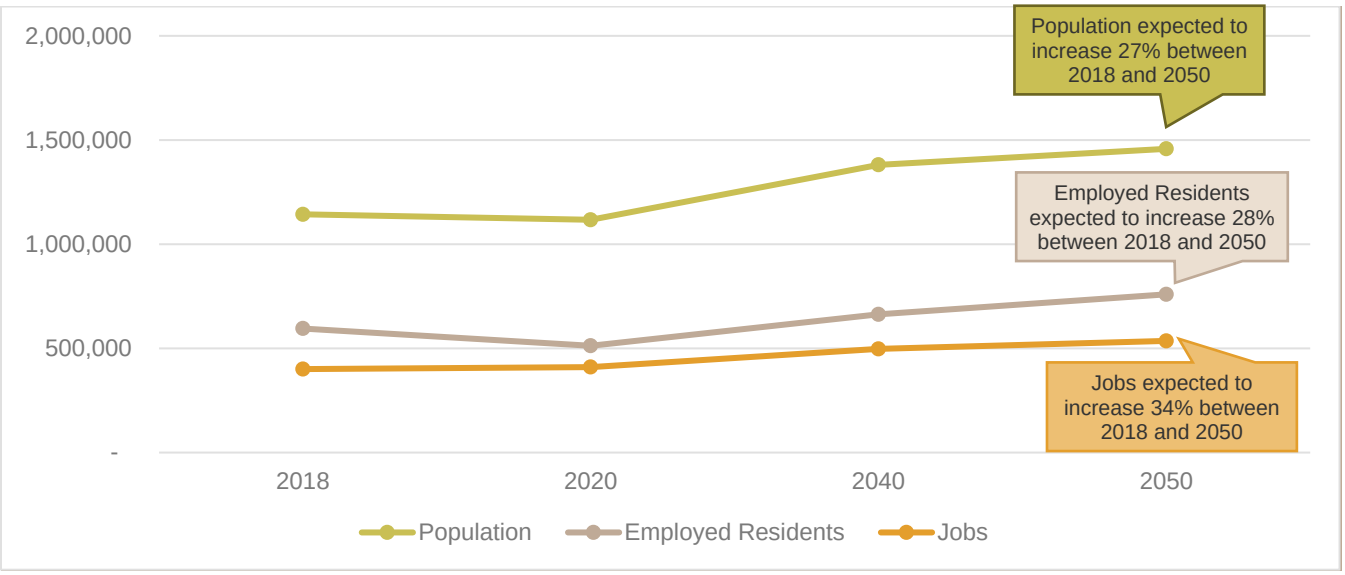
[10] BART, *Monthly Ridership Report*, July 2022, https://www.bart.gov/sites/default/files/docs/202207%20MRR.pdf.

Due to the impact of COVID-19 on the transportation system, the Action Plan update process relies on pre-pandemic data for all traffic modeling in the CCTA Travel Demand Model. CCTA uses 2019 as the Action Plan base year, and used 2020, 2040, and 2050 population and employment data to interpolate and forecast for future years. A base year of 2019 was used because the impacts of the COVID-19 pandemic could skew analysis results due to constant fluctuations in travel behavior. While the direct impacts of the COVID-19 pandemic are not reflected in the Action Plan, CCTA hopes that the next update of the Action Plan is able to account for the "new normal" of travel behavior once a consistent behavior emerges in the coming years.

Population and Employment

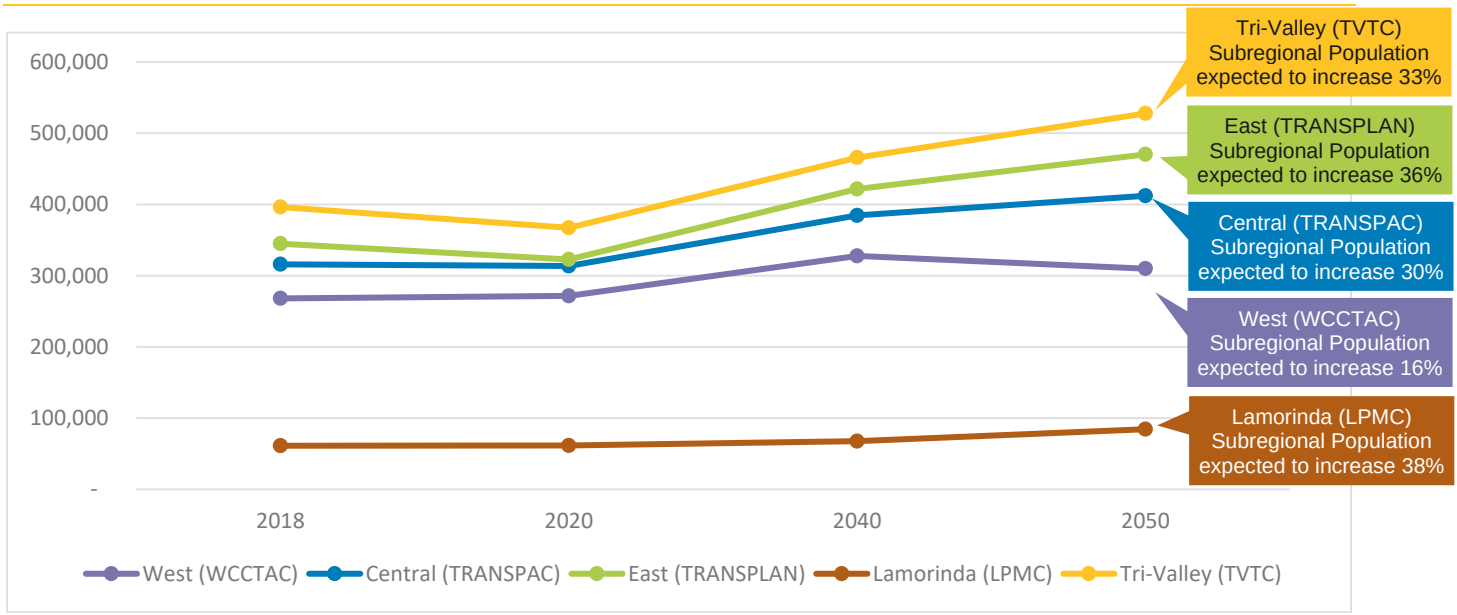
Countywide forecasts for population, employed residents, and jobs are shown in Figure 2-1, which shows a downward trend of population and employed residents occurred between 2018 and 2020 due to the COVID-19 pandemic. Projecting beyond 2020, all three categories are expected to follow fairly similar growth patterns.

Figure 2-1: Contra Costa County Demographic Growth



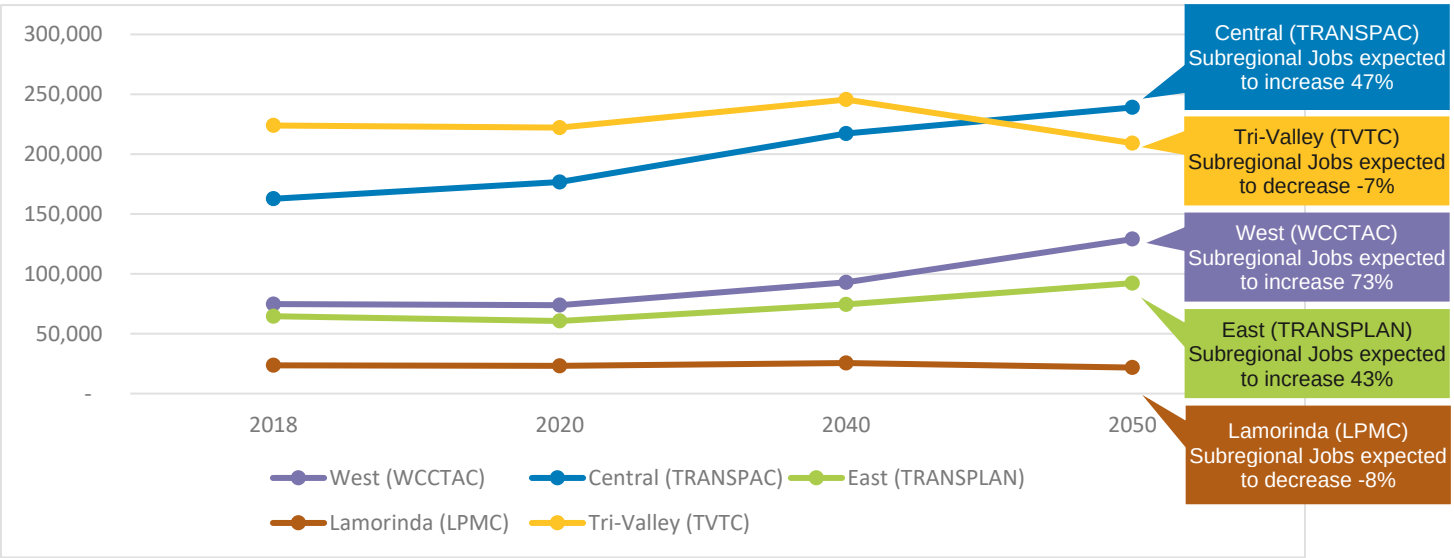
The five subregional forecasts for population growth are shown in Figure 2-2. The Tri-Valley population, represented by the yellow line, is projected to grow at a rate of 33 percent between 2018 and 2050, which is the third-highest rate of all Contra Costa County subregions. However, by 2050, the Tri-Valley area is anticipated to be home to about 527,734 people, which is the subregion with the highest increase in concentration of population in Contra Costa County.

Figure 2-2: Subregional Population Growth



Subregional forecasts for jobs are shown in Figure 2-3. Again, the Tri-Valley area is represented by the yellow line. In the Tri-Valley subregion, jobs are expected to decline by seven percent between 2018 and 2050. The only other subregion anticipated to lose jobs is the Lamorinda subregion, losing eight percent between 2018 and 2050.[11]

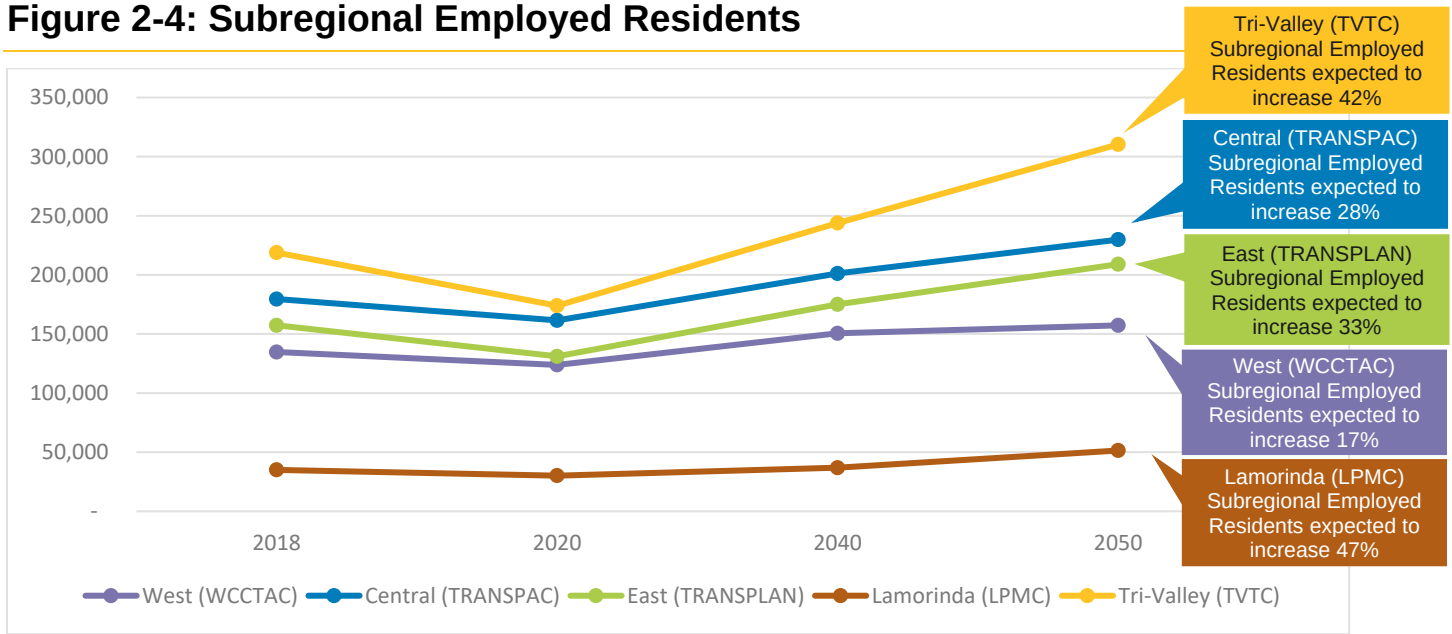
Figure 2-3: Subregional Job Growth



[11] The projected decline in Tri-Valley jobs is a result of a disconnect between Plan Bay Area 2050 projections and the job projections previously assumed for 2040 in the CCTA Travel Demand Model.

Subregional forecasts for employed residents are shown in Figure 2-4. Again, the Tri-Valley area is represented by the yellow line. Countywide, the percentage of employed residents is expected to grow faster than the population, with the Tri-Valley area projected to experience 42 percent growth of employed residents between 2018 and 2050.

Figure 2-4: Subregional Employed Residents



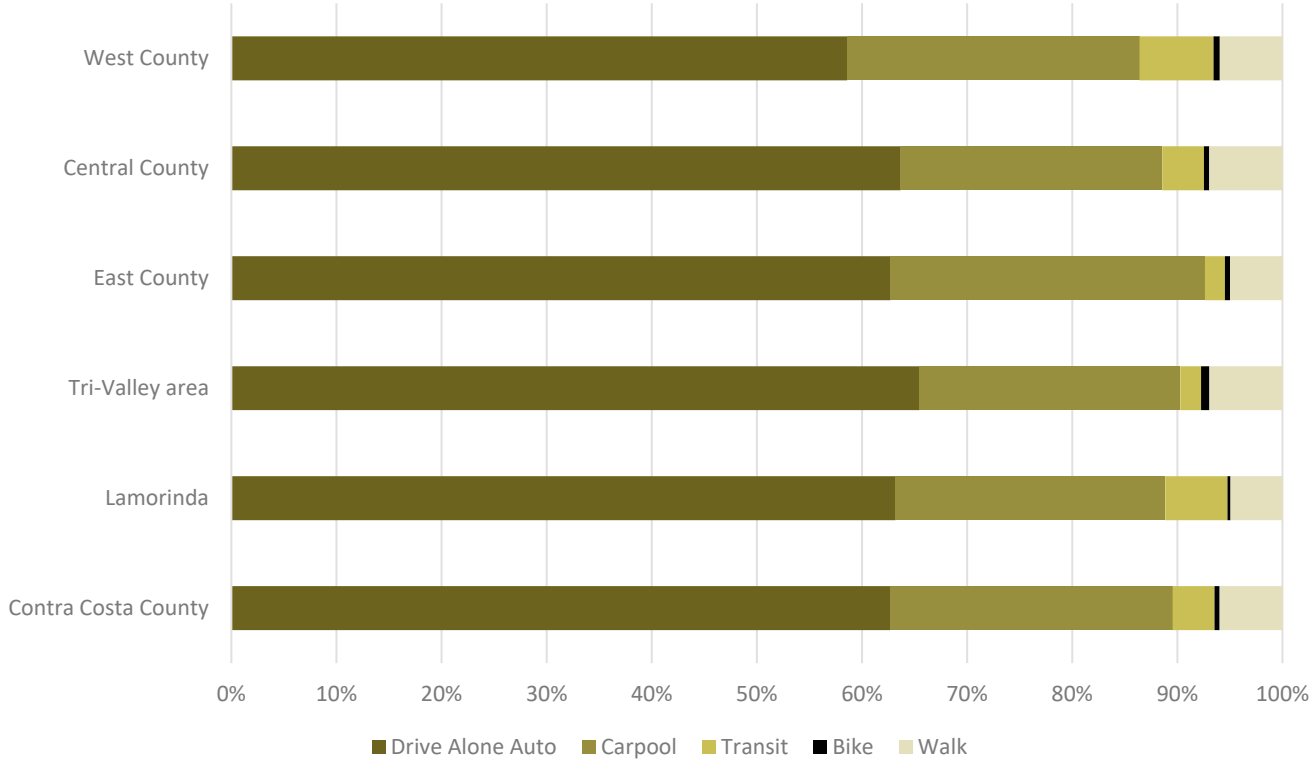
Commute Patterns and Travel Demand Forecasts

The regional Travel Demand Model was applied to generate estimates of the future traffic volumes expected on major roadways throughout the county. As with all subregions in the county, traffic volumes throughout the Tri-Valley area are anticipated to increase each year as the local population continues to grow. It should be noted that the model results shown in this chapter are intended to give an idea of the order-of-magnitude changes in traffic volumes anticipated across the region; much more detailed and refined studies would be undertaken for any specific project.

Countywide Mode Share

Each of the five subregions is geographically and socioeconomically unique. Some subregions have more dense, urban development that is quite conducive to transit and active transportation, and others are suburban or have hilly geographies that make transit and active transportation less common. For instance, the Tri-Valley area is more of a valley than the other subregions, with both flat corridors and winding roads on the edges. However, the Tri-Valley area is generally flatter than subregions like Lamorinda. Therefore, the mode share for each mode of transportation varies between subregions, as illustrated in Figure 2-5.

Figure 2-5: Mode Share of All Transit Trips by Subregion



Modeled Mode Share

Understanding mode share and how to shift it is key to changing the transit system and the active transportation system, and to curbing the transportation system's impact on climate change. The modeled and forecast mode shares are derived from CCTA's trip-based travel demand model. It is important to note that this model does not account for shifts in travel patterns that emerged in response to the COVID-19 pandemic and that may carry forward into the future. Therefore, the forecast results do not reflect increased rates of remote work that have occurred for some jobs.[12] Also note that the mode shares for active transportation only reflect trips that are made primarily by bicycling or walking. Walking or bicycling to reach transit stops is not counted as a separate active transportation trip but only as a transit trip.

[12] Some jobs, such as service jobs or healthcare, can only occur in person. However, many online-based jobs that are typically considered to be "white collar" jobs are able to be conducted remotely. As mentioned in the COVID-19 Effects section, only some of the online-based jobs that experienced a shift to remote work during the pandemic will remain that way. A future update of the Lamorinda Action Plan can better understand the rate of post-pandemic remote work and the impact it has on mode share.

Reported Current Commute Mode Share

The American Community Survey estimates, published by the United States Census Bureau, report the number of work trips by mode. An estimated mode share based on this data is shown in Table 2-1, which shows the commute mode share for the Planning Area and the Tri-Valley subregion. As shown in Table 2-1, in 2019, about 79 percent of the work trips in the Planning Area[13] are made by automobile, either driving alone or by carpool, compared with 80 percent by automobile in the Tri-Valley area, which shows a higher rate of drive alone and a lower share of carpooling in Tri-Valley than the entire Planning Area.

Table 2-1: Means of Transportation to Work in the Planning Area and the Tri-Valley Subregion (2019)

Mode	Planning Area			Tri-Valley Area		
	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.

Note: The American Community Survey found that eight percent of Tri-Valley workers were found to work from home in 2019. While the number of workers working from home rose dramatically during the COVID-19 pandemic, there is no reliable data on the exact percentage. The "work from home" mode is accounted for in the Countywide Travel Demand Model during the trip generation step by omitting those trips. In this forecast, "work from home" is assumed to continue at current levels. As COVID recedes and workers begin to return to commuting, new data will become available and will be incorporated into the next model update to reflect higher percentages of "work from home" based on the new survey data.

[13] In this Action Plan, the "Planning Area" refers to all of Contra Costa County and the Alameda County portion of the Tri-Valley area.

Modeled Commute Mode Share

Mode shares for home-to-work trip purpose have been calculated based on the residence location (Table 2-2) or the work location (Table 2-3). 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 those driving alone. Tri-Valley's transit mode share for work trips is lower than the Planning Area, reflecting the lack of available BART service in the San Ramon Valley portion of the subregion. Active transportation trips account for a very small portion of commute trips made by Tri-Valley residents. Note that the bicycle mode share only reflects trips made by bicycle from beginning to end and does not count access trips to and from transit stops.

The mode shares for Tri-Valley area commuters are projected to remain relatively similar to existing shares, with a modest decrease in the drive-alone auto and an increase in carpool, transit, and bicycling mode shares.

As shown in Table 2-3, commuters to jobs in the Tri-Valley area predominantly use the automobile modes to get to work, especially driving alone. Transit and active transportation account for small shares of this market. Commute mode shares are predicted to increase by 2050, with a moderate decrease in drive alone, and an increase in the carpool, transit, and active transportation mode shares.

Table 2-2: Modeled Home-to-Work Mode Share: Tri-Valley Residents

	Planning Area		Tri-Valley Area	
	2019	2050	2019	2050
Drive-Alone Auto	73%	71%	79%	75%
Carpool	14%	15%	13%	15%
Transit	11%	12%	6%	8%
Bicycle	0.4%	0.7%	0.8%	1.2%
Walk	1.3%	1.5%	1.0%	1.0%

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 2-3: Modeled Home-to-Work Mode Share: Jobs in Tri-Valley

	Planning Area		Tri-Valley Area	
	2019	2050	2019	2050
Drive-Alone Auto	83%	79%	83%	79%
Carpool	12%	14%	12%	14%
Transit	2%	4%	2%	4%
Bicycle	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 2-4 reports the mode share calculated for all trip purposes in the CCTA travel demand model—from home to work, shopping, social/recreation, grade school, high school, and college, as well as trips not starting from home. The modeling results show that most Planning Area trips are currently made by automobile, with transit and active transportation modes accounting for less than 10 percent of all trips. In the Tri-Valley area, the figures are quite similar.

By 2050, the mode shares are expected to remain similar to existing conditions, with a decrease in drive-alone share, increase in carpool shares, no change for transit in the Planning area, increase in transit in the Tri-Valley area, a slight increase in active transportation in the Planning Area, and a decrease in active transportation mode share in the Tri-Valley area.

Table 2-4: Mode Share for all Trips: Tri-Valley Subregion Residents[14]

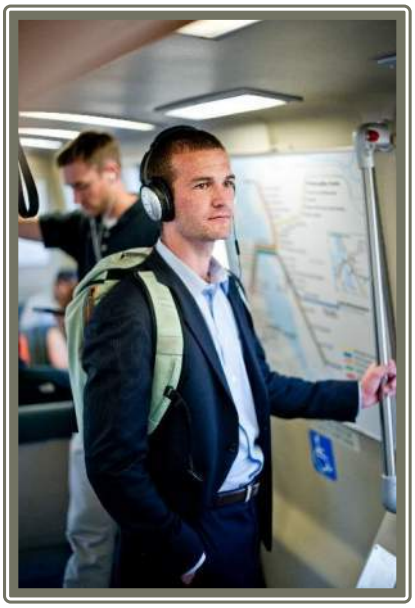
	Planning Area		Tri-Valley Area	
	2019	2050	2019	2050
Drive-Alone Auto	63%	62%	66%	60%
Carpool	27%	28%	25%	28%
Transit	3%	3%	2%	5%
Bicycle	0.6%	0.9%	0.8%	0.6%
Walk	6%	6%	7%	6%

Source: CCTA travel demand model and DKS Associates.

Note: Totals may not sum due to rounding.

[14] Note that projections in Table 2-4 are anticipating mode share shifts based on the CCTA Travel Demand Model and already planned for and/or funded projects. Therefore, some modes, such as carpooling, transit, and bicycle are projected to decrease through 2050. This projection does not take into account the improvements adopted in this Action Plan; therefore, the 2050 share of these modes is anticipated by Tri-Valley jurisdictions to be higher than reported in Table 2-4.

Transit



The Tri-Valley area is somewhat connected via public transit. Major public transit routes include the BART and Altamont Corridor Express rail lines through the Alameda County portion of the Tri-Valley. Bus service is offered in both portions of the subregion through County Connection and the Livermore Amador Valley Transit Authority. See Chapter 5, Transit, Figures 5-1 and 5-2, for a map depicting these routes and facilities.

The existing 2017 Tri-Valley Action Plan and the CTP resulted in several positive transit system programs and developments. These include, but are not limited to, the TRAFFIX School Bus Program, Express Bus and Bus Rapid Transit service along I-580, and various BART station improvements.

As discussed previously, the COVID-19 pandemic caused a decrease in use of public transportation that is still reverberating throughout the Planning Area. In 2019, Tri-Valley transit trips accounted for just over two percent of all trips in the subregion. The long-term behavior change that the COVID-19 pandemic may cause in terms of transit ridership is unknown. However, it is the goal of this Action Plan to increase transit ridership to meet, then exceed, pre-pandemic levels. See Chapter 5, Transit, for more information on objectives and actions to achieve this goal.

Active Transportation Facilities

The existing Tri-Valley active transportation network includes low-stress facilities, Class I, Class IIIB, or Class IV, either adjacent to some major thoroughfares or on multi-use paths. These facilities, in conjunction with a network of non-low-stress facilities, Class II and III, offer opportunities for both recreational and commute bicycle and pedestrian traffic to traverse the subregion.[15] See Chapter 6, Active Transportation, Figures 6-1 and 6-2, for a map depicting these routes and facilities.

Active Transportation

Active transportation is the movement of people or goods through nonmotorized means, usually through human activity like walking, pedaling, or rolling. It is essential for the reduction of carbon emissions, improving public health through physical activity, and increasing ADA-accessible spaces. Forms of active transportation can include shared and privately owned micromobility devices, standard or electric bicycles, wheelchairs, and more.

[15] Class I facilities are bicycle paths or shared-use paths with exclusive right-of-way for bicyclists and pedestrians, split from automobile traffic. Class II facilities are bicycle lanes on the perimeter of streets, defined by pavement striping and signage to delineate a portion of the roadway for bicycle travel. Class III facilities are routes that are shared by both automobiles and bicycles, often represented through painting or signage on the roadway. Class IIIB facilities are the same as Class III except there are additional protections for bicycles such as bollards to reduce the amount of automobile traffic or designation of streets as one way for automobiles. Class IV bicycle facilities are similar to Class II facilities except there is a physical barrier that separates the automobile and bicycle traffic for enhanced safety.

The existing 2017 Tri-Valley Action Plan and the CTP resulted in several successful bicycle and pedestrian projects, including, but not limited to, bicycle and pedestrian overcrossings for the Iron Horse Trail.

Despite these facilities, bicycle and pedestrian travel modes remain low, accounting for just under eight percent of all Tri-Valley trips in 2019. See Chapter 6, Active Transportation, for more information on objectives and actions to achieve bicycle and pedestrian goals.

Roadways

The Tri-Valley area roadway network is the most comprehensive travel network in the county and provides facilities for both automobile and non-automobile travel. Major facilities include I-580 and I-680, which link the Tri-Valley area between Contra Costa and Alameda County and extends to Solano County, as well as various roads that serve local and regional traffic. See Chapter 7, Roadways, Figure 7-1, for a map depicting these routes and facilities.

Major improvements to the roadway system in the Tri-Valley area include, but are not limited to, Innovate 680, I-680 HOV and express lane/express bus improvements, State Route (SR-) 84 express lanes on I-580 east of I-680, truck climbing lanes on I-580 eastbound on the Sunol Grade HOV/Express Lanes, various interchange modifications, and Sycamore Valley Park-and-Ride improvements.

Although there have been various capacity improvements to local roadways in the past decades, traffic congestion continually gets worse as population and development increase. Additionally, as described in the beginning of Chapter 2, the impacts of the COVID-19 pandemic on the transportation network, mainly roadways, is ongoing and the future of congestion on these roadways is uncertain. It is estimated that approximately 91 percent of trips in the Tri-Valley area are made by vehicle, either driving alone or as a carpool. This percentage translates to 35.9 VMT per capita in the subregion. The roadway and vehicle goals in this Action Plan aim to decrease both the mode share of SOVs and VMT, while increasing the carpooling mode share. See Chapter 7, Roadways, for more information on objectives and actions to achieve these roadway and vehicle goals.

Safety

Safety is a foundational consideration of the transportation system, which affects the lives and well-being of all Tri-Valley residents for all modes of transportation. Major collision and severe injury can happen if a Safe System Approach for infrastructure design is not implemented. Collisions that result in death or severe injury may increase proportionally as population increases, particularly without a Safe System Approach, major improvements to infrastructure, and programming focused on improving safety for all, with a focus on vulnerable users, including youth, seniors, and people walking or bicycling. However, this Action Plan includes goals, RTOs, and actions that will reduce and eventually eliminate collisions resulting in death or severe injury, per the Authority's adopted core principles of Vision Zero.[16] Vision Zero is a strategy to eliminate all fatalities and severe injuries that result from traffic collisions. The Vision Zero approach views transportation-related fatalities as preventable, not inevitable, and relies on multidisciplinary collaboration that is informed by data and is focused on equity. CCTA and their member jurisdictions and partners are committed to the Vision Zero approach and to a Safe System Approach that will enhance the existing transportation network and leverage future projects to ensure a safe environment for all.

If accompanied by a Safe System Approach to public right-of-way design and construction, intelligent transportation technologies can improve safety through vehicle technology deployment, such as connected/autonomous vehicles, smart traffic signals with bicyclist and pedestrian detection, and physical improvements such as roadway design, physically separated active transportation infrastructure, connectivity, broader educational outreach, training, and ongoing professional development. The importance of our community's safety of people traveling will increase as mobility increases, most often along shorter trips. Safety is a top priority of the Action Plan. See Chapter 8, Safety, for more information on objectives and actions to achieve these safety goals.

Climate Change and GHG Trends and Forecasts

Climate change is a significant challenge facing people and the planet, and transportation is the largest contributor of GHG emissions. The Intergovernmental Panel on Climate Change's Sixth Assessment Report states that the increased consumption of fossil fuels (e.g., natural gas, coal, gasoline) has substantially increased atmospheric levels of the GHGs that change the climate. The transportation

[16] CCTA codified Vision Zero work through Resolution 21-40-G which adopts the Contra Costa Countywide Transportation Safety Policy and Implementation Guide for Local Agencies.

system is vulnerable to the effects of climate change, most notably changing climate and weather patterns, duration and frequency of events such as drought, extreme heat, wildfires, storms, flooding, and sea-level rise; and more needs to be done to make the system resilient to these changes. In addition to impacts on the transportation system, changes in climate adversely impact agricultural productivity, water quality, air quality, and other living conditions, resulting in mental, physical, dietary, and socioeconomic effects. Air pollution from mobile sources, especially diesel engines, increases the risk and occurrence of asthma, lung diseases, and other health impacts. Therefore, one of the Action Plan's goals is to plan for a more sustainable and resilient transportation system that reduces its carbon footprint as well as mitigates climate risk from climate hazards and other impacts. This Action Plan addresses climate change in Chapter 9, which outlines RTOs and actions that will reduce GHGs through decisions that will support cleaner transportation options.

Innovation and Technology

CCTA and its Tri-Valley Transportation Council (TVTC) are committed to ongoing innovation and the deployment of new technologies to improve the transportation system. Innovative initiatives and technology added to current projects and programs should reduce traffic congestion, improve air quality, and provide new, cleaner mobility options for all Tri-Valley residents. Such innovations include in-vehicle technology such as sensors, automated capabilities, and safety enhancements, as well as outside-of-vehicle technology such as smart signals that employ artificial intelligence in real-time to help officials monitor and manage traffic flow and communicate to meet specific goals. Other technologies include “dynamic personal micro transit” (DPMT), which includes automated vehicles that could address first/last-mile connectivity issues, or “mobility as a service,” which gives riders dynamic and real-time information on available travel options at that time. See Chapter 10, Innovation and Technology, for more information on objectives and actions to achieve these goals.

Housing Development

The State of California is increasingly creating regulations that require local jurisdictions such as those in the Tri-Valley area to accommodate additional housing, whether such housing is locally supported or not. Simultaneously, the State has removed allowances to look at traffic congestion resulting from development as a significant impact under the California Environmental Quality Act (CEQA). Together, these changes mean that local communities may increasingly approve housing projects without finding significant traffic impacts from such projects under CEQA.

This Action Plan accounts for these changes by including measures of roadway congestion in the RTOs, and by committing that TVTC and CCTA will work to make roadway capacity improvements to maintain desired LOS where possible. Nonetheless, local jurisdictions may see LOS decline as residential projects are approved, and they should not anticipate that residential projects may be denied simply due to their traffic impacts.

Conclusion: Moving Toward a Multimodal Network

As is the case in all of the Planning Area and the entire nation, the Tri-Valley area's existing transportation network was constructed primarily with a focus on the efficient movement of vehicles. However, innovation and technology; prioritization of the movement of people (most efficiently transported via transit); considerations regarding the climate and safety; and an increased interest in non-vehicular modes of transportation have made possible a shift to a more dynamic future.

This Action Plan, if thoughtfully implemented, will improve the overall quality, sustainability, equity, and safety of transportation. This Action Plan includes goals, policies, RTOs, and actions to improve the transportation system and to ensure that all people can more equitably and safely travel through, to, and within the Tri-Valley subregion.

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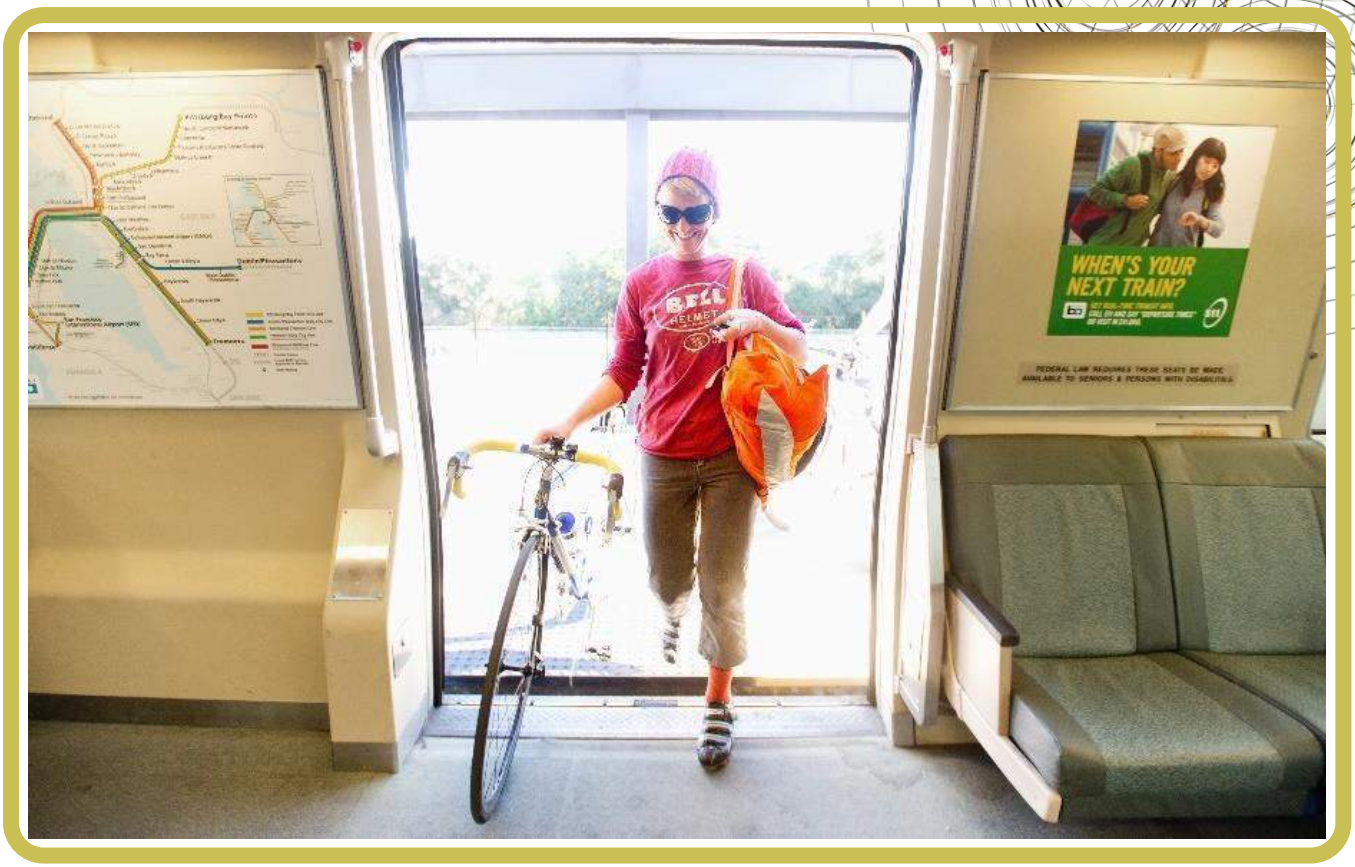
Chapter 3: Vision, Goals, and Policies



This chapter summarizes the vision, goals, and policies that lay the framework for this Action Plan.

