TRANSPLAN Technical Advisory Committee

30 Muir Road, Martinez, CA 94553

Participating entities: Cities of Antioch, Brentwood, Oakley and Pittsburg • Contra Costa County
Tri Delta Transit • 511 Contra Costa • Contra Costa Transportation Authority (CCTA) • Caltrans District 4 • BART
TRANSPLAN • State Route 4 Bypass Authority • East Contra Costa Regional Fee & Financing Authority (ECCRFFA)

Meeting Location:
Antioch City Hall, Third Floor Conference Room
Tuesday, April 17, 2018, 1:30 to 3:30 p.m.

AGENDA

NOTE: The Technical Advisory Committee ("TAC") agenda/packet is only distributed digitally, ***no paper copies will be sent.*** *If you need a printed copy please contact TRANSPLAN staff.*

Action/Discussion Items (see attachments where noted [♦])

Item 1: STANDING ITEM: Concord Community Reuse Project (former Concord Naval Weapons Station) Update.

Item 2: Review Draft of the 2018 Countywide Bicycle and Pedestrian Plan. *The Contra Costa Transportation Authority has released the draft 2018 Countywide Bicycle and Pedestrian Plan ("CBPP") for public and agency review. The CBPP outlines the Authority's proposed strategies, priorities and actions needed to support and encourage walking and bicycling in Contra Costa. The attached memo provides background information and "key questions" that CCTA wants the Regional Transportation Planning Committees ("RTPCs") to consider and provide responses to, in addition to any other comments on the Draft CBPP. CCTA is requesting formal comments from the RTPCs by May 25. Plan documents can be found here: http://keepcontracostamoving.net/documents/* ♦ Page 2

Item 3: Other Business

Item 4: Adjourn to Tuesday, May 15, 2018 at 1:30 p.m.

The TAC meets on the third Tuesday of each month, 1:30 p.m., third floor conference room at Antioch City Hall. The TAC serves the TRANSPLAN Committee, the East Contra Costa Regional Fee & Financing Authority, and the State Route 4 Bypass Authority.

Persons needing a disability-related accommodation should contact Jamar Stamps, TRANSPLAN staff person, at least 48 hours prior to the starting time of the meeting. Mr. Stamps can be reached at (925) 674-7832 or at jamar.stamps@dcd.cccounty.us.

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ITEM 1
CONCORD COMMUNITY REUSE PROJECT (FORMER CONCORD NAVAL WEAPONS STATION) UPDATE

News and Announcements

Posted on: April 12, 2018

Neighborhood Meetings

Thursday, April 26, 2018

6:30 pm

The Church of Jesus Christ of Latter-day Saints

1590 Denkinger Road, Concord, CA 94521

Monday, April 30, 2018

6:30 pm

First Lutheran Church

4000 Concord Blvd, Concord, CA 94519

Wednesday, May 2, 2018

7:30 pm

Cambridge Elementary School

1135 Lacey Lane, Concord, CA 94520

Next ⇒
CRP Program Report - December 2017

Tools

RSS

Notify Me®

Categories

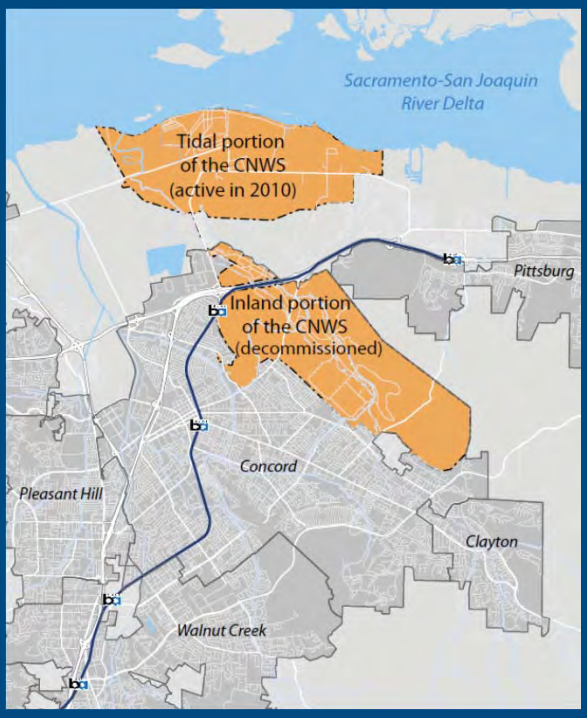
- All Categories
- News and Announcements

Other News in News and Announcements

CRP Program Report - December 2017

Site History

- 30.5 square miles of land
- Tidal area a Navy location since 1942
- Concord Naval Weapons Station (CNWS) was once the primary Pacific coast ammunition port
- Inland Area established to store munitions after 1944 Port Chicago disaster
- Inland Area vacated by Navy in 1999



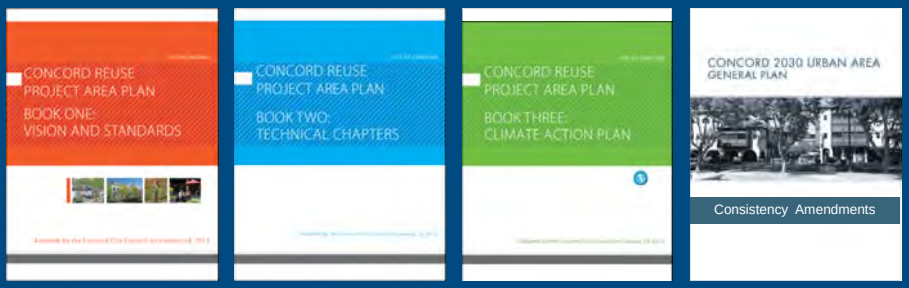
Concord Reuse Project Timeline

2005	**2005:** CNWS Closed
	2006: Planning effort begins
	2008: Evaluation 9 alternatives, including public workshops, leads to designation of the preferred alternative
2009	**2009:** Draft Reuse Plan EIR issued
	2010: Final Reuse Plan EIR certified, Draft Area Plan issued
	2012: Area Plan Adopted, Addendum to Reuse Plan EIR certified
2013	**2013-2015:** Disposition Planning, Negotiation and oversight of remediation activities, Section 7 and Section 106 consultations
2016	**2016**: Planning for transferring of property, Selection of Master Developer, Continuation of Environmental Permitting
2017	2017: Initiation of Specific Plan and Community Advisory Committee, Initiation of Infrastructure Master Plan

Concord Community Reuse Project

Key Documents Available

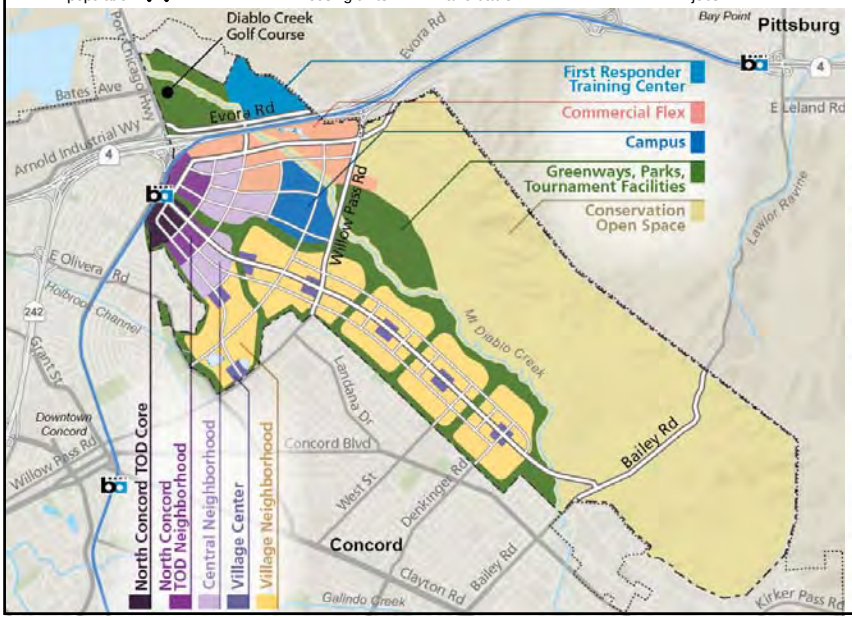
- **2010 Concord Community Reuse Plan**
  - Divides the property into parcels by land uses
- **2012 Reuse Project Area Plan – 3 books**
  - Specific Plan to be developed and used by the Master Developer to carry out the Area Plan and its standards



Concord Community Reuse Project

The Area Plan: the Community's Vision-2012

29,000 population | 12,000 housing units | 25% affordable | 27,000 jobs




Core Mixed-Use


Campus


Central Neighborhood


Commercial Flex


Village Neighborhood


Greenways and Parks

Area Plan Development Program Summary

Type	Amount
Housing	12,270 units
Commercial Space	6.1 million s.f.
Employment	26,530 jobs
Population	28,800
Parks/Open Space	3,501 acres

Concord Community Reuse Project

Book One: Vision and Standards

Street, Transit Network, and Bicycle Network Standards

- **Streets**
  - Number of travel lanes
  - Typical lane widths
  - Parking Lanes
  - Street Trees
- **Transit Network**
  - Transit on/off-peak headways
  - Spacing of transit stops
  - Location of dedicated lanes
  - Signal transit priority
- **Bike Network**
  - Lanes
  - Lane Widths

Concord Community Reuse Project

Community Input - 2017

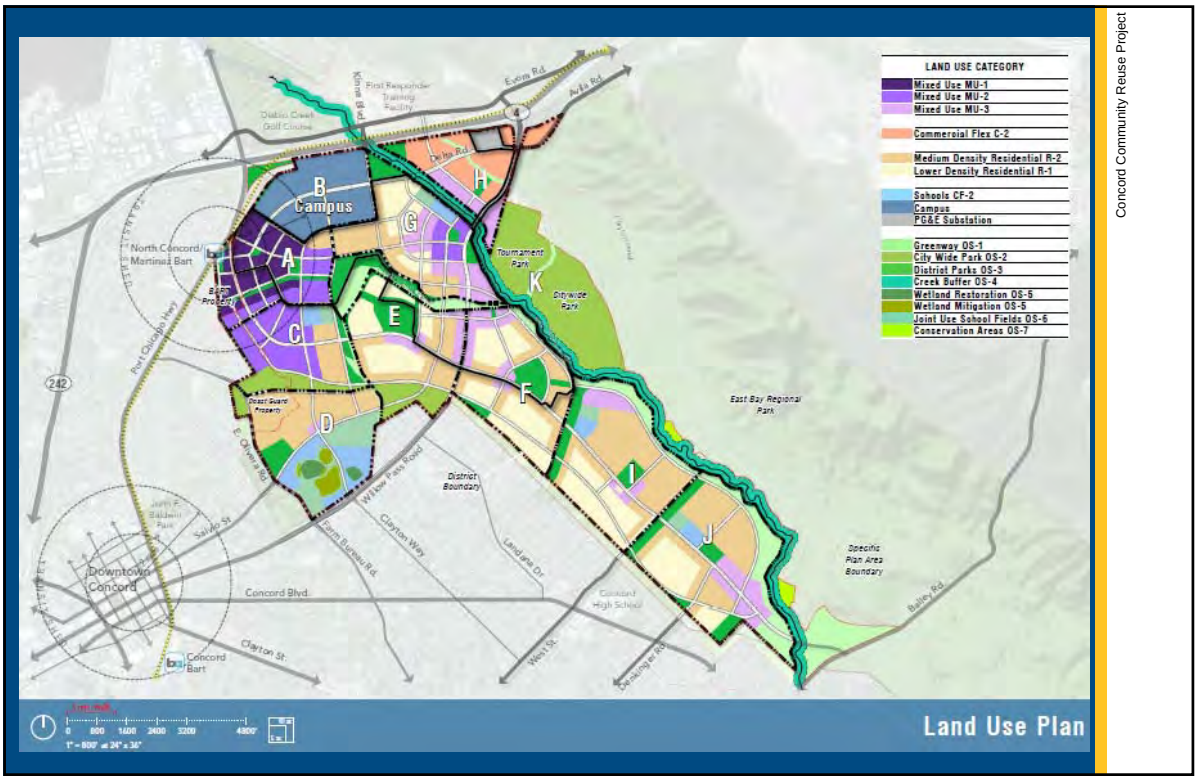
Prior Community Workshops/Meetings

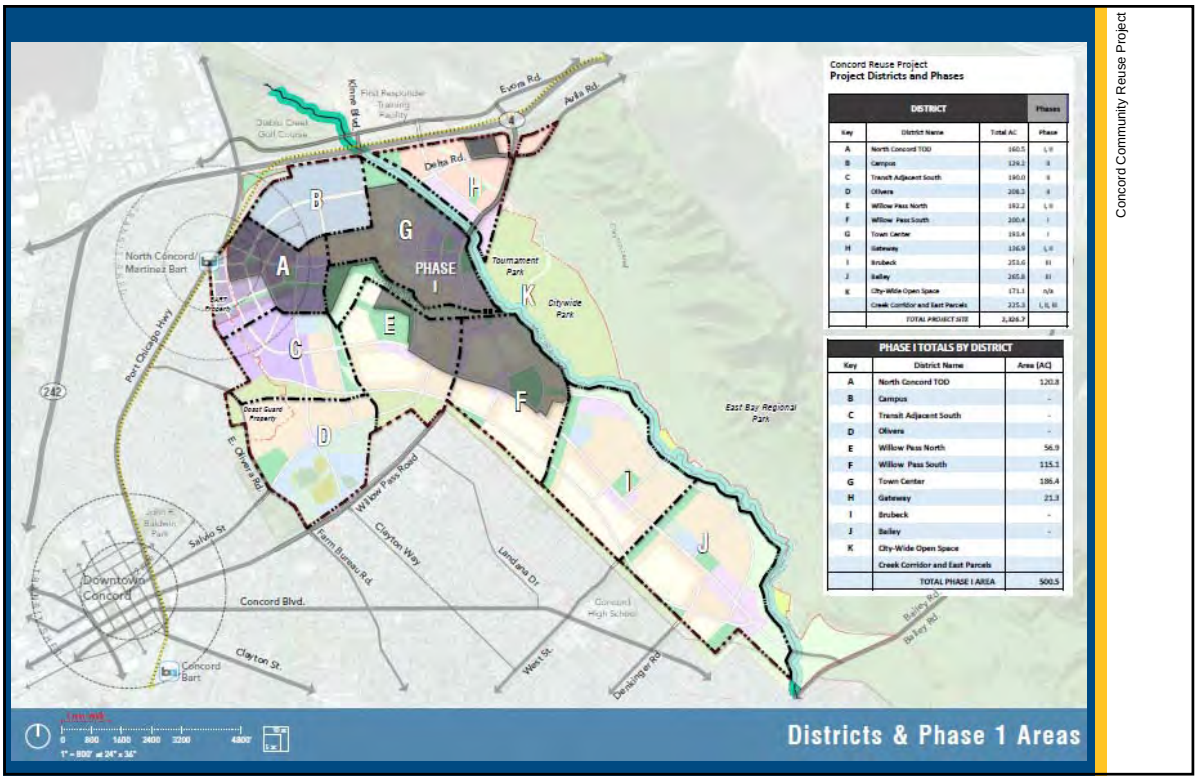
- *March 18, June 17, September 23, 2017*
- *CAC – 12+ meetings, tours*
- *Planning Com./City Council Study Sessions*

Additional Community Input Anticipated - 2018

- CAC meetings; third Tuesdays – each month; Council Chamber
- Neighborhood Meetings/Community Workshops
- Planning Commission/City Council Study Sessions
- CEQA / Environmental process
- Website (obtain additional info./request notification)
  http://www.concordreuseproject.org

Concord Community Reuse Project

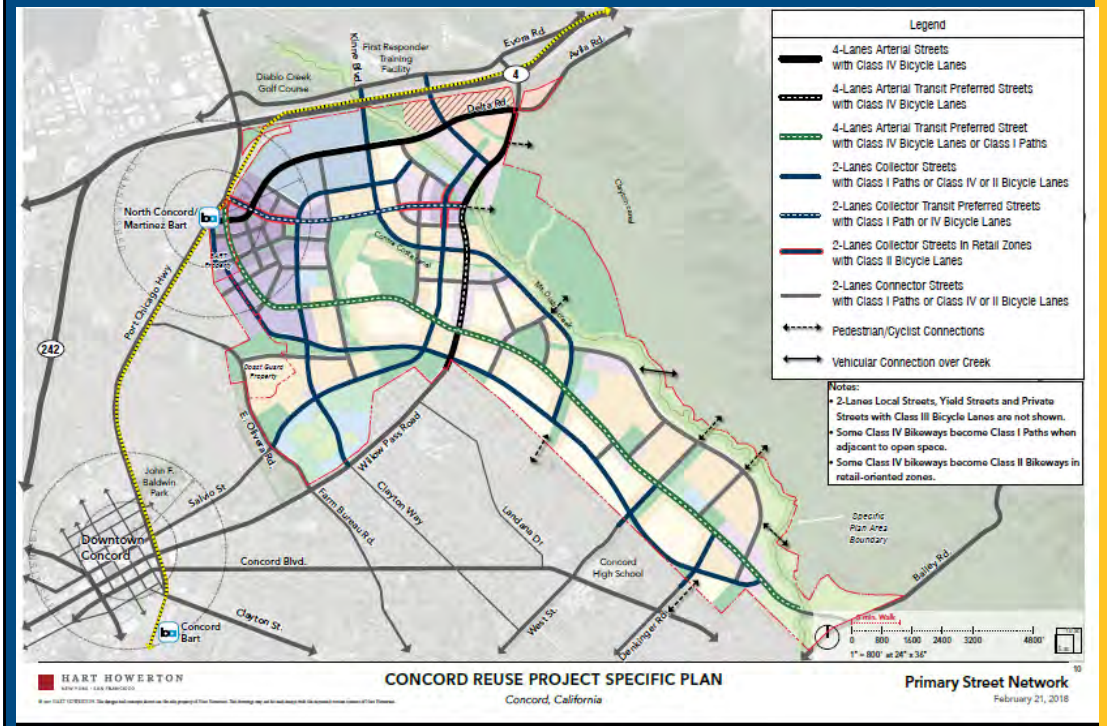

LAND USE CATEGORY
Mixed Use MU-1
Mixed Use MU-2
Mixed Use MU-3
Commercial Flex C-2
Medium Density Residential R-2
Lower Density Residential R-1
Schools CF-2
Campus
PG&E Substation
Greenway OS-1
City Wide Park OS-2
District Parks OS-3
Creek Buffer OS-4
Wetland Restoration OS-5
Wetland Mitigation OS-5
Joint Use School Fields OS-6
Conservation Areas OS-7
Campus
Tournament Park
Citywide Park
East Bay Regional Park
Specific Plan Area Boundary
District Boundary
Downtown Concord
Concord Blvd.
Clayton St.
Willow Pass Road
Land Use Plan
Concord Community Reuse Project


Concord Reuse Project
Project Districts and Phases
DISTRICT
Phases
PHASE I TOTALS BY DISTRICT
PHASE I
Districts & Phase 1 Areas
Concord Community Reuse Project

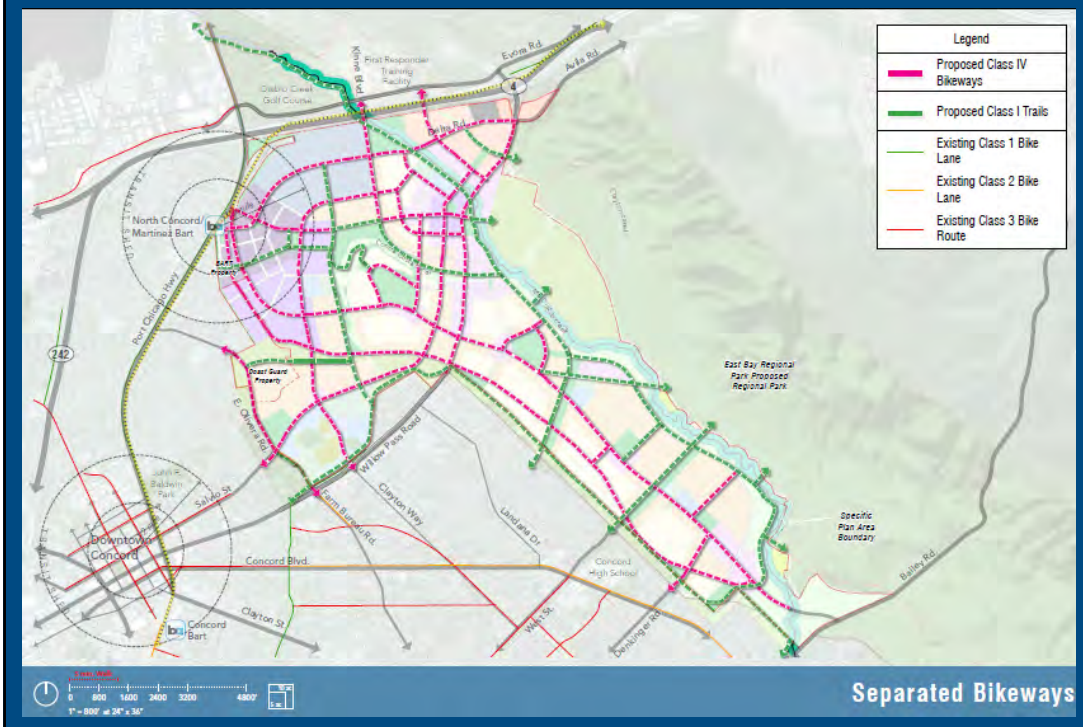
Key Transportation Themes

- **Creating Complete Streets**
  Designed with meeting the needs of multiple modes
- **Connecting the Community**
  Providing connectivity to enable multiple convenient routes to destinations
- **Managing Parking Needs**
  Implementing parking management to create a community where walking, bicycling and public transit are the preferred modes of travel
- **Reducing Traffic Impacts**
  Designing internal circulation networks and transportation demand management measures to mitigate off-site impacts

Concord Community Reuse Project



Concord Community Reuse Project



Concord Community Reuse Project

Methodology

- **CCTA traffic model –** *used as the basis on which to build the project model for developing daily and peak hour traffic projections*
- **Model Refinement –** *steps were taken to improve and further develop the model consistent with 2017 conditions.*
- **Model Validation –** *iteratively calibrated and validated to ensure a high level of confidence in its' forecasting ability at the local level*
- **Future Year Model Development –** *model further developed to assess 2040 traffic both with and without the Project.*
- **Off-Model Refinements –** *model further calibrated to account for mode shares*

Concord Community Reuse Project

Model Scenario

Developer team has been building, studying and making iterative changes to the traffic model. Three model scenarios are being studied to understand the transportation effects of the Project:

- **Year 2017 - Existing Conditions**
- **Year 2040 - No Build Alternative**
- **Year 2040 - Build Alternative**

Traffic consultants involved:

Fehr & Peers – for master developer

Kittelson & Associates - City's independent CEQA consultant

Concord Community Reuse Project

Approach

- Understand the forecast of future daily and peak hour vehicle traffic flows within the Project, as well as understand the incremental increase to off-site intersections, and potential off-site impacts associated with the Project.
- Determine mitigations necessary for the project.
- Coordinate with CCTA and neighboring jurisdictions.
- Establish a coordinated mitigation program

Concord Community Reuse Project

Anticipated Timeline – Short term

2018

- Initial Study/NOP – Q2/Q3
- Coordination with regional/local agencies – Q2/Q3
- Admin. Draft Specific Plan – Q2/Q3
- Modeling of traffic impacts – Q3/Q4

2019

- Draft EIR – Q1/Q2

Concord Community Reuse Project

Anticipated Timeline – Mid to Long term

Concord Reuse Project anticipates a 30-yr Horizon

Timeline

- Summer 2019 – Review and adoption of the Specific Plan and Environmental documents.

Phase 1

- 2020-22 Grading/Utilities, Road Improvements Installed
- 2023-25 Vertical Construction start – Stage 1
- 2025-30 Vertical Construction – Stages 2 and 3

Future Phases

- Phase 2 – 2031 – 2039
- Phase 3 – 2040 – 2046

Concord Community Reuse Project

Questions

Concord Community Reuse Project

ITEM 2
REVIEW DRAFT OF THE 2018 COUNTYWIDE BICYCLE AND PEDESTRIAN PLAN

CONTRA COSTA
transportation
authority

MEMORANDUM

Date April 4, 2018

To RTPC Managers

From Brad Beck

RE **Public Review Draft of the 2018 Countywide Bicycle and Pedestrian Plan**

The Contra Costa Transportation Authority has released the draft 2018 Countywide Bicycle and Pedestrian Plan (CBPP) for public and agency review. The CBPP outlines the Authority's proposed strategies, priorities and actions needed to support and encourage walking and bicycling in Contra Costa. The Authority has long supported alternatives to driving alone as an important goal, and encouraged walking and bicycling as a way to support our communities and our environment. The vision for the Authority's first Countywide Transportation Plan (CTP) included "enhanced pedestrian and bicycle facilities" and the 2000 CTP established a goal to "expand safe, convenient and affordable alternatives to the single-occupant vehicle."

The Draft 2018 CBPP reflects the many changes that have occurred since the last plan in 2009. Over those last nine years, new best practices for supporting walking and bicycling have been developed, local agencies have implemented new active transportation plans, and new funding sources for active transportation have been created. CCTA also recently adopted the 2017 Countywide Transportation Plan, which refined the Authority's overall policies and implementation program. Most importantly, public support for and understanding of the importance of walking and bicycling has continued to grow.

The Draft 2018 CBPP also reflects what we heard from the public and our agency partners in Contra Costa and the region. The Authority engaged the public through online surveys and interactive mapping, an online "town hall", and "pop-up" events throughout

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Phone 925 256 4700 · Fax 925 256 4701 · www.ccta.net

the county. Authority staff also met with local staff to discuss options for updating the plan.

Respondents identified several approaches as most important, including:

- Developing a "low-stress" backbone bicycle network, that is, one that increases bicycling safety and comfort by closing gaps in the bicycle network, eliminating barriers to direct travel, and connecting key destinations;
- Conducting corridor studies that recommend appropriate, low-stress bicycle and pedestrian facilities and incorporate new best practice design guidelines (e.g., protected bikeways, bicycle and pedestrian accommodations at interchanges);
- Improving pedestrian facilities by closing gaps in sidewalks, and addressing crossing and accessibility barriers; and
- Assisting local jurisdictions with new best practice designs, funding strategies, and bicycle and pedestrian planning in the context of new Senate Bill 743 requirements.

The Draft 2018 CBPP reflects these and other approaches. It retools the Countywide Bikeway Network to focus on and support the creation of a connected backbone network of low-stress facilities. The concept of Level of Traffic Stress (LTS), which is being used more often throughout the U.S., was key in that retooling of the network. (This approach, which was developed by the Mineta Transportation Institute at San Jose State University, analyzes roads and trails to determine how stressful they are for bicyclists; each is given a rating from 1 to 4, depending on the facility scores on a number of criteria.) When fully implemented, a low-stress Countywide Bikeway Network would greatly increase comfortable access to jobs, shopping, schools, parks and transit for bicyclists. Completing this network; however, would be expensive. The CBPP, using planning-level costs, estimates that building the future facilities could take around $1 billion (2018 dollars). Expanding the network beyond the backbone would add to that cost.

The Draft CBPP defines the Pedestrian Priority Areas using more clearly identified criteria, including density of housing or jobs, the proximity of housing and retail uses and existing street patterns.

The Draft CBPP would also add several new implementation actions, including:

- Implementing Vision Zero and systematic safety approaches
- Ensuring equity in bicycle and pedestrian investments
- Establishing project priorities
- Supporting "quick build" projects
- Considering curbside management
- Considering bicycle and pedestrian improvements as CEQA mitigation measures
- Streamlining calls for projects

The appendices reflect the evolution of bicycle and pedestrian "best practices". They include, for example, new approaches like Class IV separated bike lanes and cycle tracks. The appendices also include more recommendations on which intersection, crosswalk and bicycle facility approaches are appropriate in which contexts.

BICYCLE AND PEDESTRIAN PROJECT COSTS

The Authority's Comprehensive Transportation Project List (CTPL) contains 328 bicycle-pedestrian or Safe Routes to School projects with a total cost of over $1.4 billion. These projects were identified by local jurisdictions and other agencies. The 2017 CTP; however, identified only about $172 million available in the future for bicycle, pedestrian and safe routes to school projects and an additional $790 million if new sources become available. This leaves a deficit of about $433 million. We expect that, as new bicycle and pedestrian plans and corridor studies are completed, more projects will be added to the CTPL and consequently this deficit could grow.

KEY QUESTIONS

Authority staff would like to review the Draft 2018 CBPP with the RTPCs to hear their comments and suggestions. While we want to hear comments on any part of the plan, we have identified several key questions we would like your thoughts on.

- Pedestrian Priority Areas. The draft CBPP identifies pedestrian priority areas more precisely than the 2009 CBPP. The proposed areas were designated using several factors: forecast growth and mix of uses, local Priority Development Areas (PDAs), and an existing walkable character. Areas around schools and near high-frequency transit are also included within the PPAs (although not mapped). Are

these the areas where the Authority should give priority to funding for pedestrian improvements.

- Low-stress Backbone Bicycle Network: The draft CBPP identifies a network of bikeways — the Countywide Bikeway Network, or CBN — that will provide a "backbone" for the broader system of bikeways throughout Contra Costa. This network is built from the network in the 2009 plan with a few changes. The major change, however, is that the 2018 CBPP proposes that the CBN be built as a "low stress" network, that is, that all parts of the CBN are rated as LTS 1 or LTS 2, using the Mineta Institute's "level-of-traffic-stress" methodology. Are the bikeways proposed as part of the CBN the best routes to create the backbone network? The 2018 CBPP does foresee some realignments as agencies develop the corridor plans encouraged in the plan (see below).
- Implementing the CBPP: The draft 2018 CBPP identifies 23 actions for the Authority to take to carry out the plan as well as actions that the Authority hopes that local, regional and State agencies will undertake. Are any actions missing? Which should the Authority carry out first? We would especially like feedback on the following proposed actions:
  - Establish Project Priorities – The draft CBPP identifies the completion of a safe, complete pedestrian network with PPAs and a low-stress backbone bikeway network as priorities. Should the Authority work with its partners to set more detailed priorities for use in funding decisions?
  - Complete Street Corridor Studies – The draft CBPP supports the development of complete street corridor studies to determine the most effective and cost effective solutions to pedestrian and bicycle access issues. The Authority has funded a similar plans and studies before. Should the Authority set aside funding specifically for complete street corridor studies? Which corridors should be studied first? Should they, consistent with Measure J's emphasis on multi-jurisdictional planning, address multi-jurisdictional corridors first?
  - Bicycle and Pedestrian Improvements as CEQA Mitigation Measures – The draft 2018 CBPP proposes to identify ways that bicycle and pedestrian improvements could be used as mitigation measures, especially with the shift from delay-based CEQA analyses to VMT-based measures. Would developing a defensible method for using such improvements to mitigate impacts of projects through CEQA be useful? What concerns would you have?

- Best Practices – The draft 2018 CBPP includes two appendices — the Best Practice Pedestrian Treatment Toolbox and the Best Practice Bicycle Design Guidelines — that update the best practices section of the 2009 CBPP. What is the best way to get this information out to agency staff?

The draft CBPP contains other policies and strategies that we would also like your comments on.

The draft CBPP and appendices can be downloaded from the plan website: http://keepcontracostamoving.net/documents/

We would like formal comments by May 25 so that the Authority can adopt the 2018 CBPP in July. Staff will also collect any comments made during our meetings with the RTPCs.

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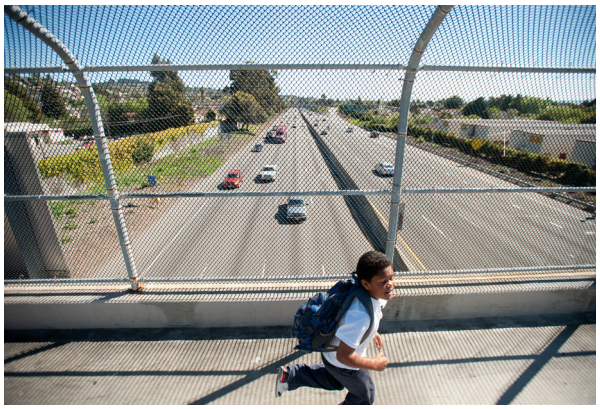

Contra Costa Countywide Bicycle and Pedestrian Plan

Public Review Draft

Prepared by
Fehr & Peers

WC16-3343

March 2018

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Appendices

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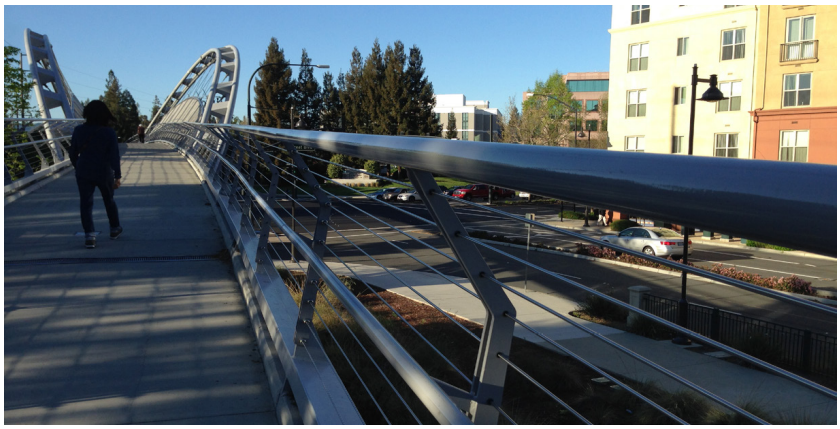
Executive Summary



To support and encourage walking and bicycling in Contra Costa, the Contra Costa Transportation Authority (CCTA or Authority) adopted its first Contra Costa Countywide Bicycle and Pedestrian Plan (CBPP) in 2003 and updated it again in 2009. The CBPP builds on and expands the goals, policies and strategies of the Countywide Transportation Plan (CTP). Both plans set goals for increasing walking and bicycling and identify actions the Authority and its partners should take to achieve them.

Numerous studies and research, in a variety of communities, have demonstrated the benefits of creating an environment where walking and bicycling are safe, comfortable and convenient, including:

- Increased walking and bicycling can benefit air quality by reducing emissions and energy use from motor vehicles
- Improving access by foot or bike can make transit more convenient
- Regular walking and bicycling can reduce mortality rates and health care costs
- Walkable communities are associated with higher home values and added bicycle facilities are associated with increased retail sales
- Bicycle and pedestrian facilities cost less to build and maintain

The 2018 CBPP reflects many new policies, best practices and standards developed over the last decade as well as newly-adopted local active transportation plans. New funding for pedestrian and bicycle projects have become also available. Especially important is the increased interest in — and support for — walking and bicycling.

The 2018 CBPP makes a number of updates to reflect changes since 2009. Three new approaches are especially key in the update.

What We Heard

To develop the 2018 CBPP, the Authority took new approaches to public outreach. This outreach included an update website with surveys and interactive map, "pop-up" events throughout the county, and an online town hall.

From the public, we heard several themes:

- Improve pedestrian crossings
- Add separated bikeways
- Connect the different pieces of the bicycle and pedestrian networks
- Educate all road users to improve safety and enforce "rules of the road"
- Add bike parking at destinations
- Reduce traffic speeds
- Improve Safe Routes to School and to Transit

From local staff, we heard support for several options:

- Identify short- and long-term project priorities
- Identify a regional backbone bikeway network
- Support complete streets corridor studies
- Integrate bike/pedestrian planning with efforts to reduce VMT and meet SB 743 requirements
- Incorporate Best Practice Design Guidelines
- Create a pedestrian crossing toolkit
- Provide guidelines for improving interchanges and intersections
- Identify innovative funding strategies

FOCUS ON THE "INTERESTED BUT CONCERNED"

To encourage more walking and bicycling, the 2018 CBPP reflects the concept of the four types of bicyclists: the one percent who are "strong and fearless" and who will ride even on stressful streets, the seven percent who are "enthused and confident" and who prefer dedicated bike facilities, the 60 percent who are "interested but concerned" and who need clearly separated facilities to feel comfortable riding, and the 33 percent who either cannot or will not ride. The 2018 CBPP explicitly focuses on creating a bicycle network that reflects the needs of the "interested but concerned" 60 percent.

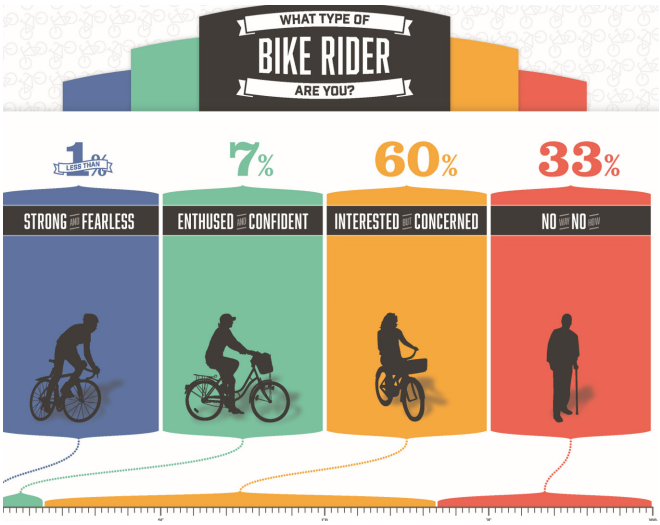
LEVEL OF TRAFFIC STRESS

The 2018 CBPP introduces a new way of evaluating a roadway's level of traffic stress (LTS). In this approach, roadways are evaluated based on several factors — speed and number of vehicles and width of bicycle facilities — to determine how stressful a roadway is for bicyclists. Roadways are given a rating from one (least stressful) to four (most stressful). The 2018 CBPP incorporates the LTS approach to create a network of bikeways that better serve the 60 percent of people who are "interested but concerned".

NEW STANDARDS AND BEST PRACTICES

The 2018 CBPP supports the new best practices developed since the last plan. These new practices and standards focus on making crosswalks and bikeways safer and more connected. This goal is in keeping with the CBPP focus on encouraging the "interested but concerned".

One of the most significant of those new standards is the separated bikeway. These bikeways, also known as cycle tracks, are physically separated from motor traffic



with some kind of vertical separation but are distinct from the sidewalk. They combine the user experience of a separated path with the on-street infrastructure of a conventional bike lane.

COMPLETE STREETS PLANS

The 2018 CBPP encourages local agencies in Contra Costa to develop "complete street" plans, both alone and collaboratively. These corridor plans would identify designs for streets, especially those on the Countywide Bikeway Network, that would transform streets that are currently high-stress — as well as where low-stress facilities are not yet been proposed in other planning efforts —and identify appropriate implementation strategies for low-stress facilities.

The Draft 2018 CBPP

GOALS

1. Encourage more people to walk and bicycle
2. Increase safety and security for pedestrians and bicyclists
3. Create a safe, connected, and comfortable network of bikeways and walkways for all ages and abilities

4. Increase the livability and attractiveness of Contra Costa's communities and districts

5. Equitably serve all of Contra Costa's communities while ensuring that public investments are focused on projects with the greatest benefits

OBJECTIVES

1. Increase the share of all trips made by walking and bicycling in Contra Costa
2. Reduce the rate of pedestrian and bicycle fatalities and injuries per capita
3. Increase the number of miles of low stress bikeways in Contra Costa
4. Increase the number of jurisdictions in Contra Costa with bicycle, pedestrian, or active transportation plans
5. Integrate complete street principles and best practices into Authority funding and design guidance

Walking

"Walking is man's best medicine" – Hippocrates

Everyone is a pedestrian for at least part of all trips, whether that means walking to a bus stop, rolling to a train station, shopping, or even just getting to and from one's car. To move about safely and comfortably, pedestrians need well-designed and maintained walkways and crosswalks that provide access to jobs, homes, shopping, schools, transit stations, parks and other common destinations.

To encourage more walking, the CBPP identifies a number of types of needed improvements:

- Walkways, curb ramps and safer crossings
- Traffic calming
- More direct connections between destinations
- Streetscape improvements

Recognizing the need to set priorities for limited funding, the CBPP identifies Priority Pedestrian Areas. These areas have:

- High residential density
- High combined residential & retail employment density
- High combined total employment & retail employment density
- High total employment density
- Within a Priority Development Area with higher forecast growth

These areas also include a more diverse mix of uses and a connected pedestrian network that supports pedestrian activity, routes within a half mile of a public school, and routes within a half-mile of a transit stop served by at least one bus every 20 minutes.

Bicycling

"The bicycle is the noblest invention of mankind."

— William Saroyan

The 2018 CBPP identifies a network of bicycle facilities that together form a "low-stress Countywide Backbone Network" (CBN). This backbone network, when implemented, will provide a connected set of facilities to serve all ages and abilities and address the barriers created by high-stress arterials and collectors. The CBN consists of only regionally-significant bicycle facilities, either existing or proposed, rated low-stress (LTS 1 or LTS 2).

Of the 662 miles in the CBN, only about 149 miles are currently developed as low-stress facilities. The remaining 513 miles in the CBN will require corridor studies by local jurisdictions and agencies to identify what low-stress facilities will be most appropriate. Ul-

timately, the low-stress CBN would be made up of a full range of facility types, including:

- Multi-use Trails
- Buffered Bike Lanes
- Bike Boulevards
- Separated Bikeways
- Improved Across Barrier Connections at interchanges and other locations

Implementing the Plan

STRATEGIES AND ACTIONS

Through its funding and oversight roles, the Authority can support and encourage walking and bicycling in Contra Costa by:

- Facilitating cross-jurisdictional collaboration on approaches and priorities
- Supporting innovation and new approaches
- Providing education and encouragement
- Offering technical assistance to jurisdictions and agencies
- Funding projects and programs that support the Authority's vision and goals
- Monitoring walking and bicycling and the achievement of CBPP objectives
- Updating Authority plans and procedures

The 2018 CBPP also identifies 20 actions to carry out these strategies as well as an implementation program that divides tasks between the Authority and its partners.

COSTS

CCTA's Comprehensive Transportation Project List (CTPL) contains 328 bicycle-pedestrian or Safe Routes to School projects with a total cost of over $1.4 billion.

Our current estimate of funding committed to bicycle, pedestrian and safe routes to school projects is, however, only about $172 million, according to the 2017 Countywide Transportation Plan (CTP). This will leave a shortfall of about $1.2 billion. The CTP also estimates a potential $790 million that could become available through new funding sources. While this potential funding would significantly reduce the shortfall, a substantial deficit will remain as shown in the following table. This underscores the need to identify new funding sources for bicycle and pedestrian projects, as well as to take advantage of opportunities to bundle these projects with other transportation improvements.

Project Costs and Future Funding

Category	*Estimated Cost or Funding*
Estimated Cost of Bicycle / Pedestrian Projects in the CTPL	$1,405,736,000
Estimated Committed Funding	$172,000,000
Shortfall	$1,233,736,000
Potential Future Funding	$790,000,000
Shortfall	$443,736,000

The 2018 CTP — like the Authority's CTP — is designed as a funding advocacy document. By identifying needed improvements to support walking and bicycling in Contra Costa and the strategies needed to carry them out, the CBPP can help Authority and its partner agencies make a better case for funding those improvements.

Below is a list of acronyms used most frequently in the Countywide Bicycle and Pedestrian Plan:

Acronym	Definition
AASHTO	American Association of State Highway and Transportation Officials
AB 32	Global Warming Solutions Act of 2006
ADA	American with Disabilities Act
ADT	Average Daily Traffic
AHSC	Affordable Housing and Sustainable Communities Program
APBP	Association of Bicycle and Pedestrian Professionals
ARB	California Air Resources Board
ATP	Active Transportation Program
BAAQMD	Bay Area Air Quality Management District
BTA	Bicycle Transportation Account
CBN	Countywide Bicycle Network
BPAC	Bicycle and Pedestrian Advisory Committee
CBPAC	Countywide Bicycle and Pedestrian Advisory Committee
CBPP	Countywide Bicycle and Pedestrian Plan
CCTA	Contra Costa Transportation Authority
CHTS	California Household Travel Survey
CMA	Congestion Management Agency
CMAQ	Congestion Mitigation and Air Quality Program
CTP	(Countywide) Comprehensive Transportation Plan
CTPL	Comprehensive Transportation Project List
EBMUD	East Bay Municipal Utility District
EBRPD	East Bay Regional Park District
FHWA	Federal Highway Administration
GHG	Greenhouse Gas
GMP	Growth Management Program
HSIP	Highway Safety Improvement Program
ITE	Institute of Transportation Engineers
LTS	Level of Traffic Stress
MUTCD	Manual on Uniform Traffic Control Devices

MTC	Metropolitan Transportation Commission
NACTO	National Association of City Transportation Officials
NHTSA	National Highway Traffic Safety Administration
OBAG	One Bay Area Grant program
PBTF	Measure J Pedestrian, Bicycle and Trail Facilities program
PDA	Priority Development Area
RTPC	Regional Transportation Planning Committee
SRTS	Safe Routes to School — also SR2S
TLC	Measure J Transportation for Livable Communities program
TDM	Transportation Demand Management

1. Introduction

Walking and bicycling play an important role in Contra Costa's transportation system: these forms of active transportation improve the quality and vibrancy of our neighborhoods and business districts, extend the range and usefulness of public transit, reduce motor vehicle trips, and promote the health of our communities. The Contra Costa Transportation Authority (CCTA or Authority) has long supported alternatives to driving alone as an important goal, and encouraged walking and bicycling as a way to support our communities and our environment. The Authority first adopted its Contra Costa Countywide Bicycle and Pedestrian Plan (CBPP) in 2003 and updated it again in 2009 to lay out the policies and actions it would take to overcome these challenges and increase walking and bicycling in Contra Costa.

There are many challenges and obstacles, however, to creating a transportation system that supports walking and bicycling and increases the number of trips that people choose to make by foot or by bike. The 2018 CBPP update allows the Authority to respond to these challenges. It builds on our previous efforts and reflects the many changes that have occurred since the last plan in 2009. Over those last nine years, new best practices for supporting walking and bicycling have been developed, local agencies have implemented new active transportation plans, and new funding sources for active transportation have been created. CCTA also recently adopted the 2017 Countywide Transportation Plan, which refined the Authority's overall policies and implementation program. Most importantly, public support for and understanding of the importance of walking and bicycling has continued to grow.

Purpose of the CBPP

The 2018 CBPP will:

- Broaden our understanding of where and why people walk or bicycle in Contra Costa, especially on how to encourage the *Interested but Concerned* group of cyclists

- Harmonize local plans for bicycle and pedestrian networks in Contra Costa to create a clear, connected, and safe system of facilities

- Identify gaps in the bicycle and pedestrian network, including needed across barriers connections (ABCs) and links to transit

- Improve the tools available to evaluate the impacts of land use and network changes on walking and bicycling

What We Heard

Through pop-events across the county, an online survey and interactive map, an online town hall, and meetings with Contra Costa's Regional Transportation Planning Committees (RTPCs) and Countywide Bicycle Pedestrian Advisory Committee (CBPAC), we heard that residents, employees, and visitors are most interested in:

- Developing a low-stress backbone bicycle network that closes gaps in the network, eliminates barriers, connects key destinations, and increases bicycling safety and comfort

- Conducting corridor studies that recommend appropriate, low-stress bicycle and pedestrian facilities and incorporate new best practice design guidelines (e.g., protected bikeways, bicycle and pedestrian accommodations at interchanges)

- Improving pedestrian facilities by closing gaps in sidewalks, and addressing crossing and accessibility barriers

- Assisting local jurisdictions with new best practice designs, funding strategies, and bicycle and pedestrian planning in the context of new Senate Bill 743 (SB 743) requirements

While the Authority does not plan, design or build bicycle and pedestrian facilities — those roles are the responsibility of local jurisdictions and other agencies — the Authority does play an important role in funding projects and programs and working with local jurisdictions and other agencies to make walking and bicycling safer, more convenient and more attractive for everyday Contra Costans.