Vision

The overall vision of the Action Plan is to ensure that the transportation system in Tri-Valley serves the needs of the community while accommodating and encouraging a shift in travel behavior that reduces congestion and leads to a healthier and better-quality life for all. The goals and performance measures in this Action Plan were designed to accomplish this vision and to ensure Tri-Valley jurisdictions are working holistically, tapping into various modes, and leveraging technology and innovation.

Long-range transportation planning in the Tri-Valley area and greater Planning Area requires a holistic, multimodal planning approach based on cooperation among all jurisdictions, partner agencies, and the community. This approach must consider all components of the transportation system simultaneously, anticipate the needs and desires of the community, and show the path to the future. Multi-jurisdictional coordination and ongoing discussions are critical to ensure that the services offered, projects pursued, and programs launched support and build off one another. Such a holistic approach can ensure that a unified plan is implemented to meet the needs of the community.

Innovation and technology will be key to achieving this vision. They are already improving the efficiency of the transportation network in Contra Costa County. Thanks to express lanes, integrated corridor management, traffic signal coordination, ramp metering, and shared-use mobility services, the transportation system is becoming more efficient and sustainable. Additional new technologies, such as fully connected and autonomous vehicles and Mobility as a Service, if harnessed correctly, can enrich the future of transportation even further.

Goals

This Action Plan includes 15 goals for the transportation system in the Tri-Valley area. Some goals pertain to one mode or topic in the Action Plan, while others are multimodal and/or cover more than one topic.

1. Integrate transportation planning with planning for air quality, community character, and other environmental factors.
2. Support corridor management programs to make the most efficient, effective, and safe use of existing facilities and services.
3. Maintain and actively pursue enhanced and expanded public transit service and increase the transit share of travel in the Tri-Valley area.
4. Enhance non-motorized transportation options.
5. Increase average vehicle occupancy and reduce vehicles miles traveled (VMT).
6. Provide support for Priority Development Areas (PDAs).
7. Manage school-related traffic to enhance safety and reduce peak period traffic impacts.
8. Minimize congestion and enhance mobility on RRS within the Tri-Valley area.
9. Support arterial traffic management strategies that address hotspots at critical intersections and approaches.
10. Maintain transportation funding for transportation projects.
11. Ensure a safe and low-stress transportation system for all modes of travel.
12. Minimize transportation impacts on the climate.
13. Ensure the transportation system is resilient in the face of climate change.
14. Support equitable mobility for all income groups, racial and ethnic groups, and all ages and abilities across all modes of transportation.
15. Continue the process of innovation and the development of new technologies in transportation.

Policies

1. Engage in collaborative discussions with partner agencies, jurisdictions, boards, and committees to ensure that the perspectives and concerns of all relevant parties are addressed when making regional decisions that impact transportation facilities.
2. Work with MTC and other agencies to implement regional initiatives such as One Bay Area Grant (OBAG)/PDA development strategies.
3. Implement the Actions in this Action Plan, and other projects and programs as needed, to achieve and maintain the RTOs in this Action Plan.
4. Maintain established capacity constraints at selected regional gateways with the intent of optimizing mobility on RRS.[17]
5. Consider safety as a top priority when designing new or modified travel corridors to be consistent with Countywide Vision Zero.
6. Support growth in downtowns, PDAs, transit priority areas, and other areas well-served by transit, so as to lessen reliance on SOVs.
7. Promote transportation alternatives to reduce demand on existing facilities in lieu of widening roadways and further impacting the natural environment.
8. Support land use decisions that improve jobs-housing balance.
9. Coordinate with economic development agencies and non-governmental organizations to attract new employment to housing-rich areas.
10. Improve transit and active transportation access to PDAs.
11. Recognize, support, and subsidize transit as an essential and free or very low-cost service for transit-dependent people.
12. Consider complete corridors, complete streets, and bicycle and pedestrian needs in all neighborhood and roadway planning and design efforts.
13. Ensure the active transportation network is attractive for all users by maintaining facilities in good working order, including pavement condition, vegetation along facilities, and debris removal.
14. Focus bicycle and pedestrian network efforts on closing gaps in the planned low-stress bicycle network, connecting key destinations such as downtowns, transit hubs, and major recreation areas.
15. Work to minimize congestion and maintain RTOs on the vehicular roadway network, while also prioritizing improvements and projects that support modes other than SOVs.
16. Support Transportation Demand Management (TDM) programs that reduce VMT, improve access to transit, and increase transit ridership.
17. Encourage local jurisdictions to develop objective design standards to support the development of transit-oriented communities.

[17] For more information on the Gateway Constraints Policy refer to Appendix F, Gateway Constraints Policy.

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Chapter 4: Routes of Regional Significance

One of the key elements of an Action Plan is the designation of RRS. RTPCs have the authority to designate RRS in their regions.

RRS are facilities for which jurisdictions in the subregion want to share regional responsibility with neighboring jurisdictions. Designation of RRS helps CCTA, TVTC, local jurisdictions, and the general public know which facilities are important to the region and serve as the basis for monitoring and maintenance by CCTA and TVTC.

When deciding which routes to designate, the Measure J GMP guidelines recommend four conditions to consider:

1. Connect two or more subregions of Contra Costa County
2. Cross county boundaries
3. Carry significant through traffic
4. Provide access to a regional center, regional highway, or transit facility

A transportation facility that meets one or more of these conditions is not required to be designated as an RRS — designations are the purview of the RTPC. Some routes that meet one or more of the criteria can remain undesignated, provided that a consensus not to designate such routes is reached among affected jurisdictions. Furthermore, routes that enter or leave the RTPC require joint discussions among the affected regional committees to determine if consensus can be reached regarding designation.

Historically, Action Plans have only been required to designate RRS for roadway facilities, largely with the intent to monitor delay and congestion. Only a few non-roadway RRS were designated anywhere in the county. However, with the understanding that the future of transportation planning requires a holistic approach and consideration of shared mobility, this updated Action Plan includes designation of RRS for transit facilities and active transportation as well as vehicles. It is important to note that designation of a facility as an RRS does not mean that improvements will be made to overcome any known or future capacity constraints. Further, Chapter 3 of this Action Plan lists several policies, including: "Maintain established capacity constraints at selected regional gateways with the intent of optimizing mobility on RRS."[18]

Competing Modes in the Action Plan

Although the State of California no longer uses level of service (LOS) as a metric to measure the impacts of developments on the transportation system, this Action Plan contains performance metrics to track traditional LOS on roadways. The Action Plan also measures vehicle miles traveled (VMT), the newly adopted metric for evaluating vehicles on the transportation system.

This Action Plan is written in a manner that supports and prioritizes non-automobile modes on certain Routes of Regional Significance, including transit or active transportation. In some cases, local jurisdictions will need to determine which goals to implement at a given time on a given facility. Therefore, it may be the case that some goals in this Action Plan could compete with one another and it will be up to the local jurisdictions and their elected officials to prioritize their own goals without conflicting with the overarching goals of the Action Plan.

[18] For more information on the Gateway Constraints Policy refer to Appendix F, Gateway Constraints Policy.

Multimodal Corridor Maps of Routes of Regional Significance

To characterize the multimodal nature of RRS, CCTA has worked with TVTC and the other RTPCs to develop a series of multimodal corridor maps to show five different transportation modes on a single map (bus, rail, bicycle, freeway, and surface roadway). The maps are intended to illustrate the multimodal nature of the transportation network and to show that multiple facilities exist in any given transportation corridor. The maps are not intended to be exact, but to show travel corridors within the multimodal transportation network. The Tri-Valley Multimodal Corridor Map is shown in Figure 4-1.

There are several critical notes to these corridor maps:

- The new multimodal 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.

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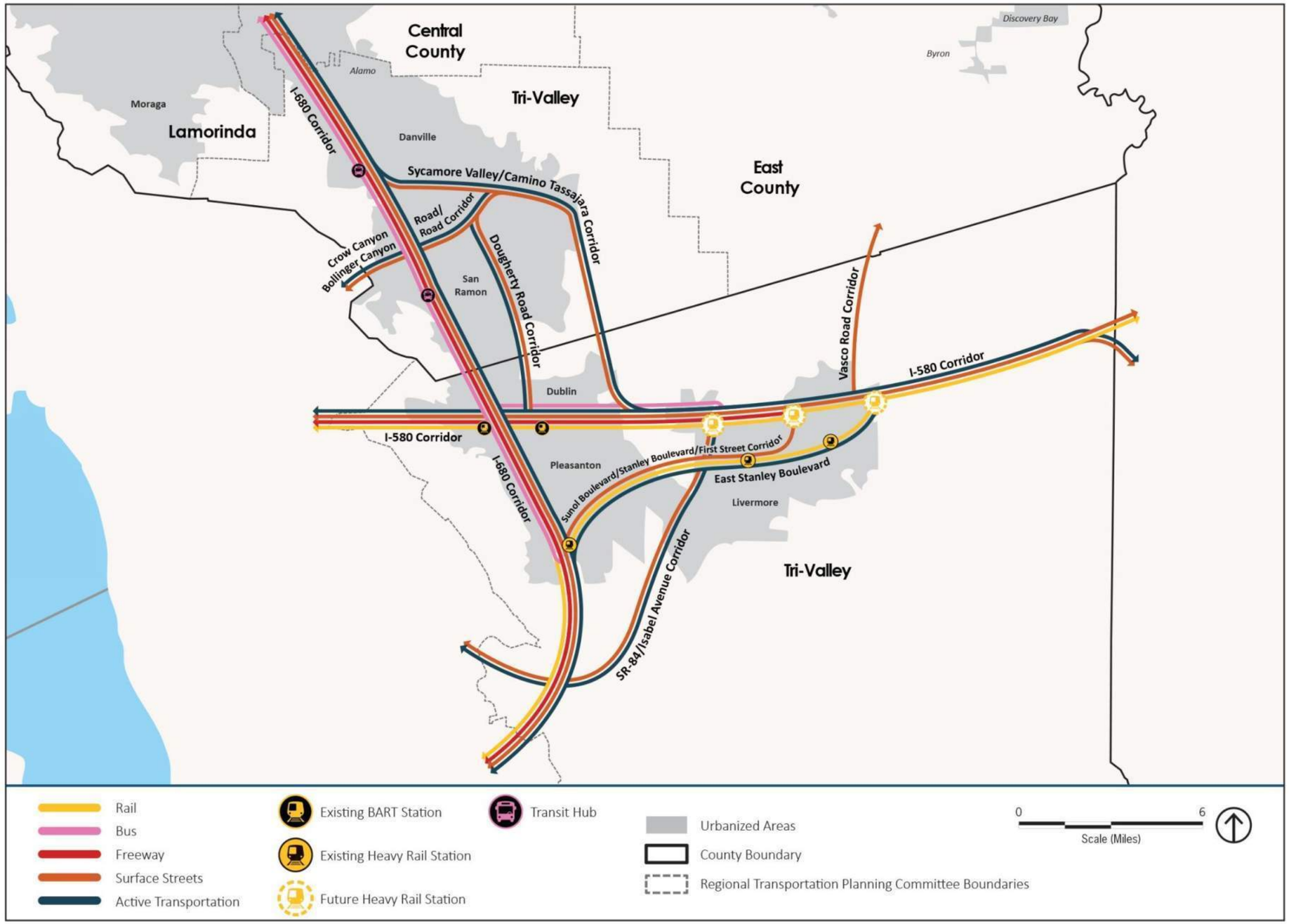
Figure 4-1: Tri-Valley Area Routes of Regional Significance Multimodal Corridor Map



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

** The corridors shown in this map are generalized to show multimodal conditions where they exist, and therefore include multiple facilities and routes within one corridor. To see mode-specific Routes of Regional Significance designated in this Action Plan, refer to Figures 5-1 and 5-2, 6-1 and 6-2, and 7-1 and 7-2.

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

Source: PlaceWorks, 2023.

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Chapter 5: Transit

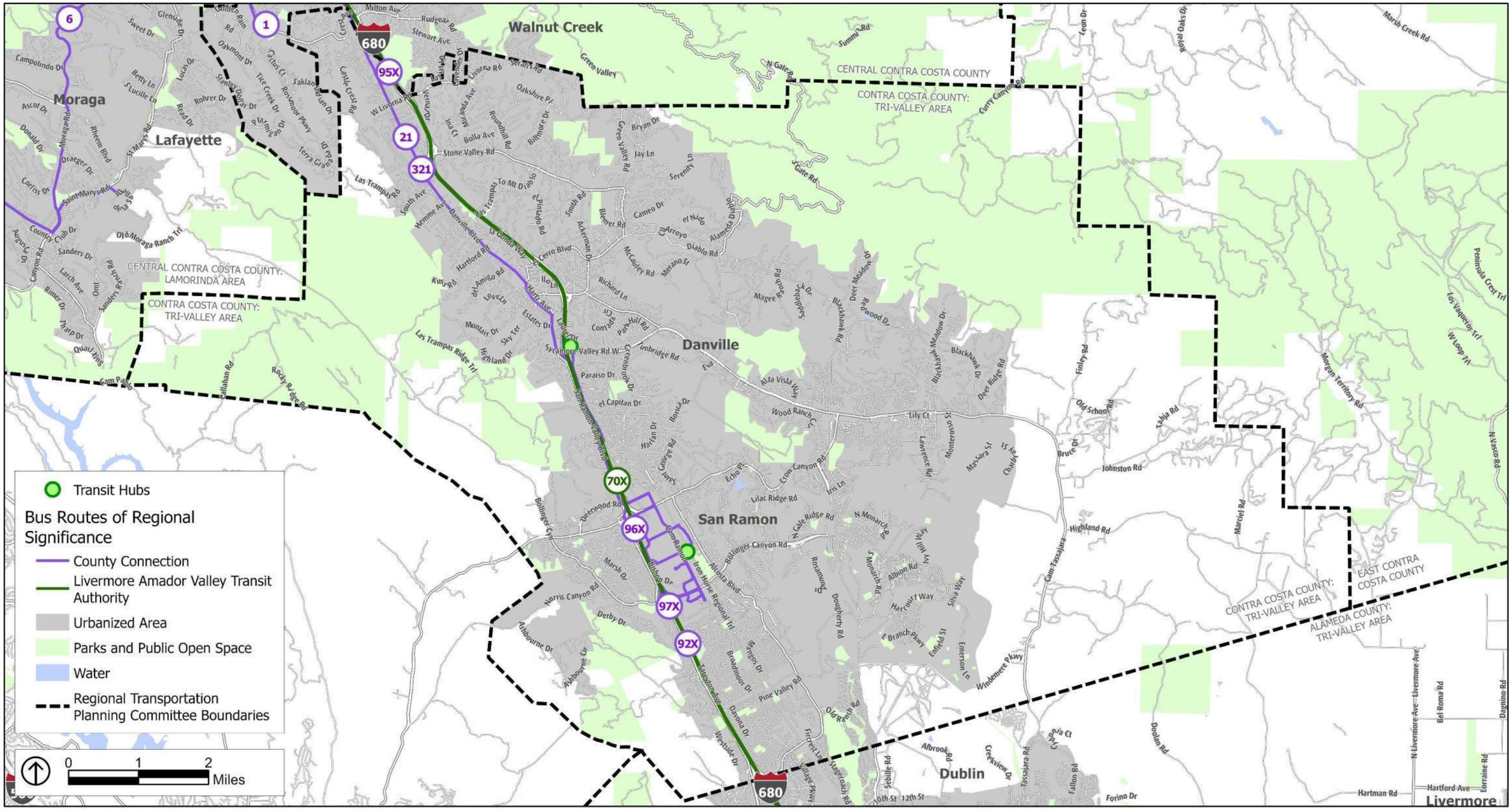
Transit in the Tri-Valley area includes a variety of different providers, from bus operators to ACE rail and BART rail. Transit service also includes vital accessible transportation services through ADA-mandated and non-ADA-mandated paratransit and community-based transportation programs that serve the elderly or residents with disabilities. Many of the routes and facilities vital to the Tri-Valley area transit system, including Livermore Amador Valley Transit Authority (LAVTA), are shown on Figures 5-1 and 5-2.

Table 5-1: Summary of Transit Regional Transportation Objectives

RTO Name	Definition	Existing Target	Proposed 2027 Target	Proposed 2050 Target
Transit RTO-1: Transit Mode Share	Increase mode share of transit trips	None	6% commute trips 2% of all trips	14% of commute trips 4% of all trips
Transit RTO-2: Mode Share to/from BART	Increase mode share of people accessing BART with non-vehicle modes	None	15%	25%
Transit RTO-3: Transit Trip Time	Optimize peak commute travel time on transit for key corridors	None	Transit time ≤ auto travel time	Transit time ≤ auto travel time
Transit RTO-4: High-Quality Transit Access	Increase urbanized land area served by high-quality transit	None	32%	42%
Transit RTO-5: Paratransit and Community Based Transportation Program Access	Increase rides through paratransit and community based transportation programs	None	Increase by 5%	Increase by 20%

Refer to the RTO discussions in this chapter for detailed information on existing conditions and explanation of the targets.

Figure 5-1: Important Transit Routes in the Contra Costa Portion of the Tri-Valley



Source: ABAG/MTC, 2021; CCTA, 2021; ESRI, 2021; PlaceWorks, 2022.

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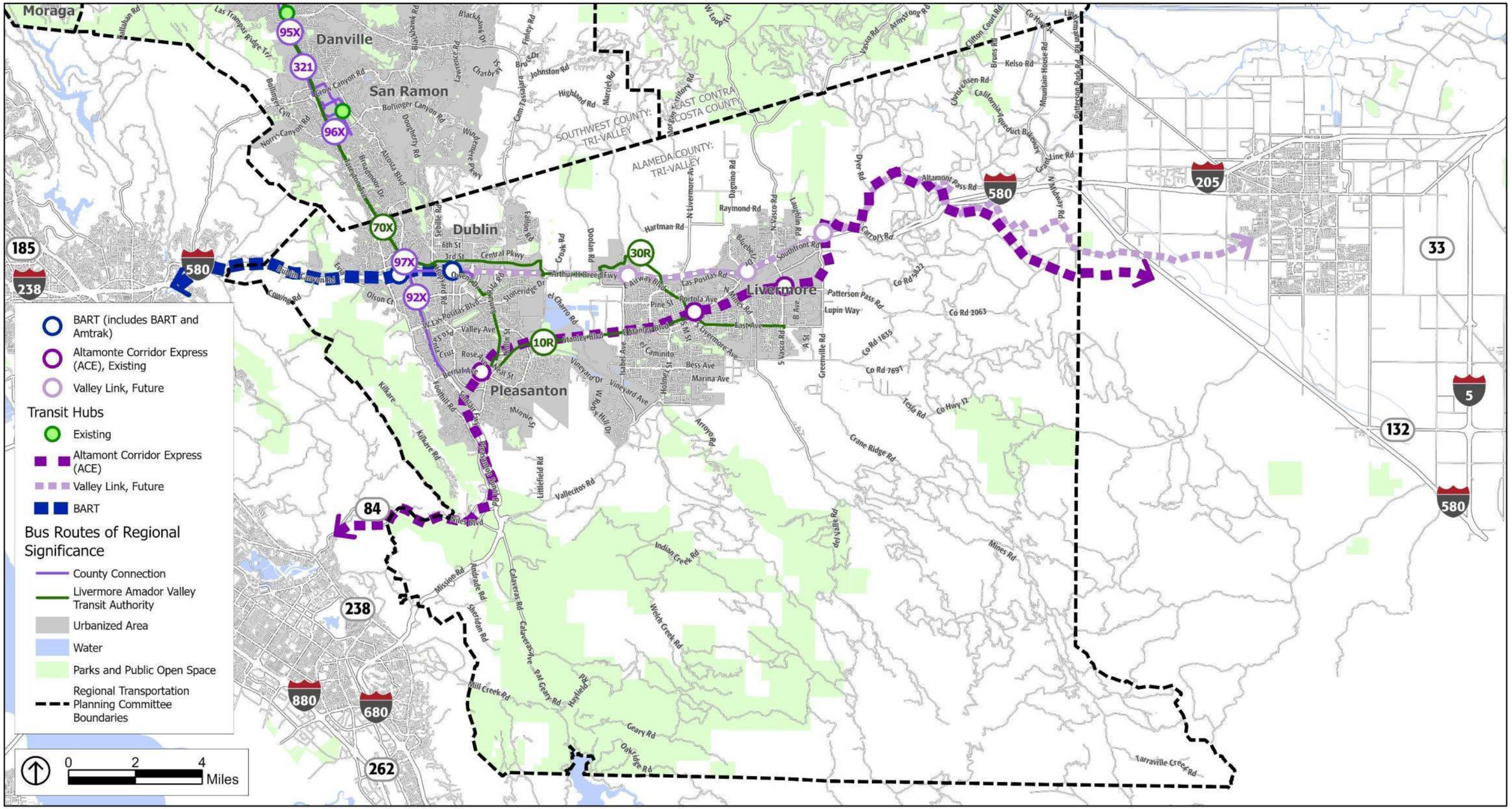
Figure 5-2: Important Transit Routes in the Alameda County Portion of the Tri-Valley



Source: ABAG/MTC, 2021; CCTA, 2021; ESRI, 2021; PlaceWorks, 2022.

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RTOs

Transit RTO-1: Transit Mode Share

Increase the Mode Share of Transit Trips in the Subregion

This RTO tracks transit mode share and defines transit as fixed-route public transportation. It does not include general carpooling through Transportation Network Companies. As shown in Table 2-2 in Chapter 2, six percent of Tri-Valley area residents commute to work using transit, compared to 11 percent of residents in the Planning Area as a whole. These figures are anticipated to increase to eight and 12 percent, respectively, by 2050. Meanwhile, Table 2-4 indicates that two percent of all Tri-Valley trips and three percent of all Planning Area trips are taken by transit. This table predicts that around five percent of all Tri-Valley trips (not strictly commute trips) and the same three percent of Planning Area trips will be taken by transit by 2050.

The COVID-19 pandemic has greatly reduced transit trips, so this Action Plan includes a performance target for transit mode share in the Tri-Valley area subregion to return to pre-pandemic levels of six percent of work trips by 2027 and to increase the level of transit commute trips to 14 percent by 2050. Further, this Action Plan proposes a target transit mode share of two percent of all trips by 2027 and four percent of all trips by 2050 be taken by transit. While these goals are ambitious, they are needed to meet local, regional, and statewide goals to minimize VMT, transportation-related GHG emissions, and traffic congestion.

Transit RTO-2: Mode Share to/from BART

Increase the Number of Riders Who Access BART Using Means Other Than Automobiles, Including Transit and Active Transportation

This metric assesses the mode used by BART riders to access BART stations in the Tri-Valley area.

BART and MTC conduct a ridership survey approximately once every 10 years that includes gathering information about modes used to access BART. The results of the most recent survey, conducted in 2015, are shown in Table 5-2.

The table shows that 15 percent of BART riders in the Tri-Valley area used non-vehicle modes to access BART stations in 2015, as compared to 53 percent systemwide.

The performance target for this RTO is to restore Tri-Valley's non-vehicle BART access modes toward the pre-pandemic performance of 15 percent by 2027. For 2050, the goal is to increase the share by an additional 10 percent. This would result in a 25 percent non-vehicle mode share.

This RTO will only be assessed when BART and/or MTC conduct ridership surveys, so it may not be assessed as frequently as the other RTOs in this Action Plan.

Table 5-2: Mode Used to Access Tri-Valley BART Stations (2015)

Station	Active Transportation	Transit	Total for Non-Vehicle Modes
Dublin/Pleasanton	14%	4%	18%
West Dublin/Pleasanton	15%	1%	16%
Total Tri-Valley	**14%**	**2%**	**15%**
Total BART System	**44%**	**9%**	**53%**

Source: MTC BART 2015 ridership survey

Note: The BART and MTC ridership study did not disaggregate access to BART stations via carpooling. Results in this table only show access to BART stations via active transportation (walking or bicycling) and via transit (bus, train, or other transit).

Transit RTO-3: Transit Trip Time

Optimize Peak-Hour and Peak-Direction Travel Time for Transit as Compared to Automobile Travel Time for the Same Trip

This metric compares the peak period transit travel time on select corridors to the SOV travel time in the peak commute direction. The key corridor(s) monitored for the Tri-Valley subregion, along with the comparative travel times, are shown in Table 5-3.

The performance target for this RTO is that transit travel time should be less than or equal to auto time, when measured from transit station to transit station. As shown in Table 5-3, travel times for automobile versus transit vary tremendously by route. ACE service between the Vasco and San Jose Diridon stations is faster by automobile in 2019 but will be faster by transit by 2050. BART service from Dublin/Pleasanton to San Francisco's Embarcadero Station is faster by BART both now and in 2050. Transit service on LAVTA route 30R from downtown Livermore to the Dublin/Pleasanton BART is significantly slower via transit both now and through 2050. While County Connection routes 95X and 97X are slower via transit than automobile, there is not as significant of a deficit as with the LAVTA route 30R.

Table 5-3: Travel Time Ratio for Autos vs Transit on Key Corridors

				Ratio of Transit/Drive Alone Time	
Corridor	**Median Drive Time (Minutes)[a]**	**Scheduled Transit Time (Minutes)[b]**	**2050 Drive Alone (Minutes) [c]**	**2019**	**2050**
ACE Vasco Station and San Jose Diridon Station					
Morning – Westbound	55	72	88	1.30	0.82
Afternoon – Eastbound	61	67	85	1.10	0.79
Dublin/Pleasanton BART Station and San Francisco Embarcadero BART Station					
Morning – Westbound	56	45	116	0.81	0.39
Afternoon – Eastbound	72	45	122	0.62	0.37
LAVTA Route 30R- Downtown Livermore and Dublin/Pleasanton BART					
Morning – Westbound	13	36	16	2.76	2.22
Afternoon – Eastbound	12	37	18	2.99	2.09
County Connection Route 97X - Dublin/Pleasanton BART to Bishop Ranch					
Morning – Northbound	11	18	13.87	1.66	1.30
Afternoon – Southbound	12	23	14.83	1.98	1.55
County Connection Route 95X - San Ramon to BART Walnut Creek					
Morning – Northbound	12.21	24.50	23.34	2.01	1.05
Afternoon – Southbound	13.55	29.50	26.99	2.18	1.09
County Connection Route 96X - BART Walnut Creek to Bishop Ranch					
Morning – Southbound	13.54	24	29.63	1.77	0.81
Afternoon – Northbound	19.14	26	34.44	1.36	0.75

Note: Refer to Roadways RTO-2 for more information related to the trip time of the Dublin/Pleasanton BART to Embarcadero BART segment compared to driving the same segment.

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

b) From published schedules. Note that this RTO assumes that 2050 scheduled transit trip times will remain constant. While increased population and congestion mean that transit trip times may not stay constant throughout the coming decades, there is no appropriate model by which to predict the change that may occur in transit trip times. Further, it is possible that transit operators could potentially maintain existing scheduled timing by taking advantage of future improvements, such as bus on shoulder or express lanes, among others.

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

Transit RTO-4: High-Quality Transit Access

Increase the Proportion of Urbanized Land Area in the Subregion Served by High-Quality Transit

This RTO seeks to increase the proportion of urbanized land[19] area in the subregion served by high-quality transit, which is defined as urbanized land area within a quarter mile of bus stops served by bus routes with headways of 15 minutes or less, or within a half mile of rail or ferry terminals. This RTO compares access to high-quality transit both pre- and post-pandemic and sets targets accordingly. Figures 5-3 and 5-4 illustrate areas within a quarter mile of high-quality transit access pre-pandemic. As shown, there are no post-pandemic high-quality transit bus lines operating in the Tri-Valley area. However, the rail stations shown on Figure 5-4 operated pre-pandemic and continue to operate post-pandemic. Table 5-4 indicates that prior to the pandemic, 32 percent of Tri-Valley's urbanized acreage was within this high-quality transit buffer while only six percent are still within this high-quality transit buffer post-pandemic. The six percent of remaining high-quality transit in the Tri-Valley area is due to the half-mile radius around rail stations in the Alameda County portion.

This Action Plan sets a target that the high-quality transit bus lines that operated prior to the pandemic be reinstated by 2027, to result in 32 percent of urbanized land in the Tri-Valley area being served by high-quality transit. Since some urbanized areas are too remote or have densities that are too low to support transit, it would not be realistic to set a goal that 100 percent of urbanized areas be served by high-quality transit in the coming decades. Therefore, this Action Plan sets a target that the proportion of urbanized land area in the subregion served by high-quality transit increase to 42 percent by 2050.

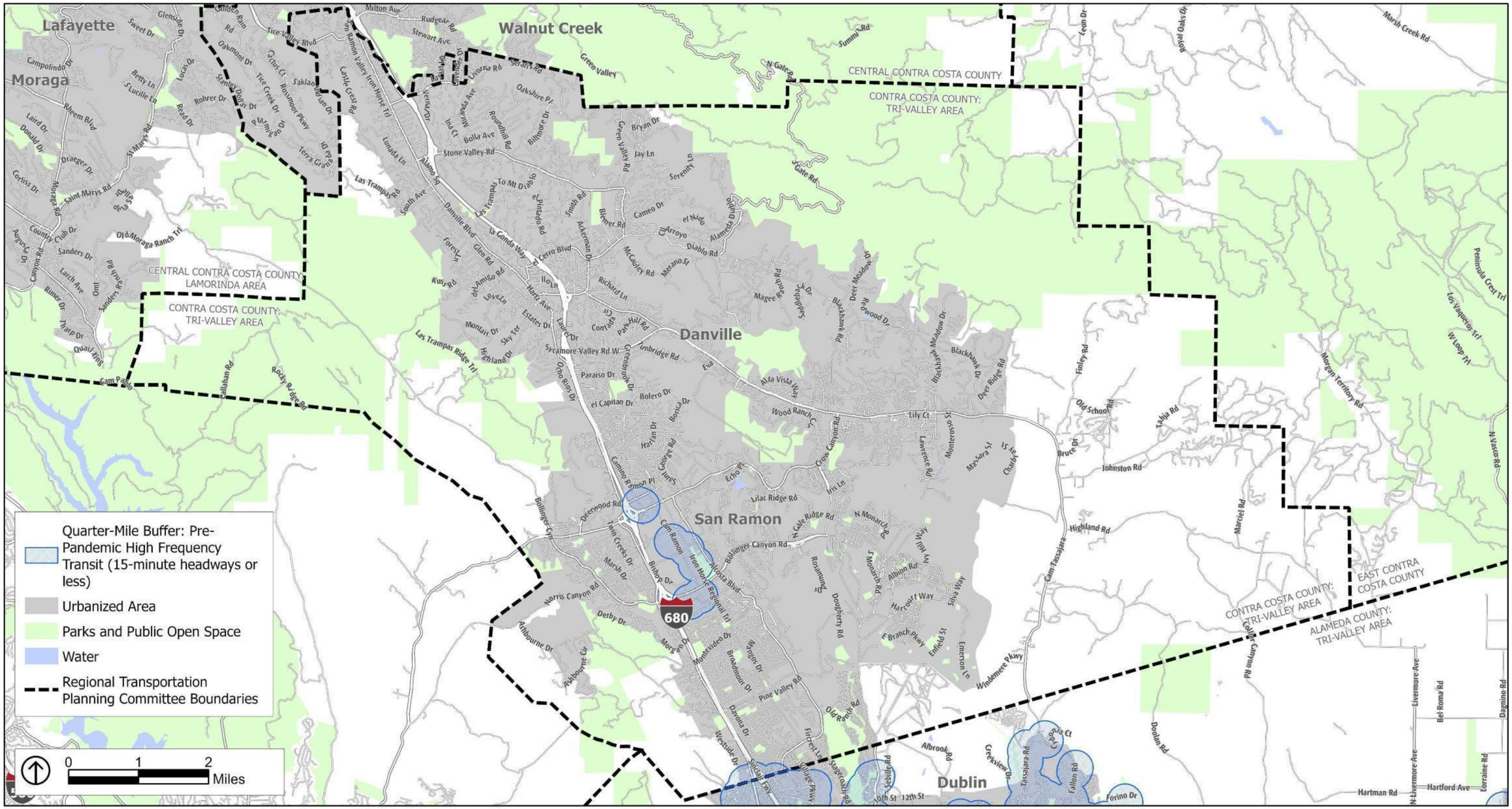
Table 5-4: Proportion of Urbanized Land in Tri-Valley with Access to High-Quality Transit

	Pre-Pandemic Acres	Pre-Pandemic Proportion of Total Acres	Post-Pandemic Acres	Post-Pandemic Proportion of Total Acres
Urbanized area in subregion with access to high-quality transit	23,481	32%	2,253	6%
Total urbanized area in subregion	74,191		74,191	

Note: "Access to high quality transit" is defined as within a quarter mile of bus stops served by bus routes with headways of 15 minutes or less, or within a half-mile of rail or ferry terminals.

[19] "Urbanized Land" in this Action Plan is based off an ESRI-created Geographic Information System (GIS) layer called "Urban Clusters Data" that identifies urbanized areas based on the United States Census population data. An urban area comprises densely settled cores of census tracts and/or blocks that meet minimum population density requirements, along with adjacent territory containing nonresidential urban land uses with low population density included to link outlying densely populated areas.

Figure 5-3: Contra Costa County Portion of the Tri-Valley High-Quality Transit



Source: CCTA, 2021; ESRI, 2021; PlaceWorks, 2022.