2. Obstacles and Challenges

Contra Costa is the ninth-largest county in California, encompassing a diverse landscape and distinct communities. Its landscape both accommodates and inhibits walking and bicycling. While most of its developed areas are relatively flat, potentially making walking and bicycling more attractive, the East Bay hills and northern Diablo Range divide the county into five distinct subareas and make intra-county bicycle travel challenging. For more details on existing conditions and challenges facing Contra Costa, see Appendix A, "State of Walking and Biking in Contra Costa."

Diverse Communities

The communities within these subareas are diverse and distinct. Contra Costa includes both lower-income "communities of concern" and higher-income neighborhoods and both pre-war "streetcar suburbs" and post-war more auto-oriented communities.

Older communities that developed in the 19th and early 20th century tend to feature short blocks on a grid, reflecting the earlier pedestrian orientation of those places. Communities that developed in Contra Costa after World War II, when the county's population grew significantly, are marked by greater segregation of land uses and lower-density, larger-scale development designed for access by car. The suburban street design of post-war communities features more circuitous routing in residential areas and arterial streets designed for higher-speed and higher-volume vehicle travel. These features can discourage walking and bicycling by increasing distances between destinations and increasing conflicts with vehicles.

The design of major transportation facilities has also created barriers to walking and bicycling. Freeways especially have limited access across them by first limiting the number of crossing points and by not providing safe and adequate space for pedestrians and bicyclists. Many bridges were also designed with minimal space for pedestrians and bicyclists.

Contra Costa is home to a diverse population. Contra Costa has a "majority-minority" population with 54 percent of the county's population identifying with a race/ethnicity other than white non-Hispanic.[1] The median household income countywide is about $80,000. Areas such as Danville, Lafayette, Orinda, San Ramon and parts of Brentwood tend to have median household incomes greater than $100,000, however, while areas such as Antioch, Bay Point, Martinez, Pittsburg, Richmond and San Pablo tend to have lower median household incomes, less than $75,000 or $50,000.

[1] U.S. Census Bureau (2015). 2011-2015 American Community Survey

Travel Patterns & Collisions

Contra Costa residents drive alone or carpool for most of the trips they take; only 15 percent of trips are made by walking, biking, or taking transit[2] (see **Table 1**). For commute trips only, most Contra Costa residents drive alone, with about 20 percent of residents using non-auto transportation (transit, walking, biking).

Table 1. Contra Costa Mode Split by Trip Type and Length

Mode	All Trips	Commute Trips Only	Short Trips 1 Mile or Less	Short Trips 1 to 3 miles
Drive alone	42%	73%	32%	43%
Carpool	42%	8%	38%	51%
Transit	4%	15%	0%	1%
Walk	10%	3%	27%	2%
Bicycle	1%	1%	3%	2%
Other	1%	0%	0%	1%
Total	100%	100%	100%	100%

Source: CA Household Travel Survey (CHTS), 2012

Contra Costans, however, are more likely to walk for shorter trips, less than one mile in length, and are more likely to bike for trips less than three miles long (see **Table 1**). For the majority of short trips, however, residents still primarily drive, alone or in a carpool. Some of these trips less than one mile long have the potential to be converted to walking or biking trips, and those less than three miles long could potentially be converted to bicycle trips. These conversions are one focus of this 2018 Plan Update.

Pedestrians and bicyclists are disproportionately likely to be killed or injured than those in vehicles. The California Highway Patrol reported that Contra Costa had 62 reported pedestrian fatalities, 1,100 pedestrian injuries, 16 bicycle fatalities and 1,227 bicycle injuries during the 2009–2013 period. While walking and bicycling made up only 11 percent of all trips, pedestrians and bicyclists accounted for about 30 percent of the traffic fatalities in Contra Costa

The patterns of collisions involving both pedestrians and bicyclists are similar. Collisions are concentrated on major arterials, with high level of and in more densely populated areas such as Richmond, San Pablo,

[2] California Household Travel Survey (CHTS), conducted February 2012 to January 2013

Walnut Creek, Pleasant Hill, Concord, and Antioch. Improving pedestrian facilities (e.g. sidewalks and crossing enhancements) and installing low-stress bicycle facilities on these roadways specifically would aim to increase multi-modal safety and comfort, and encourage Contra Costas of all ages and abilities to walk and bike more often.

Figure 1 and **Figure 2** show the density of pedestrians and bicycle collisions, respectively, for 2009 through 2013. Several roadways experienced high numbers of both pedestrian- and bicyclist-involved collisions, including: Clayton Road (Clayton, Concord), San Pablo Avenue (El Cerrito, Hercules, Pinole, Richmond, San Pablo), Willow Pass Road (Concord, Pittsburg, Unincorporated Contra Costa County), Monument Boulevard (Concord, Pleasant Hill), Lone Tree Way (Antioch, Brentwood), and Contra Costa Boulevard (Concord, Pleasant Hill). These roadways share several characteristics: high traffic volumes, high speeds, lack of low stress bicycle facilities, limited designated crossing opportunities, and frequent driveways with resulting conflicts.

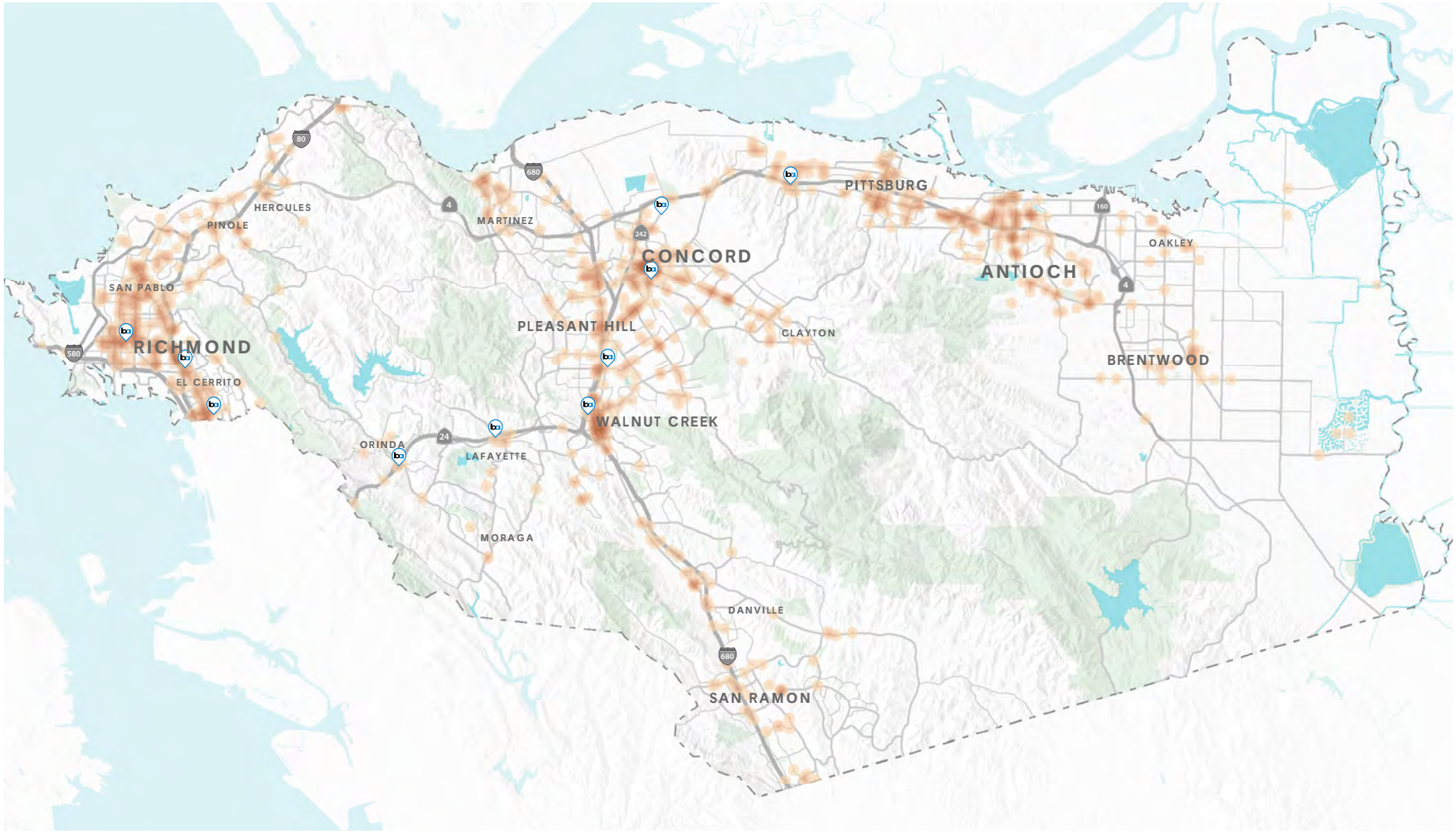
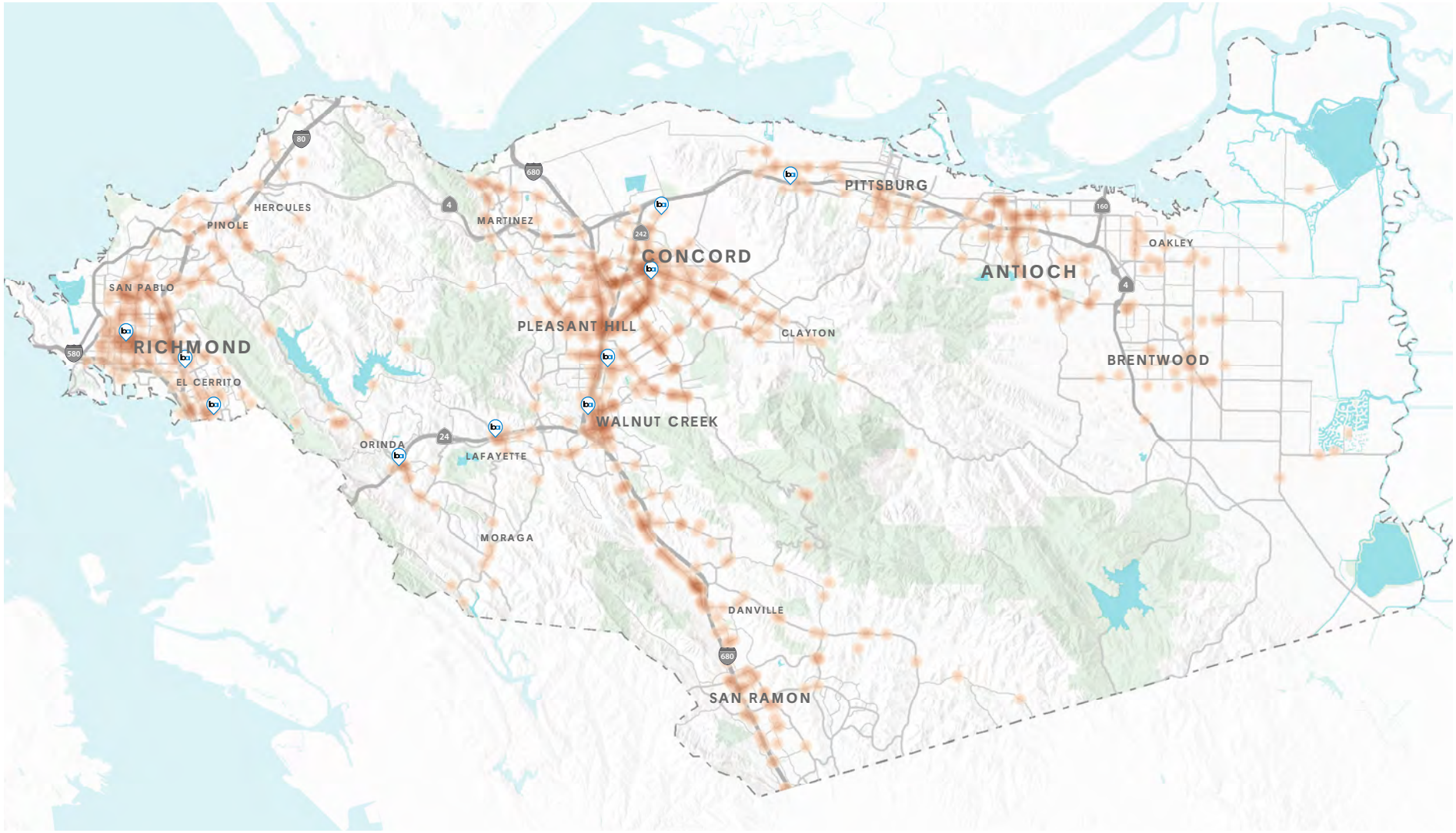


Figure 1

Pedestrian Collisions



Collision Density

Low

High

0 5 10 Miles

N

Figure 2

Bicycle Collisions

Meeting These Challenges

These conditions create a number of challenges to encouraging more walking and bicycling in Contra Costa. The following describes some of the issues these challenges raise as well as some of the projects that the Authority has funded to address them. The intent of the 2018 CBPP is to address these challenges and build on the Authority's — and our partners' — earlier efforts.

Make Across Barrier Connections

Freeways, waterways and other obstacles create barriers to walking and bicycling in Contra Costa. Making connections across these barriers are needed to give pedestrians and bicyclists safe routes to their destinations. The *I-680/Treat Boulevard Study*, now underway, is currently exploring how to improve one such barrier: Treat Boulevard across I-680.

Improve Safety

Both bicyclists and pedestrians are in danger of collisions at a much higher rate than drivers and their passengers. Redesigning our streets and roads to minimize the hazards that people who walk or bicycle face is a key strategy for the Authority. The Authority, for example, funded the *Central Concord Streetscape Improvements Project*, which added a new traffic signal on Clayton Road to provide a safer crossing for people walking from residential areas to the south to shopping and services to the north of the roadway.

Reduce Conflicts

One other way to make walking and bicycling safer and more comfortable is to provide facilities that are separate from roadways. Contra Costa already has a well-developed system of trails that provide these separated connections. Where they meet roadways, however, pedestrians and bicyclists may benefit from improved intersection designs and, in some cases, bridges that cross over the roadways altogether. The *Iron Horse Trail Overcrossing at Treat Boulevard* is one example of a separate bike-pedestrian bridge. The Authority also recently funded another such overcrossing at Bollinger Canyon in Danville.

Link to Transit

Making it easier and safer to walk or bike to transit can benefit all users, by improving access to transit and encouraging active transportation. The *Pittsburg BART Pedestrian and Bicycle Connectivity project* is a good

example. It will construct trails, buffered bikeways and improved crosswalks that will encourage people to walk or bicycle to the new Pittsburg City Center BART station.

Support Bicycling

Bicyclists, like other vehicles, benefit from end-of-trip facilities, including not only safe parking but also repair services and lockers, changing rooms and shower facilities. The recently opened *Bike Station at the Pleasant Hill/Contra Costa Centre BART Station* combines secure parking with repair services for users of the BART system. Another bike station will be funded at the Lafayette and Concord BART stations as well.

Provide Technical Assistance

With limited staff, local jurisdictions often require help with analyzing problems and identifying possible solutions. The Authority provided technical assistance to 14 different jurisdictions. These analyses focused on field observations; vehicle and pedestrian counts; signal warrant assessment; and conceptual design plans and cost estimates.

Fund Studies

Converting large-scale plans to real projects will often require complete street studies. These more detailed studies will identify and design the specific changes needed to accommodate bicyclists, pedestrians, and all other users of the facility. The *San Pablo Avenue Complete Streets Study*, developed jointly by the cities of San Pablo and Richmond, is an example of collaborative planning leading to new designs for incorporating improved pedestrian and bicycle facilities into a major corridor in West County. The *Olympic Boulevard Trail Corridor Study* outlined the alignment and facilities needed to better accommodate pedestrians and bicyclists on this corridor between Lafayette and Walnut Creek.

3. Vision, Goals, Policies and Strategies

One of the Authority's long standing goals is to *expand safe, convenient, and affordable alternatives to the single-occupant vehicle*. Walking and bicycling play a key role in meeting that goal, both on their own and by supporting increased use of transit. Walking and bicycling also support the Authority's long-range vision of promoting a *healthy environment and strong economy to benefit all people and areas of Contra Costa*.

This chapter lays out the Authority's vision for walking and bicycling in Contra Costa, the goals that the 2018 CBPP Update is designed to achieve, and the strategies and actions that will be undertaken to achieve those goals.

Vision

People of all ages and abilities, and in all neighborhoods and districts in Contra Costa, can walk and bicycle safely, comfortably, and directly to their chosen destinations thereby improving health, reducing emissions of greenhouse gases, and making our transportation system more sustainable.

Goals

To support and achieve this vision, the 2018 CBPP Update sets out five goals:

- Encourage more people to walk and bicycle
- Increase safety and security for pedestrians and bicyclists
- Create a safe, connected, and comfortable network of bikeways and walkways for all ages and abilities
- Increase the livability and attractiveness of Contra Costa's communities and districts
- Equitably serve all of Contra Costa's communities while ensuring that public investments are focused on projects with the greatest benefits

Objectives

To measure progress on achieving the vision and goals, the 2018 CBPP Update identifies the following objectives:

- Increase the share of all trips made by walking and bicycling in Contra Costa
- Reduce the rate of pedestrian and bicycle fatalities and injuries per capita
- Increase the number of miles of low stress bikeways in Contra Costa
- Increase the number of jurisdictions in Contra Costa with bicycle, pedestrian, or active transportation plans
- Integrate complete street principles and best practices into Authority funding and design guidance

The Authority will monitor their achievement toward the vision and goals as part of its ongoing monitoring efforts, including planned bi-annual updates to the 2018 CBPP Update performance metrics.

Strategies

The Authority serves as both the transportation sales tax authority and the congestion management agency (CMA) for Contra Costa. In the former role, the Authority manages the revenues received through Measure J, Contra Costa's transportation sales tax. This also includes managing the Measure J Growth Management Program (GMP). The GMP manages growth through a set of requirements, from collaborative planning among jurisdictions to assessing transportation mitigation fees and other impact programs. As the CMA for Contra Costa, the Authority influences regional transportation planning by directing how regional, State and federal funds are spent. In both roles, the Authority collaborates with local, regional and State agencies to plan, design, and oversee the construction of new projects and manage programs.

Through its funding and oversight roles, the Authority can support and encourage walking and bicycling in Contra Costa by:

- Facilitating of cross-jurisdictional collaboration on approaches and priorities
- Supporting innovation and new approaches

- Providing education and encouragement
- Offering technical assistance to jurisdictions and agencies
- Funding projects and programs that support the Authority's vision and goals
- Monitoring walking and bicycling and the achievement of CBPP objectives
- Updating Authority plans and procedures

Actions

The 2018 CBPP Update identifies a number of actions to advance these strategies.

COLLABORATE

1. Identify a **countywide system** of facilities that support and encourage walking and bicycling by people of all ages and abilities. This system will include:

    a. A **Countywide Bikeway Network** (CBN) that connects all communities in Contra Costa via existing and future low-stress, "backbone" facilities

    b. Designated **Priority Pedestrian Areas** (PPAs) where residential, commercial, and/or retail uses are concentrated, such as downtowns and Priority Development Areas, and along routes to transit and other key activity centers such as schools

2. Work with Caltrans and local agencies to identify and make **Across Barrier Connections** — especially freeway interchanges and waterways that inhibit access to nearby destinations — with emphasis on those connections where demand and safety issues are greatest

3. Work with local jurisdictions and agencies and the public to develop **Complete Streets Corridor Studies** that identify improvements that would best serve all users within the corridor. Give priority to corridors on the CBN or within PPAs

4. Develop a countywide approach to **Vision Zero** that uses a data-driven and systemic approach in identifying the leading causes of traffic injuries and efficient and cost-effective engineering countermeasures

5. Work with local sponsors to **manage development and construction** of major bicycle and pedestrian projects

6. Develop a countywide approach for **bicycle wayfinding** throughout Contra Costa that creates a comprehensive set of destinations, standards, and requirements for implementation

7. Work with local agencies to investigate potential **"quick build" projects** to test innovative designs efficiently, using materials that can easily be modified and adapted

INNOVATE

8. Encourage innovative **bicycle facilities** including Class IV separated bikeways and bicycle superhighways

9. Support **bike share and e-bike share** programs, including both station-based and dockless systems, as ways to encourage greater bicycling within Contra Costa

10. Identify and employ **new, cost-effective sources of data** to monitor and track bicycling and walking within Contra Costa

ASSIST

11. Develop and update **tools for assessing the impact of bicycle and pedestrian improvements** on travel behavior including vehicle miles traveled (VMT) for use in new CEQA analyses and development mitigation programs

12. Provide **technical assistance and training** to local agencies in planning and designing bicycle, pedestrian, and safe routes to school improvements

SUPPORT AND ENCOURAGE

13. Develop and regularly update **best practices resources** to provide local agencies with current best practices for creating safe, comfortable, and connected bicycle and pedestrian facilities. These resources will build on direction from Federal Highway Administration (FHWA), Institute of Transportation Engineers (ITE), National Association of City Transportation Officials (NACTO), American Association of State Highway and Transportation Officials (AASHTO) and other nationally or internationally recognized guides, and will include:

    a. Bikeway facility design

    b. Protected intersections

    c. Bicycle parking and other end-of-trip facilities

    d. Crosswalk toolkit

14. Continue support for 511 Contra Costa **programs that educate both bicyclists and drivers** on safe travel and rules of the road

FUND

15. Focus Authority-allocated funding first to bicycle and pedestrian projects that improve the level-of-traffic-stress on **high-priority facilities** identified in the CBPP; **allow interim projects** on those facilities that, while not fully low-stress, make substantive improvements

16. Allocate funding so that **all communities** within Contra Costa benefit from investments in bicycle and pedestrian projects and programs

17. Support local agencies in the development of bicycle and pedestrian applications for **funding through other programs**, such as the State's Active Transportation Program or Affordable Housing-Sustainable Communities Program

18. Review the guidance in the Measure J Growth Management Program for the regional and local mitigation programs to identify potential ways the **programs might be revised** to fund bicycle and pedestrian improvements as part of new developments

MONITOR

19. Regularly monitor the system to track walking and bicycling, including **rates of use, collisions and fatalities, and achievement of performance measures** set in the CBPP; and report on the results of this monitoring to the Authority, its partner agencies, and the public

UPDATE

20. Update Measure J guidance and procedures to:

    a. Incorporate **complete streets considerations** into the project selection and funding decisions

    b. Require implementation of **bicycle wayfinding**, where applicable, into Measure J-funded projects, consistent with the adopted countywide wayfinding program

    c. Encourage sponsors using Measure J return-to-source funding to use this funding to **carry out their complete streets policies** and the recommendations of the CBPP

4. Pedestrian Facilities

While walk trips make up only ten percent of the total,[3] walking is a critically important mode of travel. Everyone is a pedestrian for at least part of all trips, whether that means walking to a bus stop, rolling to a train station, shopping, or even just getting to and from one's car. To move about safely and comfortably, pedestrians need well-designed and maintained walkways and crosswalks that provide access to jobs, homes, shopping, schools, transit stations, parks and other common destinations. Walking, like bicycling, can also provide significant health benefits and contribute to vibrant neighborhoods and districts.

This chapter outlines the Authority's approach to supporting walking in Contra Costa, identifies Priority Pedestrian Areas (PPAs) where this support is most encouraged, and provides references to appendices with more detailed design guidance and resources for pedestrian facilities.

Pedestrian Priority Areas

The need for pedestrian facilities is generally greatest where residential, employment, or retail densities are higher; where those uses are nearest to each other; and where conflicts with vehicles are greatest. To focus the limited funding available, the Authority has identified areas where pedestrian improvements are most needed and, consequently, where funding should be prioritized. These Pedestrian Priority Areas (PPAs) are identified using several criteria, listed below. The CCTA Countywide Travel Demand Model for year 2040, which estimates long-term development and density for different land uses in Contra Costa, was used in this process. The criteria also incorporate Priority Development Areas (PDAs), developed by the Metropolitan Transportation Commission (MTC) as part of its long-range Regional Transportation Plan, Plan Bay Area 2040.

The PPAs shown in the **Figure 3** series identify areas across Contra Costa that meet at least one of the following criteria:

- High residential density
- High combined residential & retail employment density
- High combined total employment & retail employment density

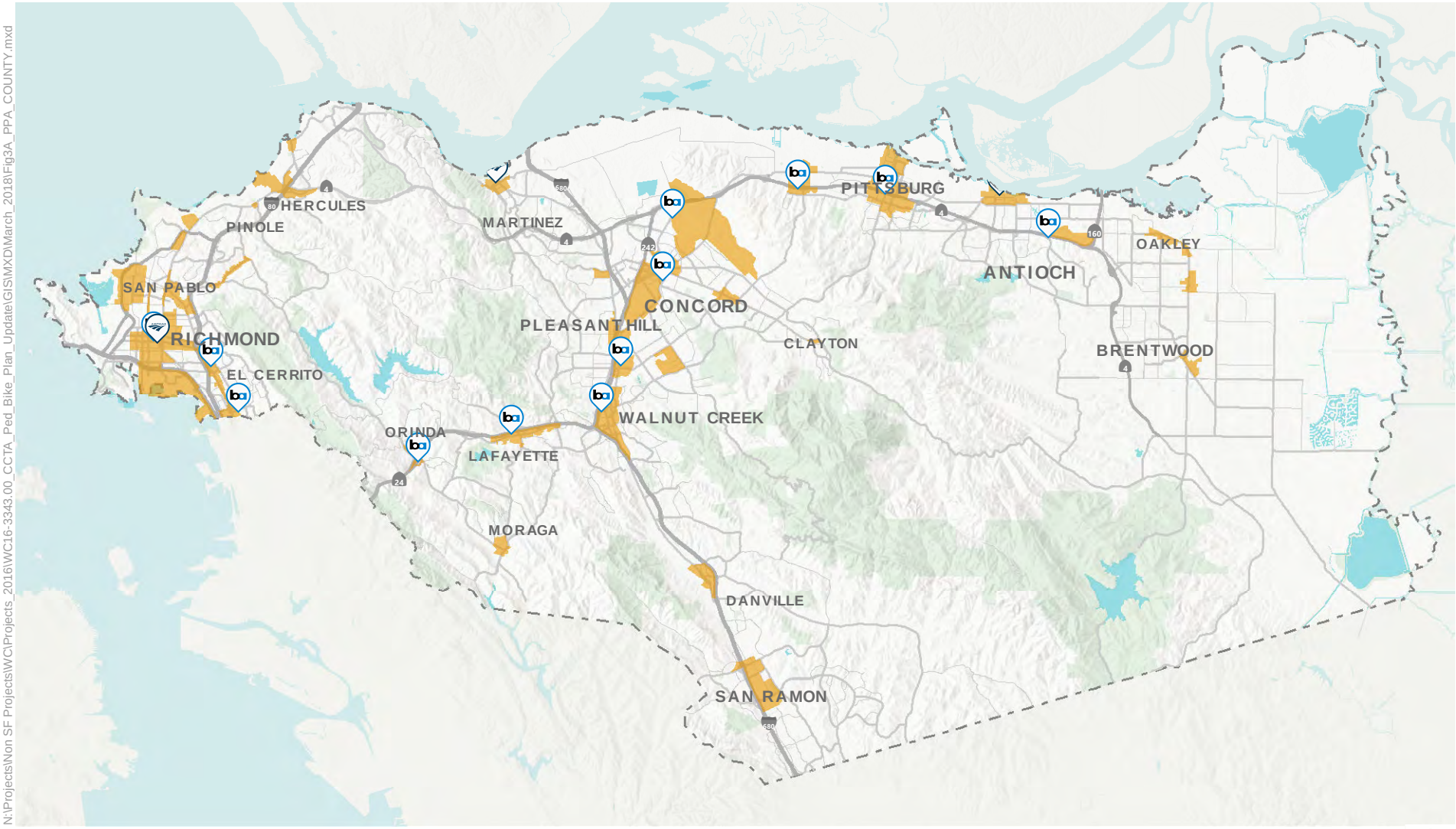
[3] California Household Travel Survey (CHTS), conducted between February 2012 and January 2013

- High total employment density

- Within a Priority Development Area with higher forecast growth

Additionally, the PPAs include areas that, while they may not meet one of the criteria listed above, provide the mix of uses and the existing pedestrian network that now support pedestrian activity. They include areas such as downtown districts in Brentwood, Pleasant Hill, and Danville, and high pedestrian-volume corridors such as Monument Boulevard in Concord. Routes within a half mile of a public school and or within a half-mile of a transit stop served by at least one bus every 20 minutes are also considered PPAs, although they may not be shown in the **Figure 3** series. Projects in other locations would be considered in a PPA if a jurisdiction can show consistency with the above criteria.

While the Authority will give priority for funding for pedestrian improvements to projects within PPAs, other pedestrian improvements could also be funded where they would remedy a significant safety issue, provide a missing across barrier connection, serve a substantial number of users, or take advantage of opportunities to leverage other funding or to be developed as part of a larger transportation improvement.



Pedestrian Priority Areas

Figure 3-A

Pedestrian Priority Areas

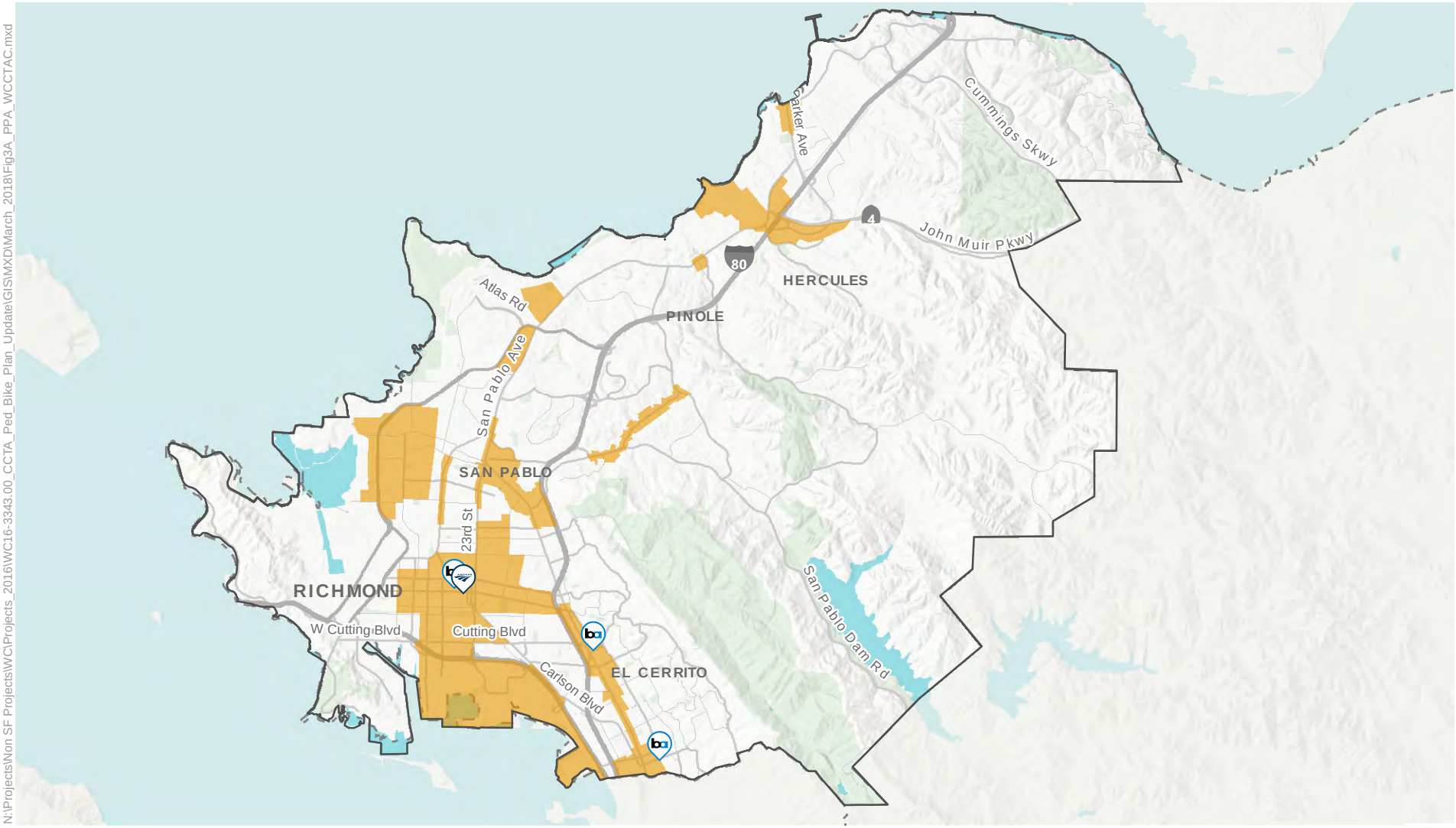
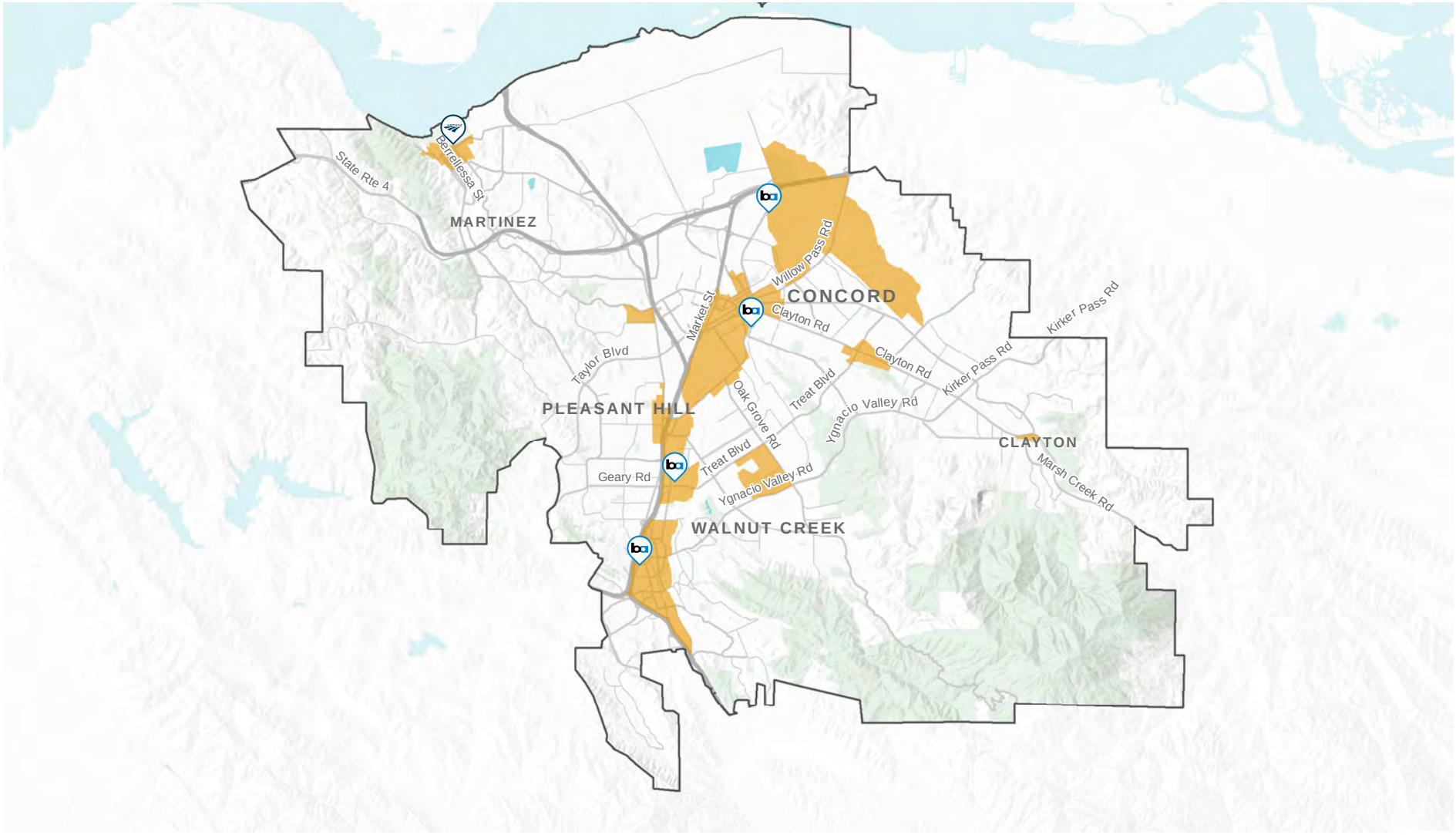


Figure 3-B

Pedestrian Priority Areas



Pedestrian Priority Areas

Figure 3-C

Pedestrian Priority Areas

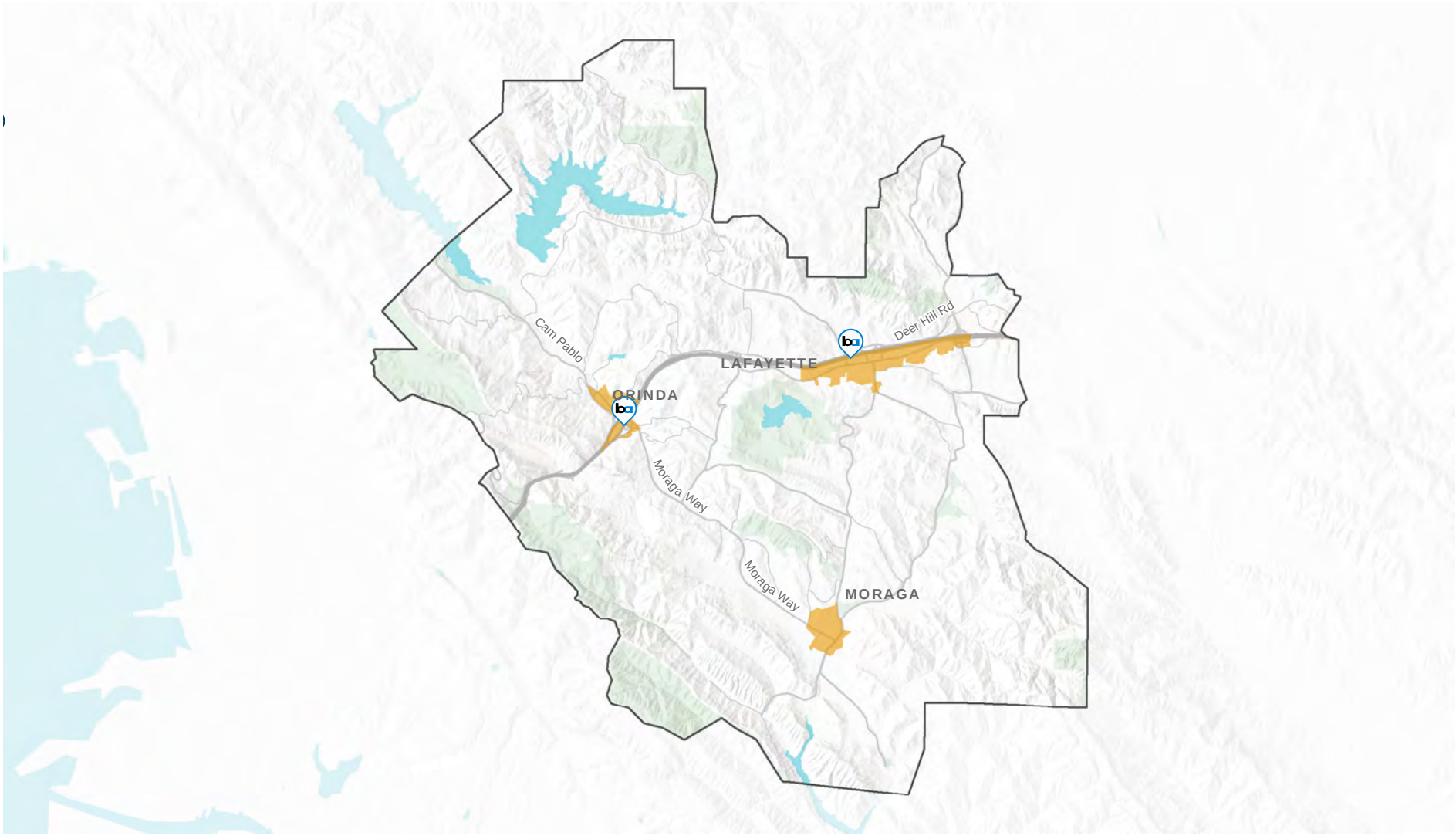


Figure 3-D

Pedestrian Priority Areas

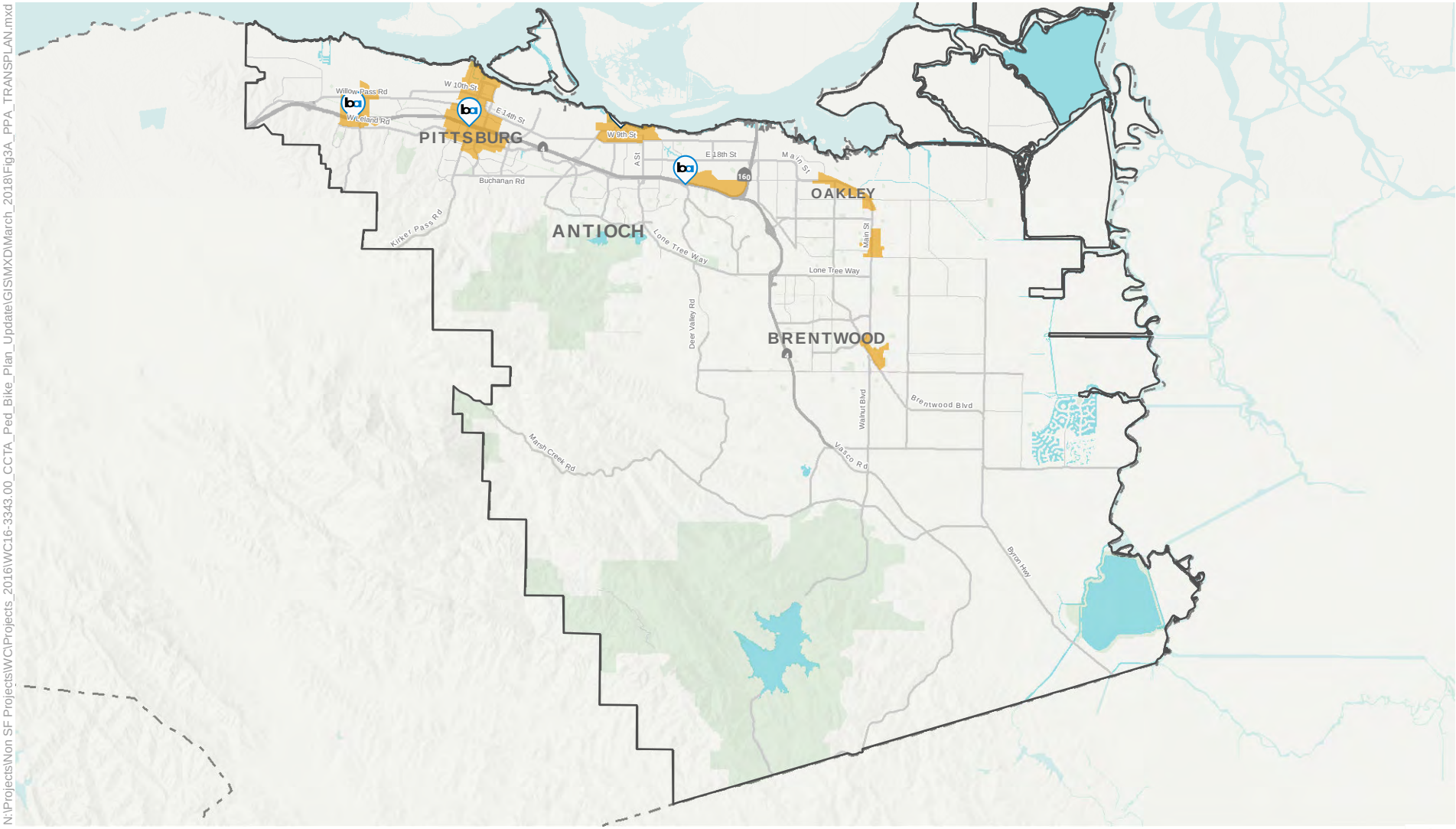
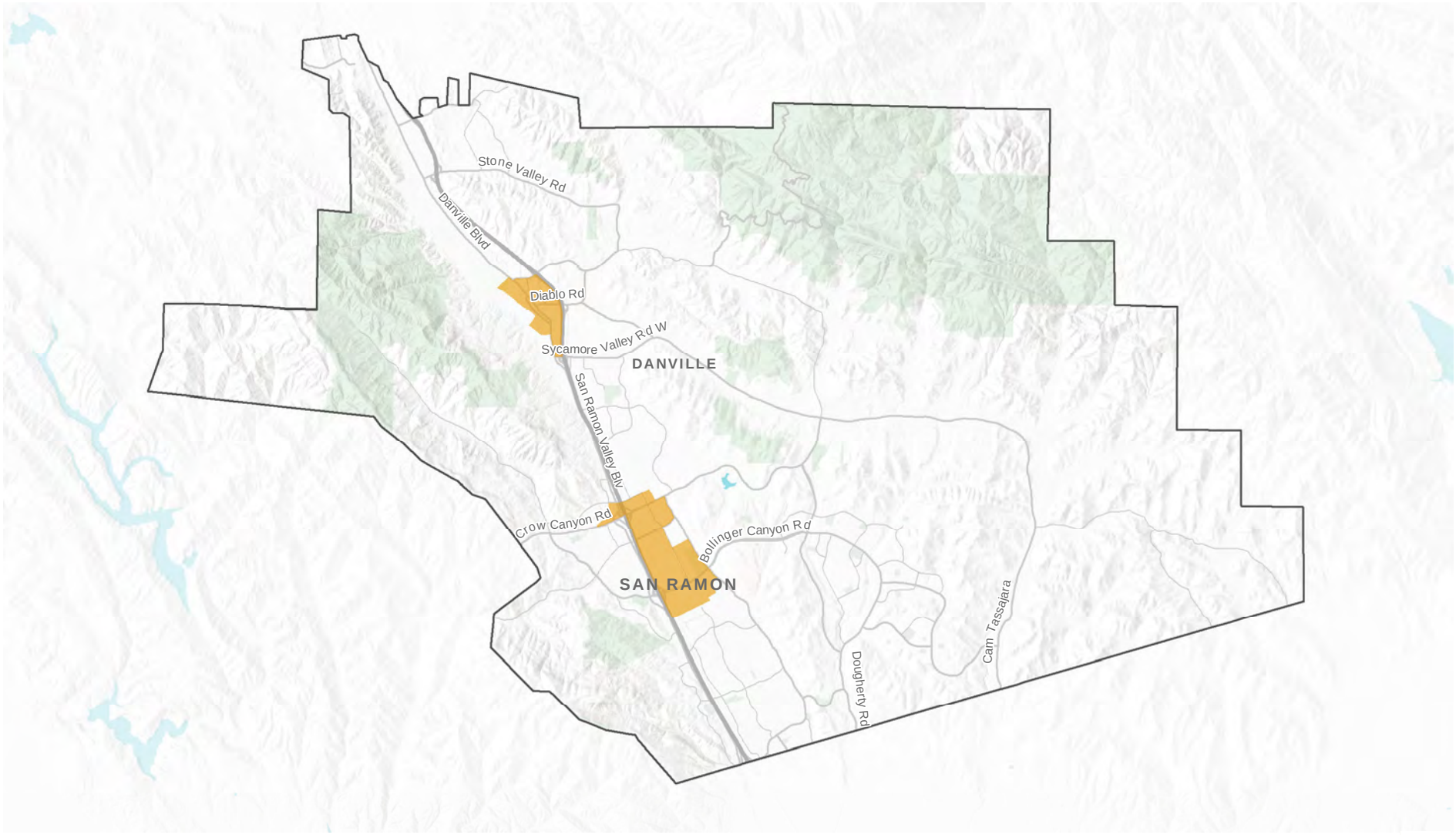


Figure 3-E

Pedestrian Priority Areas



Pedestrian Priority Areas

Figure 3-F

Pedestrian Priority Areas

Planning for Pedestrians

Improved pedestrian facilities are necessary but not sufficient for walkability. Possibly more important are land use and development patterns, since pedestrians are much more sensitive to distances and the quality of the environment through which they travel than other transportation users. Contra Costa's Measure J Growth Management Program (described in Appendix A, "State of Walking and Biking in Contra Costa") recognizes this by requiring local jurisdictions to adopt policies and standards for the design of new developments that are pedestrian- and bicycle-friendly.