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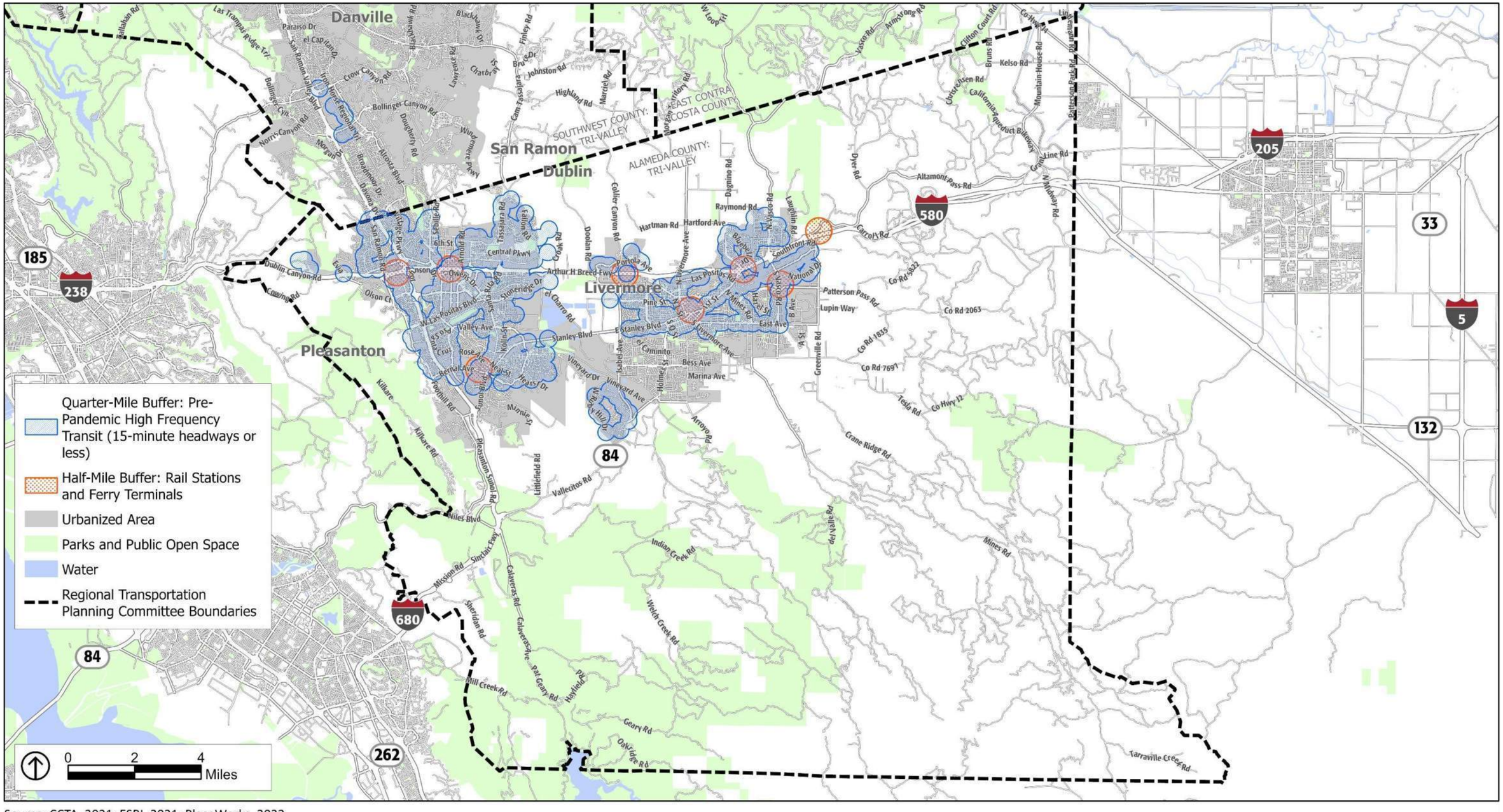
Figure 5-4: Alameda County Portion of the Tri-Valley High-Quality Transit



Source: CCTA, 2021; ESRI, 2021; PlaceWorks, 2022.

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Transit RTO-5: Paratransit and Community-Based Transportation Program Access[20]

Increase the Number of Rides by Paratransit and Community-Based Transportation Programs

This metric tracks annual rides from the seven paratransit and other accessible transportation programs that conduct operations in a portion, or the entirety, of the Tri-Valley area. These programs serve a variety of customers, from those with disabilities to the elderly. These accessible transportation operators and the number of rides provided in calendar year 2019 are listed in Table 5-5.

This Action Plan sets the goal that the number of rides provided among these Tri-Valley area providers should increase by five percent by 2027 to 400,183 rides, and by 20 percent by 2050 to 457,352 rides.

Table 5-5: Number of Calendar Year 2019 Rides Provided by Tri-Valley Paratransit and Community-Based Transportation Providers

Provider	2019 Rides
East Bay Paratransit [a,b]	115,740
County Connection LINK [a,b]	151,348
Vistability [b]	54,940
Mobility Matters [b]	3,374
Senior Express Van	2,769
LAVTA ADA paratransit [a]	45,826
City of Pleasanton paratransit program [c]	7,130
Total Rides	**381,127**

a) These programs are ADA-mandated programs.

b) These providers operate in areas throughout Contra Costa County and therefore the number of rides includes all rides, not only those that in the Tri-Valley subregion.

c) Pleasanton program rides are given for fiscal year 2016-2017 because 2019 data was not available.

[20] CCTA, TVTC, and Tri-Valley jurisdictions recognize that tracking paratransit rides is not a true measure of success when looking at countywide accessible transportation. For instance, several nonprofits encourage those using on-demand paratransit services try fixed-route transit services to meet certain needs. Use of fixed-route transit is not accounted for in this RTO. CCTA, TVTC, and Tri-Valley jurisdictions recognize that there may be more opportunities to track accessible transportation programs in a meaningful way in the next Action Plan update. This is particularly true with ongoing work that CCTA is doing as a result of their Accessible Transportation Strategic Plan adopted in 2021.

Actions

The following actions are needed to achieve the RTO targets and to implement other goals and policies of this Action Plan, the CTP, and other regional long-range planning documents with shared priorities. Completion of individual Actions depends on availability of funding and staff resources. For Contra Costa jurisdictions, requirements for compliance with the GMP are provided in the CCTA *Implementation Guide*, which specifies that Contra Costa jurisdictions have an obligation to implement Actions consistent with the time frame of the Action Plans. Compliance with this requirement will be evaluated by CCTA every other year, based on a Compliance Reporting Checklist submitted by the Town of Danville, the City of San Ramon, and Contra Costa County. All Actions are enumerated in a summary table in Appendix B, which also lists the responsible agency, partner agencies, and proposed timeline for each Action.

- Transit-1: Continue to work with CCTA and Alameda CTC to support the development of a seamless HOV/high-occupancy toll (HOT)/Express Lane network in the Tri-Valley to encourage the use of carpools and bus transit and explore the possibility of connecting the HOV/Express Lane network to adjoining areas.
- Transit-2: Work with CCTA, Alameda CTC, local jurisdictions, and local public transit operators to:
  - Implement recommendations from recent transit plans in the Tri Valley and MTC's Transit Transformation Action Plan.
  - Determine if a Tri-Valley Transit Plan is needed 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.
  - Leverage MTC's effort to standardize operations, regional mapping, and wayfinding.
  - Implement traffic signal management and bus prioritization technology on transit RRS routes to improve bus speed and reliability.
- Transit-3: Complete a study to explore the feasibility of a Regional Express Bus Program and expansion and enhancement of Bus Rapid Transit along transit corridors and RRS.
- Transit-4: Support the new Valley Link system in the Tri-Valley, including opportunities to connect riders to existing BART and ACE stations.
- Transit-5: Evaluate systemwide bus stop improvements; make it safer and easier for people to access transit stations; and ensure that transit, and its related pedestrian access and connectivity, is safe and attractive.
- Transit-6: Implement the recommendations of the Contra Costa Accessible Transportation Strategic Plan, including the establishment of a new Coordinating Entity and establishing new, ongoing dedicated funding sources.
- Transit-7: Participate in a joint TVTC/TRANSPLAN study to examine feasibility of transit service in the Vasco Road Corridor.
- Transit-8: Work with local transit agencies, regional policymakers, and private entities to promote pooled regional ridesharing services and technologies.

- Transit-9: Work with CCTA, regional, and local transit operators to explore financial incentives and reduced fares for public transit, including a feasibility study to explore a subregional or countywide Universal Basic Mobility program.
- Transit-10: 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.
- Transit-11: Create and adopt a transit hub toolkit to optimize station design and connectivity that includes coordination with local government access plans and policies.
- Transit-12: Work with CCTA, Alameda CTC, Contra Costa Health Services, and Street Smarts Diablo Region to facilitate a countywide coordinated approach to Safe Routes to Schools programs, and to identify continuous (multi-year) funding sources to encourage students, employees, visitors, and residents at private and public K-12 schools, technical schools, and college sites to use non-vehicle modes to get to/from school.
- Transit-13: Assist local jurisdictions in reviewing and considering options for improving curb management and commercial and public and private bus/shuttles, truck, and van passenger loading on key public streets.
- Transit-14: Provide educational awareness of public transit options through outreach, education, and advertising, particularly in local schools.
- Transit-15: Work with CCTA, Alameda CTC, BART, and MTC to promote safer access to transit and seek construction funding through sources like the Safe Route to Transit funding, Safe Routes to BART, and the Active Transportation Program funding, among others.
- Transit-16: Work with transit providers to boost ridership through provision of rider amenities and service timing, regional coordination efforts, and efficiency.
- Transit-17: Adopt local policies that prioritize safety for the most vulnerable users at all stages of project planning and delivery.
- Transit-18: Work with CCTA, Alameda CTC, and public transit providers to ensure real-time online transit information for all routes.
- Transit-19: Assist local jurisdictions in the development of design guidelines and objective design standards to support transit-oriented development in downtowns, PDAs, transit priority areas, and other areas well-served by transit.
- Transit-20: Work with CCTA, Alameda CTC, and public transit agencies to identify and prioritize a network of transit corridors for transit signal priority, part-time transit lanes, transit-only lanes, and other transit-focused improvements
- Transit-21: Coordinate with the Alameda CTC Paratransit program for collaboration opportunities in Alameda County.
- Transit-22: Coordinate with the Alameda CTC Safe Routes to Schools program and the Affordable Student Transit Pass Program for collaboration opportunities in Alameda County.
- Transit-23: Support Alameda County's SR2S program's transit training at Alameda County schools.

- Transit-24: Complete general improvements to BART stations to increase their use, including:
  - Pursue projects and programs that improve the passenger experience, such as upgrade systems, modernize stations, and expand the passenger capacity of BART stations.
  - Continue to work with CCTA, Alameda CTC, and local jurisdictions to improve circulation and prioritize walking, bicycling, and public transit access near major transit stops and stations.
- Transit-25: Work with major employers to encourage using transit to/from work through incentives such as reduced public transportation fares, or pre-tax commuter benefits, among others.
- Transit-26: Work with CCTA and the future accessible transportation Coordinating Entity to explore additional RTOs related to accessible transportation for inclusion in the next Action Plan update.
- Transit-27: Work with CCTA and local transit providers to reinstate high-quality transit that operated in the subregion prior to the pandemic.
- Transit-28: Work with CCTA and transit providers to identify and prioritize a network of transit corridors for transit signal priority, part-time transit lanes, transit-only lanes, and other transit-focused improvements.

Chapter 6: Active Transportation

Active transportation in the Tri-Valley area includes a variety of different activities—walking, bicycling (including electric-assist bicycling), rolling, and micromobility, among others. An increase in active transportation mode share of all trips can help Tri-Valley reach broad transportation, environmental, and public health goals that are shared by local jurisdictions and the rest of the Bay Area. Active transportation can also contribute to improved traffic congestion. A dedicated active transportation network called the Low Stress Bicycle Network (LSBN) is planned and published as part of the CCTA 2018 *Countywide Bicycle and Pedestrian Plan* (CBPP). This chapter describes the network and explains the metrics used to complete and track progress toward implementation of a contiguous low-stress network of bicycle paths with Level of Traffic Stress 1 or 2 (of four). Because the CCTA 2018 CBPP only outlined the LSBN for Contra Costa County jurisdictions, this Action Plan includes low-stress facilities in the Alameda County portion of the Tri-Valley area based off work done by MTC as part of their project to publish an interactive map of regional active transportation routes, which included collaboration with Alameda CTC and Tri-Valley jurisdictions. These low stress facilities can be seen on Figure 6-2 and are included in all Active Transportation RTO data and targets.

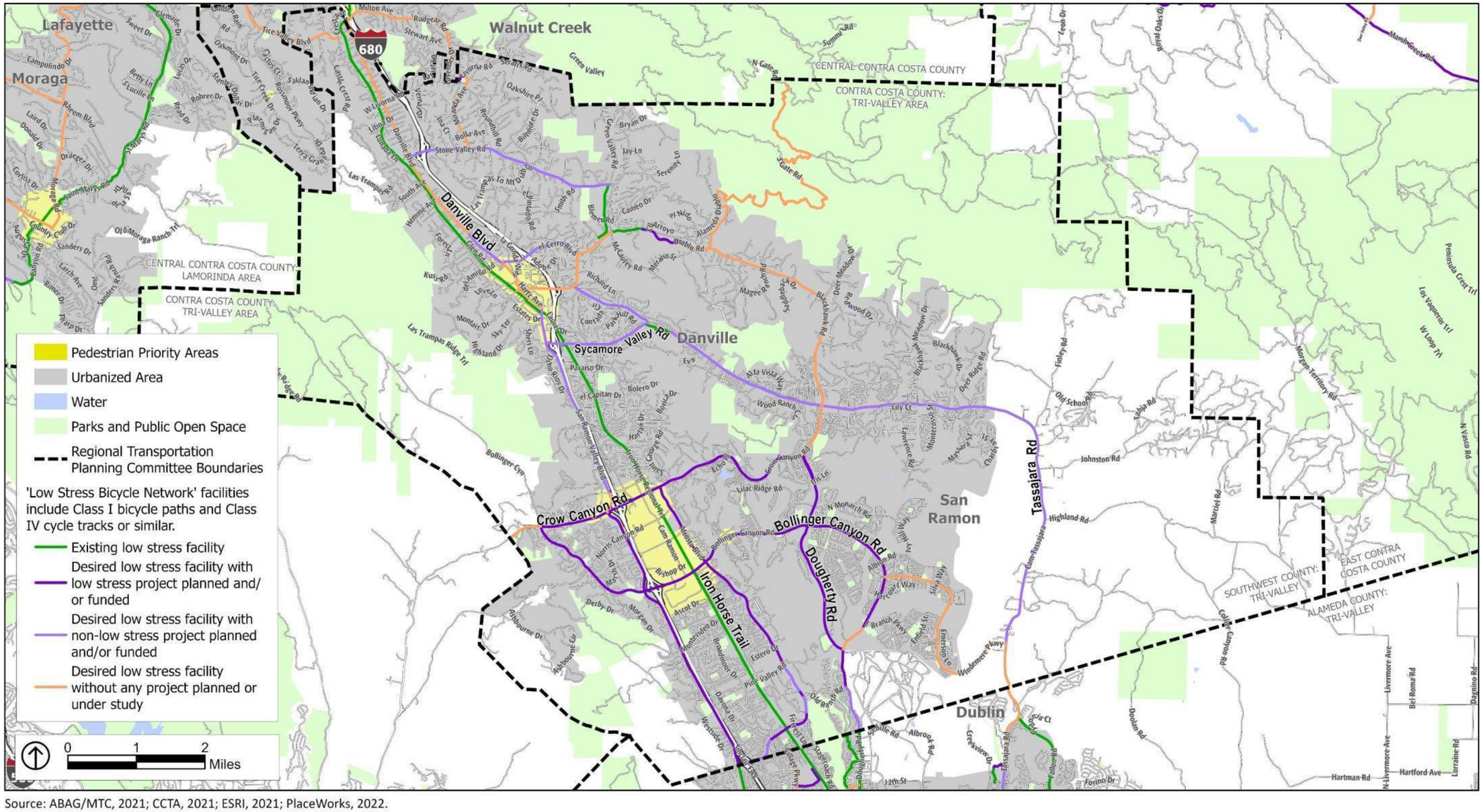
Table 6-1: Summary of Active Transportation Regional Transportation Objectives

RTO Name	Definition	Existing Target	Proposed 2027 Target	Proposed 2050 Target
Active Transportation RTO-1: Active Transportation Mode Share	Increase active transportation mode share	None	8% all trips [a] 2% commute trips	12% all trips 6% for commute trips,
Active Transportation RTO-2: Low Stress Bicycle Network	Increase completeness of the LSBN	None	66%	90%
Active Transportation RTO-3: Unprotected Trail Crossings	Eliminate unprotected crossings of the LSBN intersections with roadways	None	No unprotected crossings	No unprotected or semi-protected crossings

Refer to the RTO discussions in this chapter for detailed information on existing conditions and explanation of the targets.

a) "All trips" refers to all trips with an origin or destination in Tri-Valley.

Figure 6-1: Contra Costa Portion of the Tri-Valley Low Stress Bicycle Network



Source: ABAG/MTC, 2021; CCTA, 2021; ESRI, 2021; PlaceWorks, 2022.

Note: The status of specific segments on this map is taken from the CCTA 2018 Countywide Bicycle and Pedestrian Plan (CBPP) project list, the revised 2022 CBPP project list, adopted Bicycle and Pedestrian Master Plans from individual jurisdiction, and consultation with local staff. "Desired Low Stress Network" refers to what the entire Low Stress Bicycle Network would look like upon completion, per the 2018 CBPP.

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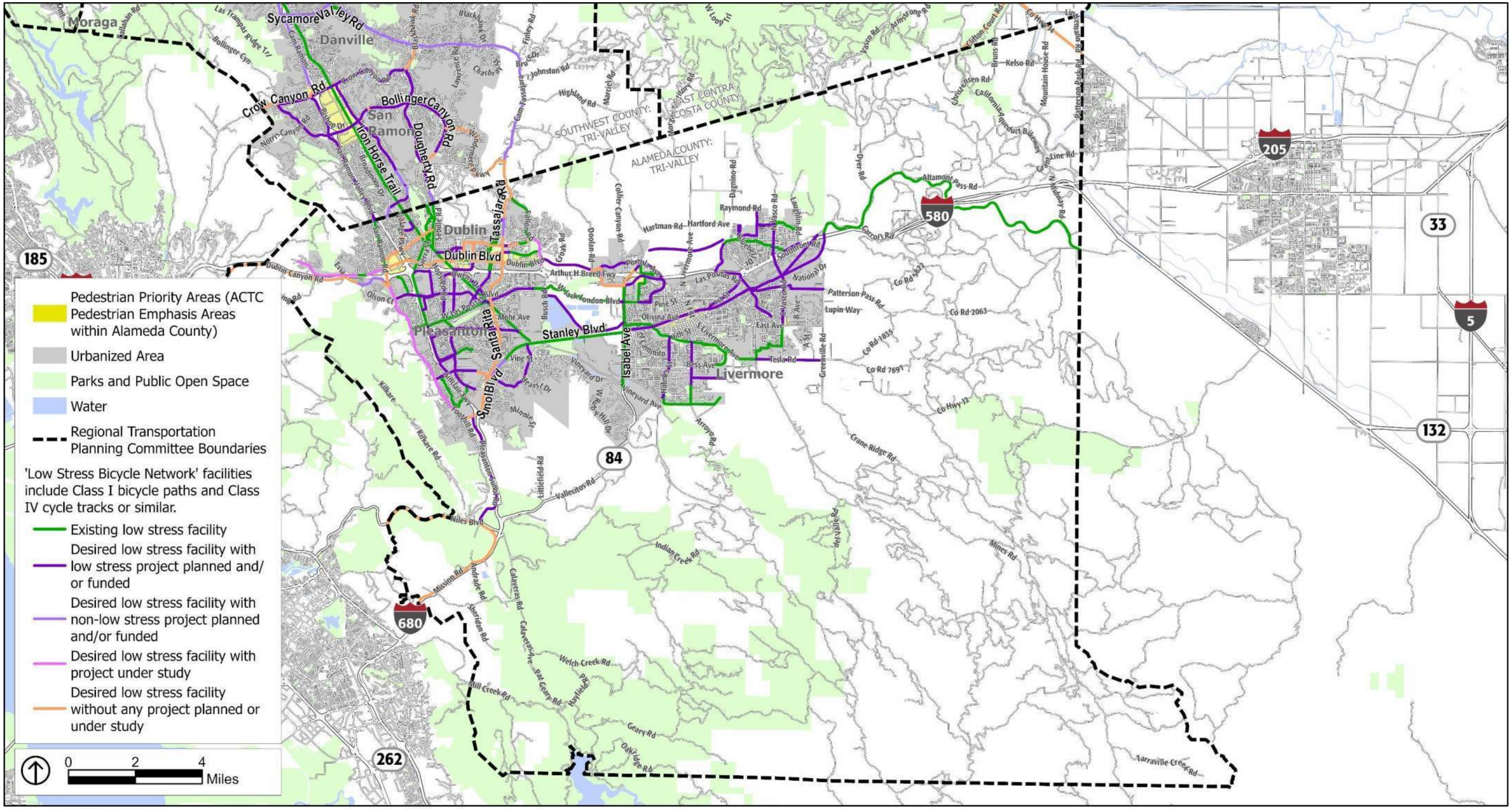
Figure 6-2: Alameda Portion of the Tri-Valley Low Stress Bicycle Network



Source: ABAG/MTC, 2021; CCTA, 2021; ESRI, 2021; PlaceWorks, 2022.

Note: The LSBN in the Alameda County portion of the Tri-Valley is comprised of data gathered by MTC as part of their 2021 project to publish an interactive map of regional active transportation routes. This included collaboration with Alameda County jurisdictions. This Action Plan includes segments from MTC data that fit the criteria of the LSBN described in the footnote of Figure 6-1.

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RTOs

Active Transportation RTO-1: Active Transportation Mode Share

Increase the Mode Share of Bicycling and Walking in the Subregion

As shown in Table 2-2 in Chapter 2, about two percent of Tri-Valley residents commute to work through active transportation such as bicycling or walking. This figure is predicted to increase to approximately two percent of Tri-Valley commute trips by 2050. As shown in Table 2-4, about eight percent of all trips (not strictly commute trips) were conducted by walking or bicycling in 2019 with a projected decrease to approximately seven percent in 2050.

This Action Plan includes active transportation mode share targets for the Tri-Valley area that would see 2027 active transportation mode share match that of pre-pandemic levels of two percent for commute trips and eight percent for all trips. Further, This Action Plan includes bicycling and walking mode share performance targets for 2050 trips, calling for an increase in commute trips to six percent and an increase in all trips to 12 percent by 2050. These goals are ambitious but necessary to meet goals to minimize VMT, transportation-related GHG emissions, and traffic congestion.

Active Transportation RTO-2: Low Stress Bicycle Network

Increase the Proportion of the Countywide Low Stress Bicycle Network Completed in the Subregion

The CBPP introduced a new way of evaluating a facility's level of traffic stress in which roadways are evaluated on several factors, including 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 bicycle 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 people of all ages and abilities can feel safer bicycling on these facilities physically separated from vehicular traffic) or Level of Traffic Stress 2 (the "interested but concerned" adult population will feel safer bicycling on these facilities). Ultimately, construction of the entire LSBN would result in an increase in active transportation mode share and a reduction in Killed or Severely Injured (KSI) collisions.

The status of the entire Tri-Valley portion of the LSBN is shown on Figures 6-1 and 6-2. If the entire LSBN in the Tri-Valley subregion were completed, it would have 263 miles of low stress facilities, classified as Class I, Class IIIB, or Class IV.

Table 6-2 shows that 30 percent of Tri-Valley's LSBN is constructed. A further 36 percent of low stress facilities are incomplete but have a locally adopted plan to construct the facility toward a more contiguous countywide LSBN. There are projects proposing improvements that would not result in low-stress facilities on an additional nine percent of the LSBN, and three additional percent is designated "under study." A total of 22 percent of the total LSBN miles are incomplete and do not have a plan to complete them or to study them further.

This Action Plan proposes that the subregion aim to achieve 90 percent completion of the LSBN by 2050 with an interim target of 66 percent (173 miles) completion by 2027. This is the sum of existing completed facilities and all facilities with a low stress project already planned and/or funded.

Table 6-2: Proportion of Tri-Valley LSBN Completed

Status of Facility	Miles	Percentage
Existing Low Stress Facility	78.6	30%
Desired Low Stress Facility with Low Stress Project Planned and/or Funded	94.6	36%
Desired Low Stress Facility with Non-Low Stress Project Planned and/or Funded [a]	23.7	9%
Desired Low Stress Facility with Project Under Study	8.4	3%
Desired Low Stress Facility without any Project Planned or Under Study	57.3	22%

a) This category means that there is a project planned and/or funded in an existing plan that would complete a Class II or Class III facility but not a Class I, Class IIIB, or Class IV facility, which are considered low stress.

Active Transportation RTO-3: Unprotected Trail Crossings

Eliminate the Number of Locations Where the Low Stress Bicycle Network Makes an Unprotected Crossing of a Heavily Traveled Vehicle Route

This metric maps and tracks the status of intersections between the LSBN and heavily traveled roadways,[21] illustrated on Figures 6-3 and 6-4. The level of protection at each intersection is classified as:

- **Fully protected** by grade separation or a signalized intersection with bicycling protections, such as a waiting bay or concrete barriers.

[21] Roadways included in this analysis labeled "heavily traveled" include all roadways except for routes designated as minor connectors, and local or residential routes. Routes that were analyzed include interstates, freeways, expressways, other principal arterials, minor arterials, and major collectors. It is important to recognize that there are other components of the transportation network that can be stressful to bicyclists and pedestrians, including, but not limited to, facilities with many driveway entrances and exits. Such sites are not included in this analysis due to lack of mapping data; however, they are important to consider as LSBN facilities are constructed and maintained.

- **Semi-protected** at an at-grade crossing with a beacon system, or with a signal but without pedestrian or cyclist protections through a grade separation.
- **Unprotected** at an at-grade crossing that includes none of the improvements listed above.

As illustrated on Figures 6-3 and 6-4, there is one study intersection in the Tri-Valley area that is currently unprotected: the crossing of the Iron Horse Trail with Santa Rita Road in Pleasanton. There are 42 that are considered semi-protected. The semi-protected intersections are:

- Iron Horse Trail crossings with:
  - Bollinger Canyon Road
  - Sycamore Valley Road
  - Alcosta Boulevard
  - Hillgrade Avenue
  - Cervato Drive
  - Livorna Road
  - Ramona Way
  - Ridgewood Boulevard
  - Lunada Lane
  - Las Trampas Road
  - La Serena Avenue
  - Hemme Avenue
  - Del Amigo Road
  - Love Lane
  - Hartford Road
  - W Prospect Avenue
  - Paraiso Drive
  - El Capitan Drive
  - Greenbrook Drive
  - Fostoria Way
  - Norris Canyon Road
  - Executive Parkway
  - Montevideo Drive
  - Pine Valley Road
  - Dougherty Road
  - Dublin Boulevard at Scarlett Drive

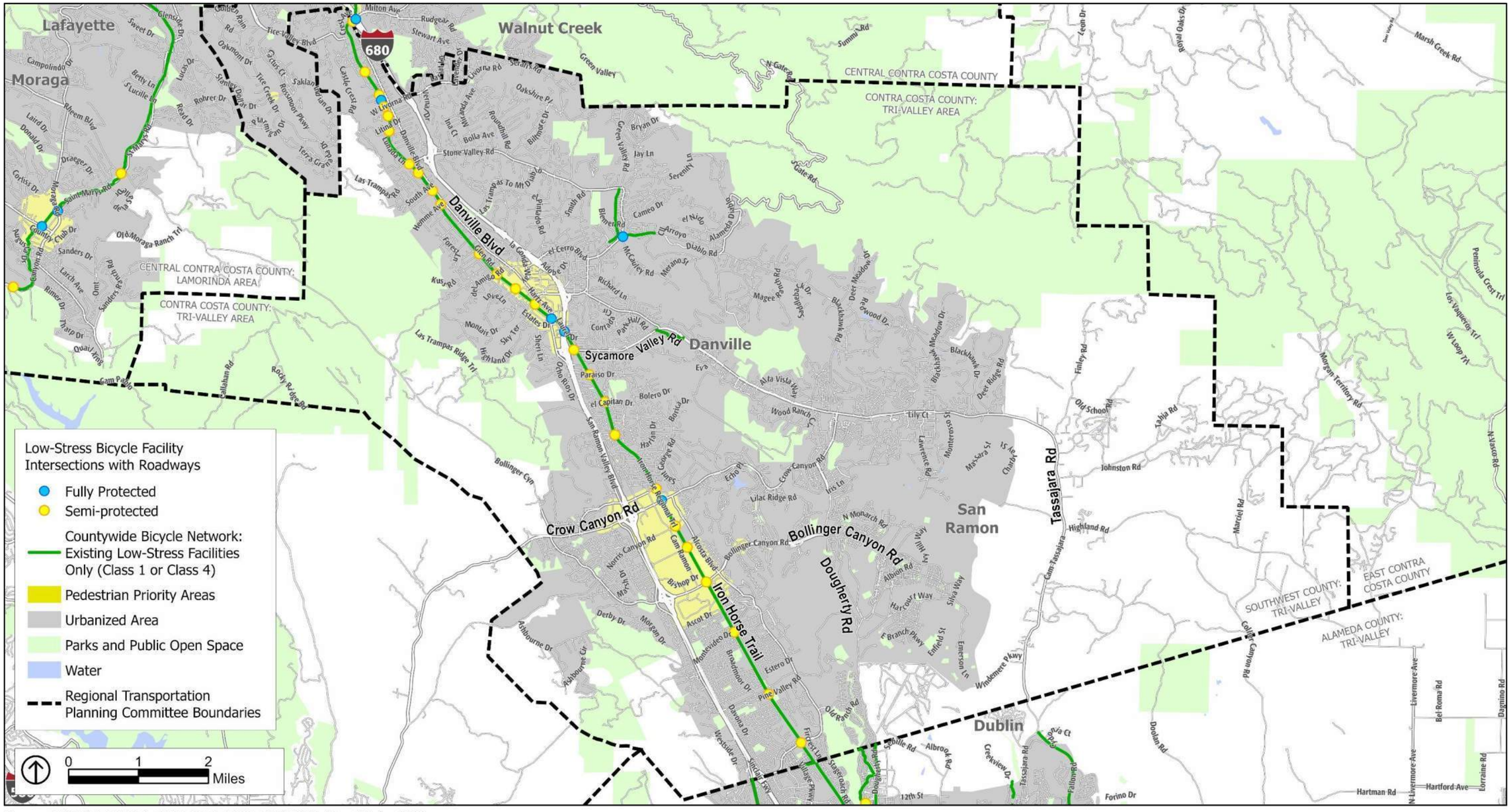
Project Highlight!

Fully protected bicycle and pedestrian overcrossings are currently under construction for the Iron Horse Trail crossing of Bollinger Canyon Road and on Dublin Boulevard at the intersection with Scarlett Drive. Further, the Iron Horse Trail crossing with Sycamore Valley Boulevard had safety improvements identified in the Danville Bicycle Master Plan and received a federal grant for construction!

  - Hacienda Road
  - Las Positas Boulevard
- Isabel Avenue Trail crossings with:
  - Airway Boulevard
  - E Jack London Boulevard
  - E Stanley Boulevard
- Arroyo Mocho Trail crossings with:
  - E Stanley Boulevard
  - Holmes Street
- San Ramon Road facility crossings with:
  - Amador Valley Boulevard
  - Dublin Boulevard
- Tassajara Creek Trail crossings with:
  - Central Parkway
  - Dublin Boulevard
- Alamo Creek Trail crossing with Amador Valley Boulevard
- Centennial Trail and Stoneridge Drive
- Trail crossing at Tesla Road and Mines Road
- S Vasco Road crossing with Charlotte Way and Oakville Lane
- Facility crossing at West Lagoon Road and Bernal Avenue

This Action Plan sets a target to modify the one unprotected intersection of Iron Horse Trail to be fully completed by 2027. A further target is set to modify the 42 semi-protected intersections to become fully protected by 2050. As the LSBN is completed, new locations where the LSBN crosses a heavily traveled vehicle route will be added. Local jurisdictions should install fully protected intersection treatments for bicyclists and pedestrians at the locations listed above and shown on Figures 6-3 and 6-4.

Figure 6-3: Status of Crossings at Intersections of the LSBN and Heavily Traveled Roadways in the Contra Costa County Portion of the Tri-Valley Area



Source: ABAG/MTC, 2021, 2019; CCTA, 2022; ESRI, 2021; PlaceWorks, 2022.

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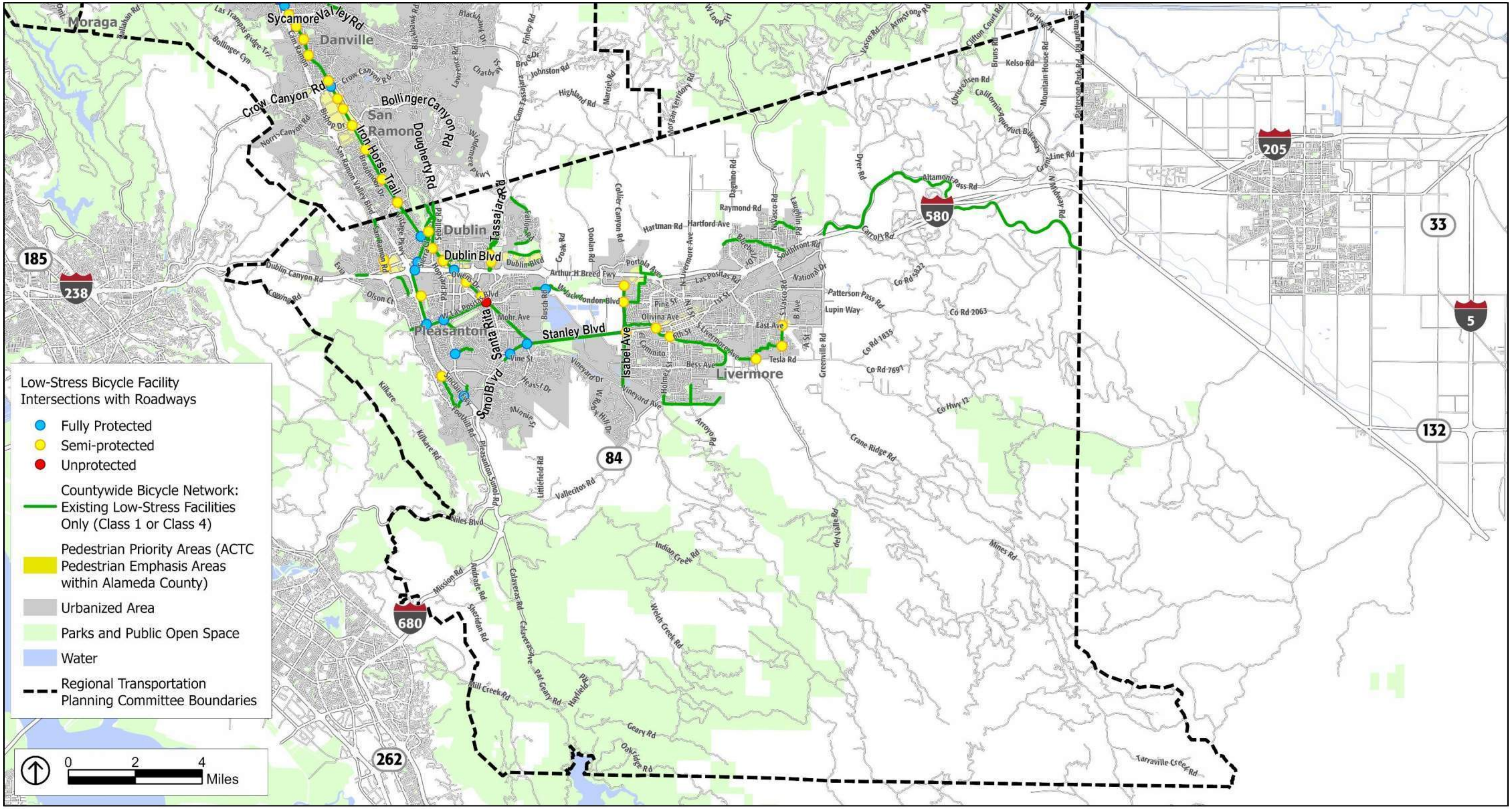
Figure 6-4: Status of Crossings at Intersections of the LSBN and Heavily Traveled Roadways in the Alameda County Portion of the Tri-Valley Area



Source: ABAG/MTC, 2021, 2019; CCTA, 2022; ESRI, 2021; PlaceWorks, 2022.

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Actions

The following actions are needed to achieve the RTO targets and to implement other goals and policies of this Action Plan, the CTP, and other regional long-range planning documents with shared priorities. For Contra Costa jurisdictions, requirements for compliance with the GMP are provided in the CCTA *Implementation Guide*, which specifies that Contra Costa jurisdictions have an obligation to implement Actions consistent with the time frame of the Action Plans. Compliance with this requirement will be evaluated by CCTA every other year, based on a Compliance Reporting Checklist submitted by the Town of Danville, the City of San Ramon, and Contra Costa County. All Actions are enumerated in a summary table in Appendix B, which also lists the responsible agency, partner agencies, and proposed timeline for each Action.