To move about safely and comfortably, pedestrians need well-designed and maintained walkways and crosswalks that provide access to jobs, homes, shopping, schools, transit stations, parks and other common destinations. Landscaping and street trees, which provide a horizontal and vertical buffer from busy roadway traffic, and shade during the summer, also improve pedestrian comfort. Streetlights might be required in some locations to improve nighttime safety and visibility.

Wheelchair users and other persons with disabilities are particularly sensitive to conditions of the public right-of-way. This need is recognized by Title II of the Americans with Disabilities Act (ADA) of 1990 and Section 504 of the Rehabilitation Act of 1973, landmark pieces of legislation that require that public facilities be accessible to persons with disabilities. Accommodating people with disabilities should be a primary objective of any newly planned pedestrian facility; facilities that accommodate the disabled improve the walking experience for all.

Designing Pedestrian Facilities

Through a pedestrian planning process, local jurisdictions can identify the needs and concerns of pedestrians in their community. Some needs can be addressed through non-capital projects, namely education, encouragement, and enforcement programs. These are addressed in Chapter 6, "Support Programs." Some needs, however, are best addressed through engineering solutions, by installing or improving facilities for pedestrians. The main types of pedestrian-oriented capital projects that municipalities should consider implementing are:

Walkways – sidewalks, trails, and other types of walkways should be clear of obstructions and have a clear path wide enough to accommodate the widest wheelchair, or baby stroller, at minimum, so that people can comfortably walk side-by-side and pass each other.

Curb Ramps – should be part of every new sidewalk installed at crossings, and at existing crossings without curb ramps, to ensure ADA-accessibility.

Safer Crossings – with clearly marked, high-visibility crosswalks; advance stop bars; speed tables; reduced crossing distances using pedestrian refuge islands, and/or curb extensions; "daylighting" (i.e. removing parked vehicles and other sight obstructions at intersections); traffic signal timing that facilitates pedestrian crossings (e.g. leading pedestrian interval); audible pedestrian count-down signals; and/or hybrid beacons.

Traffic Calming – with devices to reduce traffic speeds and volumes to improve conditions for both pedestrians and bicyclists at a district-wide scale; devices include but are not limited to traffic circles or roundabouts, mid-block and intersection bulb-outs or curb extensions, traffic diverters, raised crosswalks or speed tables, visual street-narrowing techniques, and strategic traffic signal timing.

Direct Connections – with direct pedestrian connections by implementing cut-throughs, over- or under-crossings and other shortcuts to make walking and bicycling viable, or more convenient, especially at locations with existing barriers, such as those identified in the Across Barrier Connections analysis in Appendix A.

Streetscape Improvements – with street trees and other landscaping, special paving for sidewalks or crosswalks, public art, benches, trash receptacles, bus shelters, pedestrian scale lighting, and wayfinding.

Recent innovations and current trends in pedestrian and bicycle planning are also summarized in Appendix B, "Best Practice Bicycle and Pedestrian Resources," which presents a series of brief fact sheets, including information on Pedestrian Crossing Toolkits and Applications, and Pedestrian Hybrid Beacons. For more specific design guidance for pedestrian facilities, please refer to Appendix C, "Best Practice Pedestrian Treatment Toolbox."

5. Bicycle Facilities

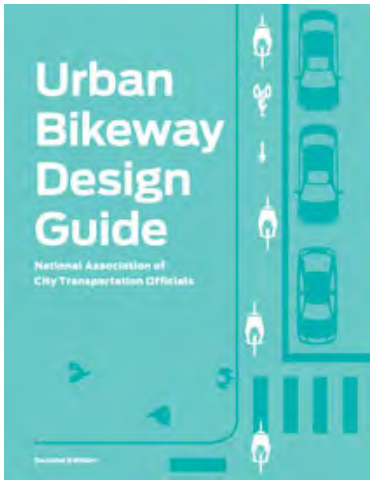
While it represents a relatively small percentage of all trips made in Contra Costa, interest in bicycling has continued to increase in recent years, reflecting a national trend. Encouraging more people to bicycle is increasingly seen as a way to combat a number of public-policy concerns including traffic congestion, physical inactivity, air pollution, and greenhouse gas emissions.

This chapter summarizes planning considerations for bicyclists, which incorporate recent innovations in bicycle planning and design; describes Contra Costa's updated, "low-stress Countywide Bikeway Network" (low-stress CBN); and presents a Level of Traffic Stress evaluation, and cost analysis for the low-stress CBN.

Recent innovations and current trends in pedestrian and bicycle planning are also summarized in Appendix B, "Best Practice Bicycle and Pedestrian Resources," which presents a series of brief fact sheets, including information on regional backbone bikeway network planning, protected bikeways, and protected intersection treatments. Appendix D, "Best Practice Bicycle Design Guidelines", contains more specific resources and recommendations for designing and implementing bicycle facilities.

Planning for Bicyclists

The landscape for bicycling at the national level has changed dramatically since the last update of the CBPP, with a variety of new bicycle planning tools and innovative designs tested in the San Francisco Bay Area and across the United States and North America. A number of new guidelines — such as the Federal Highway Administration's (FHWA) *Separated Bike Lane Planning and Design Guide* and the National Association of City Transportation Officials' (NACTO) *Urban Bikeway Guide, 2nd Edition* — have expanded and refined the state of the practice in bicycle facility design.



The NACTO Urban Bikeway Design Guide, 2nd Edition and the FHWA Separated Bike Lane Planning and Design Guide provide best practice guidance for innovative bicycle facilities in the United States.

Much recent research has focused on how different bicycle facilities can increase a bicyclist's sense of safety and comfort, and thus shift trips from other modes and increase bicycle ridership. A successful bicycle network accommodates users of all ages and abilities, including young bicyclists and those who may be new to bicycling.

Different types of bikeways feel more or less comfortable depending on the confidence and experience of different bicyclists. The Level of Traffic Stress (LTS) methodology described below was developed to evaluate and guide bicycle network planning through the analysis of low-stress connectivity. The 2018 Plan focuses the CBN on a backbone network of low-stress bikeways upon which local jurisdictions — and the public — can expand. This approach will ensure that Contra Costa stays at the forefront of sustainable transportation planning through the implementation of new but tested best practices in the planning and design of bicycle facilities.

Level of Traffic Stress Method

One way of understanding how well a bicycle network accommodates bicyclists of all ages and abilities is through Level of Traffic Stress (LTS) analysis. The LTS methodology, developed by Merkuria, Furth, and Nixon at the Mineta Transportation Institute, was created to evaluate and guide low-stress bicycle network planning.

The LTS methodology measures how much stress is experienced by bicyclists on a certain street due to roadway and bikeway characteristics that research has shown to cause stress, such as auto speeds, number of travel lanes, and bicycle facility type. For example, conventional striped bike lanes are only considered low stress where bikeways that are physically separated from vehicles (e.g. trails or protected bikeways) LTS rankings range from 1 (very low stress; tolerable by all) to 4 (very high stress; tolerable to only a few).

The LTS approach also mirrors Roger Geller's research for the City of Portland on the Four Types of Cyclists, which categorizes the general population into four groups. People comfortable with riding on roadways that score LTS 3 or 4 are typically considered the "strong and fearless" or "enthused and confident" category of cyclists from Four Types of Cyclists. Together these two groups account for only about eight percent of the total population. Research has shown that the "Interested but Concerned" who make up the largest segment of the population are attracted to highly comfortable bicycle facilities on which they feel safe riding. To feel comfortable and safe they require low traffic stress (LTS 1 or 2) roadways, such as trails, separated bikeways, or bicycle boulevards.

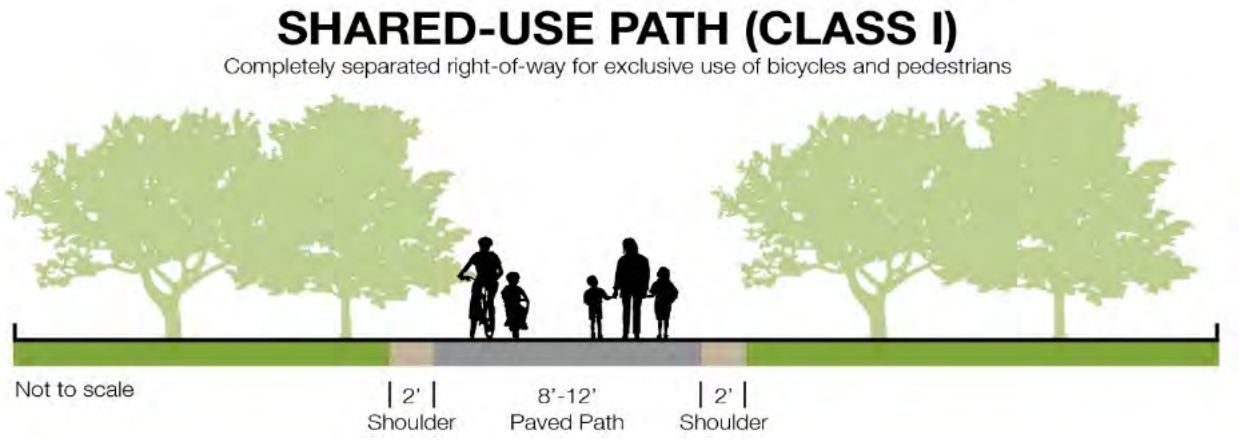
The following images graphically illustrate the LTS concept and the connection between LTS and the types of cyclists.


WHICH RIDERS DO
YOUR
BIKEWAYS SUPPORT?
AS MEASURED BY
LEVEL OF TRAFFIC STRESS
Level of traffic stress (LTS) is a way to evaluate the stress a bike rider will experience while riding on a road.
It is used to categorize roads by the types of riders above who will be willing to use them. LTS is...
NUMBER OF TRAVEL LANES
SPEED OF TRAFFIC
NUMBER OF VEHICLES
PRESENCE OF BIKE LANES
WIDTH OF BIKE LANES
PRESENCE OF PHYSICAL BARRIER
Fehr & Peers' LTS tool allows us to calculate LTS for an entire city.
LTS SCORE
4 3 2 1
Know with certainty how your bike network serves each rider type.
LTS 4
Only the "strong and fearless" will ride on these high-stress streets with high speeds limits, multiple travel lanes, limited or non-existent bikeways, and long intersection crossing distances.
LTS 3
Bike riders who are "enthused and confident" but who still prefer having their own dedicated space for riding will feel safe while traveling on streets of this nature.
LTS 1 AND 2
LTS1: Most children can feel safe riding on these streets.
LTS2: The mainstream, "interested but concerned," adult population will feel safe riding on these streets.
WHAT TYPE OF
BIKE RIDER
ARE YOU?
LESS THAN 1%
7%
60%
33%
STRONG AND FEARLESS
Riding is a strong part of my identity, and I am undeterred by traffic speed, volume, or other roadway conditions.
ENTHUSED AND CONFIDENT
I am comfortable sharing the road with motor vehicles, but I prefer to use bike lanes and bike friendly streets.
INTERESTED BUT CONCERNED
I like riding a bike, but I don't ride much. I would like to feel safer when I do ride, with less traffic and slower speeds.
NO WAY NO HOW
I don't bike at all due to inability, fear for my safety, or simply a complete and utter lack of interest.
0 PERCENT OF BIKE RIDERS 25 50 75 100%

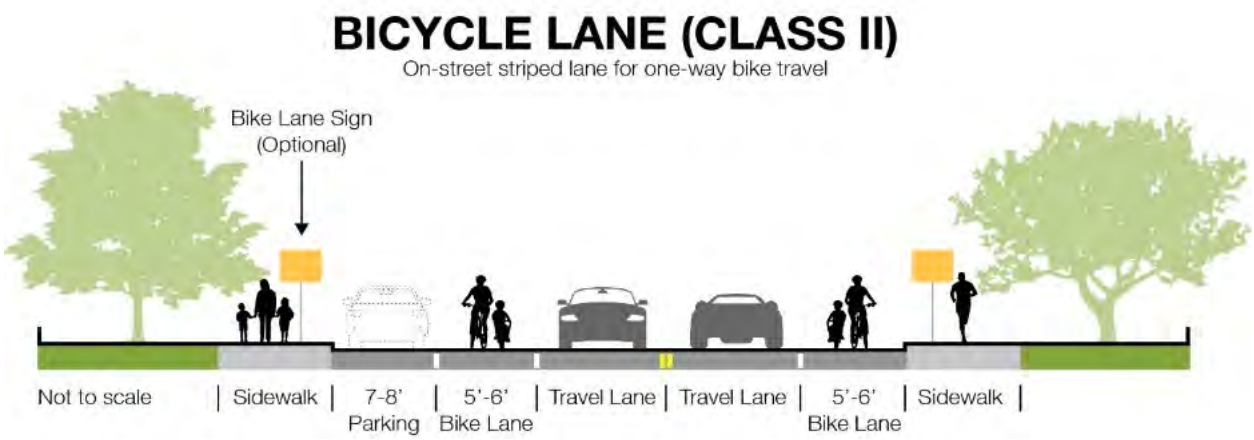
Bikeway Facilities

The bikeway facilities described in the 2018 CBPP Update are approved by the California Department of Transportation (Caltrans) in the *Highway Design Manual* (Chapter 1000: Bikeway Planning and Design) and California Assembly Bill 1193 which codify four distinct classifications of bikeways. Each bikeway class is intended to provide bicyclists with enhanced riding conditions. Bikeways offer various levels of separation from traffic based on traffic volume and speed, among other factors. The bikeway types in California and appropriate contexts for each are detailed below. These facility types were used to develop the low-stress CBN.

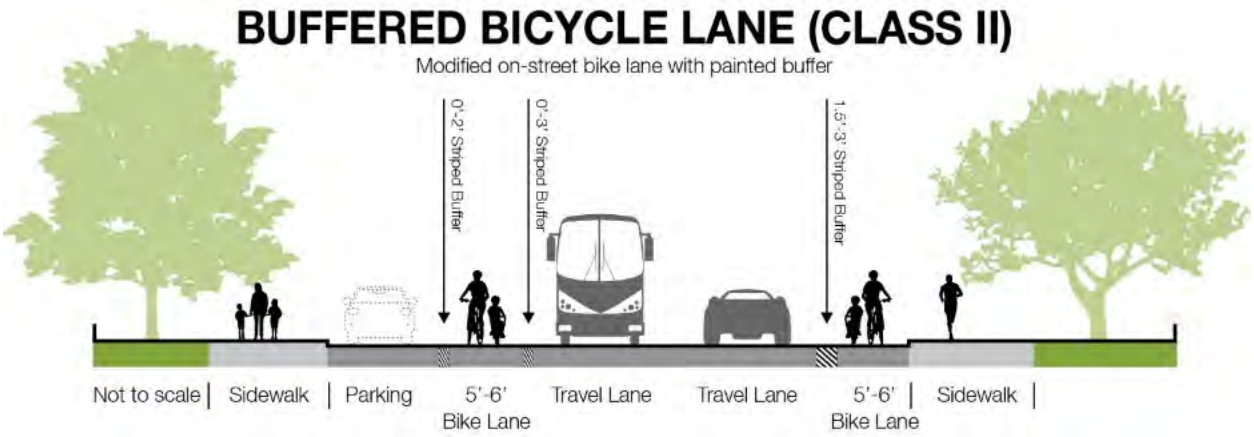
- *Shared-Use Path (Class I Bikeway)* — Bike paths provide a completely separate right-of-way that is designated for the exclusive use of people riding bicycles and walking with minimal cross-flow traffic. Such paths are often located along creeks, canals, and rail lines. Class I Bikeways can also offer opportunities not provided by the road system by serving as both recreational areas and desirable commuter routes.



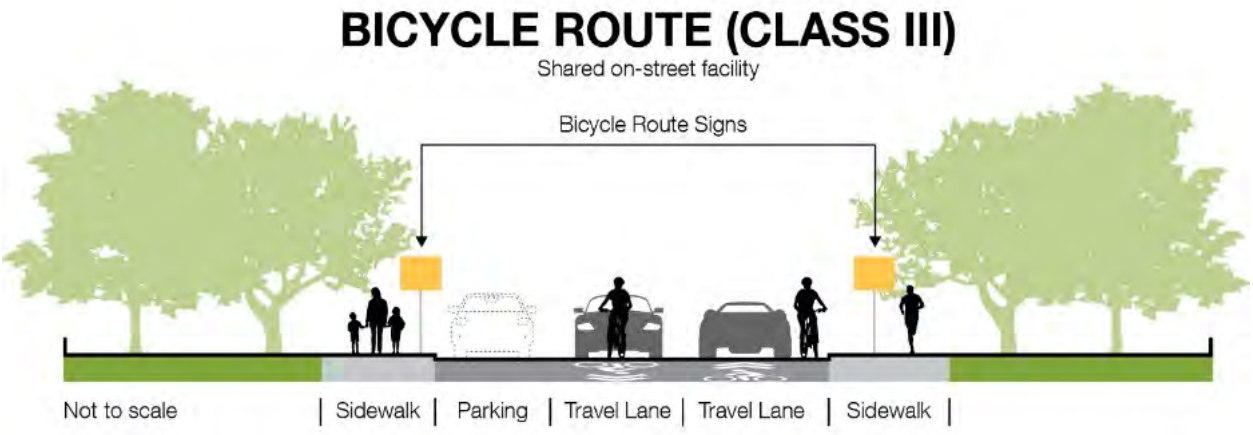
- *Bike Lane (Class II Bikeway)* — Using special lane markings, pavement legends, and signage, bike lanes provide designated street space for bicyclists, typically adjacent to the outer vehicle travel lanes.



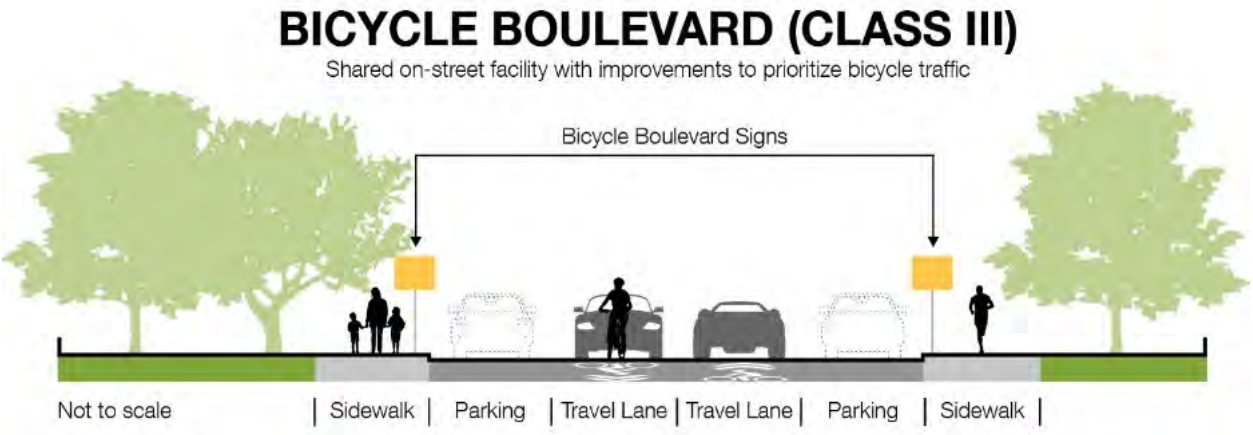
- *Buffered Bike Lanes (Class II Bikeway)* — Buffered bike lanes increase separation through painted buffers between vehicle lanes and/or parking, and green paint at conflict zones (such as driveways or intersections). This increased separation is most often added along medium volume collectors or arterials. Buffered bike lanes are often used where full vertical separation is not feasible, for example, where on-street parking or frequent driveways would block the visibility of cyclists to motorists.



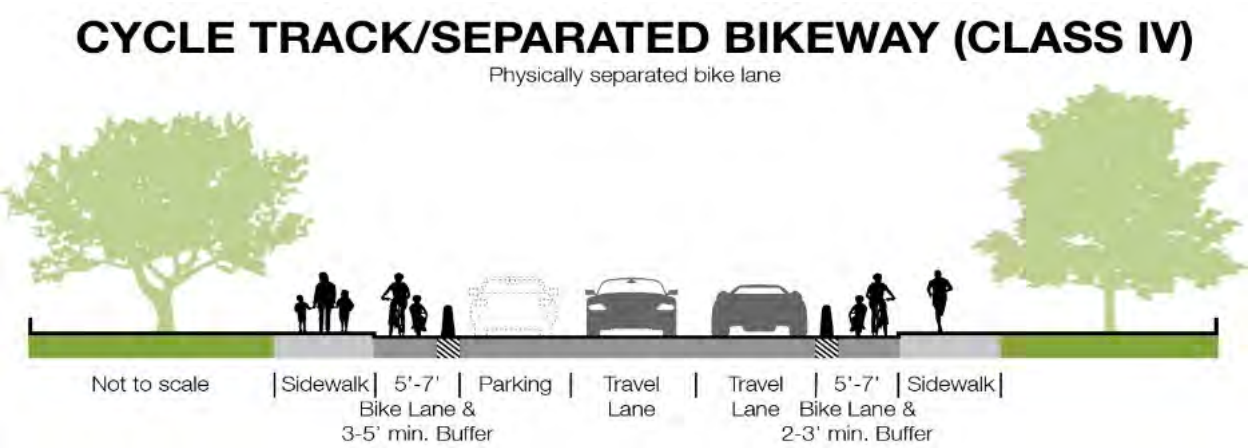
- *Bike Route (Class III Bikeway)* — Bike routes provide enhanced mixed-traffic conditions for bicyclists through signage, sharrow striping, and/or traffic calming treatments, and provide continuity to a bikeway network. Bike routes are typically designated along gaps between bike trails or bike lanes, or along low-volume, low-speed streets.



- *Bicycle Boulevards (Class III Bikeway*) further enhance bike routes by encouraging slower speeds and discouraging non-local vehicle traffic using traffic diverters, chicanes, traffic circles, and speed tables. They are always located on low auto volume and low speed residential streets. Bicycle boulevards can also feature special wayfinding signage to nearby destinations or other bikeways. They are an important element of the low-stress CBN and often provide important safe routes to school connections for children.



- *Protected Bikeway (Class IV Bikeway)*, also referred to as cycle tracks or separated bikeways, are set aside for the exclusive use of bicycles and physically separated from vehicle traffic. Separated Bikeways were recently adopted by Caltrans in 2015. Types of separation may include, but are not limited to, grade separation, flexible posts, physical barriers, or on-street parking.



Appendix D, "Best Practice Bicycle Design Guidelines", contains more information on these and other bicycle treatments.

Countywide Bicycle Network

The 2018 CBPP identifies a network of bicycle facilities that together form a "low-stress Countywide Backbone Network" (low-stress CBN). This backbone network, when implemented, will provide a connected set of facilities to serve all ages and abilities and to address the barriers created by high-stress arterials and collectors. The CBN consists of only regionally-significant bicycle facilities, either existing or proposed, rated low-stress (LTS 1 or LTS 2). Many new bicycle planning tools — such as separated bikeways and bicycle boulevards — will need to be deployed to create the envisioned network of low-stress facilities. The Authority will work with local jurisdictions to create this network and to expand and connect it to a more involved and comprehensive system of bikeways in Contra Costa.

The low-stress CBN builds on the CBN developed in the previous CBPP, which applied the following eight criteria to select the segments:

1. Existing bicycling patterns based on public input
2. Roadway conditions (speeds, volumes)
3. General connectivity and directness of route, including to transit
4. Number of destinations served (schools, parks, employment centers, transit stations and stops)
5. Topography and gradients

6. Integration into the regional system
7. Presence of reasonable alternatives for bicyclists of various skill levels
8. Collision and safety data

Using the 2009 CBN as a starting point, the 2018 low-stress CBN:

1. Incorporates any low-stress bikeway projects of regional significance that have been implemented or proposed since 2009
2. Adds low-stress facilities on segments that received an LTS scores of 3 or 4 (i.e. high-stress) in the existing LTS evaluation (see details below)
3. Removes a small number of segments where adjacent low-stress facilities exist, or where there is low expected bicycle demand due to existing industrial land uses and/or undeveloped land

The low-stress backbone bicycle network outlined in the 2018 stress CBN will close network gaps, address barriers, improve connectivity to key destinations, and increase bicycling safety and comfort.

The maps on the following pages illustrate the proposed low-stress CBN. It includes approximately 670 miles of low-stress bikeways, of which only 150 miles, or 22% have been completed. The proposed segments on the maps may not in all cases represent the final proposed alignment. Instead, they represent corridors and general connections to link existing segments. Many of these corridors and connections will need to overcome significant obstacles — most typically, limited right-of-way on existing roads — before they can be completed. The final alignment for proposed segments will need to be determined by local jurisdictions working with stakeholders, and will need to be based on such factors as feasibility, complexity, and cost. Final alignments may use different streets or trails than those shown on the maps.

The low-stress CBN is made up of a full range of facility types, including:

- *Class I Bikeways* such as the Ohlone Greenway in West County, the Lafayette-Moraga Trail, the Iron Horse Trail paralleling I-680, and the Delta de Anza Trail in East County,
- *Class II Buffered Bike Lanes* such as Treat Boulevard in Walnut Creek,
- *Class III Bike Boulevards* such as Nevin Avenue which connects the Richmond Civic Center to BART,
- *Proposed Class IV Separated Bikeways* along Rumrill Avenue in San Pablo and along San Pablo Avenue in El Cerrito and Richmond, and
- *Proposed Across Barriers Connections* such as the Iron Horse Trail overcrossing of Bollinger Canyon in San Ramon, the Mokelumne Aqueduct Regional Trail overcrossing at SR-4 in Brentwood and Antioch, and connecting Carlson Boulevard, 23rd Street and the Richmond Greenway in Richmond.

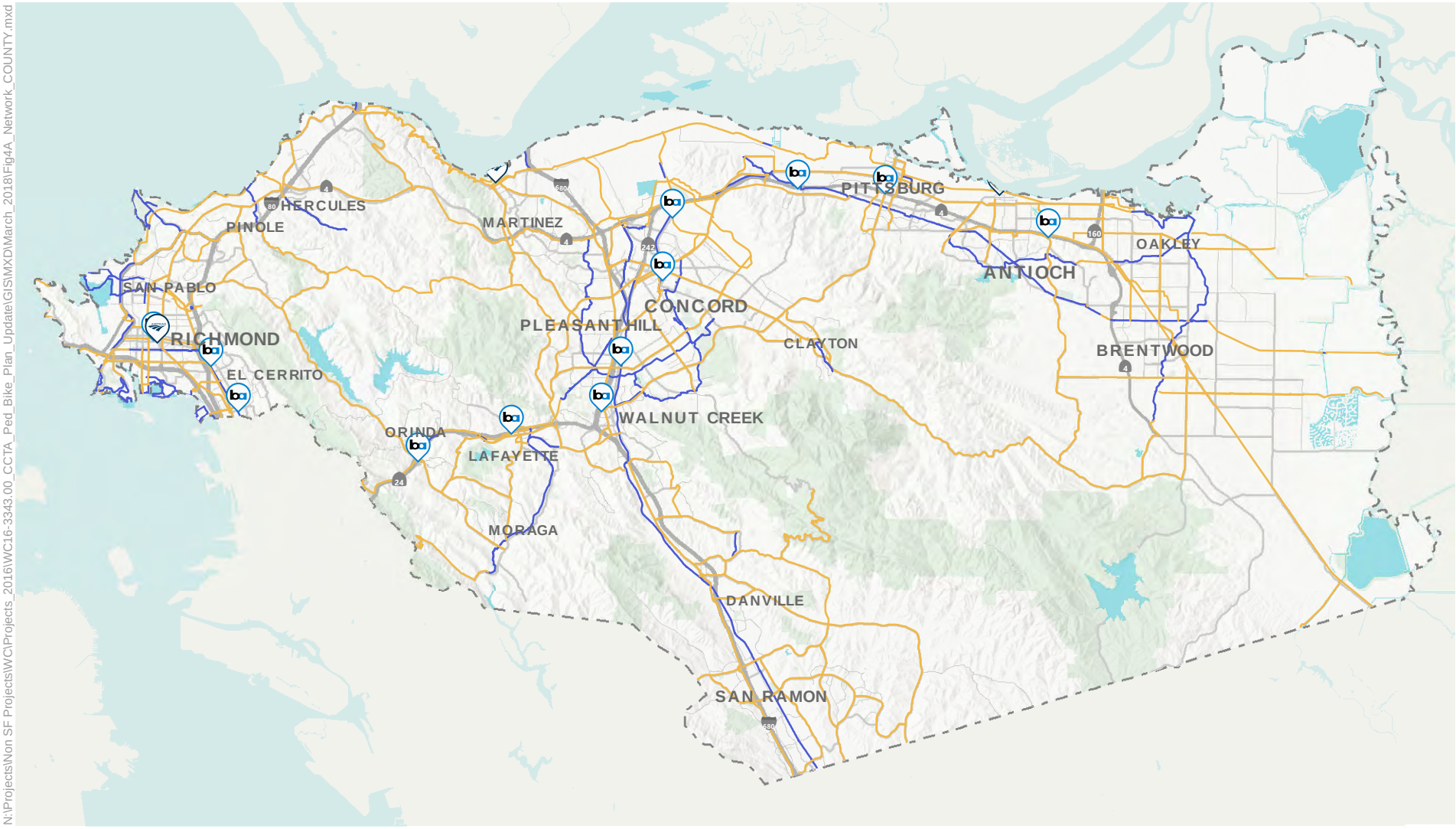
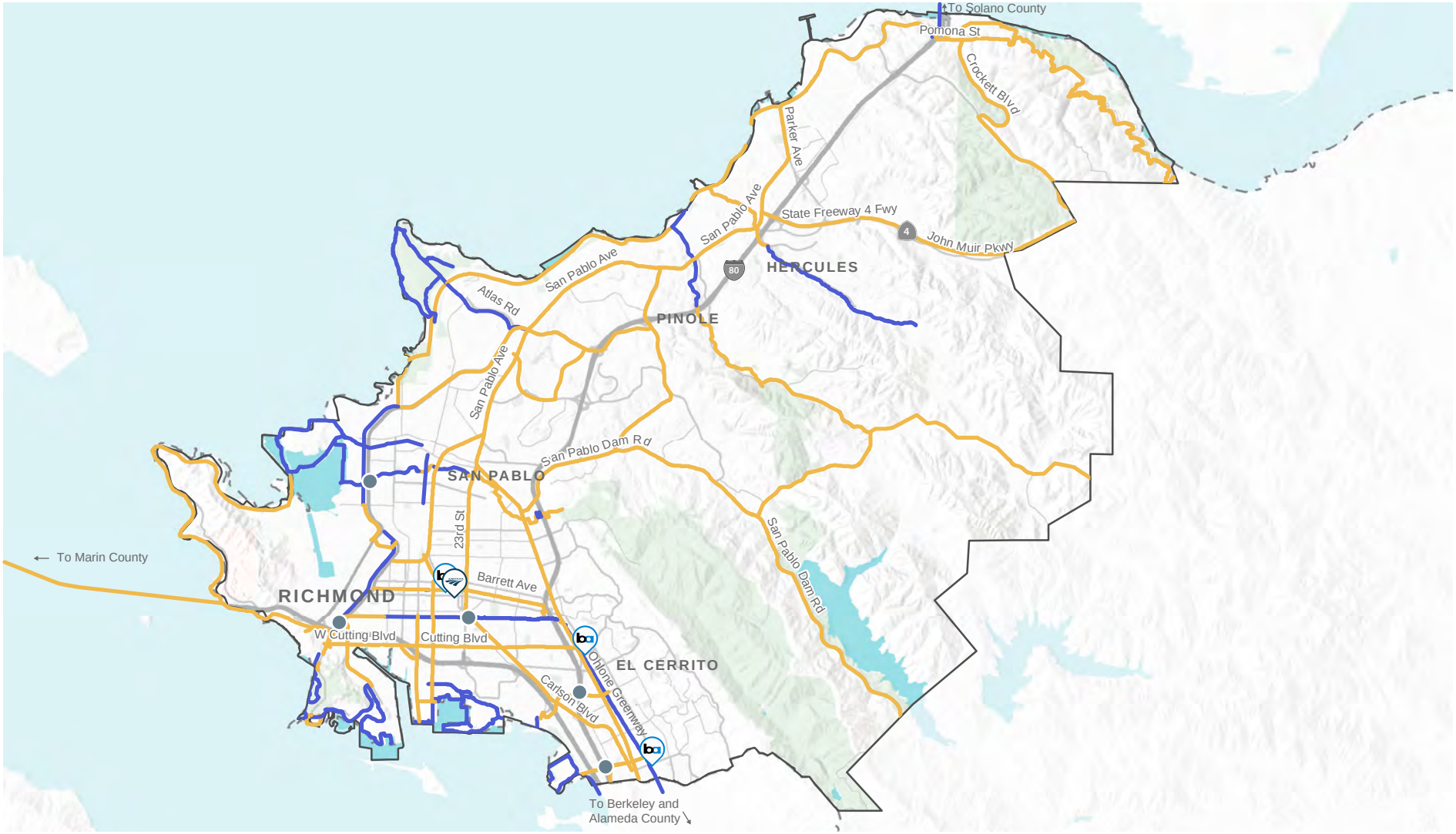


Figure 4-A

Low Stress Countywide Bicycle Network



Existing Low Stress Bikeway

Proposed Low Stress Bikeway

Proposed Pedestrian-Bicycle Bridge

Figure 4-B

Low Stress Countywide Bicycle Network

Existing Low Stress Bikeway

Proposed Low Stress Bikeway

Proposed Pedestrian-Bicycle Bridge

Figure 4-C

Low Stress Countywide Bicycle Network

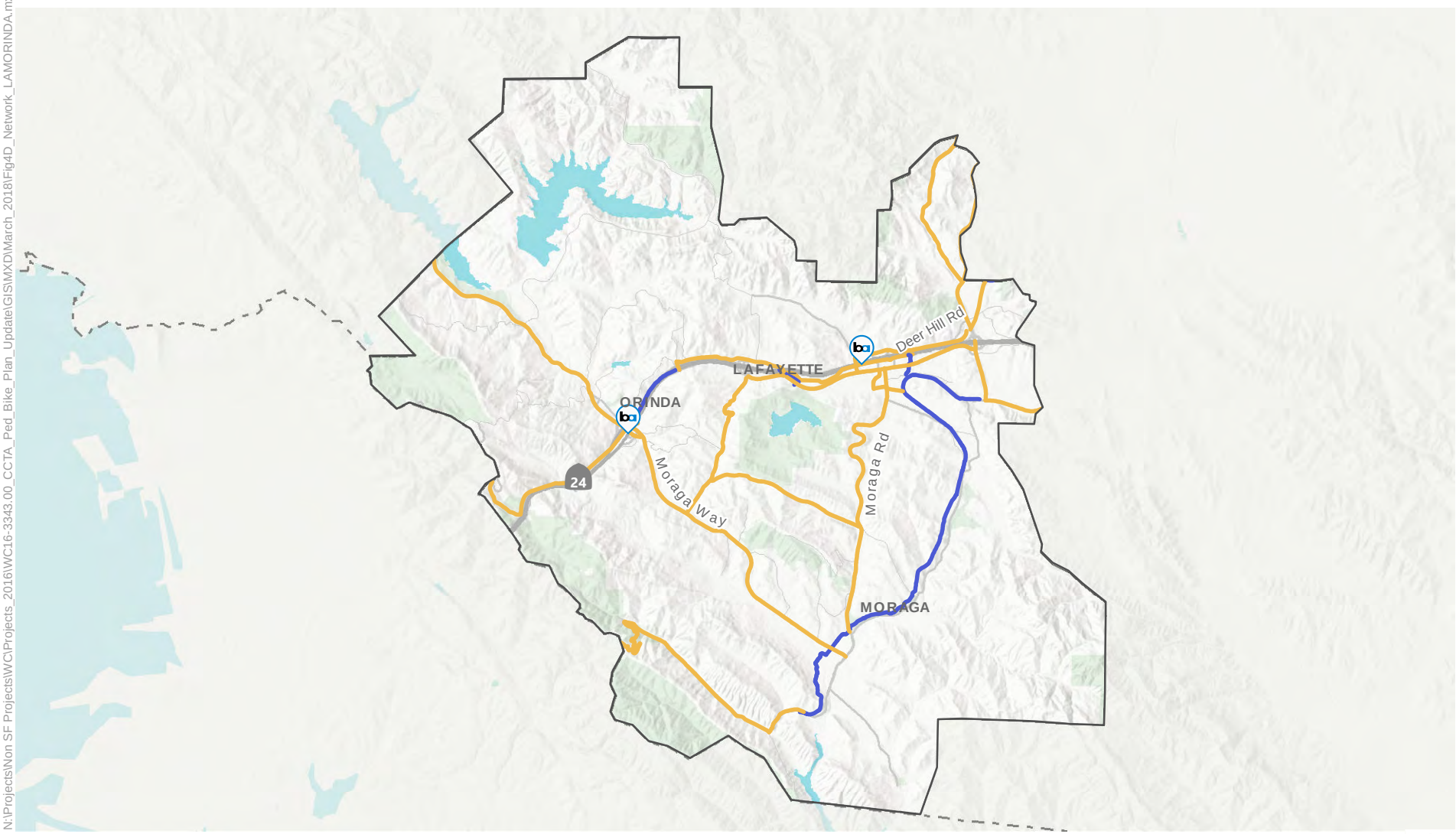
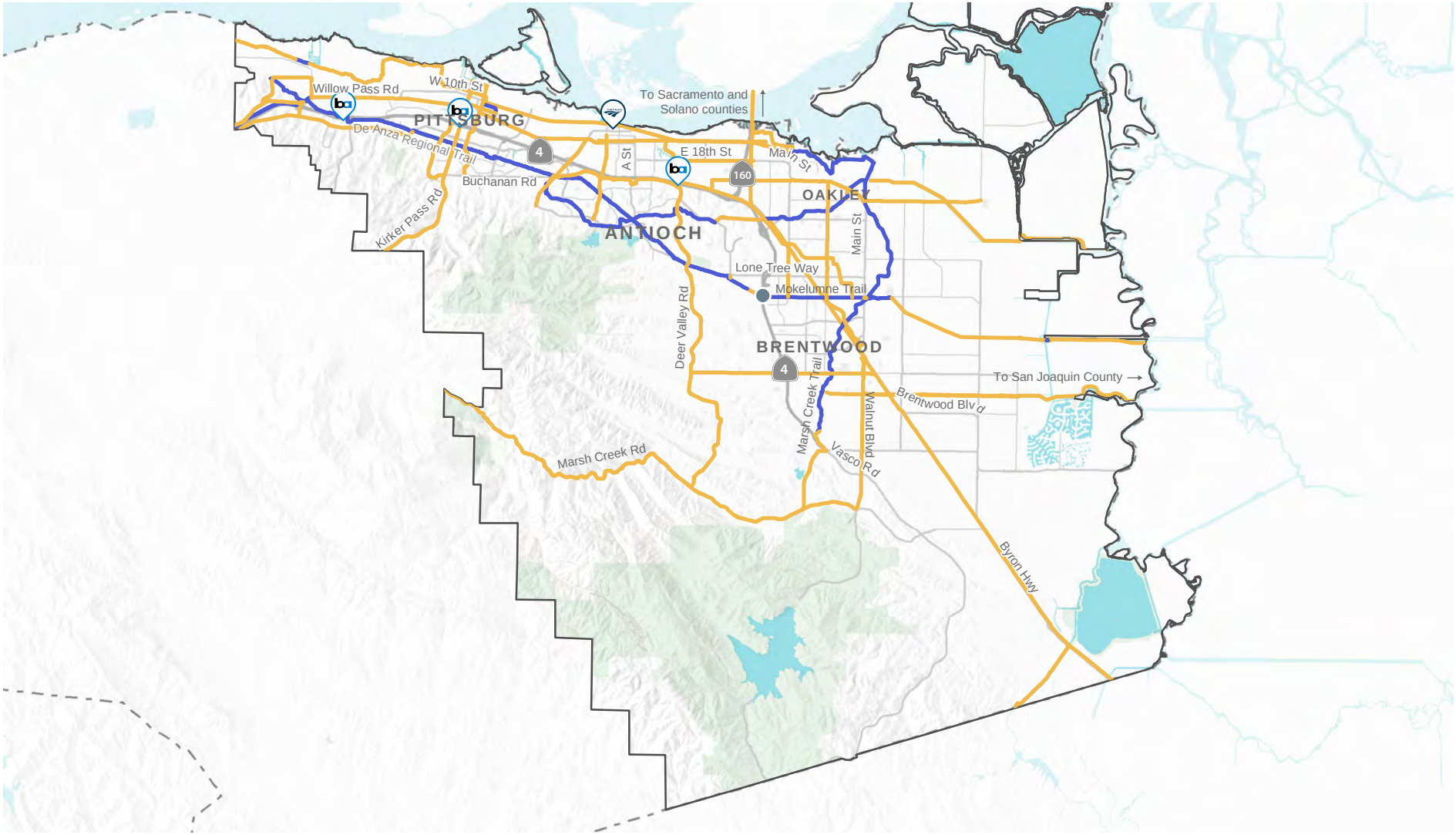


Figure 4-D

Low Stress Countywide Bicycle Network



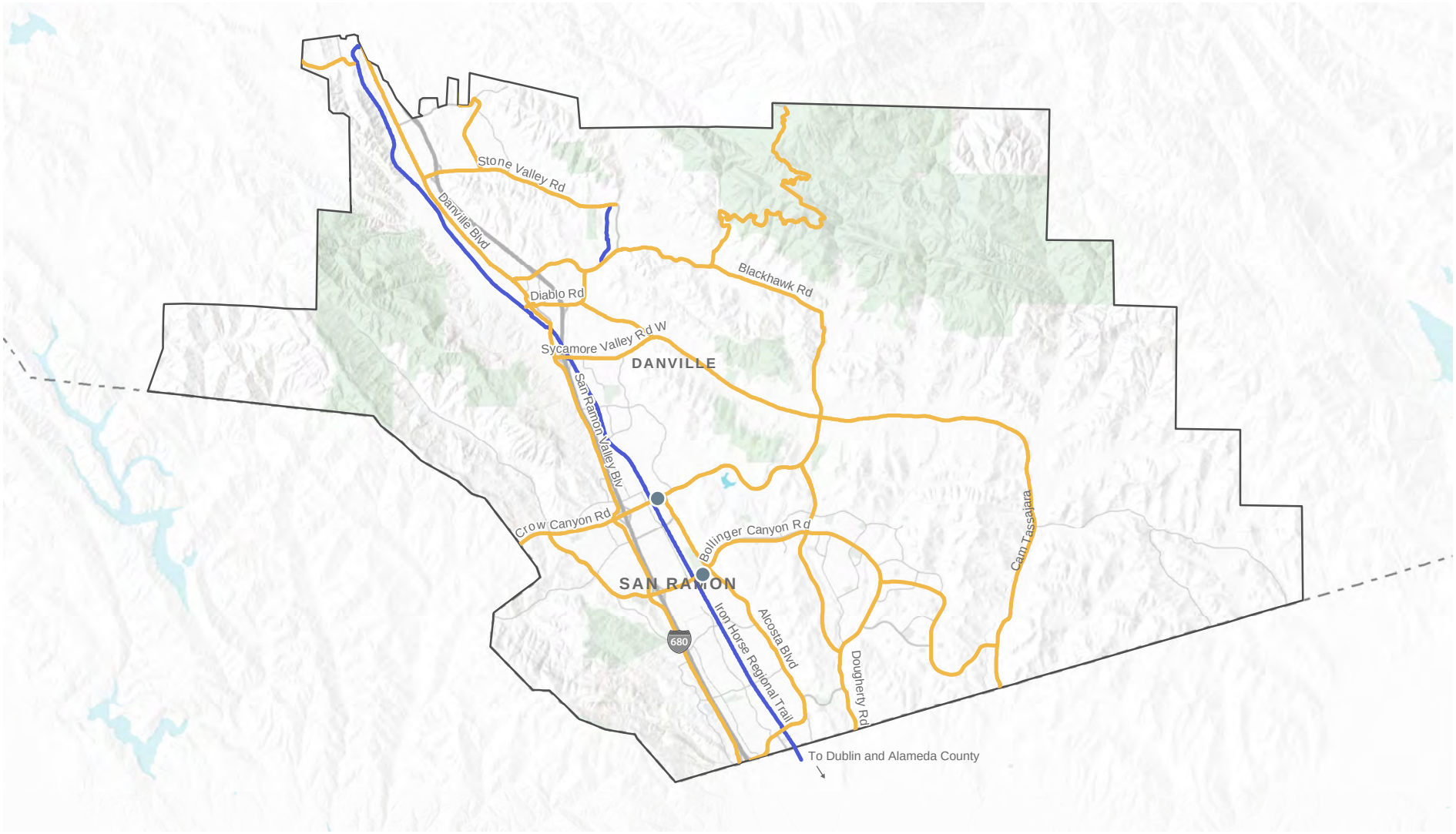
Existing Low Stress Bikeway

Proposed Low Stress Bikeway

Proposed Pedestrian-Bicycle Bridge

Figure 4-E

Low Stress Countywide Bicycle Network



Existing Low Stress Bikeway

Proposed Low Stress Bikeway

Proposed Pedestrian-Bicycle Bridge

Figure 4-F

Low Stress Countywide Bicycle Network

Evaluation of Level of Traffic Stress

A countywide assessment of bicycle comfort was conducted using a Level of Traffic Stress (LTS) analysis for each portion of the low-stress CBN. As described previously, this methodology seeks to measure how much stress is experienced by bicyclists due to various characteristics of roads and bicycle facilities. The LTS methodology was developed in 2012 by the Mineta Transportation Institute using grants from Caltrans and the U.S. Department of Transportation. This method applies existing research and standards bicycling to assess the quality of bicyclist comfort along different roadways. This method has been applied successfully throughout the U.S., including in Berkeley, Fremont, and Stockton. LTS rankings range from 1 (very low-stress; tolerable by all) to 4 (very high-stress; tolerable by only a few). The LTS analysis for the 2018 CBPP compares existing LTS scores on the facilities that make up the 2018 low-stress CBN (see **Figure 5** series) to the LTS scores for the proposed fully low-stress facilities.