- Active Transportation-1: Construct gap closure projects in the countywide low-stress bicycle facilities network to establish a safe and contiguous network.
- Active Transportation-2: Construct bicycle and pedestrian crossing improvements at the following intersections:
  - Overcrossing at Bollinger Canyon Road
  - Semi-protected intersections identified in the Action Plan.
- Active Transportation-3: Work with local and regional jurisdictions to adopt and update bicycle and pedestrian plans to expand and/or improve facilities to ensure a seamless, safe, and contiguous active transportation network that provides a positive user experience for people traveling for the daily-average distance/duration trip.
- Active Transportation-4: Work with local jurisdictions to promote 511 Contra Costa's active transportation programs that increase awareness of multimodal travel options, travel behavior incentives, and safety through outreach, events, education, social media, marketing, and advertising.
- Active Transportation-5: Continue programs that reduce the cost of using electric bicycles and pursue new programs to reduce the cost of conventional (pedal) bicycle use for Contra Costa County residents.
- Active Transportation-6: Work with CCTA, Alameda CTC, the East Bay Regional Park District, and other public facilities management agencies to develop a method of tracking the Pavement Condition Index (PCI) of bicycle facility segments along the low-stress bicycle network, and implement rehabilitation, repair, and replacement modifications where and as needed.
- Active Transportation-7: Continue to implement the Cowell Road/Willow Pass Road Complete Street Feasibility Study.
- Active Transportation-8: Work with CCTA to conduct, update, and implement a comprehensive countywide Pedestrian Needs Assessment.

Parking Electric Devices

Long-term secure e-bicycle and e-scooter parking and storage facilities are important to encourage active transportation and modal shift. These facilities can take the form of on-demand lockers that replace month-to-month rental lockers or entire bicycle rooms.

- Active Transportation-9: Work with CCTA, Alameda CTC, and local jurisdictions to explore installation of e-bicycle charging infrastructure in publicly accessible and convenient places, including trails, shared mobility hubs, existing and planned electric vehicle (EV) charging locations, and near commercial/retail establishments.
- Active Transportation-10: Support implementation of Alameda CTC's Bicycle Safety Education Program.

Chapter 7: Roadways

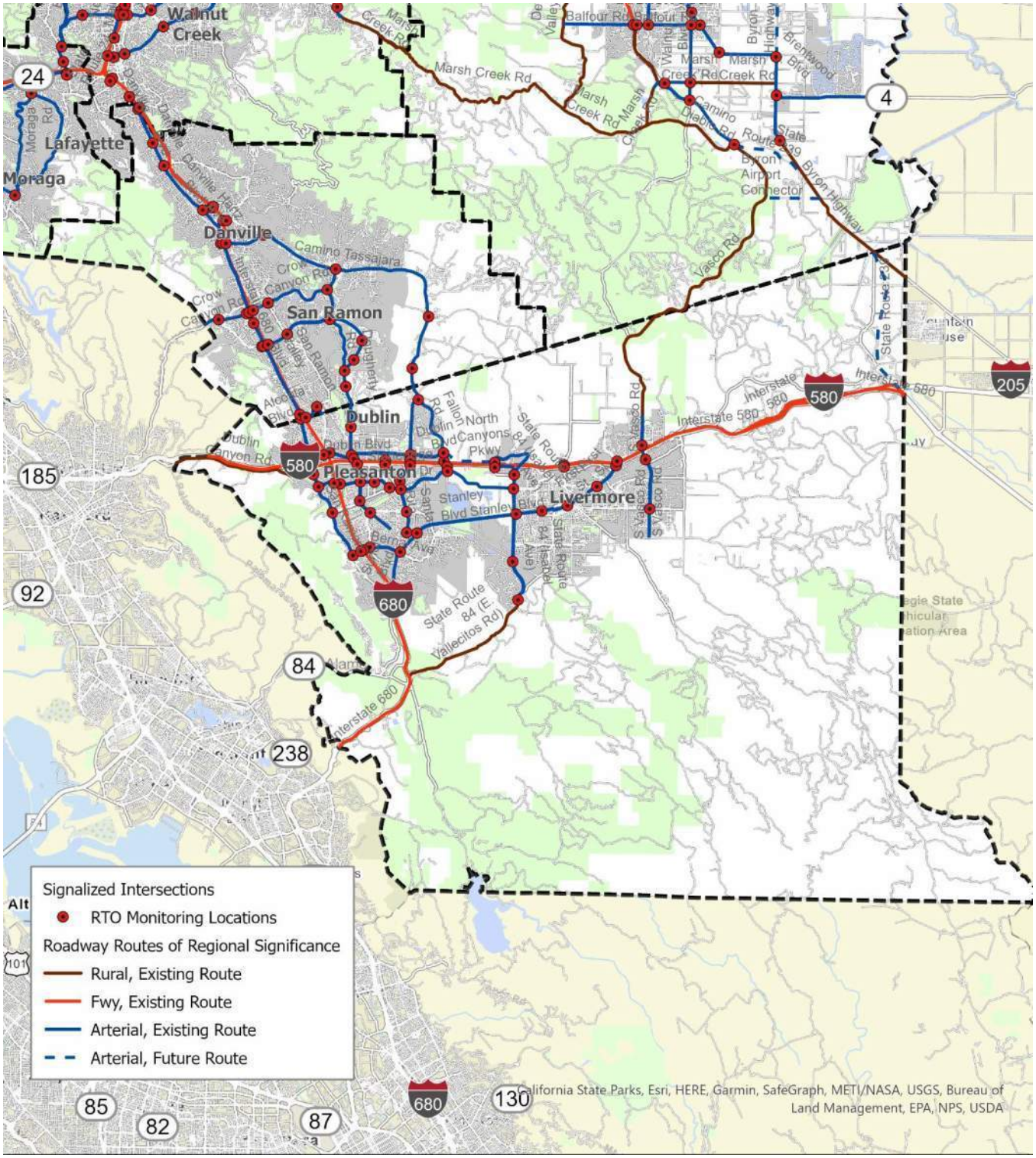
The transportation system in the Tri-Valley area, much like the rest of the United States, is built for and around the automobile. While several modes can use them, roadways are primarily geared to personal automobile and vehicle traffic. This Action Plan monitors the roadway and vehicles to ensure service on Tri-Valley roadways is adequate. However, it is the intention of this Action Plan that the share of personal automobile travel decreases, particularly SOVs, and that Tri-Valley roadways become more multimodal over time. Refer to other chapters in this Action Plan to see RTOs and Actions to achieve these goals. It may be the case that some actions in this chapter conflict with the actions in other chapters of this Action Plan. If such a conflict occurs, it will be up to the individual jurisdictions to weigh project or program benefits against one another and the goals of this Action Plan, the subregion, and Tri-Valley as a whole. Figure 7-1 shows the Tri-Valley roadway segments and intersections evaluated in this chapter.

Table 7-1: Summary of Roadway Regional Transportation Objectives

RTO Name	Definition	Existing Target	Proposed 2027 Target	Proposed 2050 Target
Roadways RTO-1: Freeway Delay Index	Maintain current delay index	Delay index: ≤2.0	Delay index: 2.75	Delay index: 2.75
Roadways RTO-2: Freeway Buffer Index	Maintain current buffer index	Buffer index: None	Buffer index: 0.5	Buffer index: 0.5
Roadways RTO-3: Intersection Level of Service (LOS)	Maintain LOS at RTO monitoring locations	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
Roadways RTO-4: Roadway Segment LOS	Maintain LOS on two-lane roadways outside of urban areas	None	LOS E (≤40 miles per hour [mph]) on SR-84 and Vasco Road No standard for Dublin Canyon Road	LOS E (≤40 mph) on SR-84 and Vasco Road No standard for Dublin Canyon Road

Refer to the RTO discussions in this chapter for detailed information on existing conditions and explanation of the targets.

Figure 7-1: Map of RTO Monitoring Locations and Segments



Freeway RTOs

Freeway 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
- I-680 from Livorna Road to I-580
- I-680 from I-580 to Fremont City Limit

Roadways RTO-1: Freeway Delay Index

Maintain 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.

The observed baseline and modeled results for freeway delay index on the freeway RRS are shown in Table 7-2. As shown, 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 follow the same pattern as 2019 with similar or higher delay index values for the peak directions.

Based on current performance and the future modeled performance, this Action Plan sets a delay index target of 2.75.

Roadways RTO-2: Freeway Buffer Index

Maintain Peak-Hour Freeway Segment Buffer Index on Select Freeway Segments

The buffer index represents the 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 eight minutes (20 minutes × 40 percent = 8 minutes) to ensure on-time arrival most of the time. In this example, the eight extra minutes are 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.

Observed baseline and modeled results are shown in Table 7-2. The observed buffer index for existing conditions and peak direction of travel ranges from 0.05 to 0.45, reflecting a high degree of travel time variability, especially in the morning westbound direction.

This Action Plan sets a performance target for the buffer index at 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 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.

For comparison, this section also provides the buffer index for BART trips from the Alameda County portion of the Tri-Valley area.

- For an AM peak trip from the Dublin BART station to the Embarcadero BART Station in San Francisco, the average trip time is 46 minutes, while 95 percent of trips occur in 50 minutes or less. This means that the buffer time for this BART trip is four minutes in addition to an average trip time of 46 minutes, which represents a buffer index of 0.09 (4 ÷ 46).
- The PM peak trip from the Embarcadero BART Station in San Francisco to the Dublin BART station is the same and therefore has the same buffer index of 0.09.

These buffer indexes for BART are often significantly better than the observed buffer index or the target buffer index for peak-hour, peak-direction trips noted for freeways in this RTO.

Table 7-2: Observed and Baseline Modeled Conditions: Freeways

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	60.7	1.07
A.M. Westbound	41.3	1.57	0.22	42.9	2.14
P.M. Eastbound	32.9	1.98	0.28	29.9	2.17
P.M. Westbound	61.5	1.06	0.11	54.7	1.19
I-580 west of I-680					
A.M. Eastbound	59	1.10	0.05	51.6	1.26
A.M. Westbound	59.7	1.09	0.22	23.4	2.78
P.M. Eastbound	23.6	2.75	0.28	31.7	2.05
P.M. Westbound	57.4	1.13	0.11	42.8	1.52
I-680 north of I-580					
A.M. Eastbound	59.4	1.09	0.24	37.1	1.75
A.M. Westbound	63.6	1.02	0.12	31.7	2.05
P.M. Eastbound	51.8	1.25	0.43	27.9	2.33
P.M. Westbound	60.6	1.07	0.24	33.0	1.97
I-680 south of I-580					
A.M. Eastbound	61.2	1.06	0.35	61.5	1.06
A.M. Westbound	39.8	1.63	0.45	33.0	1.97
P.M. Eastbound	41.3	1.57	0.20	35.1	1.85
P.M. Westbound	65.1	1.00	0.07	59.6	1.09

a) Average speed over corridor as a whole.

Surface Roadway RTOs

Roadways RTO-3: Intersection LOS

Maintain Peak-Hour LOS at RTO Monitoring Locations in Urban Areas

This RTO is applied to signalized intersections (referred to as “RTO Monitoring Locations”) along specific 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.[22] The relationship between average control delay and LOS is shown in Table 7-3, and the RTO monitoring locations analyzed for LOS are shown in Table C-1 in Appendix C, Transportation Modeling Results.

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, this Action Plan sets performance targets for RTO monitoring locations LOS for the Tri-Valley subregion 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 7-3: Intersection LOS Definitions

Control Delay (Seconds/Vehicle)	Level of Service (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

Roadways RTO-4: Roadway Segment LOS

Maintain Peak-Hour Segment LOS on Selected Two-Lane Roadways Outside of Urban Areas

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

[22] The 7th edition of the *Highway Capacity Manual* was published by the Transportation Research Board in January 2022.

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

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

The segment LOS is related to average speed, as shown in Table 7-4. Table 7-5 lists the analysis results for the two-lane roadway corridors studied for the Tri-Valley subregion and reports the existing and forecast LOS.

This Action Plan sets a performance target for this metric of LOS E, which corresponds to an average speed across the corridor of less than 40-45 miles per hour (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.

Table 7-4: LOS for Two-Lane Roadways

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

Source: Highway Capacity Manual 2010, Exhibit 15-3

Table 7-5: Corridor LOS for Two-Way Roadways Outside Urban Areas

Route of Regional Significance	Time of Day	Direction	2019		2050	
			Avg Speed (MPH)	LOS	Avg Speed (MPH)	LOS
SR-84 (E. Vallecitos Road)	A.M.	EB	55.1	A	41.8	D
SR-84 (E. Vallecitos Road)	A.M.	WB	23.3	E	22.3	E
SR-84 (E. Vallecitos Road)	P.M.	EB	41.4	D	26.3	E
SR-84 (E. Vallecitos Road)	P.M.	WB	53.9	B	41.3	D
Dublin Canyon Road	A.M.	EB	38.4	E	38.4	E
Dublin Canyon Road	A.M.	WB	35.1	E	22.3	E
Dublin Canyon Road	P.M.	EB	37.4	E1	26.3	E
Dublin Canyon Road	P.M.	WB	34.4	E1	41.3	D
Vasco Road	A.M.	NB	52.5	B	16.9	E
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	16.0	E

Source: Inrix Roadway Analytics, CCTA Travel Demand Model

Actions

The following actions are needed to achieve the RTO targets and to implement other goals and policies of this Action Plan, the CTP, and other regional long-range planning documents with shared priorities. Completion of individual Actions is dependent on availability of funding and staff resources. For Contra Costa jurisdictions, requirements for compliance with the GMP are provided in the CCTA *Implementation Guide*, which specifies that Contra Costa jurisdictions have an obligation to implement Actions consistent with the time frame of the Action Plans. Compliance with this requirement will be evaluated by CCTA every other year, based on a Compliance Reporting Checklist submitted by the Town of Danville, the City of San Ramon, and Contra Costa County. All Actions are enumerated in a summary table in Appendix B, which also lists the responsible agency, partner agencies, and proposed timeline for each Action.

- Roadways-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 improvements, HOV/HOT lane and bypass lanes, conducting Integrated Corridor Management (ICM) studies, and others, to support a cohesive transportation system for all modes.
- Roadways-2: Evaluate ramp-metering and maintain existing ramp metering on I-580 and I-680 in the Tri-Valley area as a method for maintaining an acceptable level for the delay index on both the freeway and local roadway network.
- Roadways-3: Work with CCTA, Alameda CTC, and local jurisdictions to continue studying the feasibility of pilot and long-term programs for bus on shoulder on subregional freeways such as I-680.
- Roadways-4: Work with CCTA, Bay Area Transportation Authority (BATA), Alameda CTC, Caltrans, and California Highway Patrol to develop a program to track HOV/HOT and toll lane violators.
- Roadways-5: Work with CCTA, Alameda CTC, Port of Oakland, and other relevant Alameda County goods movement stakeholders 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.
- Roadways-6: Work with CCTA, Caltrans, and other applicable agencies to conduct Integrated Corridor Management (ICM) studies to improve multimodal function of countywide facilities.
- Roadways-7: Work with CCTA, Alameda CTC, neighboring subregions, and local jurisdictions to develop a program 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 transit modes.

- Roadways-8: Develop a program to identify, establish, operate, and maintain existing and additional public or private park-and-ride facilities at appropriate locations, including shared-use agreements at activity centers with underutilized parking spaces.
- Roadways-9: Develop subarea corridor management plans for selected regional routes to 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.
- Roadways-10: Complete necessary operational improvements (e.g., protected turn lanes, synchronized signal timing, auxiliary lanes) on freeways, at intersections and on roadway segments that are needed to maintain the RTOs in this Action Plan, while ensuring balancing these improvements against the objectives and actions regarding other modes and issues covered by this Action Plan.
- Roadways-11: Construct Tesla Road safety improvements from South Livermore Avenue to Greenville Road.
- Roadways-12: Work with Alameda CTC and local jurisdictions to implement the recommendations of the I-580 Transit and Multimodal Strategy.
- Roadways-13: As part of the CTP process, study roadway improvements along key RRS, to include roadway cross-sections showing changes to lane configurations, sidewalks, bicycle facilities, shoulders, and other roadway components.

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Chapter 8: Safety

The safety of the transportation system affects each person that lives, works, or recreates in the Tri-Valley area, regardless of their age or the mode by which they travel. Whether someone is traveling in a vehicle or using active transportation, there is risk of collision on any transportation facility. It is the goal of Contra Costa and Alameda Counties, in conjunction with many jurisdictions around the world, to eliminate the number of collisions that occur, particularly collisions between vehicles and those using active transportation modes. Both CCTA and Alameda CTC have published Vision Zero and Safe Systems approaches. CCTA's *Vison Zero & Systemic Transportation Safety "How To" Policy and Implementation Guide* encourages local jurisdictions to adopt and implement Vison Zero action plans. In addition, an objective in the Contra Costa 2018 CBPP is to "Reduce the rate of pedestrian and bicycle fatalities and injuries per capita." The Alameda CTC has adopted the Safe System Approach and Vision Zero Implementation resources, initiated through their 2020 Countywide Transportation Plan. In alignment with the Vision Zero philosophy, this Action Plan sets performance targets at zero fatalities and severe injuries for all collisions.

Table 8-1: Summary of Safety Regional Transportation Objectives

RTO Name	Definition	Existing Target	Proposed 2027 Target	Proposed 2050 Target
Safety RTO-1: KSI Collisions	Eliminate collisions that result in fatality or severe injury	None	Zero fatality and severe injury collisions [a]	
Safety RTO-2: Active Transportation Collisions	Eliminate KSI collisions involving users of active transportation	None		
Safety RTO-3: Active Transportation Collisions near Schools [b]	Eliminate active transportation-involved KSI collisions occurring within 500 feet of schools	None		

Refer to the RTO discussions in this chapter for detailed information on existing conditions and explanation of the targets.

a) CCTA codified Vision Zero work through Resolution 21-40-G, which adopts the Contra Costa Countywide Transportation Safety Policy and Implementation Guide for Local Agencies.

b) Schools in this analysis refer to all public and private K-12 schools.

RTOs

The RTOs in this section are based on the injury and fatality collisions reported by the Transportation Injury Mapping System (TIMS).[23] TIMS collision records represent cleaned and geocoded data compiled by the Statewide Integrated Traffic Records System maintained by the California Highway Patrol. The statistics reflect the most recent complete four years of available data but exclude data from 2020 due to pandemic conditions. Therefore, TIMS data used in this Action Plan include January 1, 2016, through December 31, 2019. CCTA, Alameda CTC, and the Tri-Valley jurisdictions understand that there have been collisions since this time and that they may occur in locations that are not captured in these point-in-time data. However, these data are intended to be a sampling and do not represent all KSI collisions. The number of collisions reported in this chapter are recognized to represent an undercount of total collisions because not all collisions, especially minor ones, are reported to the police.

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

Safety RTO-1: KSI Collisions

Eliminate Killed or Severely Injured (KSI) Collisions in the Subregion

This RTO tracks the number of severe injury or fatality collisions from the TIMS data set between the years of 2016 and 2019.[24] This RTO includes all collisions that occur in the subregion and not exclusively collisions between vehicles and bicycles and pedestrians. The collision locations are depicted on Figure 8-1, and Table 8-2 summarizes the collisions by type.

During the analysis time frame, there were 641 severe injury or fatality collisions throughout the Tri-Valley area—93 fatal collisions and 548 severe injury collisions. The most common types of collision were cars hitting objects followed by rear-endings and vehicles overturning.

Safety RTO-2: Active Transportation Collisions

Eliminate Collisions in the Subregion that Involve Users of Active Transportation

This RTO tracks the number of bicycle- or pedestrian-involved collisions from the TIMS data set. The collision locations for the Tri-Valley subregion are depicted on Figure 8-1 and summarized by severity in Table 8-3. During this time frame, there were 938 bicycle- or pedestrian-involved collisions, accounting for nine percent of all injury and fatality collisions. Of the bicycle or pedestrian collisions, 18 resulted in fatalities and 118 resulted in severe injury.

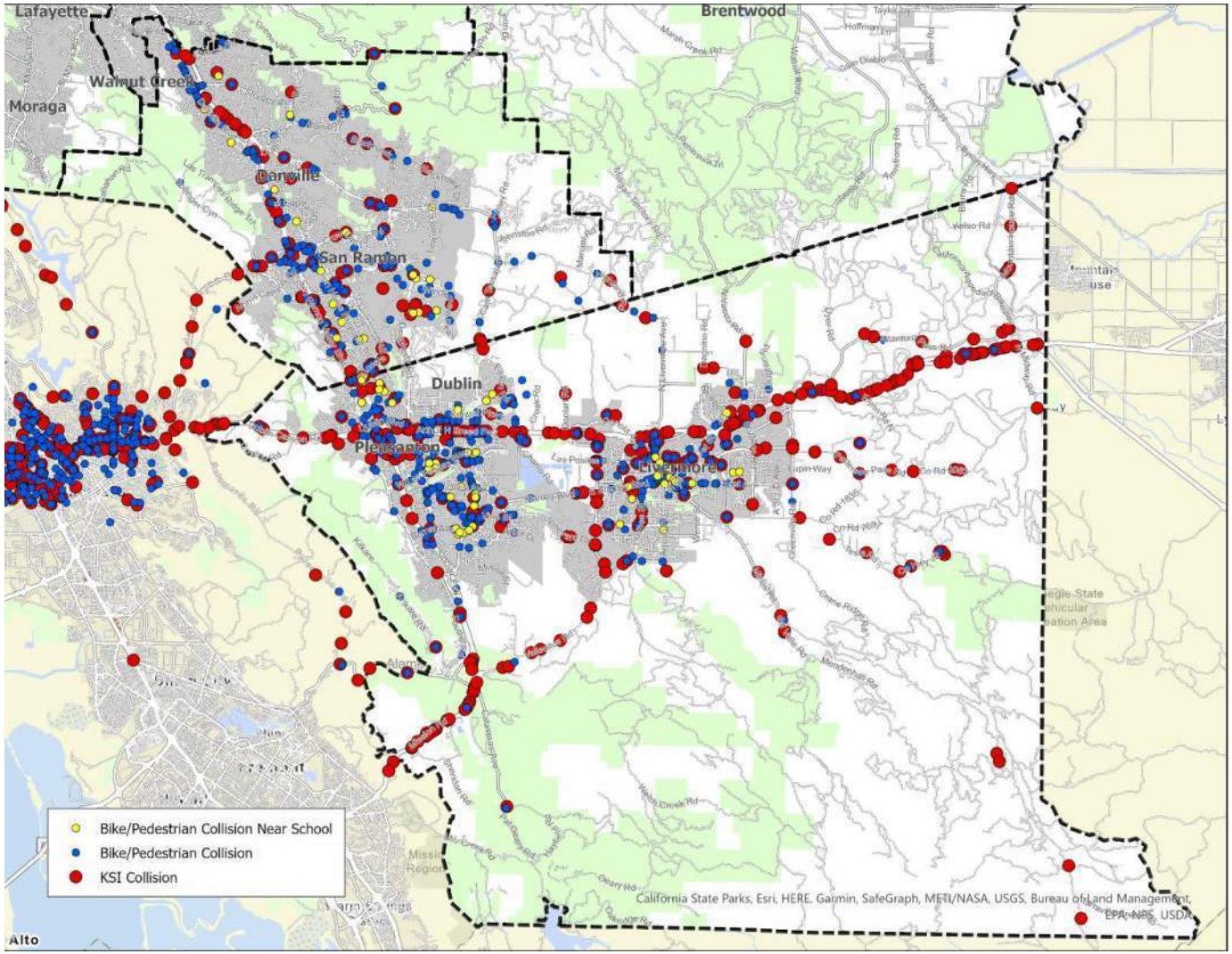
Safety RTO-3: Active Transportation Collisions Near Schools

Eliminate Active Transportation Collisions Within 500 Feet of a School

This RTO tracks the number of bicycle- or pedestrian-involved collisions that occur within 500 feet of Tri-Valley school campuses. These collision locations are also depicted on Figure 8-1. A total of 88 collisions occurred near school campuses, 36 of which involved collision with a pedestrian and 52 with a bicyclist.

[24] This Action Plan uses a collision data timeframe of four years due to skewed data in 2020 from the COVID-19 pandemic.

Figure 8-1: KSI and Bicycle- or Pedestrian-Involved Collisions (2016-2019)[25]



[25] Note that KSI collisions involving a bicycle or pedestrian are shown with both a blue and red dot.

Table 8-2: KSI Collisions by Type: Tri-Valley Subregion, January 1, 2016, through December 31, 2019

Collision Type	2016	2017	2018	2019	Number of Collisions
Head-On	16	10	10	11	47
Sideswipe	11	19	21	21	72
Rear-End	26	26	33	30	115
Broadside	13	21	19	21	74
Hit Object	33	34	49	40	156
Overturned	17	20	21	23	81
Vehicle/Pedestrian	13	25	18	16	72
Other	6	4	6	8	24
Total	**135**	**159**	**177**	**170**	**641**

Source: Transportation Injury Mapping System and DKS Associates.

Table 8-3: Bicycle and Pedestrian Collisions by Severity: Tri-Valley Subregion, January 1, 2016, through December 31, 2019

Severity of Injury	2016	2017	2018	2019	Total Bicycle and Pedestrian Collisions
Fatal	3	7	3	5	18
Injury (Severe)	23	30	30	35	118
Injury (Other Visible)	113	133	130	127	503
Injury (Complaint of Pain)	82	70	78	69	299
Total	**221**	**240**	**241**	**236**	**938**

Source: Transportation Injury Mapping System and DKS Associates.

Actions

The following actions are needed to achieve the RTO targets and to implement other goals and policies of this Action Plan, the CTP, and other regional long-range planning documents with shared priorities. Completion of individual Actions is dependent on availability of funding and staff resources. For Contra Costa jurisdictions, requirements for compliance with the GMP are provided in the CCTA *Implementation Guide*, which specifies that Contra Costa jurisdictions have an obligation to implement Actions consistent with the time frame of the Action Plans. Compliance with this requirement will be evaluated by CCTA every other year, based on a Compliance Reporting Checklist submitted by the Town of Danville, the City of San Ramon, and Contra Costa County. All Actions are enumerated in a summary table in Appendix B, which also lists the responsible agency, partner agencies, and proposed timeline for each Action.

Project Highlight!

The East Bay Regional Park District Board of Directors approved a one-year pilot program in 2017 to allow e-bicycles on three regional trails.

- Safety-1: Collaborate with CCTA, California Highway Patrol (CHP), and Caltrans to prepare an incident management plan for the State highways in Tri-Valley.
- Safety-2: Develop a program to bi-annually provide funds for implementation of the Complete Streets policies of the regional and local jurisdictions.
- 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 countywide, state, and federal safety programs and performance measures.
- Safety-4: Work with CCTA and Alameda CTC to implement their Vision Zero Frameworks and Safe Systems Approaches to project scoping and delivery.
- Safety-5: Work with regional and local agencies to increase the level of multimodal public awareness and empathy about bicycle and pedestrian safety and to reduce injuries due to vehicle-involved collisions.
- Safety-6: Monitor and evaluate traffic speed and other safety issues, particularly around schools, on an annual basis.
- Safety-7: Conduct a study to identify all transportation improvements needed within 500 feet of schools to enhance safety and reduce traffic impacts.
- Safety-8: Work with CCTA, MTC, and East Bay Regional Parks District (EBRPD) to study and mitigate the safety impacts of electric bicycles and other micromobility devices on local trails and streets, with the aim of eventually allowing electric bicycles, e-scooters, and other micromobility devices on all of these facilities.
- Safety-9: Coordinate with Alameda CTC SR2S program and review Site Assessments already conducted for participating Alameda County schools.
- Safety-10: Coordinate with CCTA to implement the findings of the CCTA Safe Routes to Schools Needs Assessment.

Chapter 9: Climate Change

As described in Chapter 2, climate change is a significant challenge facing humans and the planet, and transportation is one of the largest contributors of GHG emissions. The transportation system not only contributes to climate change, but is vulnerable to its impacts, such as extreme weather and sea level rise. This chapter includes several RTOs aimed at reducing the impact that the transportation system has on climate change.

Table 9-1: Summary of Climate Change Regional Transportation Objectives

RTO Name	Definition	Existing Target	Proposed 2027 Target	Proposed 2050 Target
Climate Change RTO-1: Single-Occupant Vehicle (SOV) Mode Share	Decrease SOV mode share per capita	None	79% for commute trips	60% for commute trips
Climate Change RTO-2: Carpool Mode Share	Increase carpool mode share	None	13% for commute trips	20% for commute trips
Climate Change RTO-3: Vehicle Miles Traveled	Decrease daily VMT per service population	None	25 VMT daily per service population	21 VMT daily per service population
Climate Change RTO-4: Greenhouse Gas (GHG) Emissions	Decrease GHG emissions per capita	None	28 lbs per capita	Zero transportation related
Climate Change RTO-5: Zero-Emission Vehicles	Increase registered electric vehicles	None	50% of total market share	100% of total market share

Refer to the RTO discussions in this chapter for detailed information on existing conditions and explanation of the targets.

RTOs

Climate Change RTO-1: SOV Mode Share

Reduce the Mode Share of SOVs in the Subregion

As shown in Table 2-2 in Chapter 2, 79 percent of total Tri-Valley work trips were by SOVs, compared to 73 percent of total Planning Area work trips. These figures are projected to slightly decrease on their own through 2050, to 75 percent and 71 percent, respectively.

This Action Plan sets a performance target for SOV commute mode share in the Tri-Valley subregion to match 2027 mode share at 79 percent of work trips in 2027 and to decrease to 60 percent in 2050. These numbers have been derived by reducing future SOV mode share by the targeted increases in transit, bicycle, and walk trip mode share, and also by assuming an increase in carpooling (multiple-occupant vehicle) mode share to 20 percent by 2050.

Climate Change RTO-2: Carpool Mode Share

Increase the Mode Share of Carpooling in the Subregion

As discussed previously, reducing the SOV mode share will require increases in the other modes, including carpooling. As shown in Table 2-2 in Chapter 2, 13 percent of total Tri-Valley work trips were by carpool, compared to 14 percent of total Planning Area work trips. These figures are projected to slight increase by 2050 to 15 and 15 percent, respectively. This Action Plan sets a target to match the 2019 base year carpool commute trips of 13 percent by 2027 and to increase the share of carpool commute trips to 20 percent by 2050.

Climate Change RTO-3: Vehicle Miles Traveled

Reduce VMT per Service Population in the Subregion

This Action Plan considers total VMT for Planning Area and subregion residents. The 2020 VMT study conducted for CCTA by consultant Fehr & Peers found that 2018 VMT per service population in the Tri-Valley subregion was 28.85 and 26.37 VMT per service population for the entire Planning Area. The forecasted VMT per service population for the Tri-Valley area and Planning Area for 2050 is 33.3 and 28.8, respectively, assuming no changes are made, including the Actions adopted as part of this Action Plan.

The California Air Resources Board's *2017 Scoping Plan: Identified VMT Reductions and Relationship to State Climate Goals*[26] states that California needs to reduce daily per capita VMT to 21 to achieve carbon neutrality, which is the State's goal for 2045. Based on this recommendation and the finding of this Action Plan Update, this Action Plan sets 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 2050, this would mean a reduction to 25 VMT per service population by 2027 in the Tri-Valley area.

Table 9-2: VMT per Service Population

	2018 Existing	2027 Target	2050 Target
Tri-Valley Area	28.85	25	21
Planning Area	26.37	---	---

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

[26] California Air Resources Board, 2*017 Scoping Plan: Identified VMT Reductions and Relationship to State Climate Goals*, January 2019, https://ww2.arb.ca.gov/sites/default/files/2019-01/2017_sp_vmt _reductions_jan19.pdf.

Climate Change RTO-4: Greenhouse Gas Emissions

Reduce Transportation GHG Emissions per Capita in the Subregion

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, carbon dioxide [CO_2]).[27] The emissions outputs also reflect assumptions about the future vehicle fleet.

The target for this metric is zero tons of transportation-related emissions by 2050 or about a one-third reduction in GHG per capita by 2027. With the currently estimated 42.2 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 9-3: Average Daily Transportation-Related GHG per Capita

	2019			2050 [a]		
	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
Planning Area	1,392,804	20,081	28.83	1,804,55	12,588	13.95

Sources : DKS Associates ; EMFAC 2021 ; CCTA Travel Demand Model.

a) 2050 data in this table reflect projected CO_2 emissions in 2050 assuming that the Action Plan is not implemented.

[27] California Air Resources Board, EMFAC, v1.0.2, Scenario Analysis, 2021.

Climate Change RTO-5: Zero-Emission Vehicles

Increase the Share of Zero-Emission Vehicles in the Subregion

This RTO tracks the number of battery electric vehicles "on the road," with the goal of increasing total electric vehicle (EV) market share. Data as of April 2021, the most recent report date, are shown in Table 9-4 for the Tri-Valley area as well as all of Contra Costa County for comparison. Tri-Valley currently has 15,262 EVs, making up 4.8 percent of total registered vehicles in the subregion.

Under a regulation approved by the California Air Resources Board, 35 percent of new passenger vehicles sold in the state must be powered by batteries or hydrogen by 2026, and 100 percent by 2035.[28] As of December 2022, 12.4 percent of new vehicles sold in California are ZEVs, and ZEVs make up about two percent of the all light-duty vehicle fleet in the Planning Area.

By Executive Order, California has set a target of one million ZEVs on the road by 2025 and five million ZEVs by 2030.[29] Since Tri-Valley accounts for about less than one percent of the state's population, this suggests that the subregion should have about 10,100 ZEVs by 2025 and 50,700 ZEVs by 2030. A straight-line extrapolation of this number through 2050 suggests about 212,800 ZEVs in Tri-Valley by 2050.

With all these factors in mind, this Action Plan sets a target of 100 percent of the fleet (vehicles on the road), contrasted to the estimated existing EV fleet penetration of about two percent. The estimated number of light-duty vehicles currently based in the Tri-Valley area is 315,590.

[28] California Air Resources Board, Advanced Clean Cars II.

[29] Executive Order B-16-2012 and Executive Order B-48-18.

Table 9-4: Electric Vehicles by Subregion as of April 2021

Area	Battery Electric Vehicles[30]	Total Vehicles	Percentage Battery Electric
Central County	4,879	247,807	2.0%
East County	2,926	264,910	1.1%
Lamorinda	3,141	51,896	6.1%
Tri-Valley [a]	15,262	315,590	4.8%
West County	4,258	217,792	2.0%
Countywide Total (including Alameda County portion of the Tri-Valley area)	**30,466**	**1,097,995**	**2.8%**

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.

a) Includes both the Contra Costa and Alameda County portions of the Tri-Valley.

[30] A Battery Electric Vehicle is a vehicle that can operate, partially or entirely, on chemical energy stored in rechargeable battery packs.

Actions

The following actions are needed to achieve the RTO targets and to implement other goals and policies of this Action Plan, the CTP, and other regional long-range planning documents with shared priorities. Completion of individual Actions is dependent on availability of funding and staff resources. For Contra Costa jurisdictions, requirements for compliance with the GMP are provided in the CCTA *Implementation Guide*, which specifies that Contra Costa jurisdictions have an obligation to implement Actions consistent with the time frame of the Action Plans. Compliance with this requirement will be evaluated by CCTA every other year, based on a Compliance Reporting Checklist submitted by the Town of Danville, the City of San Ramon, and Contra Costa County. All Actions are enumerated in a summary table in Appendix B, which also lists the responsible agency, partner agencies, and proposed timeline for each Action.

- Climate Change-1: Continue to implement a program to support deployment of high-quality, fast, and diverse electrical vehicle and bus chargers in the subregion, with an emphasis on areas where deployment is lagging behind other parts of the subregion.
- Climate Change-2: Continue to promote electric vehicle ownership through establishing sources of financial incentives, educational programs, and demonstrations.
- Climate Change-3: Work with regional agencies, local employers, and schools to increase tele-work, compressed work weeks, alternative work locations, and flex schedules, and provide pretax employer transportation benefit programs.
- Climate Change-4: Work with 511 Contra Costa, Alameda CTC TDM program, and local jurisdiction TDM Advisory Councils to expand TDM programs, adopt local TDM plans, and conduct regular monitoring and reporting for program effectiveness.
- Climate Change-5: Adopt local policies that prioritize mobility for GHG-reducing modes of transportation.
- Climate Change-6: Assist transit agencies and local jurisdictions to transition to zero-emission truck fleets and facilities.

511 Contra Costa

511 Contra Costa is a countywide TDM program that strives to reduce traffic congestion and improve air quality through public education, resources, and tools that promote mobility options other than solitary driving. Some of its incentives and programs are Safe Routes to School, E-bicycle Rebates, Guaranteed Rides Home, and Free Bus Pass for Students. In 2021, 511 Contra Costa helped eliminate 50 million pounds of pollution by shifting drive-alone trips to transit, shared rides, bicycling, and walking.

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Chapter 10: Innovation and Technology

As discussed in Chapter 2, innovation and technology, coupled with current projects and programs, will reduce congestion, improve air quality, and provide new mobility options for all Tri-Valley residents. RTOs and actions in this chapter are created to ensure that CCTA, Alameda CTC, and Tri-Valley jurisdictions are leveraging various transportation technologies and will adopt new ones as they emerge to ensure the region stays at the forefront of technological innovation in the transportation system. New technology can be difficult to track because there are so many unknowns, so this Action Plan only includes one Innovation and Technology RTO. However, several actions are in this chapter to ensure that innovation and technology are key components of the work that will be implemented for the Action Plan, with the ultimate goal to expand Innovation and Technology RTOs in the next Action Plan update.

Autonomous Vehicles

Although it is not yet available to all consumers, full vehicle autonomy could increase safety by removing human error that can lead to a collision and by detecting an oncoming threat faster than a human. Other anticipated benefits of autonomous vehicles are increased accessibility for underserved communities, reduced demand for parking space when used for shared mobility, and reduced traffic through improved communication technology like Connected Autonomous Vehicles (CAVs).

Table 10-1: Summary of Innovation and Technology Regional Transportation Objective

RTO Name	Definition	Existing Target	Proposed 2027 Target	Proposed 2050 Target
Innovation and Technology RTO-1: Signal Interconnection Project	Increase connected signals	None	Complete Signal Interconnection Project	None

Refer to the RTO discussions in this chapter for detailed information on existing conditions and explanation of the targets.

RTOs

Innovation and Technology RTO-1: Signal Interconnection Project

Complete the Project to Upgrade Traffic Signals to Regional Ethernet and/or Fiber-Optic Interconnection

Traffic signal interconnection establishes a connection among individual traffic signals and a central management system, enabling remote access to the signals from a traffic management or operations center. Interconnections allow signal timings to be adjusted remotely during regular day-to-day operations, major incidents, and special events. Regional interconnection also enables cross-jurisdiction communications, coordination, and data exchange to respond to varying traffic conditions.

CCTA is currently working on a new project to identify and implement improvements to traffic signals in each subregion. CCTA will work with Tri-Valley's Contra Costa jurisdictions to interconnect selected signals in San Ramon and Danville and in unincorporated Contra Costa County, using funding primarily from MTC's OBAG Cycle 3 program.[31] Since this effort is already underway, the target for this RTO is the completion of signal interconnection improvements by 2027. There is no additional target for 2050 because there are no plans for a further interconnection program.

[31] This Smart Signals program is particular to Contra Costa County jurisdictions through CCTA's work. Several Alameda County jurisdictions have some form of Smart Signals through work with the Alameda CTC. CCTA will work with Alameda CTC and Alameda jurisdictions to determine compatibility between these signals, if applicable, at time of design and implementation.

Actions

The following actions are needed to achieve the RTO targets and to implement other goals and policies of this Action Plan, the CTP, and other regional long-range planning documents with shared priorities. Completion of individual Actions is dependent on availability of funding and staff resources. For Contra Costa jurisdictions, requirements for compliance with the GMP are provided in the CCTA *Implementation Guide*, which specifies that Contra Costa jurisdictions have an obligation to implement Actions consistent with the time frame of the Action Plans. Compliance with this requirement will be evaluated by CCTA every other year, based on a Compliance Reporting Checklist submitted by the Town of Danville, the City of San Ramon, and Contra Costa County. All Actions are enumerated in a summary table in Appendix B, which also lists the responsible agency, partner agencies, and proposed timeline for each Action.

- Innovation and Technology-1: Coordinate with CCTA, Alameda CTC, MTC, and local jurisdictions 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-optic technology to link all traffic signals and bolster communications for signals, etc.
- Innovation and Technology-2: Examine the feasibility of implementing a pilot Automated Driving System or other modal technologies (such as an autonomous shuttle) somewhere in the Tri-Valley area.
- Innovation and Technology-3: Interconnect the Tri-Valley signal system to enable remote access to the signals from a traffic management or operations center. These signals to be interconnected are yet to be identified, but will be selected based on the following criteria:
  - On RRS
  - In or providing access to a PDA, downtown, or commercial district
  - Presence of bus routes at the intersection
  - Connection to BART
  - Presence of bicycle facilities at the intersection
  - High number of bicycle and pedestrian collisions
  - Geographic distribution across Contra Costa County and the subregion
  - Connection to shared mobility hubs
  - High traffic volume
  - Innovate 680 (non-Caltrans intersections)
- Innovation and Technology-4: Implement micromobility recommendations from the Countywide Bicycle and Pedestrian Plan, including those related to ordinances and requests for proposals (RFPs), and work with operators to deploy micromobility systems, built off industry best management practices.
- Innovation and Technology-5: Work with CCTA and Alameda CTC to determine a method for tracking the availability of EV charging stations.

- Innovation and Technology-6: Work with CCTA and Alameda CTC to mediate adoption and implementation of emerging technologies to ensure that they are feasible and do not cause adverse effects on the transportation system.
- Innovation and Technology-7: Improve the safety of high-incident local roadways through physical changes, signage, technology, education, enforcement, or other tools.
- Innovation and Technology-8: Work with BART to expand the on-demand bicycle parking program for e-bicycles and scooters at BART stations throughout Contra Costa County.
- Innovation and Technology-9: Work with CCTA and local jurisdictions to implement the CCTA EV Readiness Blueprint.

Chapter 11: Financial Outlook

The Measure J GMP requires that local jurisdictions participate in a Regional Transportation Mitigation Program (RTMP) to mitigate the impact of new development on the regional and subregional transportation system. The RTMP may include fees, assessments, or other mitigations, as appropriate, to ensure that new growth pays its fair share for the transportation impacts that it generates. The RTMPs are in addition to transportation impact fees that local jurisdictions may implement on new development as specified in each jurisdiction's local fee program. Establishment of the RTMP may include not only the transportation impacts on existing facilities, but also jobs/housing balance, carpool and vanpool programs, and proximity to transit service.

This Action Plan is not financially constrained; it includes both funded and unfunded projects and programs. The identified projects qualify for inclusion in the Authority's Comprehensive Transportation Project List, which will be revised in the 2023 CTP Update. As noted in Chapter 1, Introduction, this Action Plan constitutes a work program for TVTC, CCTA, and its member agencies, with many Actions to be completed by outside agencies, such as Caltrans and BART. Completion of individual Actions is dependent on availability of funding and staff resources. The Actions listed in this plan do not commit

CCTA, TVTC, or local jurisdictions to completing Actions within a specific timeframe. It is possible that some Actions will not be completed, and there is no penalty to any jurisdiction for inability to complete an Action. All Actions are enumerated in a summary table in Appendix B, which also lists the responsible agency, partner agencies, and proposed timeline for each Action.

General Funding Information

The projects and programs of the TVTC Plan receive funding from a variety of sources. Many of the projects and programs designed to address needs within an individual community are funded by the general revenues of the jurisdiction (city or county) in which the project is being implemented or through development impact fees specific to the jurisdiction. Larger projects of a more regional nature generally receive funding from a variety of funding sources designed to address subarea or regional issues. These include revenue from the county sales tax measures for Alameda County (Measure B) and Contra Costa County (Measures C and J).

Measure B was passed in 2000 and extended the half-cent sales tax for transportation in Alameda County through the year 2022. Measure B provides roughly $3 billion over the 20-year period. Some of the key Tri-Valley projects funded by Measure B are the following:

- I-580 Auxiliary Lanes
- I-580 BART to Livermore Studies
- I-680 Express Lanes
- SR-84 Expressway
- Vasco Road Safety Improvements
- Altamont Commuter Express Rail Capital Improvements
- Bicycle and Pedestrian Trail Improvements

A measure to add an additional half-cent and extend the existing sales tax for a 30-year period (Measure BB) was passed by voters in Alameda County in November of 2014. Measure BB projects in the Tri-Valley include the following:

- BART expansion, modernization, and extension to Livermore in the I-580 median to Isabel Avenue
- Operating funds for LAVTA Wheels bus service
- Affordable and accessible transit for seniors and people with disabilities
- Affordable student transit pass program and safe routes to schools
- Freight corridor improvements on I-580
- I-580 interchange improvements at Greenville Road, Isabel Avenue, and Vasco Road
- I-580/I-680 interchange improvements
- I-680 carpool/express lanes from Alcosta Boulevard to SR-237
- Major commute corridor improvements to Dougherty Road, Dublin Boulevard, El Charro Road, and Greenville Road

- SR-84/I-680 interchange improvements and SR-84 widening
- Improvements to support transit-oriented development at East Dublin/Pleasanton and West Dublin BART stations
- Iron Horse Trail bicycle and pedestrian projects

Measure C in Contra Costa County was passed in 1988 and provided a half-cent sales tax for transportation through the year 2009. Measure J was passed in 2004 and extends the half-cent sales tax through 2034. Measure C provided roughly $70 million to $80 million per year for total revenues of approximately $1 billion. Measure J will provide roughly $1.52 billion over the 25-year period. Some of the key Tri-Valley projects that will be funded by Measures C and J are the following:

- I-680 HOV Lane Gap Closure and Transit Corridor Improvements
- BART Parking, Access, and Other Improvements
- Local Street Maintenance and Improvements
- Major Street Traffic Flow, Safety, and Capacity Improvements
- Transportation for Livable Communities Grants
- Pedestrian, Bicycle, and Trail Facilities
- Bus Services
- Transportation for Seniors and People with Disabilities
- Commute Alternatives
- Congestion Management, Transportation Planning Facilities and Services
- Safe Transportation for Children

Additional regional funds are provided by the following federal, state, and regional sources:

- Federal Surface Transportation Funds – MAP-21
- State Transportation Development Act (TDA)/State Transit Assistance (STA) Revenues
- State Transportation Improvement Program (STIP) Funds
- State Corridor Management Improvement Account (Prop 1B)
- State Environmental Enhancement and Mitigation
- STDA, Article 3 – Bicycle and Pedestrian Funds
- Bridge Toll Revenues
- Regional Measure 2 Bridge Toll Revenues for Specific Projects and Programs
- Assembly Bill 1107 half-cent sales tax revenues for transit (BART and AC Transit)
- Transportation Fund for Clean Air - Vehicle Registration Fees for Clean Air Programs

Because of the dramatic growth that is expected in the Tri-Valley and surrounding areas, the funding from the sources identified above will not be sufficient to address all of the travel needs in a way that allows the area to meet all of its MTSOs in 2040. Since the first plan was adopted in 1995, the TVTC has looked to additional Tri-Valley funding from new development for improvements that can be linked directly to new development. Two elements of the financing plan for the TVTC Plan are designed to address this additional need for funds: the subregional transportation impact fee, and the cost-sharing formulae for road improvements that benefit multiple jurisdictions.

Subregional Transportation Impact Fee

In 1998, the member jurisdictions of the Tri-Valley Transportation Council entered into a JEPA[32] that established the Tri-Valley Transportation Development Fee, or TVTDF. The TVTDF comprises a set of uniform fees on new development within the Tri-Valley area. The use of the fee is guided by the TVTDF Strategic Expenditure Plan, which outlines the priorities for the Tri-Valley area as agreed to by the seven TVTC member agencies. The TVTDF Strategic Expenditure Plan (SEP) lists project costs for each of the potential projects to be funded; estimates expected revenues from the TVTDF and other possible revenue sources for the projects; sets a prioritization plan and a timeline for project delivery; and identifies the TVTDF jurisdiction responsible for overseeing implementation of the project.

Action Related to Funding

- Financial-1: Continue to participate and periodically update the Tri-Valley Transportation Development Fee (TVTDF) Program and Strategic Expenditure Plan to ensure it will produce sufficient funds in light of current and anticipated growth rates and construction costs.

Shared Facilities

Implementation of many of the transportation system improvements in this Action Plan will benefit multiple jurisdictions. Each of these improvements needs a negotiated agreement about cost sharing between jurisdictions. The cost-sharing approach could be based on which jurisdiction's traffic is expected to use the facility, on the boundaries within which the facility lies, or a combination. These agreements should be negotiated in advance so that when development takes place, the responsibility for improvements is clear.

[32] The 2013 JEPA document is appended in this Action Plan and can be viewed in Appendix E.

Chapter 12: Procedures for Notification, Review, and Monitoring

Action Plans are required to include a set of procedures to share environmental documents, review general plan amendments, and monitor progress in attaining the service objectives. The procedures for notification, monitoring, and review are described herein. While the procedures outlined in this chapter were created by CCTA for Contra Costa jurisdictions, Alameda County jurisdictions in the Tri-Valley area are required to follow some of the procedures as part of the JEPA adopted by all Tri-Valley area jurisdictions included within this Action Plan.[33] Specifically, Alameda County jurisdictions in the Tri-Valley area are required to participate in the Action Plan process through the TVTC RTPC and are required to circulate environmental documents and notify neighboring jurisdictions of development that meets the requirements outlined in this chapter.

[33] The 2013 JEPA document is appended in this Action Plan and can be viewed in Appendix E.

Role of Regional Transportation Planning Committees

The RTPC for each subregion is made up of elected and appointed representatives from each jurisdiction within that subregion. Officials from transit agencies and planning commissions also serve on some of the RTPCs, either as voting or *ex officio* nonvoting members. The RTPCs are groups that engage in multi-jurisdictional and collaborative planning work to improve the transportation system in Contra Costa and build consensus for projects and programs over the whole subregion. Each RTPC oversees one Action Plan, except for Southwest Area Transportation Committee, which oversees two (this Tri-Valley Action Plan and the Lamorinda Action Plan).

In addition to their responsibilities for preparing and updating the Action Plans, the RTPCs are involved in various transportation planning efforts. Central Contra Costa Transportation Committee, also known as the Transportation Partnership and Cooperation (TRANSPAC) committee, for example, is involved in the Innovate I-680 project and has completed improvements to the Iron Horse Trail, and WCCTAC started Richmond ferry service and completed over- and undercrossing projects. In East County, TRANSPLAN continues to plan for a link to Pittsburg/Antioch BART, and in the Southwest Area, work underway includes several bicycle and pedestrian overcrossings of major thoroughfares.

Circulation of Environmental Documents and Transportation Impact Studies

The Action Plan is required to have a set of procedures to share environmental documents and transportation impact studies. This notification is to occur through the CEQA analysis process (assuming it occurs for a project) at the following two junctures: first, upon issuance of a Notice of Preparation (NOP), and second, at the stage of Notice of Completion (NOC) of the draft environmental impact report (EIR).

The Action Plan sets the threshold for circulating transportation impact studies and/or EIRs to neighboring jurisdictions, consistent with the CCTA *Implementation Guide*.[34] This threshold states that any project that generates at least 100 Net New Peak-Hour Vehicle Trips (NNPHVTs) triggers preparation of a transportation impact study and notification of neighboring jurisdictions. Examples of projects that could generate more than 100 NNPHVTs are:

- A single-family residential development of more than 100 units
- A condominium development of more than 180 units
- A retail center of at least 14,000 square feet
- A general office building of at least 44,000 square feet

[34] More information on the thresholds and procedures around circulating of environmental documents and transportation impact studies can be found in Chapter 4 of the CCTA *Implementation Guide,* Evaluating the Impacts of Proposed New Development and General Plan Amendments.

The following procedures are to be followed by the jurisdictions of the Tri-Valley area (including the Alameda County portion of the Tri-Valley area) regarding circulation of environmental documentation:

- For any proposed project or general plan amendment that generates more than 100 NNPHVTs and for which an environmental document is being prepared (Negative Declaration or EIR or Environmental Impact Statement), the lead agency shall issue a "notice of intent" to issue a negative declaration or NOP for an EIR to TVTC staff, all Regional Transportation Planning Committee chairs or designated staff persons, and to each member jurisdiction of TVTC.
- For any proposed project or general plan amendment that generates more than 100 NNPHVTs and for which an environmental document will not be prepared, the lead agency shall complete a transportation impact study and alert TVTC staff, all Regional Transportation Planning Committee chairs or designated staff persons, and each member jurisdiction of TVTC of the study's preparation.
- TVTC shall notify its member jurisdictions of receipt of such notices from jurisdictions in other subregions.
- When the environmental document and/or transportation impact study described under points #1 and #2 are completed, the lead agency shall notify TVTC staff, all Regional Transportation Planning Committee chairs or designated staff persons, and each member jurisdiction of TVTC.
- TVTC staff shall review development projects for compliance with the technical procedures regarding evaluation of new development proposals.

Note that these requirements apply to all projects generating 100 NNPHVTs or more, regardless of whether a CEQA document is prepared.[35] Further, the transportation impact study required under CCTA regulations is to cover congestion impacts and VMT, and hence will meet and exceed the requirements of CEQA, which no longer requires assessment of congestion impacts since the implementation of Senate Bill (SB) 743. Contra Costa jurisdictions must conduct this analysis consistent with the Measure J GMP *Implementation Guide*. Alameda jurisdictions must assess the effects of the development on the Metropolitan Transportation System consistent with the Alameda Congestion Management Plan (CMP) and subsequently report results to neighboring jurisdictions if they trigger such circulation.

Review of General Plan Amendments

This Action Plan was developed using land use forecasts that generally reflect future land development allowed within the framework of the adopted general plans for jurisdictions in Tri-Valley, and do not yet reflect additional development capacity and by-right land use modifications under state laws that became effective on January 1, 2023. General plan amendments enacted after adoption of the Action Plan could therefore adversely affect the ability to meet this Action Plan's goals, policies, and objectives.

[35] This threshold matches the CCTA *Implementation Guide* recommendation for circulation of environmental documents and transportation impact studies. Some subregions may adopt more stringent thresholds if desired.

The CCTA *Implementation Guide* requires that each Action Plan contain a process for notification and review of the impact of proposed General Plan Amendments (GPAs) that exceed a specified threshold size of 500 NNPHVTs.[36] Accordingly, the process outlined below has been adopted by TVTC. This process is also shown in more detail in the CCTA *Implementation Guide* in Chapter 4, Evaluating the Impacts of Proposed New Development and General Plan Amendments.

In addition to the project review procedures described, the following procedures are to be followed for general plan amendments that generate more than 500 NNPHVTs:

- Through its participation in TVTC, the jurisdiction preparing the general plan amendment shall notify TVTC and its member jurisdictions of the proposed GPA in accordance with the above notification and circulation requirements for environmental documents and transportation impact studies.
- Upon request by TVTC, the jurisdiction considering the amendment shall confer with TVTC staff and/or attend a meeting of either the TVTC and/or the TVTC policy board, to discuss the impacts of the proposed GPA on the adopted Action Plan. During these discussions:
  - The lead agency proposing the GPA should demonstrate that the amendment will not adversely affect the TVTC jurisdictions' ability to implement this Action Plan or should propose amendments to the GPA to allow this to be the case.
  - Alternatively, the lead agency proposing the GPA can propose modifications to this Action Plan for consideration by TVTC.

The lead agency and TVTC will participate in these discussions with the intent of arriving at a consensus for the proposed GPA that will not adversely affect the ability to implement this Action Plan (as it may be amended). If this does not occur, approval of the GPA by the lead jurisdiction may lead to compliance issues with the CCTA GMP. If an RTO is not met following implementation of the Action Plan, the Plan would need to be reevaluated through the forum of TVTC and SWAT. Amendments to the Plan could include a relaxation of RTOs, a strengthening of actions, or a combination of these approaches. In Alameda County, the jurisdiction with the RTO violation can elect to modify growth rates, improve the facility, or seek a lower RTO standard through the amendment process set forth in this chapter.

Schedule for Action Plan Review

From time to time, this Action Plan will be reviewed in coordination with CCTA's CTP Update in accordance with the CCTA GMP *Implementation Guide* for guidance on the development and updates of Action Plans.

[36] This threshold matches the CCTA *Implementation Guide* recommendation for circulation of GPAs. Some subregions may adopt more stringent thresholds if desired.

In general, the Action Plan review process will involve:

- Regular monitoring of transportation conditions on RRS and reporting to TVTC on RTO performance.
- Identification of RTOs not being met, which would trigger a focused revision to the Action Plan.
- A complete review of the Action Plan on a four- to five-year cycle, coordinated with updates to the CTP.
- Review of individual corridors, RTOs, and other Action Plan components as deemed appropriate by TVTC.

Implications for Compliance with the Measure J Growth Management Program (GMP)

The CCTA *Implementation Guide* describes the conditions for GMP compliance that relate specifically to Action Plans. As per the *Implementation Guide*, each member jurisdiction must:[37]

- Participate in the preparation and adoption of Action Plans.
- Implement actions to attain RTOs.
- Place conditions on project approvals consistent with the growth management strategy.
- Circulate environmental documents and transportation impact studies as specified in this Action Plan and consistent with CCTA policy.
- Participate in the development application and GPA review procedure.

Process for Addressing RTO Exceedances

CCTA will monitor transportation conditions in Tri-Valley and all of Contra Costa County to determine whether the RTOs in this and other Action Plans are being achieved. Under adopted CCTA policy, exceedance of an RTO does not constitute a compliance issue with the GMP. Similarly, the Alameda jurisdictions are not subject to any penalties or loss of funding due to an observed or forecast RTO exceedance.

If it is determined through CCTA's monitoring program that any RTOs are not being met, CCTA will convey this information to TVTC for consideration in its ongoing monitoring of the Action Plan. The *Implementation Guide* states that if satisfactory progress is observed, then implementation of the Action Plan will continue. If progress has not been satisfactory, a revision to the Action Plan may be necessary.

[37] Per the *Implementation Guide*, Alameda County jurisdictions are not subject to GMP requirements.

Given the level of expected growth in Tri-Valley and elsewhere throughout Contra Costa and the constraints on adding new capacity to the system, it should not be surprising if some RTOs are not attained, either today or in the future. If nonattainment occurs, the only required action is for TVTC to document the condition and continue to monitor and address the RTOs in future updates to the Action Plan every four to five years, as established in this chapter.

In the case where a proposed development project or GPA causes an exceedance or exacerbates a situation where an already exceeded RTO is worsened, then the procedures for development application review and GPAs, as established in the CCTA *Implementation Guide* shall apply.

Conflict Resolution

Because of the importance of support for the Plan by all members of the TVTC, the Council should act on a consensus basis. Some cases may arise, however, in which consensus cannot be reached. In cases where conflict exists between jurisdictions within one county, resolution should be negotiated through the forum of the Congestion Management Agency for the respective county. In cases where conflict exists between jurisdictions in different counties, resolution should be negotiated through the TVTC with the provisions of the JEPA applying. These provisions state the following:

- Supermajority of five members required for plan adoption and amendment.
- Supermajority of five members required for adoption of annual work program and budget.
- Simple majority for grant applications, expenditure of funds, execution of contracts, and adoption of rules of procedure.
- Simple majority vote of all members present required for action on any other matter.

Appendix A:

RTOs Considered but not Recommended for Adoption in this Action Plan

Appendix A: RTOs Considered but not Recommended for Adoption in this Action Plan

Throughout the Action Plan update, several objectives were considered and evaluated but not carried forward in this Action Plan update. These potential metrics and RTOs were found by CCTA and its consultants to be difficult to quantify and track in the Action Plan due to lack of available data. Should new data become available, these could potentially added and tracked in future updates.

- **Wait time for paratransit.** CCTA and the RTPC technical advisory committees (TACs) were interested in tracking wait time for paratransit to expand from the work in CCTA's Accessible Transportation Strategic Plan. The topic was not recommended for this Action Plan because paratransit scheduling and function are not conducive to such a metric. This Action Plan uses a different paratransit metric in Chapter 5, Transit, and includes actions that support implementation of the strategic plan.
- **Bicycle ownership.** The intent of a bicycle or e-bicycle ownership RTO would be to understand the proportion of a subregion's population that owns devices and therefore understands the availability of active transportation, such as bicycling. However, there are no data sources that track the number of existing bicycles or e-bicycles or their ownership status, and there is no mechanism in place to track this moving forward.
- **Number of shared scooters, shared bicycles, and public autonomous vehicles that are deployed.** As of publication of this Action Plan, there is only one subarea in all of Contra Costa County with an active micromobility program and only one other subarea currently pursuing deployment of its own. CCTA and its consultants agreed that the most efficient way to incorporate shared mobility is to first support CCTA in a regional leadership role, similar to what 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 (RFPs) or a set of model standards for the local jurisdictions to adopt locally.
- **Pavement condition on the countywide Low Stress Bicycle Network (LSBN).** No programs currently track pavement condition on the entire countywide LSBN. Pavement condition is currently tracked in a few areas of the county, but such tracking is for roadway segments used for vehicles only and does not include the portions of roadways used for walking or bicycling. Further, data on pavement condition, such as tracked by East Bay Regional Parks, do not reflect true pavement conditions because they do not account for conditions resulting from tree uprooting, settling, or damage.

- **Use of shared (pooled) Transportation Network Companies.** Data assembled before the pandemic showed that Transportation Network Companies (TNC), such as Lyft and Uber, led to increases in VMT and congestion. However, shared TNC rides (or "pooled rides"), in which several unrelated riders share a vehicle for a trip, could reduce VMT and congestion. For this reason, shared TNC rides were used as a metric in the Action Plan. However, the pandemic led to the cancellation of shared services by both Lyft and Uber in the greater Bay Area, so it is impossible to track such rides today. Moreover, data from Lyft and Uber are difficult to obtain.
- **Average commute time for low-income residents versus higher-income residents.** The Action Plan team was 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 time traveling to work than higher-income commuters. Based on American Community Survey data, the project team found that the correlation value between income and commute time was 0.3 in 2019, indicating a weak correlation.
- **Speed reduction.** 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. Mobile device data can be used to measure existing prevailing speeds on specific roadways; however, this mobile device data can be difficult to gather, especially in a large geographic area.
- **Electric vehicle chargers.** The Action Plan team and several RTPC TAC members questioned the inclusion of an RTO tracking the number of electric-vehicle charging stations. The project team pursued such an RTO and found that several data obstacles presented an issue to accurately reporting the number of electric-vehicle charging stations. Some limitations include, but are not limited to, certain brand electric-vehicle chargers being exclusive to specific electric vehicle models, lack of accurate reporting, chargers advertised as public chargers being inaccessible behind various barriers such as parking garages or private gates, and general uncertainty around the number of electric-vehicle charging stations that exist in single- and multifamily homes. Therefore, this RTO has not been included in the Action Plan. However, this Action Plan does include Action Innovation and Technology-5: Work with CCTA and Alameda CTC to determine a method for tracking the availability of EV [electric vehicle] charging stations. The intention of this Action is to ensure that there be an accurate way to track the number of electric-vehicle charging stations in the Tri-Valley area in the coming years.

Appendix B:

Summary of Actions

Appendix B: Summary of Actions

Actions are contained in Chapters 5 through 10 of this Action Plan. This appendix repeats all actions from those chapters for ease of reference on a single list of actions (Table B-1).

As noted in Chapter 1, Introduction, this Action Plan constitutes a work program for TVTC, CCTA, and its member agencies, with some actions to be completed by outside agencies such as Caltrans and BART. For each action, a "Lead Agency" is listed, which indicates the agency that should take the lead in implementing the action. Additional "Partner Agencies" are also listed, who may provide staff support or financing, or who may have to adopt or implement parts of the action after the Lead Agency initiates it. In some cases, a Lead or Partner Agency assigned to an action may change over time as need arises.

For Contra Costa jurisdictions, requirements for compliance with the GMP are provided in the CCTA *Implementation Guide*, which specifies that Contra Costa jurisdictions have an obligation to implement Actions consistent with the time frame of the Action Plans. Compliance with this requirement will be evaluated by CCTA every other year, based on a Compliance Reporting Checklist submitted by the Town of Danville, the City of San Ramon, and Contra Costa County. It is possible that some Actions will not be completed, and inability to complete an Action will not result in this Action Plan being non-compliant with the Measure J GMP.

Each Action has a "timeframe," which indicates when the Action is expected to occur. The timeframes listed are:

- Near-Term: To be completed within two years from the time of Action Plan adoption.
- Mid-Term: To be completed within five years from the time of Action Plan adoption.
- Long-Term: To be completed within 10 years from the time of Action Plan adoption.
- Ongoing: To be initiated immediately upon Action Plan adoption and to be continued on an ongoing basis.

Table B-1: Summary of Action and Applicable Detail

Action	Lead Agency	Partner Agency	Timeline
CHAPTER 5, TRANSIT			
◘ **Transit-1:** Continue to work with CCTA and Alameda CTC to support the development of a seamless HOV/ high-occupancy toll (HOT)/Express Lane network in the Tri-Valley to encourage the use of carpools and bus transit and explore the possibility of connecting the HOV/Express Lane network to adjoining areas.	TVTC	CCTA Alameda CTC Caltrans	Ongoing
◘ **Transit-2:** Work with CCTA, Alameda CTC, local jurisdictions, and local public transit operators to: • Implement recommendations from recent transit plans in the Tri Valley and MTC's Transit Transformation Action Plan. • Determine if a Tri-Valley Transit Plan is needed 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. • Leverage MTC's effort to standardize operations, regional mapping, and wayfinding. • Implement traffic signal management and bus prioritization technology on transit RRS routes to improve bus speed and reliability.	TVTC	CCTA Alameda CTC Tri-Valley Member Jurisdictions MTC	Ongoing

Action	Lead Agency	Partner Agency	Timeline
◘ **Transit-3:** Complete a study to explore the feasibility of a Regional Express Bus Program and expansion and enhancement of Bus Rapid Transit along transit corridors and RRS.	CCTA	TVTC Tri-Valley Member Jurisdictions Tri-Valley Transit Operators	Near-term
◘ **Transit-4:** Support the new Valley Link system in the Tri-Valley including opportunities to connect riders to existing BART and ACE stations.	TVTC	San Joaquin Valley Regional Rail Authority CCTA Alameda CTC Tri-Valley Member Jurisdictions	Mid-term
◘ **Transit-5:** Evaluate systemwide bus stop improvements; make it safer and easier for people to access transit stations; and ensure that transit, and its related pedestrian access and connectivity, is safe and attractive.	TVTC	CCTA Tri-Valley Member Jurisdictions Tri-Valley transit operators	Mid-term
◘ **Transit-6:** Implement the recommendations of the Contra Costa Accessible Transportation Strategic Plan, including the establishment of a new Coordinating Entity and establishing new and ongoing dedicated funding sources.	CCTA	TVTC Tri-Valley Member Jurisdictions Tri-Valley transit operators Tri-Valley Paratransit providers	Near-term

Action	Lead Agency	Partner Agency	Timeline
◘ **Transit-7:** Participate in a joint TVTC/TRANSPLAN study to examine feasibility of transit service in the Vasco Road Corridor.	CCTA	TVTC Tri-Valley Member Jurisdictions TRANSPLAN East County Member Jurisdictions	Mid-term
◘ **Transit-8:** Work with local transit agencies, regional policymakers, and private entities to promote pooled regional ridesharing services and technologies.	CCTA	TVTC Tri-Valley Transit Operators Tri-Valley Member Jurisdictions Transportation Network Companies	Ongoing
◘ **Transit-9:** Work with CCTA, regional, and local transit operators to explore financial incentives and reduced fares for public transit, including a feasibility study to explore a subregional or countywide Universal Basic Mobility program.	CCTA	TVTC Tri-Valley Member Jurisdictions Tri-Valley transit operators MTC	Mid-term
◘ **Transit-10:** 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.	CCTA	TVTC Tri-Valley Member Jurisdictions Tri-Valley transit operators	Mid-term

Action	Lead Agency	Partner Agency	Timeline
▫ **Transit-11:** Create and adopt a transit hub toolkit to optimize station design and connectivity that includes coordination with local government access plans and policies.	CCTA	TVTC Tri-Valley Member Jurisdictions Tri-Valley transit operators	Mid-term
▫ **Transit-12:** Work with CCTA, Alameda CTC, Contra Costa Health Services, and Street Smarts Diablo Region to facilitate a countywide coordinated approach to Safe Routes to Schools programs, and to identify continuous (multi-year) funding sources to encourage students, employees, visitors, and residents at private and public K-12 schools, technical schools, and college sites to use non-vehicle modes to get to/from school.	CCTA	TVTC Contra Costa Health Services Street Smarts Diablo School Districts Tri-Valley Member Jurisdictions	Ongoing
▫ **Transit-13:** Assist local jurisdictions in reviewing and considering options for improving curb management and commercial and public and private bus/shuttles, truck, and van passenger loading on key public streets.	CCTA	Tri-Valley Member Jurisdictions	near-term
▫ **Transit-14:** Provide educational awareness of public transit options through outreach, education, and advertising, particularly in local schools.	511 Contra Costa	TVTC Tri-Valley Member Jurisdictions Tri-Valley transit operators	Ongoing
▫ **Transit-15:** Work with CCTA, Alameda CTC, BART, and MTC to promote safer access to transit and seek construction funding through sources like the Safe Route to Transit funding, Safe Routes to BART, and the Active Transportation Program funding, among others.	511 Contra Costa	TVTC MTC Tri-Valley Member Jurisdictions Tri-Valley transit operators	Ongoing

Action	Lead Agency	Partner Agency	Timeline
◘ **Transit-16:** Work with transit providers to boost ridership through provision of rider amenities and service timing, regional coordination efforts, and efficiency.	CCTA	TVTC Tri-Valley Member Jurisdictions Tri-Valley transit operators	Mid-term
◘ **Transit-17:** Adopt local policies that prioritize safety for the most vulnerable users at all stages of project planning and delivery.	Tri-Valley Member Jurisdictions	CCTA Tri-Valley transit operators	Near-term
◘ **Transit-18:** Work with CCTA, Alameda CTC, and public transit providers to ensure real-time online transit information for all routes.	Tri-Valley transit operators	CCTA Tri-Valley Member Jurisdictions	Mid-term
◘ **Transit-19:** Assist local jurisdictions in the development of design guidelines and objective design standards to support transit-oriented development in downtowns, PDAs, transit priority areas and other areas well-served by transit.	Tri-Valley Member Jurisdictions	CCTA MTC Tri-Valley transit operators	Mid-term
◘ **Transit-20:** Work with CCTA, Alameda CTC, and public transit agencies to identify and prioritize a network of transit corridors for transit signal priority, part-time transit lanes, transit-only lanes, and other transit-focused improvements.	CCTA	TVTC Tri-Valley Member Jurisdictions Tri-Valley transit operators	long-term
◘ **Transit-21:** Coordinate with the Alameda CTC Paratransit program for collaboration opportunities in Alameda County.	CCTA	Alameda CTC TVTC Tri-Valley Member Jurisdictions	Mid-term

Action	Lead Agency	Partner Agency	Timeline
◘ **Transit-22:** Coordinate with the Alameda CTC Safe Routes to Schools program and the Affordable Student Transit Pass Program for collaboration opportunities in Alameda County.	CCTA	Alameda CTC TVTC Tri-Valley Member Jurisdictions	Mid-term
◘ **Transit-23:** Support Alameda County's SR2S program's transit training at Alameda County schools.	CCTA	Alameda CTC	Mid-term
◘ **Transit-24:** Complete general improvements to BART stations to increase their use, including: • Pursue projects and programs that improve the passenger experience such as, upgrade systems, modernize stations, and expand the passenger capacity of BART stations • Continue to work with CCTA, Alameda CTC, and local jurisdictions to improve circulation and prioritize walking, bicycling, and public transit access near major transit stops and stations.	BART	CCTA Tri-Valley member Jurisdictions Alameda CTC	Long-term
◘ **Transit-25:** Work with major employers to encourage using transit to/from work through incentives such as reduced public transportation fares, or pre-tax commuter benefits, among others.	CCTA	Tri-Valley member Jurisdictions	Mid-term
◘ **Transit-26:** Work with CCTA and the future accessible transportation Coordinating Entity to explore additional RTOs related to accessible transportation for inclusion in the next Action Plan update.	TVTC	CCTA	Lon-term
◘ **Transit-27:** Work with CCTA and local transit providers to reinstate high quality transit that operated in the subregion prior to the pandemic.	TVTC	CCTA Tri-Valley member Jurisdictions Tri-Valley transit operators	Long-term