As the **Figure 5** series indicates, Contra Costa has several low stress backbone facilities along key Class I trails such as the Ohlone Greenway in West County, the Iron Horse Trail paralleling I-680, and the Delta de Anza Trail in East County. However, many existing facilities on the 2018 CBN are located on high-speed arterials and are currently high stress (with LTS scores of 3 or 4).

The **Figure 6** series presents the LTS scores for the proposed low-stress CBN, which assumes that all bicycle facilities on the CBN would receive a score of LTS 1 or 2. This represents a significant increase in low-stress bikeways, which provide more comfortable facilities for Contra Costans of all ages and abilities to bike more often.

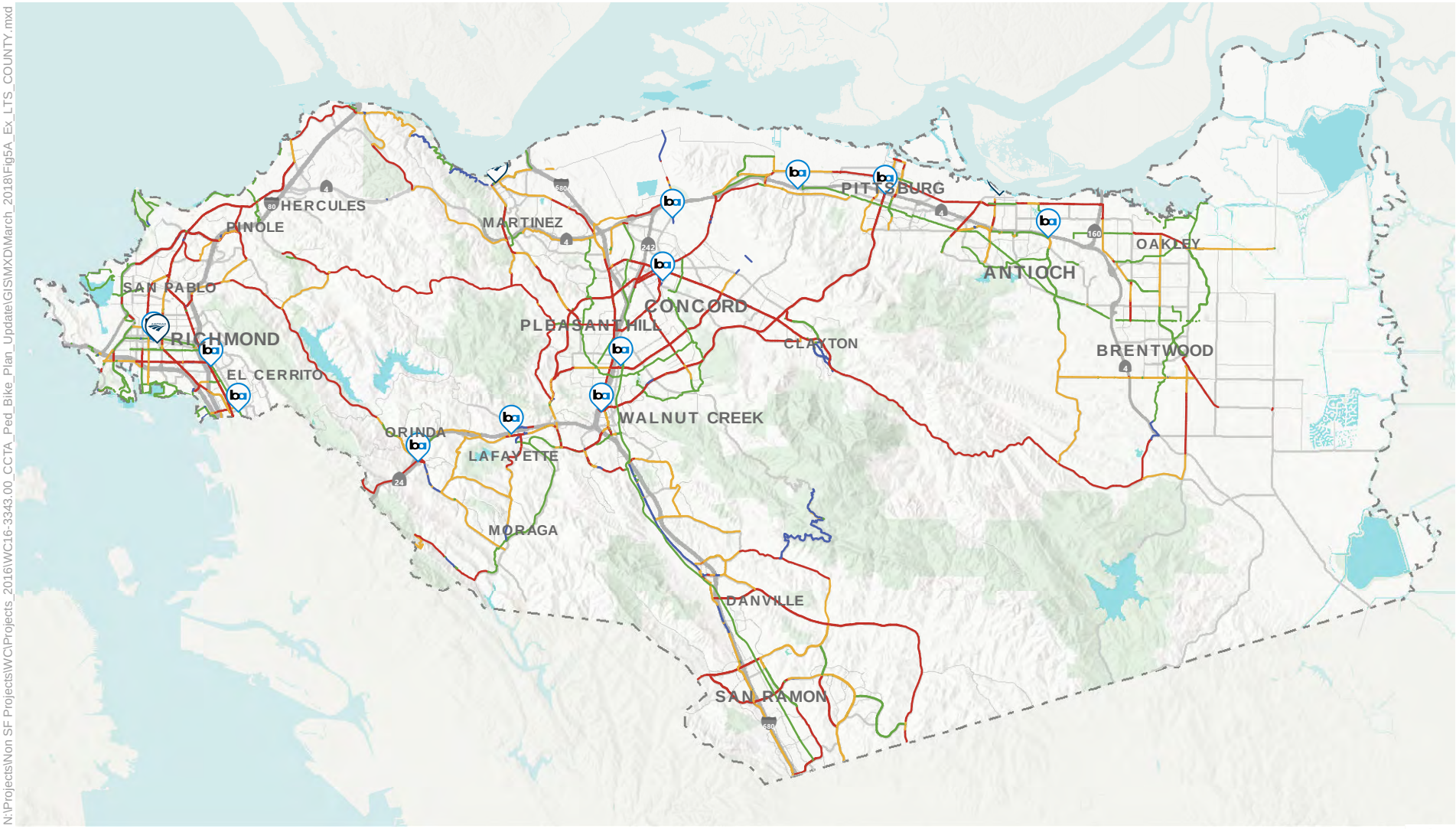
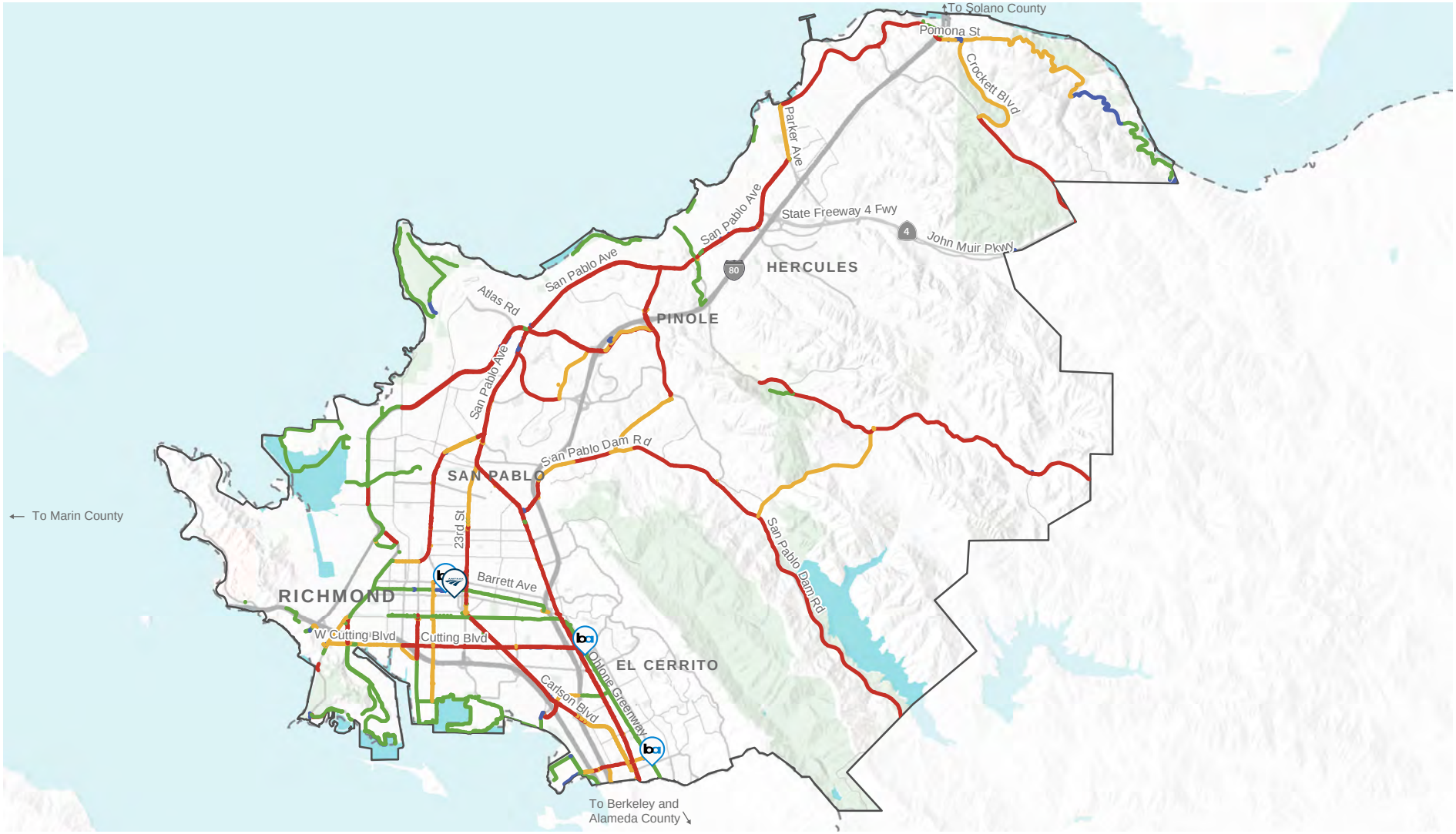


Figure 5-A

Existing LTS on 2018 CBN



Existing LTS 1

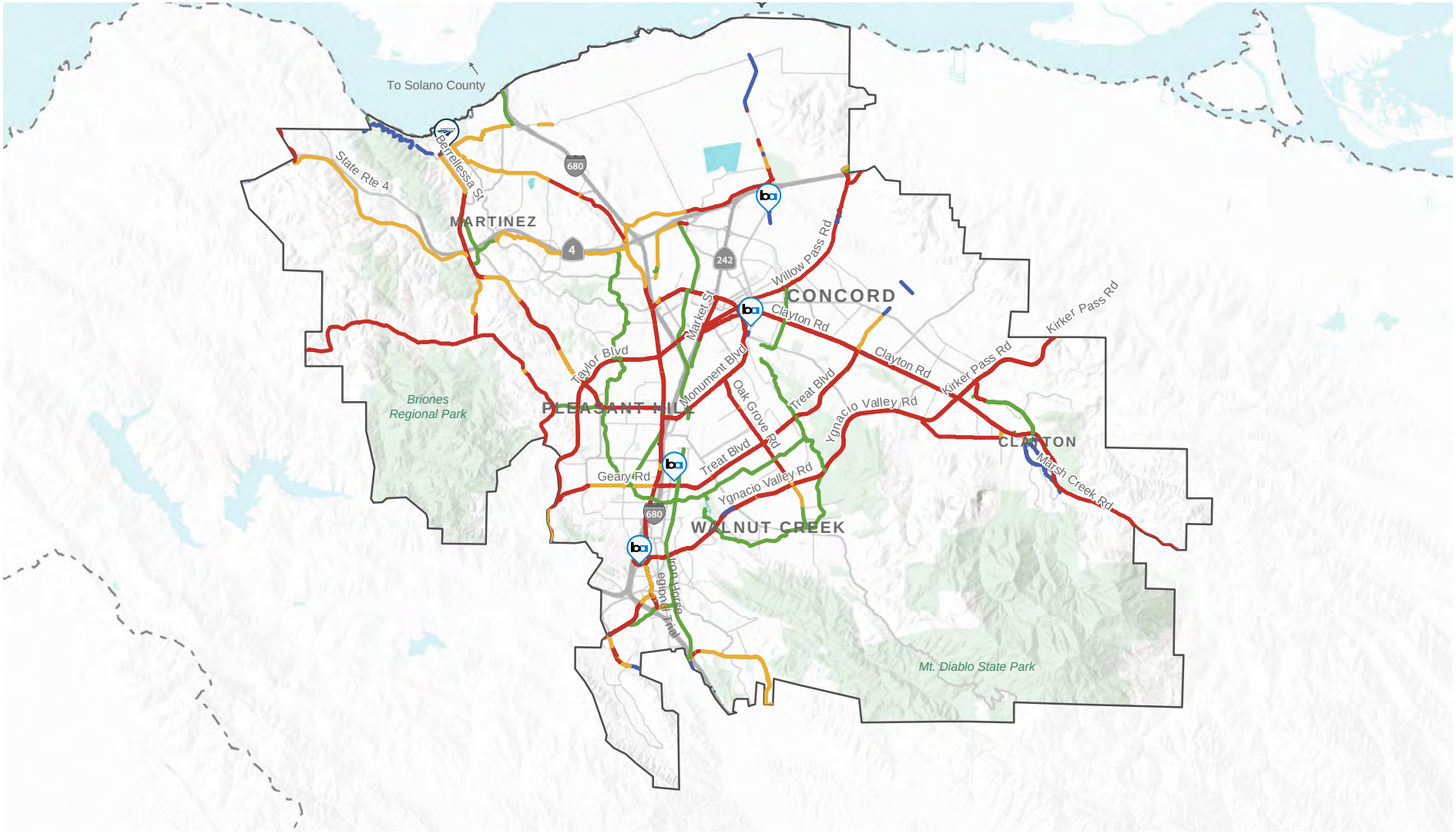
Existing LTS 2

Existing LTS 3

Existing LTS 4

Figure 5-B

Existing LTS on 2018 CBN



- Existing LTS 1
- Existing LTS 2
- Existing LTS 3
- Existing LTS 4

Figure 5-C

Existing LTS on 2018 CBN

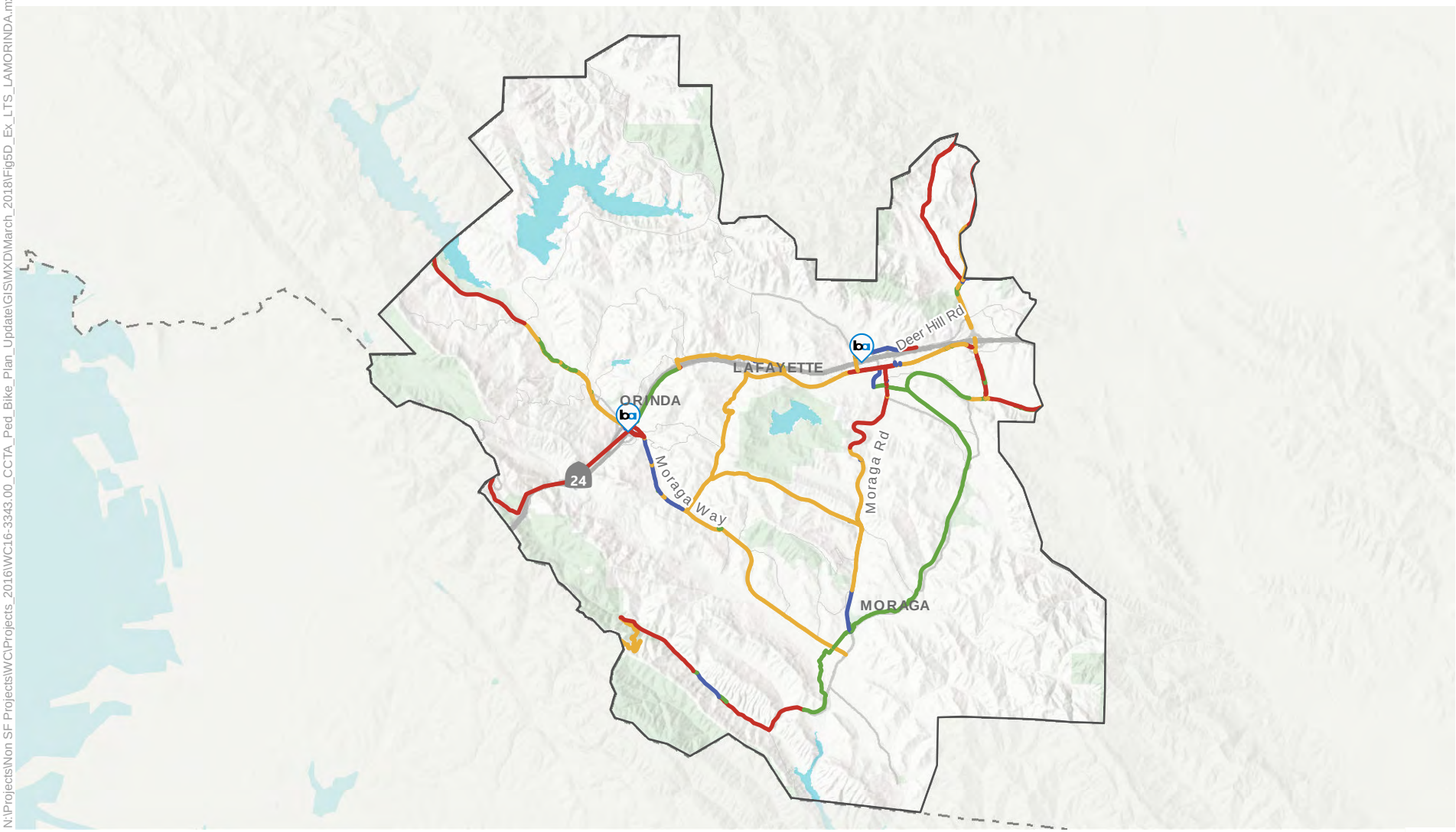
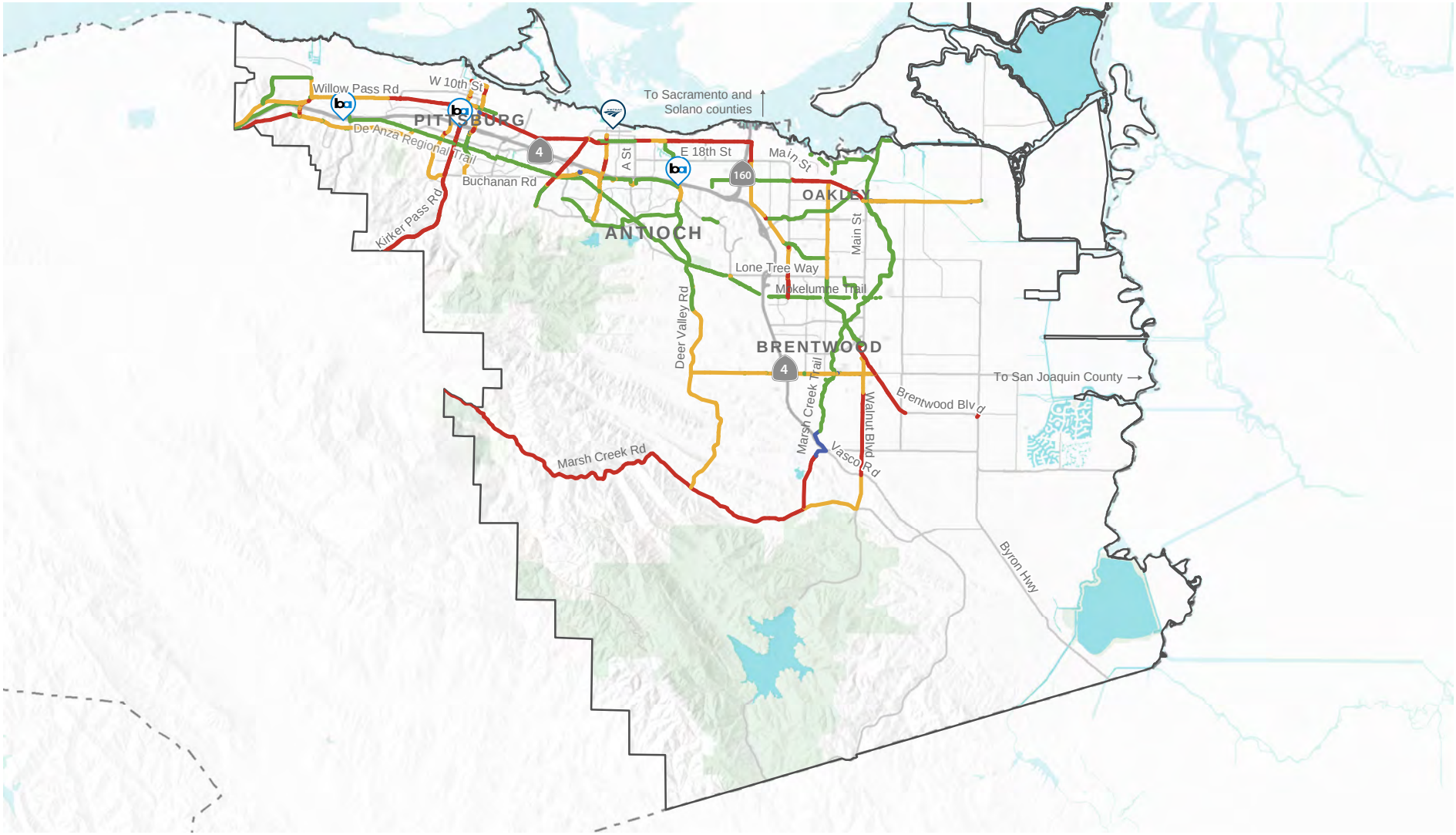