Action	Lead Agency	Partner Agency	Timeline
▫ **Transit-28**: Work with CCTA and transit providers to identify and prioritize a network of transit corridors for transit signal priority, part-time transit lanes, transit-only lanes, and other transit-focused improvements.	TVTC	CCTA Tri-Valley member Jurisdictions Tri-Valley transit operators	Long-term
CHAPTER 6, ACTIVE TRANSPORTATION			
▫ **Active Transportation-1:** Construct gap closure projects in the countywide low-stress bicycle facilities network to establish a safe and contiguous network.	Each project to be led by the responsible agency, generally either a local jurisdiction or East Bay Regional Parks District	CCTA TVTC East Bay Regional Park District Tri-Valley Member Jurisdictions	Mid-term
▫ **Active Transportation-2:** Construct bicycle and pedestrian crossing improvements at the following intersections: • Overcrossing at Bollinger Canyon Road • Semi-protected intersections identified in the Action Plan.	Tri-Valley Member Jurisdictions where these intersections are located	CCTA East Bay Regional Park District Tri-Valley Member Jurisdictions	Long-term
▫ **Active Transportation-3:** Work with local and regional jurisdictions to adopt and update bicycle and pedestrian plans to expand and/or improve facilities to ensure a seamless, safe, and contiguous active transportation network that provides a positive user experience for people traveling for the daily-average distance/duration trip.	Tri-Valley Member Jurisdictions	CCTA	Ongoing
▫ **Active Transportation-4:** Work with local jurisdictions to promote 511 Contra Costa's active transportation programs that increase awareness of multimodal travel options, travel behavior incentives, and safety through outreach, events, education, social media, marketing, and advertising.	511 Contra Costa	CCTA TVTC Tri-Valley Member Jurisdictions	Ongoing

Action	Lead Agency	Partner Agency	Timeline
▫ **Active Transportation-5:** Continue programs that reduce the cost of using electric bicycles and pursue new programs to reduce the cost of conventional (pedal) bicycle use for Contra Costa County residents.	511 Contra Costa	TVTC	511 Contra Costa
▫ **Active Transportation-6:** Work with CCTA, Alameda CTC, the East Bay Regional Park District, and other public facilities management agencies to develop a method of tracking the Pavement Condition Index (PCI) of bicycle facility segments along the low-stress bicycle network, and implement rehabilitation, repair, and replacement modifications where and as needed.	CCTA	East Bay Regional Park District Tri-Valley Member Jurisdictions	Mid-term
▫ **Active Transportation-7:** Continue to implement the Cowell Road/Willow Pass Road Complete Street Feasibility Study.	CCTA	Tri-Valley Member Jurisdictions	Ongoing
▫ **Active Transportation-8:** Work with CCTA to conduct, update, and implement a comprehensive countywide Pedestrian Needs Assessment.	CCTA	TVTC Other RTPCs Tri-Valley Member Jurisdictions	Mid-term
▫ **Active Transportation-9:** Work with CCTA, Alameda CTC, and local jurisdictions to explore installation of e-bicycle charging infrastructure in publicly accessible and convenient places, including trails, shared mobility hubs, existing and planned electric vehicle (EV) charging locations, and near commercial/retail establishments.	CCTA	TVTC Tri-Valley Member Jurisdictions East Bay Regional Parks District	Mid-term
▫ **Active Transportation-10:** Support implementation of Alameda CTC's Bicycle Safety Education Program.	CCTA	Alameda CTC	Near-term

Action	Lead Agency	Partner Agency	Timeline
CHAPTER 7, ROADWAYS			
◘ **Roadways-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 improvements, HOV/HOT lane and bypass lanes, conducting Integrated Corridor Management (ICM) studies, and others, to support a cohesive transportation system for all modes.	Caltrans	CCTA TVTC Tri-Valley Member Jurisdictions MTC	Ongoing
◘ **Roadways-2:** Evaluate ramp-metering and maintain existing ramp metering on I-580 and I-680 in the Tri-Valley area as a method for maintaining an acceptable level for the delay index on both the freeway and local roadway network.	CCTA	TVTC Caltrans Tri-Valley Member Jurisdictions	Mid-term
◘ **Roadways-3:** Work with CCTA, Alameda CTC, and local jurisdictions to continue studying the feasibility of pilot and long-term programs for bus on shoulder on subregional freeways such as I-680.	CCTA	TVTC Caltrans Tri-Valley Member Jurisdictions	mid-term
◘ **Roadways-4:** Work with CCTA, Bay Area Transportation Authority (BATA), Alameda CTC, Caltrans, and California Highway Patrol to develop a program to track HOV/HOT and toll lane violators.	CCTA	Caltrans MTC California Highway Patrol Tri-Valley Member Jurisdictions	Near-term

Action	Lead Agency	Partner Agency	Timeline
◘ **Roadways-5:** Work with CCTA, Alameda CTC, Port of Oakland, and other relevant Alameda County goods movement stakeholders 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.	CCTA	TVTC Alameda CTC Port of Oakland	Long-term
◘ **Roadways-6:** Work with CCTA, Caltrans, and other applicable agencies to conduct Integrated Corridor Management (ICM) studies to improve multimodal function of countywide facilities.	CCTA	TVTC Caltrans Tri-Valley Member Jurisdictions	Long-term
◘ **Roadways-7:** Work with CCTA, Alameda CTC, neighboring subregions, and local jurisdictions to develop a program 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 transit modes.	CCTA	TVTC Caltrans Tri-Valley Member Jurisdictions	Mid-term
◘ **Roadways-8:** Develop a program to identify, establish, operate, and maintain existing and additional public or private park-and-ride facilities at appropriate locations, including shared-use agreements at activity centers with underutilized parking spaces.	CCTA	TVTC Caltrans Tri-Valley Member Jurisdictions	Mid-term
◘ **Roadways-9:** Develop subarea corridor management plans for selected regional routes to 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.	CCTA	TVTC Tri-Valley Member Jurisdictions	Long-term

Action	Lead Agency	Partner Agency	Timeline
◘ **Roadways-10**: Complete necessary operational improvements (e.g., protected turn lanes, synchronized signal timing, auxiliary lanes) on freeways, at intersections and on roadway segments that are needed to maintain the RTOs in this Action Plan, while ensuring balancing these improvements against the objectives and actions regarding other modes and issues covered by this Action Plan.	Caltrans (for freeways) Tri-Valley member jurisdictions where the individual facilities are located (for surface roadways)	CCTA TVTC	ongoing
◘ **Roadways-11:** Construct Tesla Road safety improvements from South Livermore Avenue to Greenville Road.	TVTC	CCTA Tri-Valley Member Jurisdictions	Near-term
◘ **Roadways-12:** Work with Alameda CTC and local jurisdictions to implement the recommendations of the I-580 Transit and Multimodal Strategy.	CCTA	Alameda CTC Tri-Valley Member Jurisdictions	Near-term
◘ **Roadways-13:** As part of the CTP process, study roadway improvements along key RRS, to include roadway cross sections showing changes to lane configurations, sidewalks, bicycle facilities, shoulders, and other roadway components.	CCTA	TVTC	Mid-term
CHAPTER 8, SAFETY			
◘ **Safety-1:** Collaborate with CCTA, California Highway Patrol (CHP), and Caltrans to prepare an incident management plan for the State highways in Tri-Valley.	CCTA	TVTC California Highway Patrol Caltrans	Mid-term
◘ **Safety-2:** Develop a program to bi-annually provide funds for implementation of the Complete Streets policies of the regional and local jurisdictions.	CCTA	TVTC Tri-Valley Member Jurisdictions	Mid-term

Action	Lead Agency	Partner Agency	Timeline
◘ **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 countywide, state, and federal safety programs and performance measures.	CCTA	511 Contra Costa East County Member Jurisdictions	Mid-term
◘ **Safety-4:** Work with CCTA and Alameda CTC to implement their Vision Zero Frameworks and Safe Systems Approaches to project scoping and delivery.	CCTA	Tri-Valley Member Jurisdictions	ongoing
◘ **Safety-5:** Work with regional and local agencies to increase the level of multimodal public awareness and empathy about bicycle and pedestrian safety and to reduce injuries due to vehicle-involved collisions.	511 Contra Costa	TVTC Tri-Valley Member Jurisdictions	ongoing
◘ **Safety-6:** Monitor and evaluate traffic speed and other safety issues, particularly around schools, on an annual basis.	CCTA	TVTC Tri-Valley Member Jurisdictions 511 Contra Costa	Mid-term
◘ **Safety-7:** Conduct a study to identify all transportation improvements needed within 500 feet of schools to enhance safety and reduce traffic impacts.	CCTA	TVTC Tri-Valley Member Jurisdictions 511 Contra Costa	Mid-term
◘ **Safety-8:** Work with CCTA, MTC, and East Bay Regional Parks District (EBRPD) to study and mitigate the safety impacts of electric bicycles and other micromobility devices on local trails and streets, with the aim of eventually allowing electric bicycles e-scooters, and other micromobility devices on all of these facilities.	CCTA	TVTC MTC East Bay Regional Parks District Tri-Valley Member Jurisdictions	Short-term

Action	Lead Agency	Partner Agency	Timeline
▫ **Safety-9:** Coordinate with Alameda CTC SR2S program and review Site Assessments already conducted for participating Alameda County schools.	CCTA	Alameda CTC	Mid-term
▫ **Safety-10:** Coordinate with CCTA to implement the findings of the CCTA Safe Routes to Schools Needs Assessment.	TVTC	CCTA Tri-Valley Member Jurisdictions	Mid-term
CHAPTER 9, CLIMATE CHANGE			
▫ **Climate Change-1:** Continue to implement a program to support deployment of high-quality, fast, and diverse electrical vehicle and bus chargers in the subregion, with an emphasis on areas where deployment is lagging behind other parts of the subregion.	CCTA	TVTC Tri-Valley Member Jurisdictions	Ongoing
▫ **Climate Change-2:** Continue to promote electric vehicle ownership through establishing sources of financial incentives, educational programs, and demonstrations.	CCTA	TVTC Tri-Valley Member Jurisdictions	Ongoing
▫ **Climate Change-3:** Work with regional agencies, local employers, and schools to increase tele-work, compressed work weeks, alternative work locations, and flex schedules, and provide pretax employer transportation benefit programs.	CCTA	TVTC School Districts Employers Tri-Valley Member Jurisdictions	Mid-term
▫ **Climate Change-4:** Work with 511 Contra Costa, Alameda CTC TDM program, and local jurisdiction TDM Advisory Councils to expand TDM programs, adopt local TDM plans, and conduct regular monitoring and reporting for program effectiveness.	511 Contra Costa	CCTA TVTC Tri-Valley Member Jurisdictions	Ongoing
▫ **Climate Change-5:** Adopt local policies that prioritize mobility for GHG-reducing modes of transportation.	Tri-Valley Member Jurisdictions	CCTA TVTC	Mid-term

Action	Lead Agency	Partner Agency	Timeline
◘ **Climate Change-6:** Assist transit agencies and local jurisdictions to transition to zero emissions truck fleets and facilities.	TVTC	CCTA Tri-Valley Member Jurisdictions	Near-term
CHAPTER 10, INNOVATION AND TECHNOLOGY			
◘ **Innovation and Technology-1:** Coordinate with CCTA, Alameda CTC, MTC, and local jurisdictions 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-optic technology to link all traffic signals and bolster communications for signals, etc.	CCTA	TVTC Tri-Valley Member Jurisdictions	Near-term
◘ **Innovation and Technology-2:** Examine the feasibility of implementing a pilot Automated Driving System or other modal technologies (such as an autonomous shuttle) somewhere in the Tri-Valley area.	CCTA	TVTC Tri-Valley Member Jurisdictions	Mid-term
◘ **Innovation and Technology-3:** Interconnect the Tri-Valley signal system to enable remote access to the signals from a traffic management or operations center. These signals to be interconnected are yet to be identified, but will be selected based the following criteria: • On RRS • In or providing access to a PDA, downtown or commercial district • Presence of bus routes at the intersection • Connection to BART • Presence of bicycle facilities at the intersection • High number of bicycle and pedestrian collisions	CCTA	TVTC Tri-Valley Member Jurisdictions	Mid-term

Action	Lead Agency	Partner Agency	Timeline
• Geographic distribution across Contra Costa County and the subregion • Connection to shared mobility hubs • High traffic volume • Innovate 680 (non-Caltrans intersections)			
◘ **Innovation and Technology-4:** Implement micromobility recommendations from the Countywide Bicycle and Pedestrian Plan, including those related to ordinances and RFPs, and work with operators to deploy micromobility systems, built off industry best management practices.	CCTA	Tri-Valley Member Jurisdictions	mid-term
◘ **Innovation and Technology-5:** Work with CCTA and Alameda CTC to determine a method for tracking the availability of EV charging stations.	CCTA	TVTC Tri-Valley Member Jurisdictions	near-term
◘ **Innovation and Technology-6:** Work with CCTA and Alameda CTC to mediate adoption and implementation of emerging technologies to ensure that they are feasible and do not cause adverse effects on the transportation system.	CCTA	TVTC Tri-Valley Member Jurisdictions	ongoing
◘ **Innovation and Technology-7:** Improve the safety of high-incident local roadways through physical changes, signage, technology, education, enforcement, or other tools.	CCTA	TVTC Tri-Valley Member Jurisdictions	ongoing
◘ **Innovation and Technology-8:** Work with BART to expand the on-demand bicycle parking program for e-bicycles and scooters at BART stations throughout Contra Costa County.	BART	CCTA TVTC Tri-Valley Member Jurisdictions	mid-term

Action	Lead Agency	Partner Agency	Timeline
▫ **Innovation and Technology-9:** Work with CCTA and local jurisdictions to implement the CCTA EV Readiness Blueprint.	TVTC	CCTA Tri-Valley Member Jurisdictions	mid-term
CHAPTER 11, FINANCIAL OUTLOOK			
▫ **Financial-1:** Continue to participate and periodically update the Tri-Valley Transportation Development Fee (TVTDF) Program and Strategic Expenditure Plan to ensure it will produce sufficient funds in light of current and anticipated growth rates and construction costs.	Tri-Valley Member Jurisdictions	CCTA TVTC East Contra Costa Regional Fee & Financing Authority	ongoing

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Appendix C:

Transportation Modeling Results

Appendix C: Transportation Modeling Results

Table C-1: RTO Monitoring Location Peak-Hour LOS

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	C	29	D	44	C	29	F	>80
Alcosta Blvd & Bollinger Canyon Rd	E	79	F	>80	F	>80	F	>80
Alcosta Blvd & Crow Canyon Rd	B	16	B	17	C	20	B	18
Alcosta Blvd & NB 680 Ramps	F	>80	F	>80	F	>80	F	>80
Alcosta Blvd & Village Pkwy	B	14	C	22	C	31	C	22
Bernal Ave & I-680 NB Ramps	E	60	C	20	E	60	C	24
Bernal Ave & I-680 SB Ramps	B	14	A	6	B	14	A	7
Bernal Ave & Valley Ave	D	39	C	28	D	39	C	30
Bollinger Canyon Rd & Branch Pkwy	D	48	C	28	D	48	C	29
Bollinger Canyon Rd & Crow Canyon Rd	C	32	C	31	D	40	C	32
Bollinger Canyon Rd & Dougherty Rd	D	55	E	80	E	56	F	>80
Bollinger Canyon Rd & Dougherty Rd	D	37	C	26	D	37	C	26
Bollinger Canyon Rd & NB 680 Ramps	C	25	C	21	F	>80	F	>80
Bollinger Canyon Rd & SB 680 Ramps	D	47	D	53	E	62	E	61
Bollinger Canyon Rd & Windemere Pkwy	E	61	E	65	E	60	F	>80
Camino Tassajara & Blackhawk Rd	D	45	D	48	D	47	D	49
Camino Tassajara & Highland Rd	B	14	C	27	D	45	C	27
Camino Tassajara & Sycamore Valley Rd	B	13	B	19	C	33	F	>80
Camino Tassajara & Windemere Pkwy	C	20	B	19	C	26	C	23
Crow Canyon Rd & NB 680 Ramps	C	22	C	22	E	78	D	45
Crow Canyon Rd & SB 680 Ramps	B	19	B	18	B	19	B	17

Intersection	2019 A.M.		2019 P.M.		2050 A.M.		2050 P.M.	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Danville Blvd & El Cerro Blvd	C	22	C	22	C	21	C	21
Danville Blvd & Livorna Rd	F	>80	F	>80	F	>80	F	>80
Danville Blvd & Stone Valley Rd	E	57	D	47	F	>80	F	>80
Dougherty Rd & Amador Valley Blvd**	D	55	C	30	E	68	D	48
Dougherty Rd & Crow Canyon Rd	B	18	C	30	F	>80	F	>80
Dougherty Rd & Dublin Blvd**	D	44	E	63	D	55	F	>80
Dougherty Rd & Old Ranch Rd	B	19	C	27	B	20	C	29
Dougherty Rd & WB I-580 Ramp	C	21	B	19	C	21	D	36
Dublin Blvd & Amador Plaza Rd	C	25	D	49	C	25	F	>80
Dublin Blvd & Fallon Rd**	B	18	B	17	D	54	E	72
Dublin Blvd & Village Pkwy**	C	26	F	>80	F	>80	F	>80
EB I-580 Off Ramp & Airway Blvd	D	38	C	31	D	38	D	39
EB I-580 Off Ramp & El Charro Rd	A	7	A	6	A	7	A	6
EB I-580 Off Ramp & Hacienda Dr	C	24	C	21	C	24	C	29
EB I-580 Ramps & Livermore Ave	B	13	D	38	B	13	F	>80
First St & EB I-580 Ramp*	-	-	-	-	-	-	-	-
First St & Portola Ave	B	17	C	26	B	17	F	>80
First St & S L St	C	22	C	27	C	33	C	31
Foothill Rd & Bernal Ave	C	20	B	20	C	20	B	19
Foothill Rd & Dublin Canyon Rd	C	27	B	16	C	27	B	18
Foothill Rd & EB I-580 Ramps*	0	0	0	0	0	0	0	0
Foothill Rd & Las Positas Blvd	B	17	B	15	B	17	C	24
Foothill Rd & Stoneridge Dr	C	23	C	23	C	23	C	27
Foothill Rd & WB I-580 Off Ramp	B	14	B	18	B	14	B	12
Hopyard Rd & EB I-580 Ramp	E	71	D	50	E	71	F	>80
Hopyard Rd & Las Positas Blvd	C	32	D	43	C	32	D	39
Hopyard Rd & Stoneridge Dr	D	44	D	49	D	44	D	54
Hopyard Rd & Valley Ave	C	28	D	37	C	28	D	36
I-580 WB Off Ramp & Hacienda Dr	A	10	B	12	A	10	B	18
I-580 WB On Ramp & 1st St	A	7	A	6	A	7	A	6
I-580 WB Ramps & Airway Blvd	A	6	A	7	A	10	B	14

Intersection	2019 A.M.		2019 P.M.		2050 A.M.		2050 P.M.	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
I-580 WB Ramps & El Charro Rd	A	6	A	7	A	6	A	9
I-580 WB Ramps & Livermore Ave	C	20	B	18	C	20	D	52
I-680 NB Off Ramp & Diablo Rd	F	>80	F	>80	F	>80	F	>80
I-680 NB Ramps & Diablo Rd	F	>80	F	>80	F	>80	F	>80
I-680 NB Ramps & El Cerro Blvd	D	50	C	33	E	64	D	44
I-680 SB Ramps & El Cerro Blvd	D	42	D	43	D	48	D	47
Jack London Blvd & Isabel Ave	C	29	D	37	C	29	E	71
San Ramon Rd & Amador Valley Blvd	C	24	C	29	C	24	C	27
San Ramon Rd & Dublin Blvd	C	31	D	40	C	31	D	37
San Ramon Valley Blvd & Alcosta Blvd	F	>80	E	58	F	>80	F	>80
San Ramon Valley Blvd & Bollinger Canyon Rd	E	59	E	72	F	>80	F	>80
San Ramon Valley Blvd & Crow Canyon Rd	D	37	E	61	F	>80	F	>80
San Ramon Valley Blvd & Norris Canyon Rd	F	>80	E	67	F	>80	F	>80
San Ramon Valley Blvd & SB 680 Ramps	D	52	F	>80	F	>80	F	>80
San Ramon Valley Blvd & Sycamore Valley Rd	C	35	D	49	E	69	D	52
Santa Rita Rd & Las Positas Blvd	D	40	D	41	D	40	D	41
Santa Rita Rd & Stanley Blvd	C	23	B	18	C	23	B	16
Santa Rita Rd & Stoneridge Dr	F	>80	D	54	F	>80	D	48
Santa Rita Rd & Valley Ave	E	71	F	>80	E	71	F	>80
Stanley Blvd & Bernal Ave	F	>80	F	>80	F	>80	F	>80
Stanley Blvd & Isabel Ave/SR-84 Ramp	C	29	C	28	C	29	D	40
Stanley Blvd & Murrieta Blvd	F	>80	F	>80	F	>80	F	>80
Stanley Blvd & Stanley Blvd	C	21	B	20	C	21	C	21
State Route 84 (E. Vallecitos Rd) & Vineyard Ave	C	23	C	27	C	23	C	34
Stoneridge Dr & El Charro Rd	B	18	E	61	C	25	F	>80
Stoneridge Dr & Hacienda Dr	D	41	D	41	D	41	D	48

Intersection	2019 A.M.		2019 P.M.		2050 A.M.		2050 P.M.	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Stoneridge Dr & I-680 NB Off Ramp	B	17	B	14	B	17	B	12
Stoneridge Dr & I-680 SB Off Ramp	B	17	C	20	B	17	D	45
Stoneridge Dr & Las Positas Blvd	C	23	D	39	C	23	D	47
Sycamore Valley Rd & NB 680 Ramps	B	17	C	26	C	28	E	80
Sycamore Valley Rd & SB 680 Ramps	B	10	A	9	A	8	A	10
Tassajara Rd & Dublin Blvd**	C	22	C	31	D	38	D	43
Tassajara Rd & EB I-580 Off Ramp	C	32	E	57	C	32	E	58
Tassajara Rd & Fallon Rd**	B	18	B	16	C	20	C	24
Tassajara Rd & WB I-580 Off Ramp	B	16	B	16	B	16	B	18
Vallecitos Rd & Ruby Hill Dr	A	7	A	7	A	7	A	9
Vasco Rd & East Ave	C	22	C	34	C	22	C	35
Vasco Rd & Industrial Way	C	25	E	72	C	25	E	74
Vasco Rd & Northfront Rd	E	62	F	>80	E	62	F	>80

Notes: Delay is average control delay reported in seconds.

** Future monitoring location. Intersection count data not available for this intersection at the time of analysis and publication.*

*** Forecast results from City of Dublin local traffic impact studies and represent 2040 conditions.*

Appendix D:

RTO Measurement and Modeling Methodologies

Tri-Valley Action Plan

Appendix D: RTO Measurement and Modeling Methodologies

Memorandum

DATE Published July 7, 2022 and Revised in October 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 Regional Transportation Objectives (RTO) and the underlying methodology that PlaceWorks and its technical consultants (DKS and Fehr & Peers) modeled 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 were used to evaluate success in achieving the goals of each Action Plan.

Historically, each Regional Transportation Planning Committee (RTPC) has had latitude to select a set of Multimodal Transportation Service Objectives (MTSO) 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 worked with CCTA and the RTPCs to ensure that the new RTOs are as consistent as possible across the Action Plans and can ultimately be combined and consolidated into the future CTP.

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

- **Transit RTO-1: Transit Mode Share.** Increase the mode share of transit trips in the subregion.
- **Transit RTO-2: Mode Share to BART.** Increase the number of riders who access BART using means other than automobiles, including transit and active transportation.
- **Transit RTO-3: Transit Trip Time.** Optimize peak-hour and peak direction travel time for transit as compared to automobile travel time for the same trip.
- **Transit RTO-4: High Quality Transit Access.** Increase the proportion of urbanized land area in the subregion served by high quality transit.
- **Transit RTO-5: Paratransit Access.** Increase the number of rides by paratransit programs.
- **Active Transportation RTO-1: Increase Active Transportation Mode Share.** Increase the mode share of bicycling and walking in the subregion.

- **Active Transportation RTO-2: Low-Stress Bicycle Network.** Increase the proportion of the countywide low-stress bicycle network (LSBN) completed in the subregion.
- **Active Transportation RTO-3: Unprotected Trail Crossings.** Eliminate the number of locations where the low-stress bicycle network has an unprotected crossing of a heavily traveled vehicle route.
- **Roadways RTO-1: Freeway Delay Index.** Maintain peak-hour delay index on select freeway segments.
- **Roadways RTO-2: Freeway Buffer Index.** Maintain peak-hour freeway segment buffer index on select freeway segments.
- **Roadways RTO-3: Intersection LOS.** Maintain peak-hour LOS at selected intersections in urban areas.
- **Roadways RTO-4: Roadway Segment LOS.** Maintain peak-hour segment LOS on selected two-lane roadways outside of urban areas.
- **Safety RTO-1: KSI Collisions.** Eliminate killed or severely injured (KSI) collisions in the subregion.
- **Safety RTO-2: Active Transportation Collisions.** Eliminate collisions in the subregion that involve users of active transportation.
- **Safety RTO-3: Active Transportation Collisions Near Schools.** Eliminate active transportation collisions within 500 feet of a school.
- **Equity RTO-1: EPC Low-Stress Bicycle Network Completion.** Ensure that the proportion of the countywide LSBN that has been completed in EPCs is equal to or greater than the proportion completed in the subregion as a whole.
- **Equity RTO-2: Collisions in EPCs.** Ensure that the proportion of KSI and active transportation-involved collisions in EPCs in the subregion is equal to or less than the proportion of the subregion's population living in EPCs.
- **Equity RTO-3: EPC Job Access: Driving.** Ensure that the number of jobs that can be reached by EPC residents with a 30-minute drive is equal to or greater than the number of jobs that can be reached with a 30-minute drive by all residents in the subregion.
- **Equity RTO-4: EPC Job Access: Transit.** Ensure that the number of jobs that can be reached by EPC residents with a 45-minute transit trip is equal to or greater than the number of jobs that can be reached with a 45-minute transit trip by all residents in the subregion.
- **Equity RTO-5: EPC Access to High Quality Transit.** Ensure that the proportion of urbanized EPC land area in the subregion served by high-quality transit is equal to or greater than the urbanized land area served by high-quality transit in the subregion as a whole.
- **Climate Change RTO-1: SOV Mode Share.** Reduce the mode share of single-occupant vehicles in the subregion.
- **Climate Change RTO-2: Carpool Mode Share.** Increase the mode share of carpooling in the subregion.
- **Climate Change RTO-3: Vehicle Miles Traveled.** Reduce vehicle miles traveled per capita in the subregion.

- **Climate Change RTO-4: Greenhouse Gas Emissions.** Reduce transportation GHG per capita in the subregion.
- **Climate Change RTO-5: Zero Emission Vehicles.** Increase ownership of zero-emission vehicles in the subregion.
- **Technology and Innovation RTO-1: Signal Interconnect Project.** Complete the project to upgrade traffic signals to regional ethernet and/or fiber-optic interconnection.

The remainder of this memo explains the methodologies that the PlaceWorks team used 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.

The travel demand modelling work described in this memo was completed by DKS using the CCTA Countywide Travel Demand Model. This four-step, trip-based model was most recently revalidated to a 2019 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 was developed for the Action Plan analyses. In addition to accommodating a year 2050 horizon, the revised version incorporated enhanced traffic assignment procedures for freeway express lanes.

For the Action Plan updates, land use inputs for the horizon year of 2050 were 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 was 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 projects were programmed from the Tri-Valley TVTC Nexus Study. These include express lanes assumed on Interstate (I-) 680, consistent with CCTA's Innovate 680 program, and removal of the extension of the Bay Area Rapid Transit (BART) service to Livermore. Going forward, it will be important to coordinate with ACTC, LAVTA, and other Alameda County agencies to incorporate planned (or funded) transportation infrastructure improvements and transit service enhancements into any modeling and analyses. This coordination should occur through the TVTC Technical Advisory Committees and Policy Board, and all local agencies should be actively involved in cooperative coordination on project implementation.

For existing conditions, the project team selected 2019 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.

Transit RTOs

Transit RTO-1: Transit Mode Share

Increase the mode share of transit trips in the subregion.

This RTO tracks transit mode share and defines transit as fixed-route public transportation buses. It does not include general carpooling through Transportation Network Companies or vanpools, which are modes covered in Climate Change RTO-2. Mode share was estimated for the Action Plan updates, both for transit (which is the focus of this section) and for the bicycle/pedestrian and climate change topics (as explained in later sections of this memo).

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

For current conditions, the PlaceWorks team reported ACS data, which provides mode share estimates for work commute trips for workers 16 years of age and over. The current data release includes one-year estimates for 2019, which was reported in the Action Plans. Mode share for all trips and all modes was modeled using outputs from the CCTA Countywide Travel Demand Model. Specifically, the person trip tables from the mode choice step of the model were aggregated to calculate mode share by geographic subarea. These 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. Scripts were developed to summarize this data by RTPC and mode. Most mode share RTOs were summarized by the geographic area of production, but the home-based work trip mode share was summarized by the attraction zone as well.

Mode shares were calculated for the 2019 base year and 2050 baseline scenarios. The mode alternatives specified in CCTA Countywide Travel Demand Model include:[38]

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

[38] Mode share in the Tri-Valley Action Plan was calculated using a combination of the CCTA Countywide Travel Demand Model and additional ACS data to assess the entire "Planning Area" which include Contra Costa County and the Alameda County portion of the Tri-Valley area.

- Bicycle
- Walk

The summary tables and charts for these modes 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).

Transit RTO-2 Mode Share to BART

Increase the number of riders who access BART using means other than automobiles, including transit and active transportation.

This RTO is intended to assess accessibility to BART using transit and active transportation. MTC conducts a regional survey every 7 to 10 years of riders across all stations to gather data on travel mode used to access transit stations (including BART stations). The project team gathered the data from MTC/BART and aggregated the results for the stations in Contra Costa County and the Alameda County portion of the Tri-Valley, grouping them by the five subregions. Subsequently, the team analyzed the results to determine the mode share for accessing BART (transit, active transportation, or automobiles).

Transit RTO-3: Transit Trip Time

Optimize peak-hour and peak direction travel time for transit as compared to automobile travel time for the same trip.

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 D-1 were selected for this metric. Travel times were developed for each mode based on both the peak-commute and reverse-commute directions of travel for the morning and afternoon peak periods.

Table D-1. Corridors for Transit-Auto Travel Time Comparison

Subarea	Origin-Destination Pairs
West County	Richmond BART and Contra Costa Center (Pleasant Hill BART station) Hercules Transit Center and Salesforce Transit Center in San Francisco Contra Costa College and 14th Street/Broadway in Oakland
Central County	Walnut Creek BART station and Montgomery Street BART station Walnut Creek BART and San Ramon Transit Center Dublin BART and San Ramon Transit Center
East County	Antioch BART station and 12th Street (Oakland) BART station
Lamorinda	Orinda BART station and Montgomery Street (San Francisco) BART station
Tri-Valley	ACE Vasco Station and San Jose Diridon station Dublin-Pleasanton BART station and Montgomery Street (San Francisco) BART station Downtown Livermore and Dublin/Pleasanton BART Dublin/Pleasanton BART and Bishop Ranch San Ramon and BART Walnut Creek Dublin BART and San Ramon Transit Center

Transit travel times along key routes were based on published transit schedules. Bus schedules are assumed to account for expected roadway congestion that would impact bus routes. Driving travel times were derived from INRIX roadway analytics for weekdays (Tuesday to Thursday) for April 2019. The forecasted driving travel times for 2050 were derived from the CCTA Countywide Travel Demand Model, using peak-period drive-alone automobile travel times between all TAZs. Because the model's transit travel times are not accessible in an interpretable format, it was assumed that the transit frequency and travel times would remain constant between 2019 and 2050.

Transit RTO-4: High Quality Transit Access

Increase the proportion of urbanized land area in the subregion served by high quality transit.

This RTO assesses the percentage of urban land that has access to high quality transit by walking and bicycling. The project team used GIS to map the distribution of high frequency transit stops[39] in the five subareas and identified the high quality transit zones, or areas within a ¼-mile radius of each of the stations. Additionally, the team mapped all rail and ferry stations and identified areas within a ½-mile radius around each station. The project team summed the high quality transit zone areas in acres and subtracted it from the total acreage of urban land in the subregion; the result was the percentage of urban land within walking or bicycling distance to high quality transit.

[39] High frequency transit stops are those with headway frequency of 15 minutes or fewer.

Transit RTO-5: Paratransit and Community Based Transportation Program Access

Increase the number of rides by paratransit and community based transportation programs.

This RTO assesses the demand for paratransit[40] and community based transportation services. The project team estimated paratransit demand by aggregating the number of trips in 2019 from ADA-mandated and non-ADA-mandated paratransit/accessible transportation providers in the county (from their Accessible Transportation Strategic Plan). The project team recognizes that this metric is not the most efficient way to track access and use of paratransit services, particularly for agencies that encourage elderly and disabled groups to use fixed-route or other transportation services. However, this metric begins the conversation of tracking accessible transportation in the Action Plans.

Active Transportation RTOs

Active transportation RTOs are based on the countywide Low-Stress Bicycle Network (LSBN) adopted in the 2018 CCTA Countywide Bicycle and Pedestrian Plan. This network consists of existing and planned Class 1 bicycle paths and Class 4 cycle tracks throughout Contra Costa County. The project team identified low stress facilities in the Alameda County portion of the Tri-Valley area by reviewing the Alameda CTC Active Transportation Plan and the MTC active transportation facility webmap.

Active Transportation RTO-1: Increase Active Transportation Mode Share

Increase the mode share of bicycling and walking in the subregion.

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

[40] Paratransit programs are individualized transit services without fixed routes or timetables that supplement mass transit services.

Active Transportation RTO-2: Low-Stress Bicycle Network

Increase the proportion of the countywide Low Stress Bicycle Network completed in the subregion

The LSBN is a component of the CCTA Countywide Bicycle and Pedestrian Plan (CBPP) adopted in 2018.[41] 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 bicycle 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 updated the LSBN map to reflect any portions that have been constructed since the 2018 CBPP and map adoption. Once the LSBN was updated, the number of total miles in the network at buildout was calculated and compared with the total miles already completed.

Active Transportation RTO-3: Unprotected Trail Crossings

Eliminate the number of locations where the low-stress bicycle network has an unprotected crossing of a heavily traveled vehicle route.

PlaceWorks created an ArcGIS point data set to identify each location where the LSBN (Class I and Class IV facilities) crosses a vehicle roadway. Then we ranked the crossing by how protected it is using Google Maps.

- **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 was conducted for low-stress bicycle path crossings of all arterials and major collectors in each subarea. The types of roadways included in this exercise were interstates, freeways, expressways, other principal arterials, minor arterials, and major collectors. The only roadways not included in this exercise were minor collectors and local routes.

[41] The project team identified low stress facilities in the Alameda County portion of the Tri-Valley area by reviewing the Alameda CTC Active Transportation Plan and the MTC active transportation facility webmap.

Roadway RTOs

Roadways RTO-1: Freeway Delay Index

Maintain 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 D-2 lists the specific facilities to be evaluated with this metric for the current Action Plan updates; these segments are mapped in Figure D-1. While the performance targets used in the previous round of Action Plans are provided for reference, revised targets have been developed as part of the current planning process.

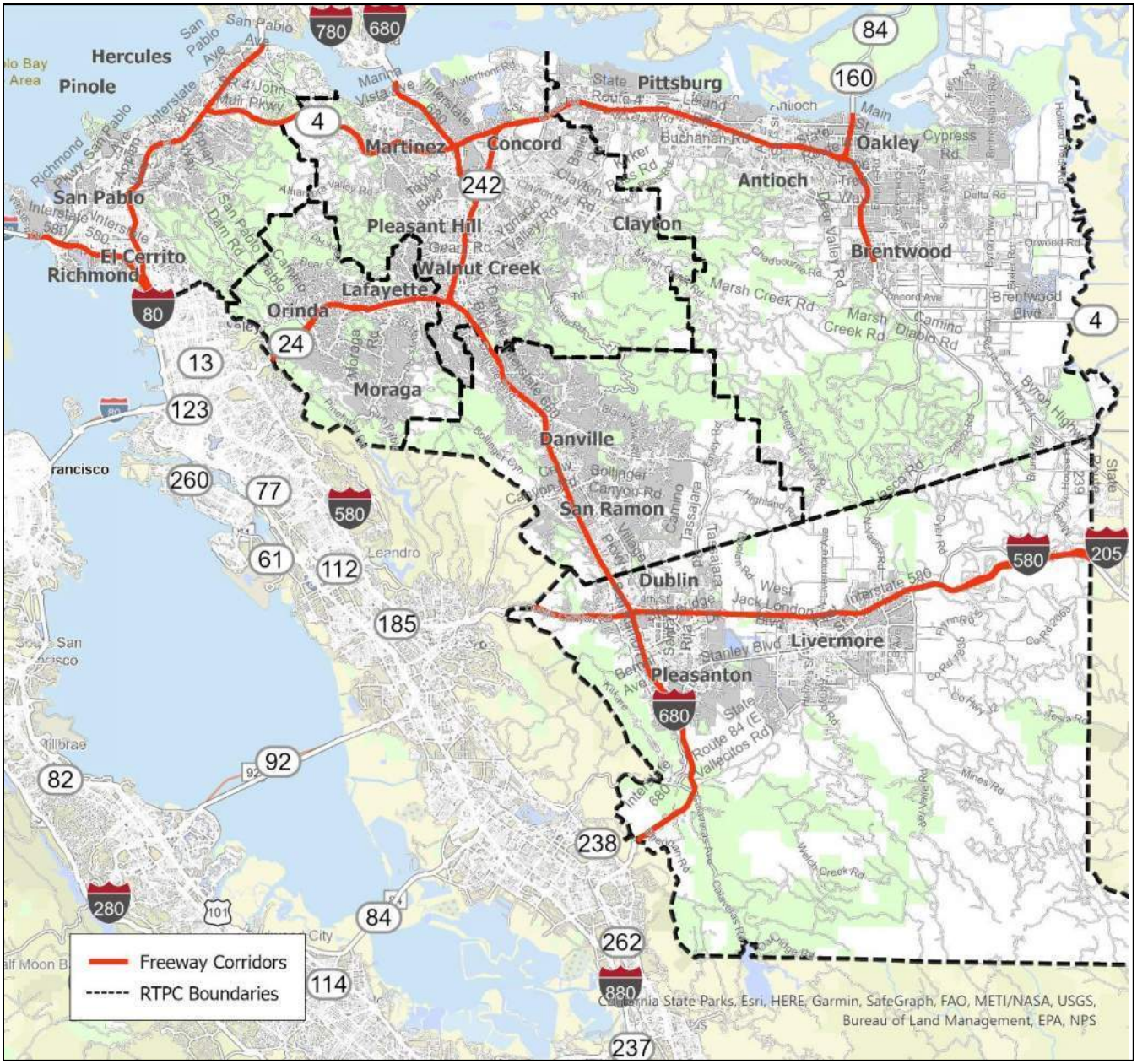
Table D-2. Freeway Facilities and Previous Performance Targets

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

Source: RTPC Action Plans.

** DI = Delay index*

Figure D-1. Freeway Facilities



The delay index (and the related average speed) were calculated for both the 2019 Base Year and 2050 Baseline scenarios, pivoting from observed data. The source of observed data for this RTO was speed data from INRIX Roadway Analytics, which was also used in the 2017 MTSO monitoring[42] and 2021 Congestion Management Plan (CMP) monitoring.[43] Observed 2019 speeds and travel times were calculated with INRIX data using April 2019 as a baseline. DKS downloaded one-minute interval data including travel time for all segments in Alameda and Contra Costa Counties. These data were processed using use a Python program to excerpt defined study areas from Table D-1 and Figure D-1, and 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.

Baseline 2050 delay indices were forecast using the CCTA Countywide Travel Demand Model peak period traffic assignments by estimating the additional congested travel time that is expected on each segment of the study corridors. Components of this work included:

- Calculate average congested speed for 2019 was derived from INRIX Roadway Analytics for each segment (typically defined from one on ramp to the following off ramp).
- Obtain peak period congested speeds for 2019 and 2050 from the travel demand model for the same segments (note: free-flow speed is taken as the posted speed limit).
- Where the observed 2019 speed is lower than the modeled 2019 speed, scale the 2050 modeled speed by this ratio to calculate the corresponding delay index.

These calculations yielded existing and future delay index ratings for the segments of freeways listed in Table D-1. Existing delay index ratings were compared to adopted MTSO delay index thresholds, and the project team suggested revisions to the existing delay index thresholds for consideration by the RTPCs.

Roadways RTO-2: Freeway Buffer Index

Maintain peak-hour freeway segment buffer index on select freeway segments.

The “buffer index” metric is intended to measure reliability and relies on the same INRIX 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 are called the buffer time.

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

[43] 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 is a monitoring metric, compiled for existing and observed conditions but not forecasts. The buffer index for each freeway corridor listed in The observed baseline and modeled results for freeway delay index on the freeway RRS are shown in Table 7-2. As shown, 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 follow the same pattern as 2019 with similar or higher delay index values for the peak directions.

Based on current performance and the future modeled performance, this Action Plan sets a delay index target of 2.75.

Roadways RTO-3: Intersection LOS

Maintain peak-hour LOS at selected intersections in urban areas.

Peak-hour intersection LOS was calculated for selected 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 was determined based on intersection turning movement counts (also called turning/traffic volumes), intersection geometry, and signal timing data, where available. The CCTA Technical Procedures specify that methods documented in the latest edition of the Highway Capacity Manual be used to measure signalized intersection LOS.[44] The relationship between average delay and LOS is shown in Table D-3.

Table D-3. 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.

[44] The 6th edition of the Highway Capacity Manual was published by the Transportation Research Board in January 2022.

The facilities evaluated using signalized intersection LOS or other intersection operational metrics in the previous round of Action Plans are listed in Table D-4. 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, most recently 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 D-5 summarizes the available data for intersection analysis.

Since the previous rounds of Action Plans and monitoring, some previously non-urban 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 only reported on key locations, such as at the intersections of two RRS facilities, freeway ramp terminals, and intersections of local concern, as depicted in Figure D-2 through Figure D-6. In total, 343 intersections were analyzed for 2019 and 2050.

Table D-4. 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]

RTPC	Arterial Facility	Previously Used Performance Target and Number of Intersections
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 ▫ 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	LOS D on all intersections except for Bailey Road where LOS E is acceptable.
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	LOS E on all intersections except no standard for intersections in downtown areas and those exempt by General Plans.

RTPC	Arterial Facility	Previously Used Performance Target and Number of Intersections
	▪ 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	

Source: RTPC Action Plans

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

Table D-5. Signalized Intersections and Available Intersection Data

Region	Previous Action Plans	2017 Monitoring	2021 CMP	Total Signalized Intersections on RRS	Total Selected for Existing and Baseline Scenarios
Central County	54	29	27	183	76
East County	41	41	9	233	83
Lamorinda	13	12	1	47	12
Tri-Valley	151	29		301	91
West County	40	58	23	172	81
Total	**299**	**169**	**60**	**936**	**343**

Figure D-2. Arterial Intersections and Roadway RRS (West County)

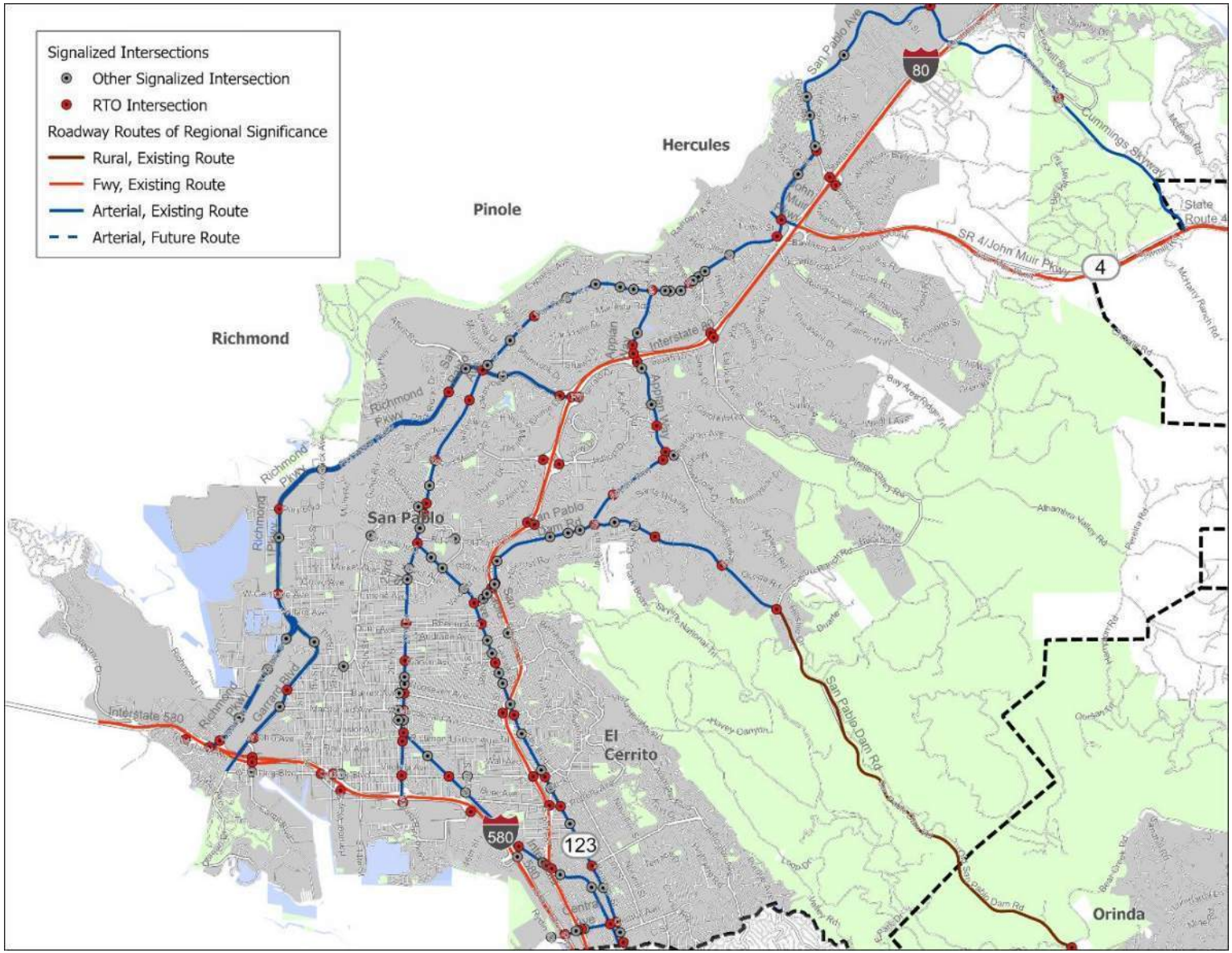


Figure D-3. Arterial Intersections and Roadway RRS (Central County)

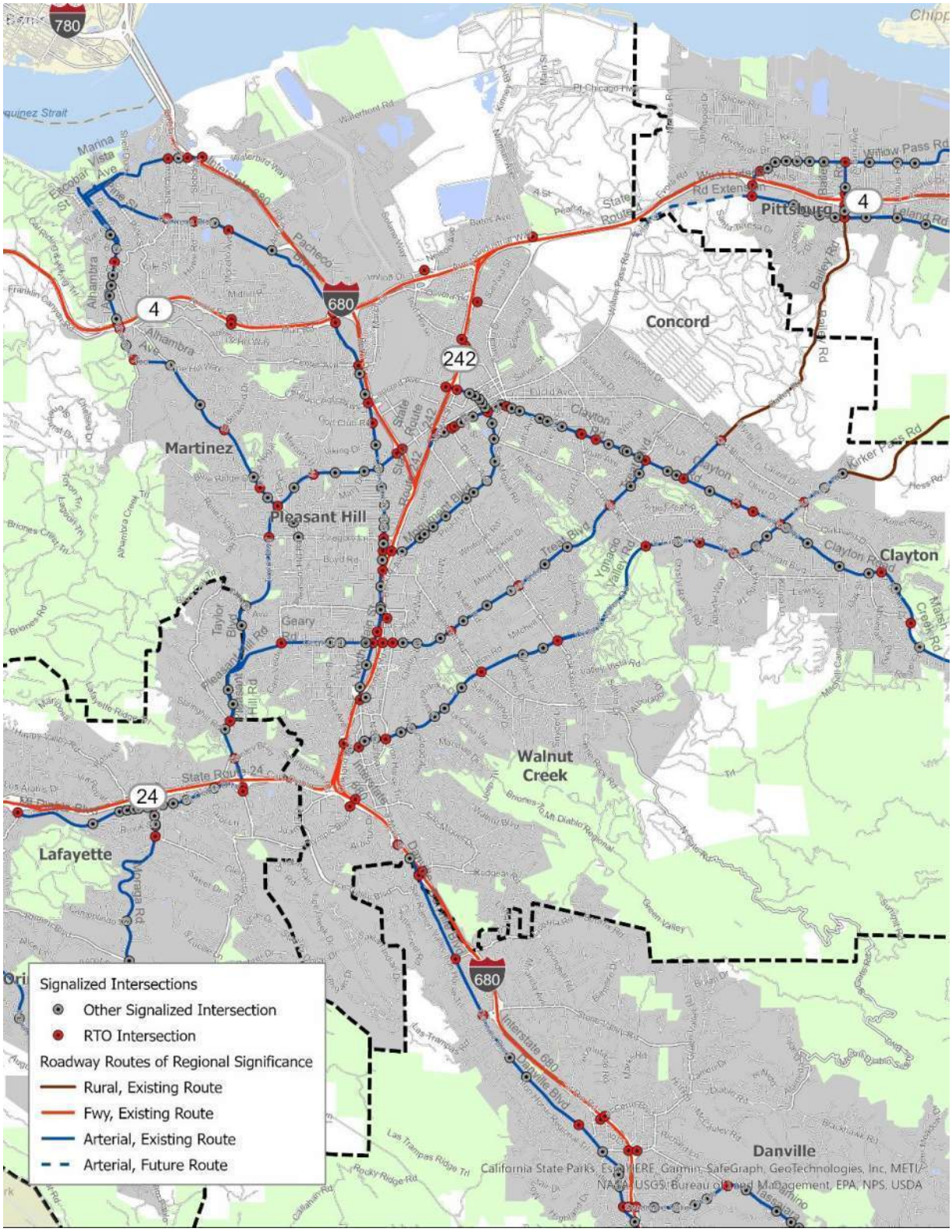


Figure D-4. Arterial Intersections and Roadway RRS (East County)

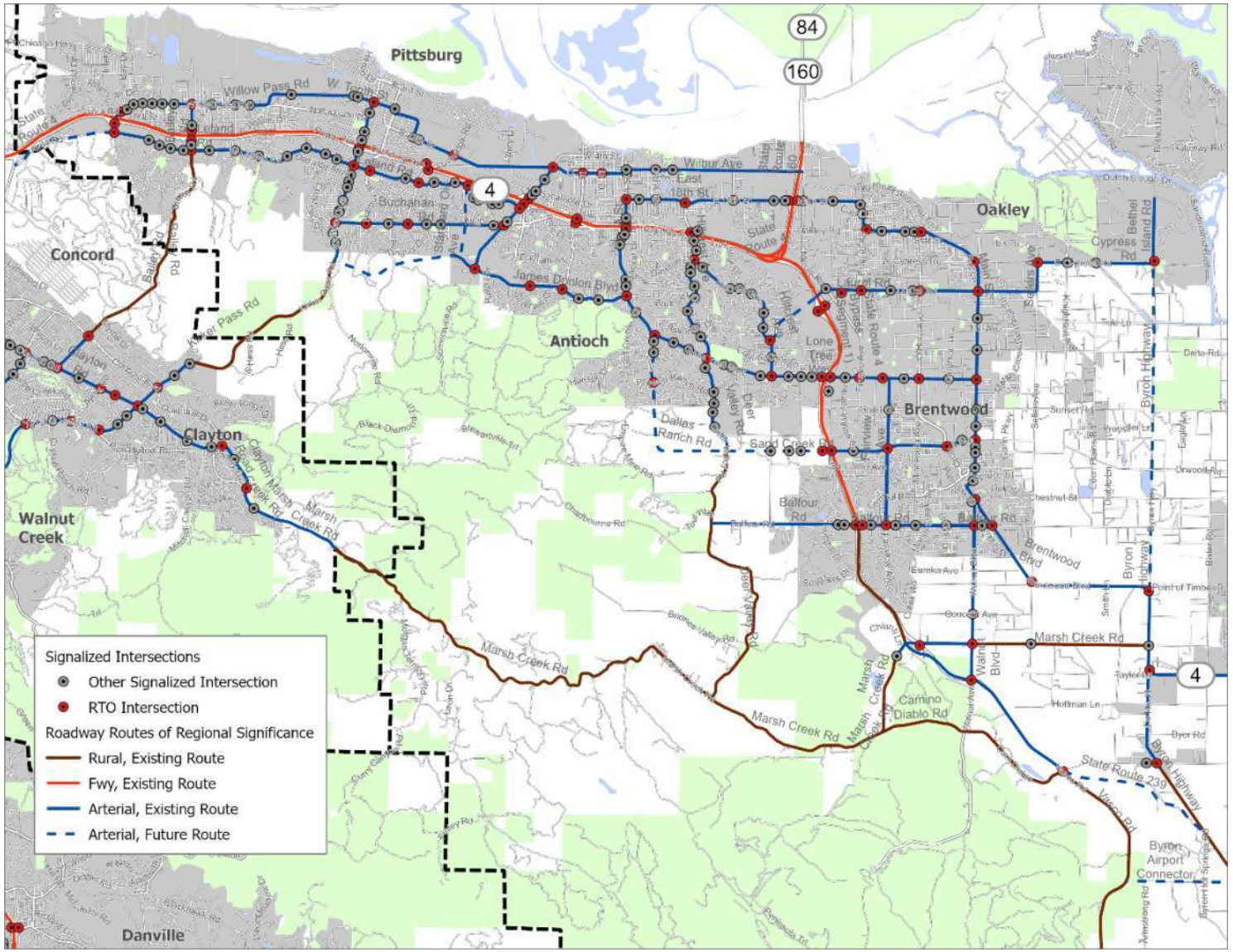


Figure D-5. Arterial Intersections and Roadway RRS (Southwest County – Lamorinda)

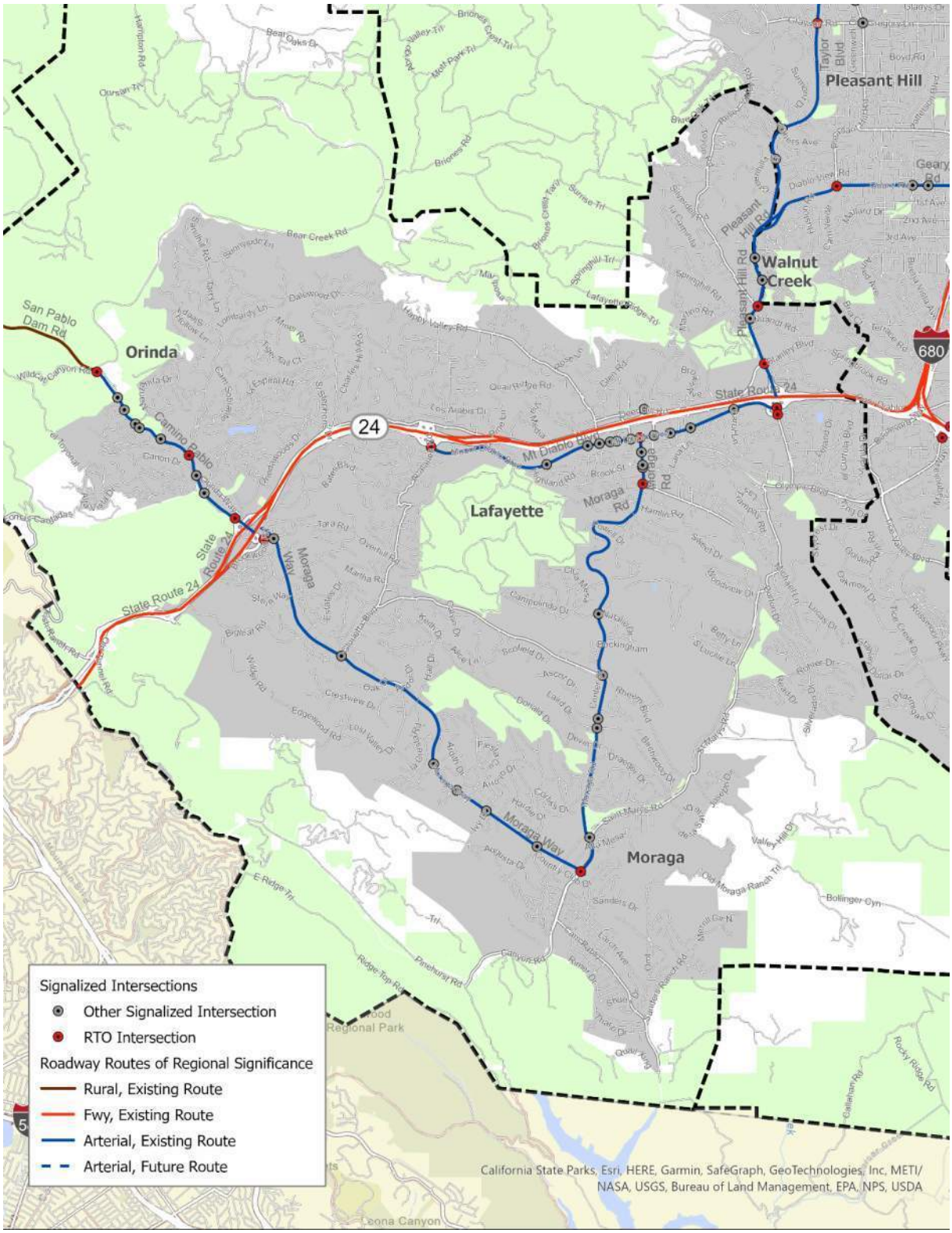
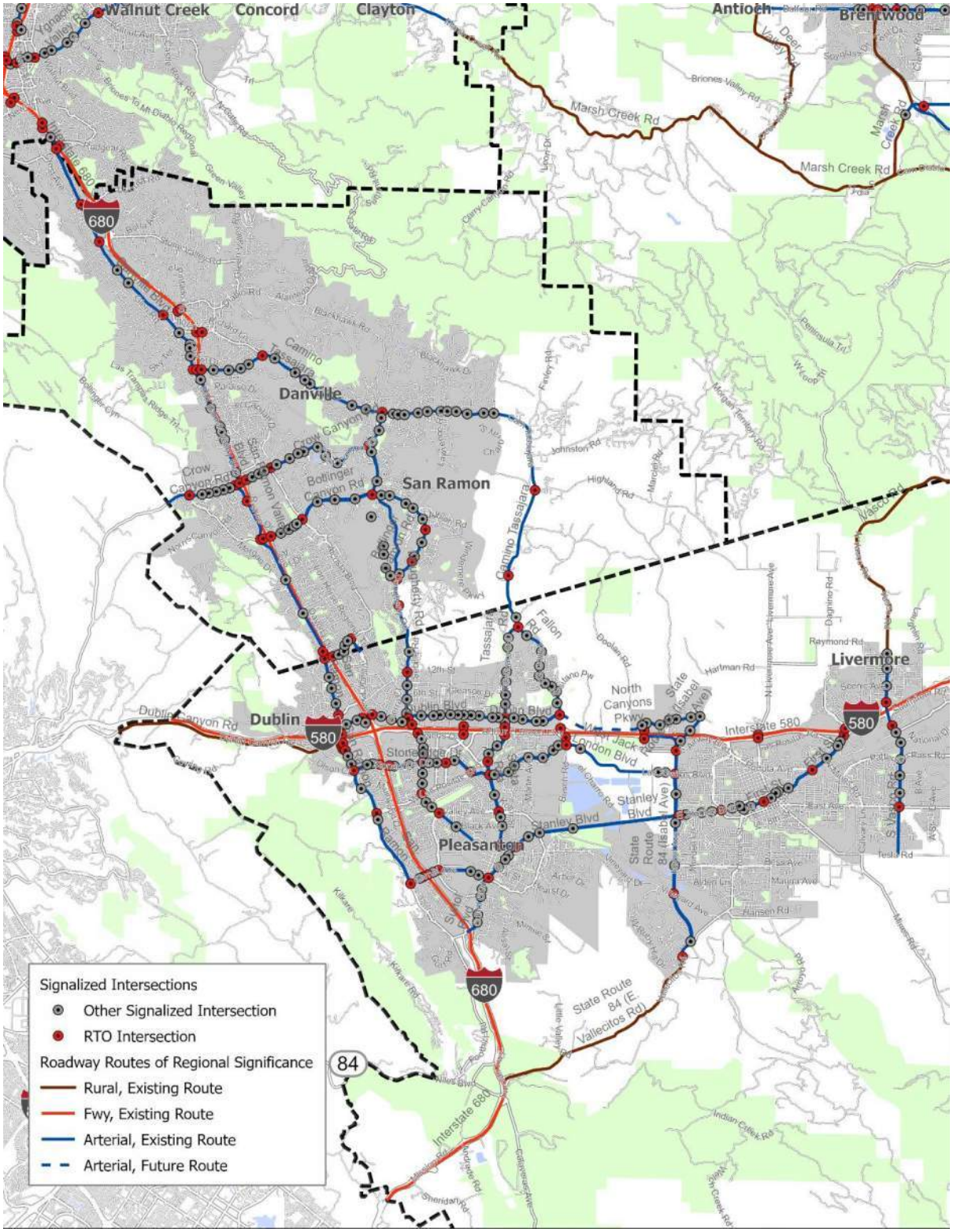


Figure D-6. Arterial Intersections and Roadway RRS (Southwest County – Tri-Valley)



The methodology for calculating signalized intersection LOS followed standard practice. Where available, observed counts were extracted from the operational models built for the 2017 MTSO monitoring and the 2021 CMP monitoring. For the additional intersections analyzed for this round of Action Plans, historical turning volume estimates were obtained from the Streetlight data subscription maintained by CCTA. The Streetlight data represent a spring 2019 weekday condition excluding holidays.

Peak-hour traffic volumes for the base year and future year were 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.

Intersection geometry was derived or checked using Google Earth and timing plans requested for any newly added intersection locations. In the absence of local timing plans, optimized timing settings were applied.

Signalized intersection LOS was assessed by implementing Highway Capacity Manual (HCM) methods in the Trafficware Synchro (“Synchro”) software package.[45] The outcome of this modeling yielded a list of all intersections and their baseline 2019 and projected 2050 LOS ratings.

Roadways RTO-4: Roadway Segment LOS

Maintain peak-hour segment LOS on selected two-lane roadways outside of urban areas.

LOS was analyzed for specific segments on non-urban 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

[45] The latest HCM (7th ed.) 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 methods specified in the 2010 HCM using average speed for Class I highways, which are two-lane facilities in non-urban areas that motorists expect to traverse at relatively high speed.

DKS ran LOS analysis for the roadway segments as listed in Table D-6 and shown in Figures D-2 through D-6.

Table D-6. Two-Lane Non-urban 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
	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
	Vasco Road	Alameda County	Dalton Avenue

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). Since these data are not available for the segments to be studied, the Action Plan updates retained the HCM 6th edition approach, which simply relates LOS to average speed, as shown in Table D-7. For this analysis, DKS used the travel demand model to predict congested speed for all segments to be analyzed.

Table D-7. LOS for Two-Lane Non-urban 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.

Safety RTOs

Safety RTO-1: KSI Collisions

Eliminate killed or severely injured (KSI) collisions in the subregion.

DKS obtained KSI collisions data for the Planning Area from the Transportation Injury Mapping System (TIMS)[46] as the basis for the safety RTOs. TIMS collision records represent cleaned and geocoded data compiled by the Statewide Integrated Traffic Records System (SWITRS) maintained by the California Highway Patrol. Collision recode geocoding was reviewed for accuracy, and any obviously miscoded records were removed or recoded. Collision records were downloaded for the period spanning January1, 2016, through December 31, 2019, and loaded into a Geographic Information System for further processing by planning subregion.

Safety RTO-2: Active Transportation Collisions

Eliminate collisions in the subregion that involve users of active transportation.

The number of active transportation collisions was developed using the same TIMS data set described above. The active transportation KSI collisions were then tabulated and mapped by planning subregion.

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

Safety RTO-3: Active Transportation Collisions Near Schools

Eliminate active transportation collisions within 500 feet of a school.

This RTO was developed using the same TIMS data set described previously. The project team used GIS school site polygon data to create a 500-foot buffer around school sites and determined which of the geocoded collisions occurred within these school site buffers. The resulting data were tabulated and mapped by subregion. The records identified through GIS analysis were individually reviewed to confirm that the collisions involved students using active transportation.

Equity RTOs

Equity RTO-1: EPC Low-Stress Bicycle Network Completion

Ensure that the proportion of the countywide LSBN that has been completed in EPCs is equal to or greater than the proportion completed in the subregion as a whole.

The methodology for this RTO is identical to that of Active Transportation RTO-2, except that it applies specifically to Equity Priority Community (EPC) areas. Facilities in the EPC areas are given a rating from one (least stressful) to four (most stressful) to evaluate the stress a bicycle 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 updated the LSBN map to reflect any portions that have been constructed since the 2018 CBPP and map adoption.[47] Once the LSBN was updated, the number of total miles in the network upon buildout was calculated and compared with the total miles already completed.

[47] The project team identified low stress facilities in the Alameda County portion of the Tri-Valley area by reviewing the Alameda CTC Active Transportation Plan and the MTC active transportation facility webmap.

Equity RTO-2: Collisions in EPCs

Ensure that the proportion of KSI and active transportation-involved collisions in EPCs in the subregion is equal to or less than the proportion of the subregion's population living in EPCs.

This RTO was developed using the same TIMS data set described for the Safety RTOs. Using GIS, this analysis mapped the boundaries of identified EPCs. For each subregion and the county as a whole, the average annual rate of KSI and active transportation collisions per population was calculated for the EPCs as well as each planning subregion and the Planning Area as a whole. To develop these metrics, population estimates at the block group level were taken from the American Community Survey 2019 Five Year Estimates, Table B01003. This RTO was not tracked in Action Plans that do not contain EPCs, including Tri-Valley and Lamorinda.

Equity RTO-3: EPC Job Access: Driving

Ensure that the number of jobs that can be reached by EPC residents with a 30-minute drive is equal to or greater than the number of jobs that can be reached with a 30-minute drive by all residents in the subregion.

The travel demand model's map of TAZs was compared to identified EPCs in Contra Costa County and designated each TAZ as either "EPC" on "non-EPC." Based on the CCTA Travel Demand Model's peak-period drive-alone travel times, the TAZs that could be reached within a 30-minute drive from each TAZ in the study area were identified and the jobs in those TAZs were summed. The average number of jobs per capita in each TAZ that is reachable within 30 minutes was calculated for EPC and non-EPC TAZs, and the results were compared. This RTO was not tracked in Action Plans that do not contain EPCs, including Tri-Valley and Lamorinda.

Equity RTO-4: EPC Job Access: Transit

Ensure that the number of jobs that can be reached by EPC residents with a 45-minute transit trip is equal to or greater than the number of jobs that can be reached with a 45-minute transit trip by all residents in the subregion.

The travel demand model's map of TAZs was compared to identified EPCs in Contra Costa County and designated each TAZ as either "EPC" on "non-EPC." Based on the CCTA Travel Demand Model's peak-period transit travel times, the TAZs that could be reached within a 45-minute transit journey from each TAZ in the study area were identified and the jobs in those TAZs were summed. The average number of jobs per capita in each TAZ that is reachable within 45 minutes was calculated for EPC and non-EPC TAZs, and the results were compared. This RTO was not tracked in Action Plans that do not contain EPCs, including Tri-Valley and Lamorinda.

Equity RTO-5: EPC Access to High Quality Transit

Ensure that the proportion of urbanized EPC land area in the subregion served by high-quality transit is equal to or greater than the urbanized land area served by high-quality transit in the subregion as a whole.

The methodology for this RTO is identical to Transit RTO-4, except that it applies specifically to EPC areas. This RTO assesses the percentage of urban land in EPC areas that has access to high quality transit by walking and bicycling. The project team used GIS to map the distribution of high frequency transit stops in the countywide EPC areas and identified the high quality transit zones, or areas within a ¼-mile radius from each of the stations. Additionally, the team mapped all rail and ferry stations in the EPC areas and identified areas within a ½-mile radius around each station. The project team summed the high quality transit zone areas in EPC areas in acres and subtracted it from the total acreage of urban land in the EPC areas; the result was the percentage of urban land within walking or bicycling distance to high quality transit.

Climate Change RTOs

Climate Change RTO-1: SOV Mode Share

Reduce the mode share of single-occupant vehicles in the subregion.

The methodology for this RTO was identical to the methodology for the “Mode Share of Transit Trips” RTO, except that the metric associated with this RTO tracked a decrease in overall single-occupant vehicle (SOV) mode share, not an increase as desired for transit and active transportation mode share.

Climate Change RTO-2: Carpool Mode Share

Increase the mode share of carpooling in the subregion.

The methodology for this RTO is identical to the methodology for “SOV Mode Share,” RTO-1, except that the metric associated with this RTO tracked a decrease in vehicle mode share by carpool, not SOV mode share.

Climate Change RTO-3: Vehicle Miles Traveled

Reduce vehicle miles traveled per capita in the subregion.

VMT per capita was 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 had already been developed as part of CCTA’s Technical Procedures update. Final processing was done in a spreadsheet, and results were tabulated by subregion.

Climate Change RTO-4: Greenhouse Gas Emissions

Reduce transportation GHG emissions per capita in the subregion.

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

Climate Change RTO-5: Zero Emission Vehicles

Increase the share of zero emission vehicles 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.

Total registrations by vehicle type were available by county and zip code, and these data were applied to estimate the ZEV ownership by subregion.

Technology RTOs

Technology and Innovation RTO-1: Signal Interconnect Project

Complete the project to upgrade traffic signals to regional ethernet and/or fiber-optic interconnection.

Interconnected signal systems communicate with other signals or systems. Signal interconnect helps to establish 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 allows signal timings to be adjusted remotely during regular day-to-day operations, major incidents, and special events. Interconnection enables cross-jurisdiction communications, coordination, and data exchange in response to varying traffic conditions.

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

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Appendix E:

Joint Exercise of Powers Agreement

JOINT EXERCISE OF POWERS AGREEMENT

Establishing the Tri-Valley Transportation Council for Planning and Facilitating the Implementation of Transportation Improvement Projects in the Tri-Valley Transportation Area

BY AND AMONG

The County of Alameda

The County of Contra Costa

The City of Dublin

The City of Livermore

The City of Pleasanton

The City of San Ramon, and

The Town of Danville

October 17, 2013

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EXECUTION OF AGREEMENT 22

JOINT EXERCISE OF POWERS AGREEMENT ESTABLISHING THE TRI-VALLEY TRANSPORTATION COUNCIL

THIS AGREEMENT is made and entered into as of Oct. 17 2013 ("the Effective Date") by and among the Parties (the County of Alameda, the County of Contra Costa, the Town of Danville, the City of Dublin, the City of Livermore, the City of Pleasanton, and the City of San Ramon) signatory hereto, each of which is a public entity duly organized and existing under the Constitution and other laws of the State of California.

WHEREAS, Chapter 5 of Division 7 of Title 1 of the Government Code of the State of California (commencing at Section 6500) authorizes the Parties to enter into an agreement for the joint exercise of any power common to them and, by that agreement, create an entity that is separate from each of the Parties; and

WHEREAS, the Parties recognize that adequate transportation planning is essential to the orderly development of the Tri-Valley Area (defined in Section 1.bb), and that review and coordination of planning and implementation of transportation facilities in the Tri-Valley Area is to the benefit of all parties hereto and their constituents; and

WHEREAS, the Parties desire for adequate transportation planning resulted in the creation of the Tri-Valley Transportation Council's first Joint Powers Agreement (JPA) in 1991 that provided for coordinated transportation efforts; and

WHEREAS, the Parties also recognized that traffic impacts from new residential and commercial developments forecast by the Association of Bay Area Governments in the Tri-Valley Area would adversely affect the quality of life for the existing residents of the Cities and Counties unless those regional impacts are mitigated by off-site street improvement; and

WHEREAS, through the adoption of the Tri-Valley Transportation Plan/Action Plan for Routes of Regional Significance ("Action Plan"), the Parties identified regional Transportation Improvement Projects designed to help mitigate the regional impacts of forecast development within the Tri-Valley Area; and

WHEREAS, the Parties entered into a Joint Exercise of Powers Agreement (JEPA) in 1998, with two subsequent addendums in 2003 and 2009, for purposes of collecting traffic impact fees for the Transportation Improvement Projects on a uniform basis and to use the fees collected in a coordinated manner to provide for financing and construction of the Transportation Improvement Projects; and

WHEREAS, substantial time has passed since the initial execution of the 1991 JPA and the execution of the 1998 JEPA; and

WHEREAS, the Parties wish to establish a separate entity known as the Tri-Valley Transportation Council pursuant to the provisions of the Joint Exercise of Powers Act;

NOW, THEREFORE, in consideration of the facts stated above, the mutual advantages to be derived, and the mutual covenants contained herein, it is agreed by and among the Parties hereto as follows:

SECTION 1
Definitions

a. Act means the Joint Exercise of Powers Act, Chapter 5 of Division 7 of Title 1 of the California Government Code, commencing with Section 6500, as it may be amended from time to time.

b. Agreement means this joint exercise of powers agreement as it now exists or as it may from time to time be amended, and which is made effective only upon the signature and execution of all the Parties.

c. Alameda County Transportation Commission ("Alameda CTC") is a joint powers authority, governed by a 22-member commission, that serves as the Congestion Management Agency for Alameda County and delivers the projects and programs in the Expenditure Plan of its transportation sales tax measure.

d. Auditor means an independent certified accountant selected by the Governing Council to audit the records and accounts of the TVTC.

e. Bylaws means the rules, regulations, and other operational and organizational directives adopted by the Governing Council for the conduct of the TVTC's meetings and other affairs.

f. City (or Town) means each municipality that is a Party to this Agreement.

g. Contra Costa Transportation Authority ("CCTA") is an 11-member joint powers agency that serves as the Congestion Management Agency for Contra Costa County and delivers the projects and programs in the expenditure plan of its half-cent sales tax measure.

h. County means the agency representing the unincorporated geographic areas, within the county of Contra Costa or Alameda, that is a Party to this Agreement.

i. Fiscal Year means the period from each July 1st to and including the following June 30th.

j. Governing Council means the governing body constituted herein to administer this Agreement and manage the affairs of the TVTC.

k. Gross Floor Area refers to the sum of the area of all floor levels of a structure, including, but not limited to, cellars, basements, mezzanines, penthouses, corridors, lobbies, retail areas, and offices, that are included within the principal outside faces of exterior walls, not including architectural setbacks or projections. Included are all stories or areas that have floor surfaces with clear standing head room (six feet, six inches, minimum) regardless of their use. Where a ground level area, or part thereof, within the principal outside faces of the exterior walls is left unenclosed, the gross area of the unenclosed portion is to be considered as a part of the overall square footage of the building. All unroofed areas and unenclosed roofed-over spaces, except as defined above, are to be excluded from area calculations. The gross area of any parking garages within the building shall not be included within the gross area of the entire building.

l. Industrial Use is a land use category that refers to land designated for the purpose of manufacture or fabrication of products, the processing of materials, the warehousing of merchandise for sale or distribution, research and development of industrial products and processes, and the wholesaling of merchandise.

m. Joint Exercise of Powers Agreement means this agreement of the Parties to jointly exercise their power or powers, privileges and authority, as authorized by the Act, to implement purposes of the TVTC as described in Section 2.a and 2.b.

n. Land Use Entitlement means a permit or approval granted for a development project as that term is defined in Government Code Section 66000.

o. Land Use Type means Industrial Use, Multi-Family Residential use, Office Use, Other Use, Retail Use, and Single Family Residential Use.

p. Legislative Body means the governing board of each Party.

q. Member (or Members) means the individual appointed by a Party to the TVTC's Governing Council.

r. Multi-Family Residential Use is a land use category that refers to land

designated for buildings or parts thereof designed and used exclusively as a dwelling unit among other dwelling units, either on the same parcel (e.g., apartments and mobile home parks) or under separate ownership (e.g., condominiums, townhomes, duplexes, or duets).

s. Office Use is a land use category that refers to land designated for for buildings or parts thereof designed and used for non-retail, non-manufacturing businesses.

t. Other Uses refers to land use categories not implicitly included within the land use categories of "Single Family Residential", "Multi Family Residential", "Retail", "Office", or "Industrial", and for which alternative rates can be found in the *Institute of Transportation Engineers Trip Generation Manual* or in a list of peak-hour trip rates that the Tri-Valley Transportation Council has explicitly approved.

u. Party (or Parties) refers to the following signatory agencies to this Agreement: the County of Alameda, the County of Contra Costa, the Town of Danville, the City of Dublin, the City of Livermore, the City of Pleasanton, and the City of San Ramon.

v. Project Sponsor means a Party designated in the Strategic Expenditure Plan to oversee the use of Tri-Valley Transportation Development Fee revenues in the development of a specific regional Transportation Improvement Project. The Party designated as Project Sponsor may be, but need not be, the lead agency for environmental clearance or the agency responsible for the design or construction of the project itself

w. Retail Use is a land use category that refers to land designated for buildings or parts thereof designed and used for retail sale of merchandise and services

x. Single Family Residential Use is a land use category that refers to land for buildings or parts thereof designed and used for occupation as the residence of one family.

y. Strategic Expenditure Plan ("SEP") refers to the TVTC's May 16, 2011 funding and project prioritization plan, adopted by TVTC by execution of this agreement, and as may be amended from time to time, but at least every five years, by the TVTC with a supermajority vote of six.

z. Subsidized Housing Development refers to housing facilities developed by public agencies, limited dividend housing corporations, or non-profit corporations, and maintained exclusively for persons or families of very low, low or moderate income, as defined in Section 50093 of the Health and Safety Code.

aa. Transportation Improvement Projects (or "Projects") refer to those public improvements required to implement the 2011 Update to the Tri-Valley Transportation Council Strategic Expenditure Plan, adopted by TVTC by execution of this agreement, and as that plan may be amended from time to time.

bb. Transportation Plan/Action Plan for Routes of Regional Significance ("Action Plan") refers to the transportation planning document prepared by the TVTC to establish coordinated transportation plans including routes of regional significance, multi-modal transportation service objectives (MTSOs) for these routes and specific actions to be implemented by each participating jurisdiction among the TVTC Parties. The TVTC Action Plan helps TVTC parties in the county of Contra Costa comply with the Measure J Growth Management Program and is incorporated into the Contra Costa Countywide Comprehensive Transportation Plan (CTP).

cc. Tri-Valley Area refers to the geographic area that encompasses the town of Danville, the cities of Dublin, Livermore, Pleasanton and San Ramon, and portions of the counties of Alameda and Contra Costa immediately adjacent to the cities and town referenced in this definition.

dd. Tri-Valley Transportation Council ("TVTC") means the separate entity created by this Agreement, whose purpose and membership is defined herein.

ee. Tri-Valley Transportation Development Fee ("TVTDF" or "TVTD Fee") refers to the fees to be imposed by the Cities and Counties on development within the Tri-Valley Area.

SECTION 2
General Provisions

a. Purpose. The purpose of this Agreement is to establish a separate agency that is responsible for coordinating transportation planning efforts within the Tri-Valley Area by facilitating the implementation of Transportation Improvement Projects identified in its Strategic Expenditure Plan and:

i. Establishing a framework for the enactment by the Parties of a TVTD Fee to fund all or part of the necessary transportation improvements identified in the SEP.

ii. Establishing funding goals and seeking commitments, for identified Transportation Improvement Projects.

iii. Establishing mechanisms for collecting, managing and disbursing the TVTD Fee and to formalize institutional arrangements for the implementation of the Projects to be constructed with fee revenues.

iv. Facilitating cooperative regional planning efforts through the adoption and implementation of the regional transportation plans (such as the Transportation Plan/Action Plan for Routes of Regional Significance), the SEP and the TVTD Fee program.

b. Creation of Agency. There is hereby created a public entity to be known as the "Tri-Valley Transportation Council." The TVTC is formed by this Agreement pursuant to the provisions of the Act. The TVTC is a public agency separate from the Parties to this Agreement and shall exercise in the manner set forth in this Agreement the powers common to each of the Parties, for the purposes stated in this Agreement.

c. Supersede. This Agreement supersedes the 1991 JPA and the 1998 JEPA, as amended.

SECTION 3
Governing Council

a. Governing Council. The TVTC shall be governed by the TVTC Governing Council, which shall exercise all powers and authority on behalf of the TVTC.

b. Membership. The Governing Council shall consist of seven (7) members appointed by the Parties as follows: one (1) Member appointed by the Board of Supervisors of Alameda County, one (1) Member appointed by the Board of Supervisors of Contra Costa County, one (1) Member appointed by the Town Council of Danville, one (1) Member appointed by City Council of the City of Dublin, one (1) Member appointed by City Council of the City of Livermore, one (1) Member appointed by City Council of the City of Pleasanton, and one (1) Member appointed by City Council of the City of San Ramon

i. Each Member shall have one vote.

ii. Each Member must be a member of the Legislative Body for the Party that appointed the Member.

iii. Each Party may appoint an alternate, or alternates, for its appointed Member, who may serve as the Member in the Member's absence. The

alternate Member must be a Member of the Legislative Body for the Body that appointed the Member.

iv. All Members and their alternates serve at the pleasure of their appointing Party.

v. All vacancies on the TVTC Governing Council shall be filled by the Party's respective Legislative Body as soon as practicable following the effective date of the vacancy. Any Member or alternate shall cease to be a Member when such person ceases to hold office as a member of the respective appointing Legislative Body.

c. Meetings of the Governing Council. All TVTC meetings shall be held in accordance with the provisions of the Ralph M. Brown Act. All meeting shall be public unless a specified closed session is held in accordance with the California Government Code.

i. Quorum. At least five (5) Members must be present in order for the Governing Council to act.

ii. Regular Meetings. The Governing Council shall establish a date, time, and place for regular meetings fixed by the Bylaws.

iii. Special Meetings. Special meetings and emergency meetings of the Governing Council may be called in accordance with State law.

iv. Call, Notice, and Conduct of Meetings. All meetings of the Governing Council, including without limitation, regular, adjourned regular, and special meetings, shall be called, noticed, held, and conducted in accordance with the provisions of Section 54950, *et seq.*, of the California Government Code, as may be amended from time to time.

d. Required Votes and Approvals. Actions of the TVTC shall require the following votes:

i. Supermajority of Six. A vote of at least six (6) members, is required to: Adopt or amend the Strategic Expenditure Plan; amend the TVTD Fee structure, with the exception of the annual automatic Construction Cost Index adjustment, as described in Section 6d(i), "TVTD Fee Adjustments," which may be amended by a simple majority; amend this Agreement under Section 9(a) below; and terminate this Agreement under Section 9(c)(i) below.

ii. Supermajority of Five. A vote of at least two-thirds (2/3) of the entire Governing Council, or five (5) Members, shall be required for the TVTC to: Adopt or amend a regional transportation plan that has required performance objectives that a Party to this Agreement must meet, such as the Tri-Valley Transportation Plan/Action Plan for Routes of Regional Significance or other future transportation plans prepared for the Tri-Valley Transportation Council; adopt a budget of TVTC expenditures; or amend the Bylaws.

iii. Simple majority. A vote by a simple majority of the Members at any meeting of the TVTC at which a quorum is present for any action other than those described in subsection i or ii above.

e. Bylaws. The TVTC shall create and adopt, and from time to time amend, Bylaws as are necessary or convenient to achieve or facilitate the conduct of the Governing Council's meetings and procedures.

f. Principal Office. The principal office of the TVTC shall be designated by the TVTC Governing Council and shall be located within the boundaries of one of the Members.

g. Committees. The TVTC may have such committees as established pursuant to the Bylaws.

SECTION 4
Officers and Administration

a. Chair and Vice Chair. The Governing Council shall elect a Chair and Vice-Chair from among its Members at its initial meeting. These officers shall serve a term as defined by the Bylaws, starting on July 1st of each Fiscal Year. The Chair shall preside at the meetings of the Governing Council, call meetings to order, adjourn meetings, put to vote all questions moved and seconded, announce result of votes, execute documents and official actions on behalf of the Governing Council when duly approved, and carry out other duties set forth in the Bylaws. The Vice Chair shall serve as Chair in the absence of the Chair.

b. Secretary. The Governing Council shall appoint a Secretary who may be a Member of the Governing Council. The Secretary shall record votes, prepare, distribute, and maintain minutes, and maintain the official records of the TVTC, and perform other duties set forth in the Bylaws. The Secretary shall cause a copy of this Agreement to be filed with the California Secretary of State and the State of California pursuant to Government Code section 6503.5.

c. Treasurer. The Governing Council shall designate a treasurer pursuant to Government Code section 6505.5. The Treasurer shall have the responsibility and accountability for the management and disbursement of TVTD Fee funds. The Treasurer shall perform the following duties:

i. Serve as custodian of all of the accounts, funds and monies of the TVTC from whatever source, and shall have the duties and obligations set forth in Government Code sections 6505 and 6505.5; and

ii. Keep a record of all TVTD Fees disbursements and expenditures made by the Treasurer in accordance with this Agreement; and

iii. Transmit monies, based on direction from an approved TVTC resolution, from the TVTD Fee Account to Project Sponsors for the planning, design and construction of the Transportation Improvement Projects as listed, and in accordance with, the SEP; and

iv. Transmit monies from the TVTD Fee Account for TVTC expenditures as authorized in the TVTC annual budget; and

v. Account for all monies from the TVTD Fee Account received in accordance with Government Code §6505; and

vi. Other duties as specified by law or as required by the Bylaws and the TVTC.

d. Auditor. The Governing Council shall designate, or select, an auditor pursuant to Section 6505.5 of the Act to assure that there shall be strict accountability of all funds and reporting of all receipts and disbursements of the TVTC. As provided in Government Code sections 6505 and 6505.5, the Auditor shall make arrangements with a certified public accountant or firm of certified public accountants for the annual audit of accounts and records of the TVTC.

e. Officers in Charge of Records, Funds and Accounts. Pursuant to Government Code section 6505.5, the Treasurer and Auditor shall have charge of, handle, and have access to all accounts, funds, and money of the TVTC and all records of the TVTC relating thereto. The public officer or officers or persons who have charge of, handle, or have any access to any property of the TVTC shall be bonded, and the amount of their bond shall be designated and fixed in the TVTC budget for each fiscal year, and may be covered by bonds of a Party. The Secretary shall have charge of, handle and have access to all other records of the TVTC.

f. Staffing. The Governing Council may employ, contract, or appoint an

Administrator to implement the objectives of the TVTC and as may be necessary for the functions and purposes of this Agreement. Any officer, employee, or agent of the Governing Council may also be an officer, employee, or agent of any of the Parties.

SECTION 5
Powers of the Agency

a. General Powers. The TVTC shall exercise in the manner herein provided the powers common to all of the Parties, as provided by the Constitution and laws of the State of California, and all incidental, implied, expressed, or necessary powers for the accomplishment of the purposes of this Agreement, subject to the restrictions set forth in subsection 5(c). As provided in the Act, the TVTC shall be a public entity separate from the Parties. The TVTC shall have the power to plan, coordinate and receive disbursements of traffic impact fee revenues from the Parties to help implement Transportation Improvement Projects in the Tri-Valley Area. The TVTC shall have all of the powers provided in Articles 2 and 4 of the Act, unless specifically prohibited or restricted by this Agreement.

The TVTC shall have the powers to do the following in its own name:

i. To make and enter into contracts; and

ii. To retain consultants, contractors, agents or personnel; and

iii. To sue and be sued in its own name; and

iv. To apply for, accept, receive, and disburse grants, loans, and other aids from any agency for the United States of America or of the State of California; and

v. Perform such other functions as may be necessary or appropriate to carry out this Agreement, so long as such other functions performed are not prohibited by any provision of law.

b. Specific Powers. The TVTC is hereby authorized, in its own name, to conduct all acts necessary for the exercise of the foregoing powers, including but not limited to, any of the following.

i. Prepare and adopt a regional transportation plan (such as the Tri-Valley Transportation Plan/Action Plan for Routes of Regional Significance) that coordinates transportation planning efforts in the Tri-Valley Area; and

ii. Prepare and implement a Strategic Expenditure Plan; and

iii. Prepare and adopt a budget for the TVTC's administrative functions; and

iv. Establish Bylaws and such other rules and regulations as may be necessary for its operation and for the conduct of the TVTC's business including an appropriate conflict of interest/disclosure policy; and

v. Exercise a power common to the parties so long as the power is exercised in furtherance of the purposes of the Agreement; and

vi. Collect TVTD Fees imposed by its Member agencies on development within the Tri-Valley Area, in accordance with Section 5; and

vii. Use TVTD Fees to fund a portion of the costs of Transportation Improvement Projects, in accordance with the SEP, within the Tri-Valley Area; and

viii. Perform such other functions as may be necessary or appropriate to carry out this Agreement, so long as such other functions performed are not prohibited by any provision of law.

c. Restrictions on Exercise of Powers. The TVTC shall exercise in the manner herein provided the powers common to each of the Parties as appropriate to the accomplishment of the purposes of this Agreement. For purposes of Government Code Section 6509, the powers of the TVTC shall be exercised subject to the restrictions upon the manner of exercising such powers as are imposed upon the City of San Ramon, a Charter City. The TVTC shall exist as an agency legally and financially self-sufficient from and independent of the Parties to this Agreement. The TVTC has no authority to condemn property, or impose a debt or obligation upon or incur one for or on behalf of a Party to this Agreement.

d. Obligations of Agency. The debts, liabilities, and obligations of the TVTC shall not be the debts, liabilities, and obligations of any Party or Member.

SECTION 6
Tri-Valley Transportation Development Fees

The revenues from the TVTD Fees are used to fund the regional Transportation Improvement Projects ("Projects") identified in the Tri-Valley Transportation Plan/Action Plan (TVTP/AP) for Regional Significance and the Strategic Expenditure

Plan (SEP), and to pay for TVTC administrative costs as authorized in the TVTC annual budget. The maximum allowable traffic impact fees that can be imposed to fund the total unfunded cost of Projects are established by the Tri-Valley Transportation Council Nexus Study ("2008 Nexus Study"), adopted on January 30, 2008 and amended on February 26, 2008, and in any subsequent nexus study.

With regard to subsequent TVTD Fee updates:

a. Adoption of Fee Nexus Study. The TVTC shall conduct, as needed, a fee nexus study to establish the legal basis for regional development impact fee amounts.

b. Recommendation of TVTD Fee Amounts. The TVTC shall through resolution, based on the findings of a nexus study, recommend regional impact fee amounts for categories of land use entitlements within the Tri-Valley Area for purposes of funding a portion of the costs of the Projects. The TVTC may recommend an exemption from the fee public schools, Subsidized Housing Developments and the governmental buildings owned by any public entity unless a Party can and does impose the TVTD Fee on governmental buildings of a public entity other than one of the Parties.

c. Party's Adoption of TVTD Fee Ordinances and Collection of TVTD Fees. If the TVTD Fees are amended, each Party shall consider the adoption, by ordinance or resolution, of TVTD Fees in amounts recommended by the TVTC, and will consider including as part of the proposed ordinance or resolution, the following:

    i. Require each project developer to pay TVTD Fees prior to issuance of building permits for the project, or no later than occupancy, and to the extent permitted by law; and

    ii. Levy TVTD Fees on all development projects not exempt from payment of the fee; and

    iii. Apply TVTD Fees on all significant changes to existing development agreements adopted after the execution of this Agreement. The TVTD Fee shall be applied to all components of a project that are subject to an amended or renewed development agreement. As used herein, significant means any of the following: (a) change in land use type (e.g., office to retail); (b) intensification of land use types (e.g., increases in square footage of approved Office); (c) extension of term of development agreements; and (d) reduction or removal of project mitigation requirements or conditions of approval.

d. TVTD Fee Adjustments.

i. Each Party shall consider, as part of a TVTD Fee resolution or ordinance, implementing an automatic adjustment of the TVTD Fee as of July 1 of each year, based on the increase or decrease in the Engineering News Record Construction Cost Index for the San Francisco Bay Area for the period ending December 31 of the preceding calendar year; and

ii. In addition to considering the automatic adjustment described in Section 6d(i), each Party shall consider adjusting TVTD Fees to reflect revisions in the Project list, program revenue, and other factors. The amount of such adjustments shall be included in a written addendum to the SEP that shall be approved by the TVTC with a supermajority vote of six. Concerted efforts shall be made to attract and obtain other funds from other available revenue sources for which the projects are eligible.

e. TVTD Fee Accounts. Each Party to this Agreement agrees to the following if it adopts TVTD Fees:

i. To place the TVTD Fees in an interest-bearing individual account to be used specifically for the Projects, in a manner consistent with the law. The deposits in each account shall be invested in the same manner as other funds of the Party; and

ii. Each Party shall transmit to the Treasurer within 30 days of the end of each quarter not less than 80% of all TVTD Fees collected by that Party during the quarter, and any interest or income generated on such 80% amount, together with notification of the Projects that the Party intends to fund with any retained portion of the revenues; and

iii. To maintain a current record of all TVTD Fee revenue collected and retained by that Party, including interest or income on such funds, and make available to the Treasurer an accounting for inclusion in any audit of TVTD Fees.

SECTION 7
Transportation Improvement Projects

a. The TVTC shall use the TVTD Fees it collects from the Parties to fund a portion of the costs of the Transportation Improvement Projects outlined in the adopted SEP. Notwithstanding the foregoing, the TVTD Fee imposed and collected by the County of Contra Costa shall not be used to fund any Projects that are not

authorized by Government Code sections 66484 or 66484.7 and Contra Costa County's implementing ordinance.

b. Project Sponsors are eligible to receive TVTD Fees in accordance with the SEP only if they have adopted the uniform TVTD Fees (including all subsequent fee adjustments and the annual CCI adjustments) as recommended by the TVTC with a vote of a supermajority of six.

c. The TVTC shall comply with the requirements of the Mitigation Fee Act and shall provide each Party with all information necessary for each Party to comply with its separate Mitigation Fee Act requirements.

SECTION 8
Strategic Expenditure Plan

a. SEP Preparation and Adoption. The TVTC shall adopt or update the Strategic Expenditure Plan every five years. The Strategic Expenditure Plan shall include a list of Projects, the estimated project cost of each Project, revenue estimates for the TVTD Fee, as well as a prioritization plan and a timeline for project delivery. It shall also include reasonable requirements for indemnification and insurance, as appropriate for individual projects, and shall include requirements that Project Sponsors or other entities which construct any of the Projects defend and indemnify the Parties. The SEP shall also include guidelines governing credit and/or reimbursement for any entity-constructed Projects and developer-constructed Projects.

b. Project Prioritization. The TVTC shall consider the following criteria when establishing the priority of Projects:

i. **Project Readiness:** Ability of Project Sponsors to move directly to final design and construction, which could be represented by, among other things, completion of environmental documentation, inclusion of the project in the Regional Transportation Improvement Program, preparation of plans, specifications and estimates; and

ii. **Project Funding:** Ability of project to leverage other funding, eligibility of the project for external funding, or commitment of external funding; and

iii. **Project Effectiveness:** Ability of the project to address traffic congestion or safety problems.

c. Review Period. The SEP must be reviewed at least once every five years by the TVTC. Each revision shall require approval by the TVTC with a vote of a

supermajority of six.

SECTION 9
Miscellaneous

a. Amendments. This Agreement may be amended at any time only by a supermajority of six votes, as approved by resolution adopted by the Legislative Body of each Party.

b. Liability and Indemnity.

i. Nothing in this Agreement shall be construed to hold any Party liable to any other Party, or any person not a party hereto, for the design, construction, installation, inspection, operation, maintenance and/or repair of any of the Transportation Improvement Projects. This Agreement is designed to implement the subvention or disbursement of public funds from one public agency to another and accordingly is not an agreement as defined in Government Code section 895.

ii. A Party is not liable to any other Party for the inadvertent failure or legal inability to collect a TVTD Fee.

iii. Each Party shall defend, hold harmless and indemnify the other Parties and their officers, agents and employees from any and all claims, costs and liability arising out of or in connection with an act or failure to act under this Agreement, or breach of any term of this Agreement, and caused by the negligence or willful misconduct of the indemnitor, its officers, agents or employees.

iv. The TVTC shall defend, hold harmless and indemnify the Parties and their officers, agents and employees from any and all claims, costs and liability arising out of or in connection with an act or failure to act under this Agreement, or breach of any term of this Agreement, by the TVTC, except to the extent such claims, costs or liability arise from the negligence or willful misconduct of an indemnitee or its officers, agents, or employees.

v. TVTC Project Sponsors shall require, in all consultant and contractor contracts used to implement Transportation Improvement Projects, that such consultant and contractor agree to defend, indemnify and hold harmless the TVTC, and each Party to this Agreement, and their respective council members, board members, officers and employees, from all claims, losses, damages, costs, injury and liability arising out of the provision of services provided pursuant to the consultant or contractor's contract with the Project Sponsor.

c. Term; Termination.

i. Term. The term of this Agreement is from the Effective Date until terminated pursuant to its terms. This Agreement may be terminated at any time only by a supermajority of six vote of the Parties, as approved by resolution adopted by the Legislative Body of each Party.

ii. Effective Date of Termination. Termination shall not under any circumstances become effective until June 30 of a Fiscal Year, provided such date is a minimum of six (6) months following the effective date of a written notice of termination to the TVTC Governing Council approved by the Legislative Bodies for all the Parties.

d. Withdrawal. Any Party may withdraw from this Agreement on one years' written notice to the other Parties, given at least 30 days prior to the end of any Fiscal Year. Any withdrawing Party shall be obligated for its proportionate share of any expenses incurred prior to the effective date of the withdrawal. The withdrawal of any Party from this Agreement shall in no way affect the rights and obligations of the remaining Parties. If a Party withdraws from this Agreement, that Party shall not be entitled to the return of any funds contributed to the TVTC, if any, nor to the return in cash or in kind of any materials or supplies until termination of this Agreement.

e. Disposition and Distribution of Assets. Upon dissolution of the TVTC, any assets of the TVTC shall be distributed to the respective grantors or assignors thereof, in the amounts and at the time or times as may be determined by the Governing Council. Upon completion of the purposes of this Agreement, any surplus money on hand shall be returned to the Parties in proportion to the contributions made to the TVTC.

f. Continued Existence of Agency. Upon dissolution, this Agreement and the TVTC shall continue to exist as required or necessary for the limited purpose of distributing the Assets and Cash Reserves and winding up and closing out the business, accounts and affairs of the TVTC.

g. Section Headings. All section headings in this Agreement are for convenience of reference only and are not to be construed as modifying or governing language in the section referred to or to define or limit the scope of any provision of this Agreement.

h. Law Governing. This Agreement is made under the Constitution and laws of the State of California and is to be so construed.

i. Severability. In the event any provision of this Agreement is determined to be illegal or invalid for any reason, all other provisions and articles of this Agreement shall remain in full force and effect unless and until otherwise determined. The illegality of any provision of this Agreement shall in no way affect the legality and enforceability of any other provisions of this Agreement.

j. Notice. Any notice required to be given or delivered by any provision of this Agreement shall be personally delivered or deposited in the U.S. mail, postage prepaid, addressed to the TVTC Chair and to the Members at their addresses as reflected in the records of the TVTC, and shall be deemed to have been received by the party to which the notice is addressed upon the earlier of receipt or 72 hours after mailing

k. Agreement Not Exclusive. This Agreement shall not be exclusive and shall not be deemed to amend or alter the terms of other agreements between or among the Parties, unless the terms of this Agreement conflict, in which case the terms of this Agreement shall prevail.

l. Breach. Any default made by any Party in any covenant contained in this Agreement shall not excuse any Member from fulfilling its respective obligations under this Agreement. The Parties declare that this Agreement is entered into for the benefit of the TVTC created hereby. The TVTC is authorized to take any or all legal or equitable actions, including but not limited to injunction and specific performance, necessary or permitted by law to enforce this Agreement.

m. Insurance. The TVTC shall procure such general liability insurance as the Governing Council shall approve.

n. Successors. This Agreement shall be binding upon and shall inure to the benefit of the successors of the Parties. Except to the extent provided herein, none of the Parties may assign any right or obligation hereunder without the written consent of the others.

EXECUTION OF AGREEMENT

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed and attested by their proper officers thereupon duly authorized and their official seals to be hereto affixed on the dates as shown herein.

MEMBERS

APPROVED AS TO FORM:

By: _____

Its: Deputy County Counsel

Date: 10/2/13

COUNTY OF ALAMEDA, a political subdivision of the State of California

By: _____

Its: PRESIDENT OF THE BOARD OF SUPERVISORS OF ALAMEDA COUNTY, CALIFORNIA

Date: 10-15-2013

ATTEST:

By: _____

Its: Deputy Clerk

Date: 10-15-2013

APPROVED AS TO FORM:

By: _____

Its: Deputy County Counsel

Date: 10/16/13

COUNTY OF CONTRA COSTA, a political subdivision of the State of California

By: _____

Its: County Administrator

Date: 4/22/14

ATTEST:

By: _____

Its: _____

Date: _____

APPROVED AS TO FORM:

By: Robert B. Ewing

Its: City Attorney

Date: 4/4/14

TOWN OF DANVILLE, a municipal corporation

By:

Its: Mayor

Date: 4/7/14

ATTEST:

By:

Its: City Clerk

Date: 4/7/14

APPROVED AS TO FORM:

By:

Its: City Attorney, City of Dublin

Date: 3/18/2014

CITY OF DUBLIN, a municipal corporation

By: Tim Sbranti

Its: Mayor, City of Dublin

Date: 3/18/14

ATTEST:

By: Caroli P. Sat

Its: City Clerk, City of Dublin

Date: 3/18/14

APPROVED AS TO FORM:

By:

Its: Assistant City Attorney

Date: 10 March 2014

CITY OF LIVERMORE, a municipal corporation

By:

Its: Acting City Manager

Date: 3/11/14

ATTEST:

By: Susan Neer

Its: City Clerk

Date: May 19, 2014

APPROVED AS TO FORM:

By: [signature]

Its: Asst. City Atty

Date: 3/20/2014

CITY OF PLEASANTON, a municipal corporation

By: [signature]

Its: City Manager

Date: 3/21/2014

ATTEST:

By: Karen Diaz

Its: City Clerk

Date: 3/21/14

APPROVED AS TO FORM:

By: [signature]

Its: City Attorney

Date: Nov 7, 2013

CITY OF SAN RAMON, a Charter City

By: [signature]

Its: Mayor

Date: 11-7-13

ATTEST:

By: Patricia Edwards

Its: City Clerk

Date: 11-7-2013

Appendix F:

Gateway Constraints Policy

Appendix F: Gateway Constraints Policy

The Gateway Constraints Policy was adopted for inclusion in the 2017 Lamorinda Action Plan. At the policy level, it consists of the following language, which is included as Policy 4 in Chapter 3 of this Action Plan: "Maintain established gateway capacity constraints at selected regional gateways with the intent of optimizing mobility on RRS".

The goal of this policy is to control the physical width of regional routes that serve Lamorinda and help address the issue of through traffic on Lamorinda's Routes of Regional Significance. By limiting capacity on certain roadways, the Gateway Constraints Policy seeks to minimize through traffic and thereby reserve capacity on the regional roadway system for traffic that has an origin and/or destination in Lamorinda. This policy was adopted because the modeling analysis for the 2017 Action Plan indicated that a Gateway Constraints Policy could the key to achieving the MTSOs laid out in the 2017 Lamorinda Action Plan. This Policy is therefore carried through to this Action Plan update to help Lamorinda jurisdictions achieve the RTOs spelled out in this Action Plan.

The Gateway Constraints Policy sets a maximum number of through lanes and lane widths for SR-24 inbound gateways, except short-link segments providing access to SR-24, and similarly identifies limits on the number of lanes for arterials such as Pleasant Hill Road and Camino Pablo. The following areas are specifically identified as gateway constraints in Lamorinda:

- **SR-24:**
  - The four-lane section of SR-24 just east of the Caldecott Tunnel in the eastbound direction, and the four-lane cross section of SR-24 in the westbound direction, just west of the Pleasant Hill Road off-ramp.
  - In the eastbound direction, SR-24 gateway capacity is limited by the Caldecott Tunnel. At the time the data was collected in 2013, the Caldecott Tunnel had three tunnels, each with two lanes where the center tunnel was reversible and was operated in the peak direction. The practical capacity in the peak direction was limited to about 8,000 to 8,400 vehicles per hour. Although a two-lane, fourth bore for the Caldecott Tunnel was opened in late 2013, only the capacity of the off-peak direction was increased for which only one tunnel (two lanes) was previously available.
  - SR-24 is also limited by policy to four lanes in the westbound direction at the Pleasant Hill Road exit where an auxiliary lane ends. The effective westbound capacity constraint at that point is about 8,400 to 8,800 vehicles per hour.
- **Pleasant Hill Road:**
  - Pleasant Hill Road–Taylor Boulevard is limited to two southbound through lanes from where the roadway enters the Lamorinda area to its junction with SR-24. Details of this gateway constraint are to be defined in a Traffic Management Plan developed jointly with TRANSPAC, outlined in Roadways Action-18.

- **Camino Pablo/San Pablo Dam Road:**
  - Camino Pablo/San Pablo Dam Road is limited to one lane southbound from where it enters the Lamorinda area to its junction with SR-24.

There is a broad range of strategies available to address congestion that do not include adding new lanes or building new roads. These strategies focus on improving the efficiency of traffic flow on roads, and thereby increasing the number of vehicles or people that can move through that corridor. They can include the addition of auxiliary lanes to freeways, incident management programs such as the Freeway Service Patrol, changeable message signs that provide information to travelers on travel alternatives, ramp metering, and support for travel alternatives such as park-and-ride lots and HOV bypass lanes at freeway ramps. These strategies are to be implemented on the above roadways, instead of the strategy of adding through lanes.

To address the technical challenges raised by the Lamorinda Gateway Constraints Policy, CCTA has established a gateway constraint analysis methodology as part of its *Technical Procedures*. This methodology takes into account physical roadway constraints, queuing, and recurrent delay at the gateways.

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