Figure 5-D

Existing LTS on 2018 CBN



Existing LTS 1

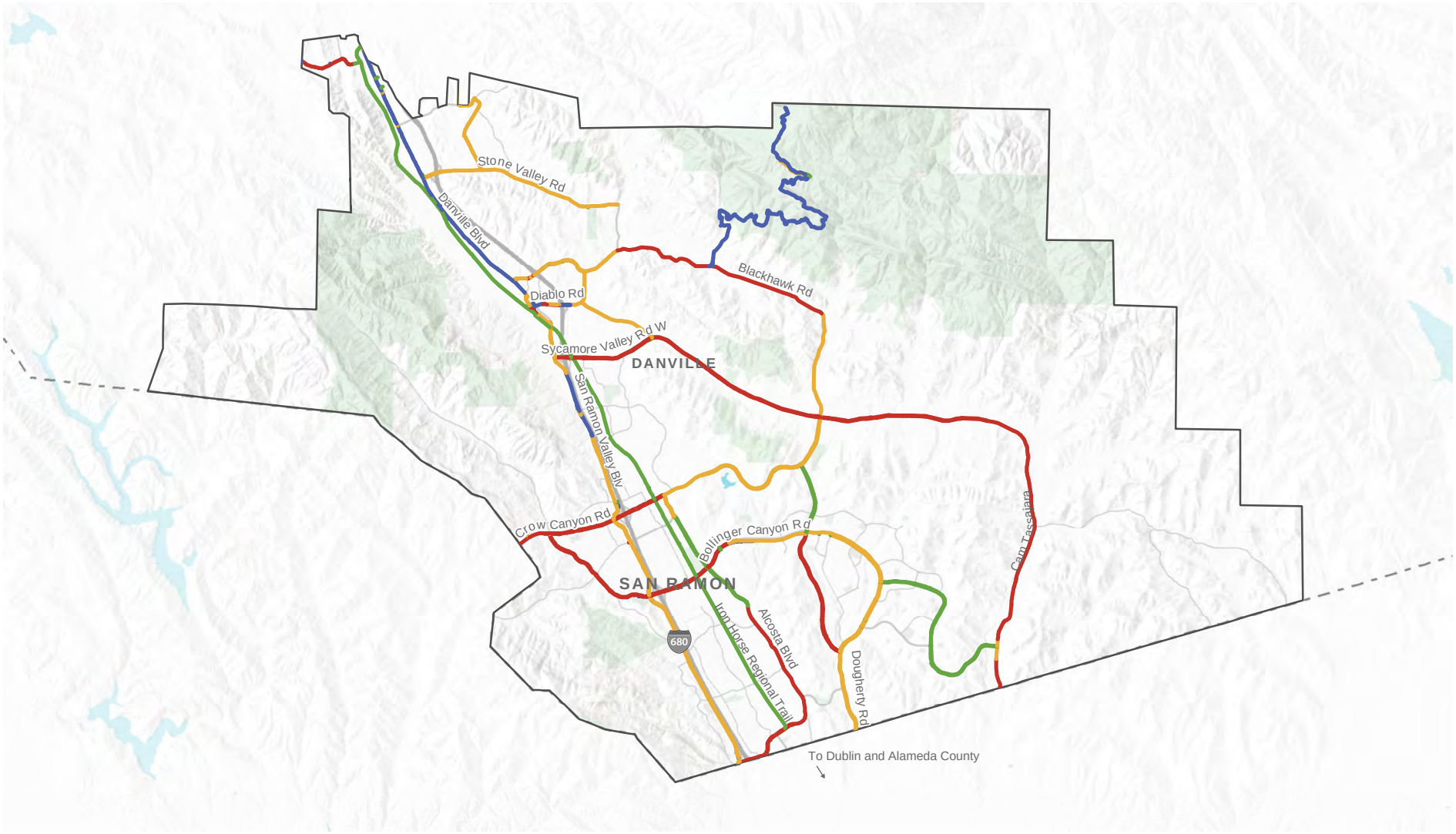
Existing LTS 2

Existing LTS 3

Existing LTS 4

Figure 5-E

Existing LTS on 2018 CBN



Existing LTS 1

Existing LTS 2

Existing LTS 3

Existing LTS 4

Figure 5-F

Existing LTS on 2018 CBN

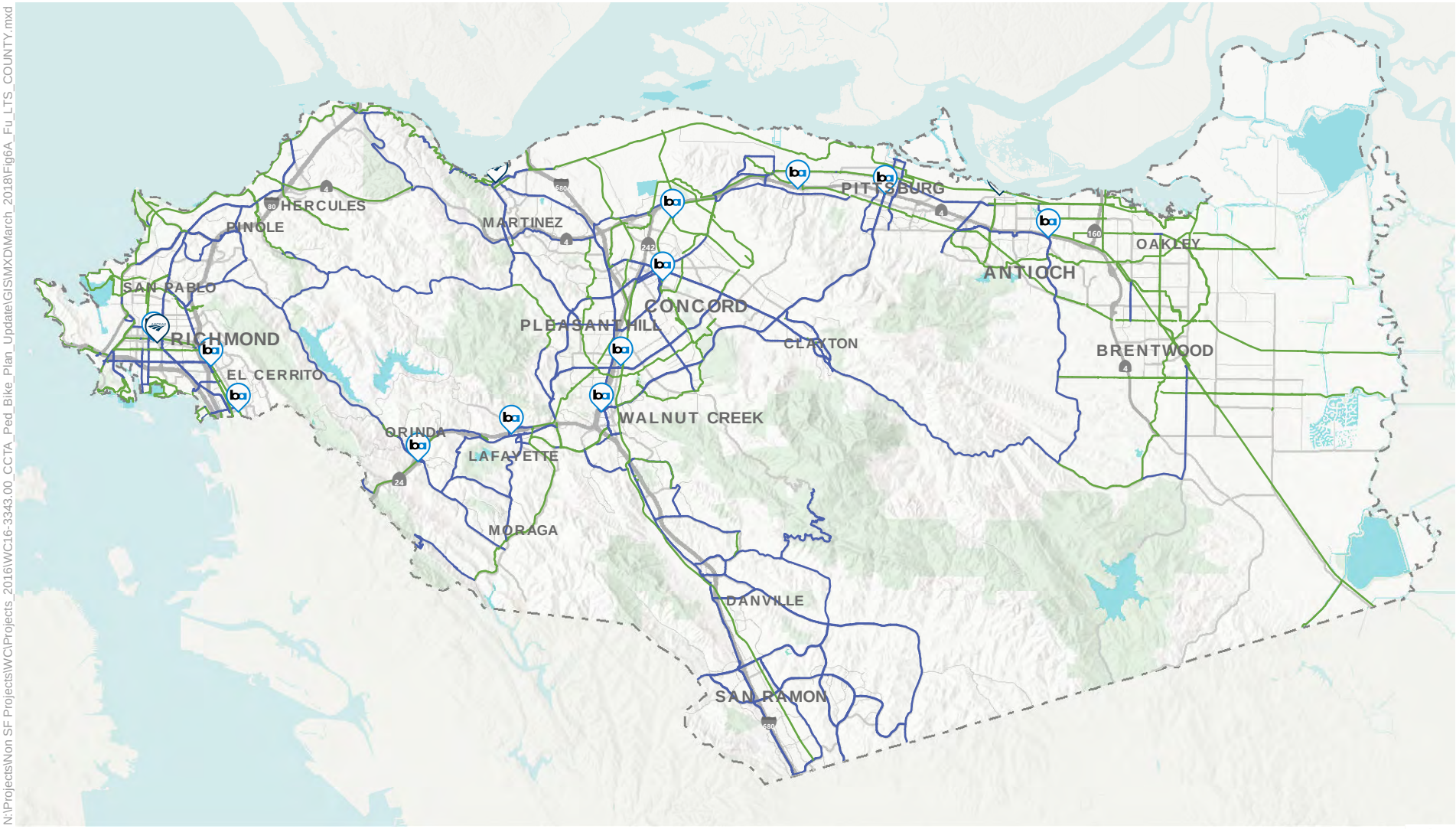


Figure 6-A

LTS on Proposed Low Stress 2018 CBN

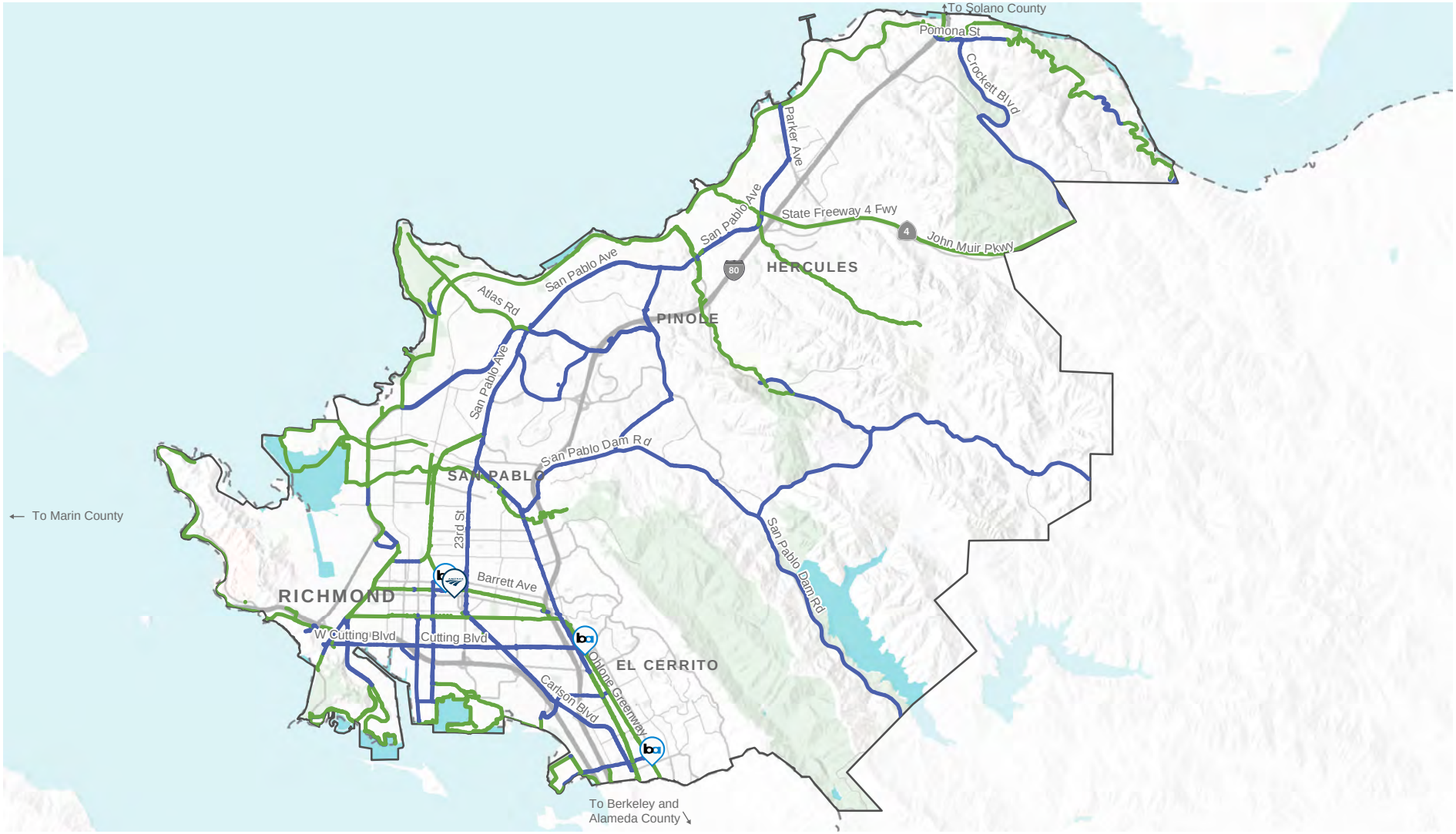
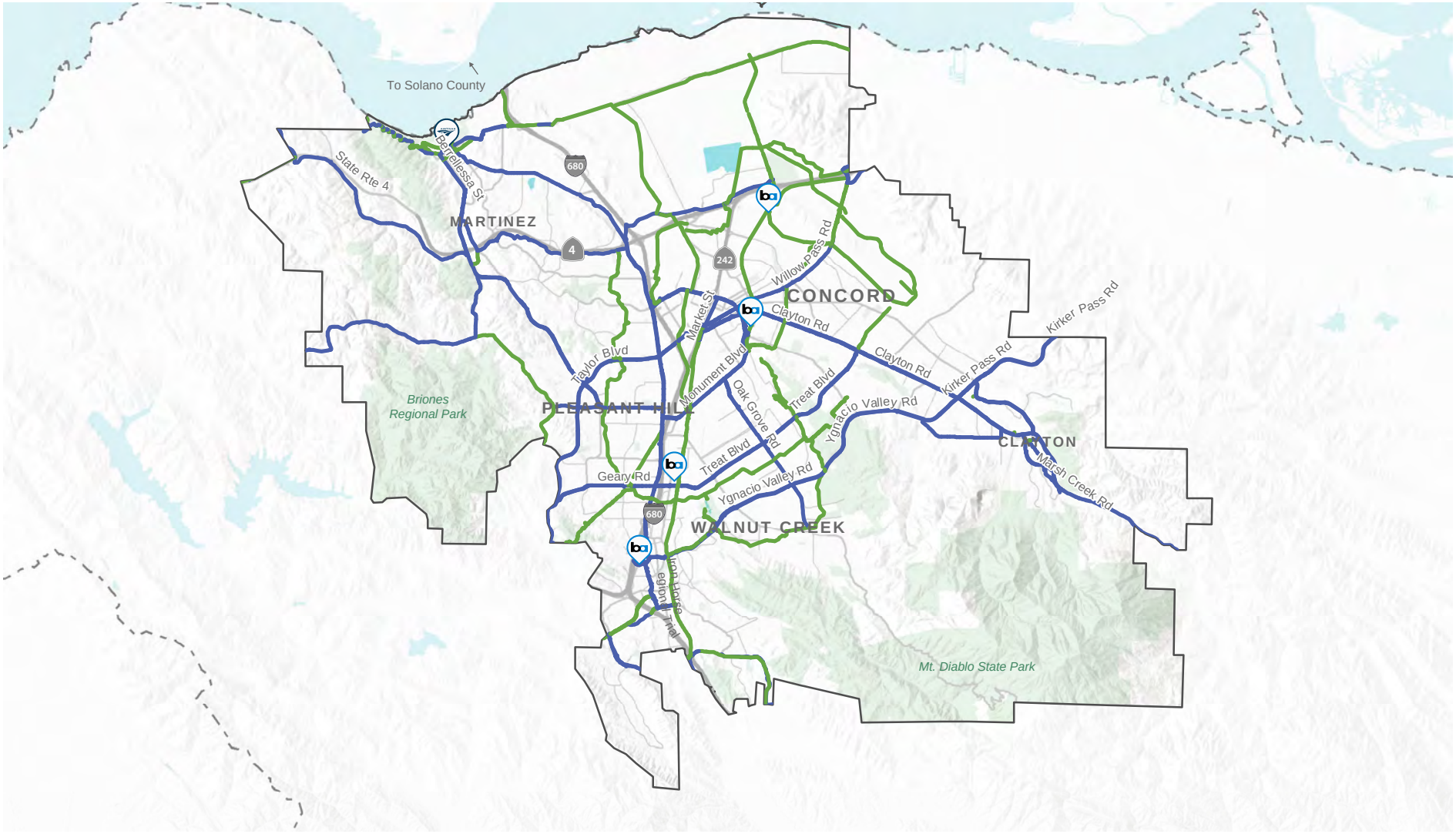


Figure 6-B

LTS on Proposed Low Stress 2018 CBN



Future LTS 1

Future LTS 2

Figure 6-C

LTS on Proposed Low Stress 2018 CBN

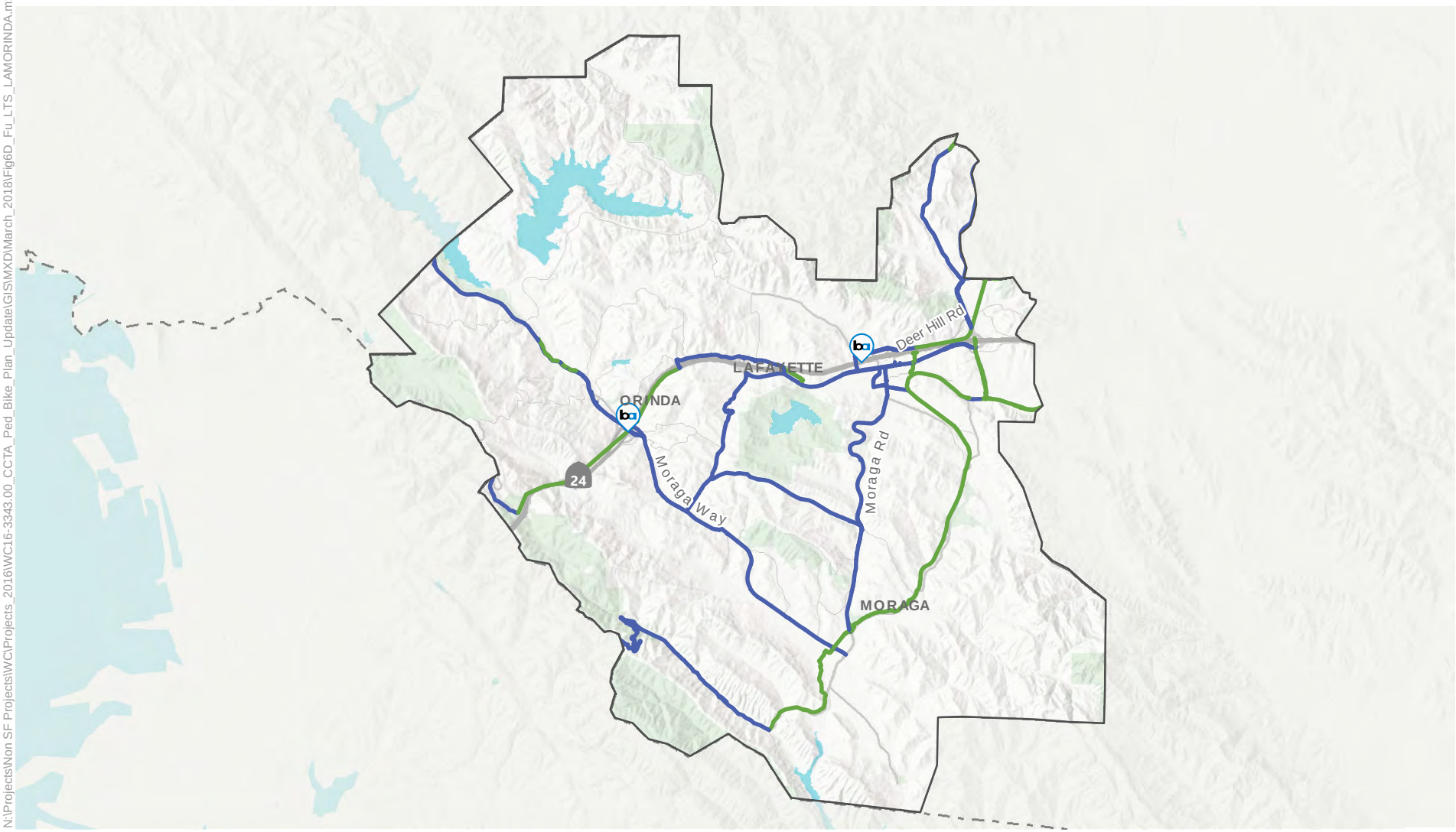


Figure 6-D

LTS on Proposed Low Stress 2018 CBN

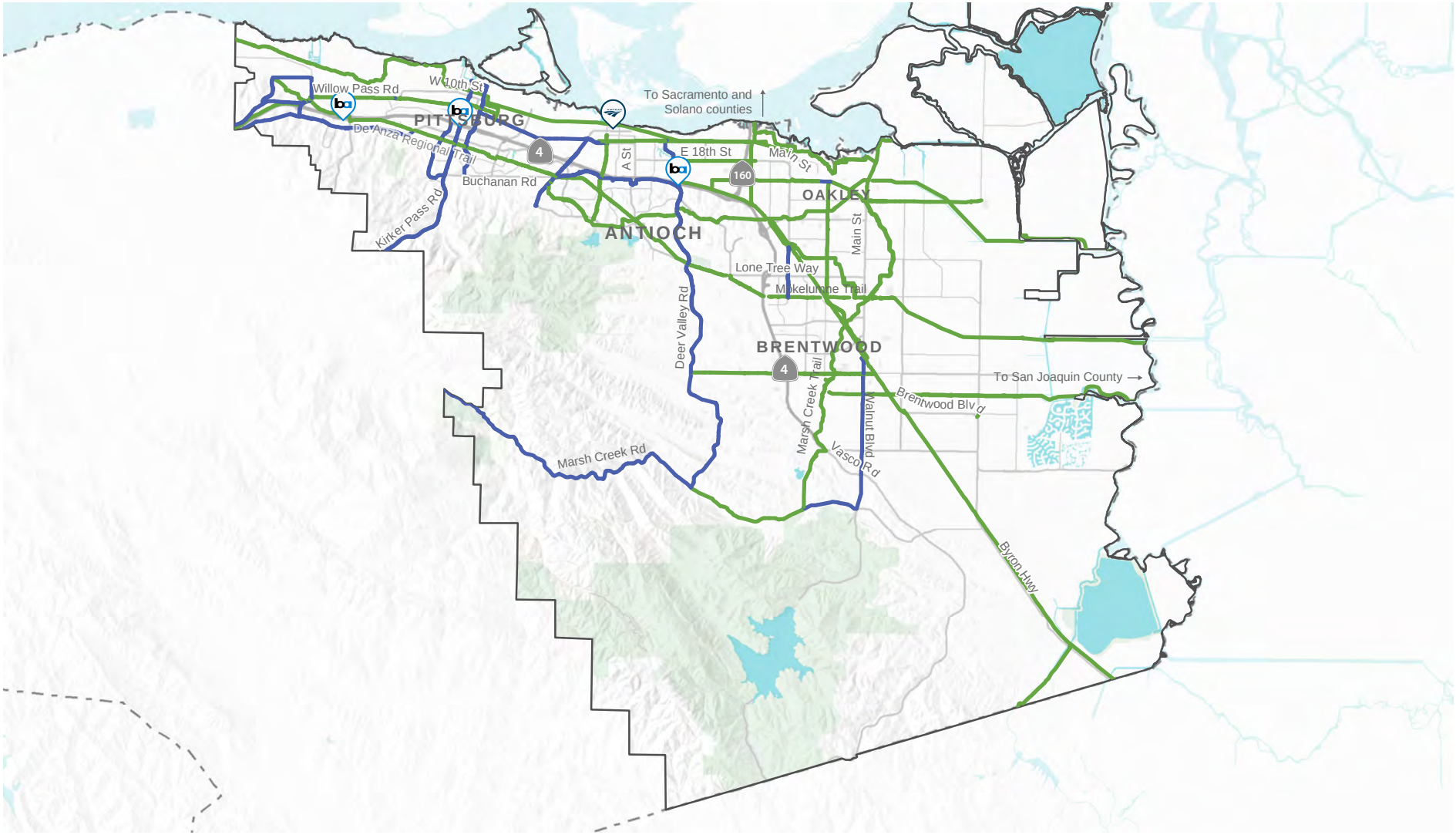
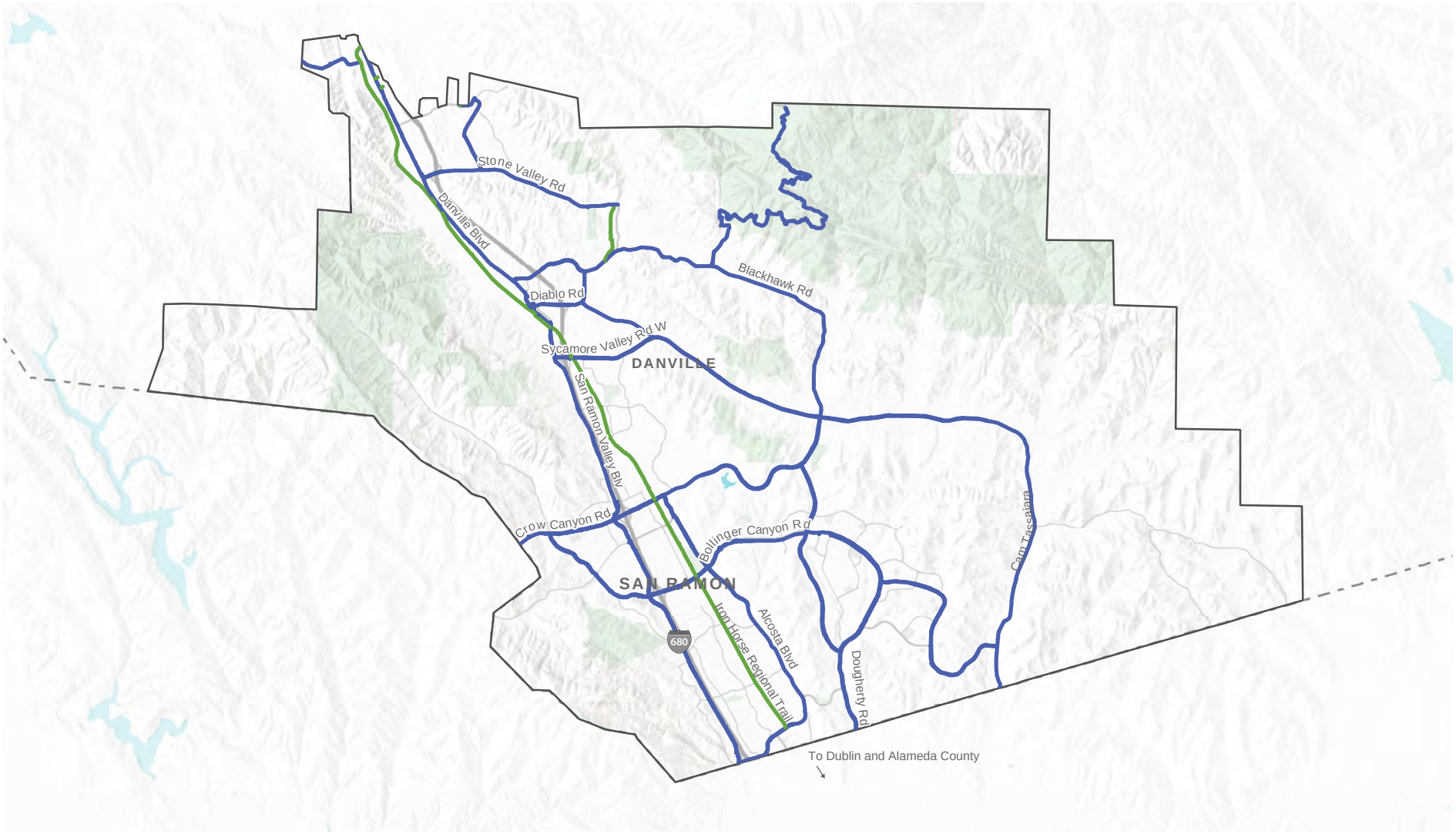


Figure 6-E

LTS on Proposed Low Stress 2018 CBN



Future LTS 1

Future LTS 2

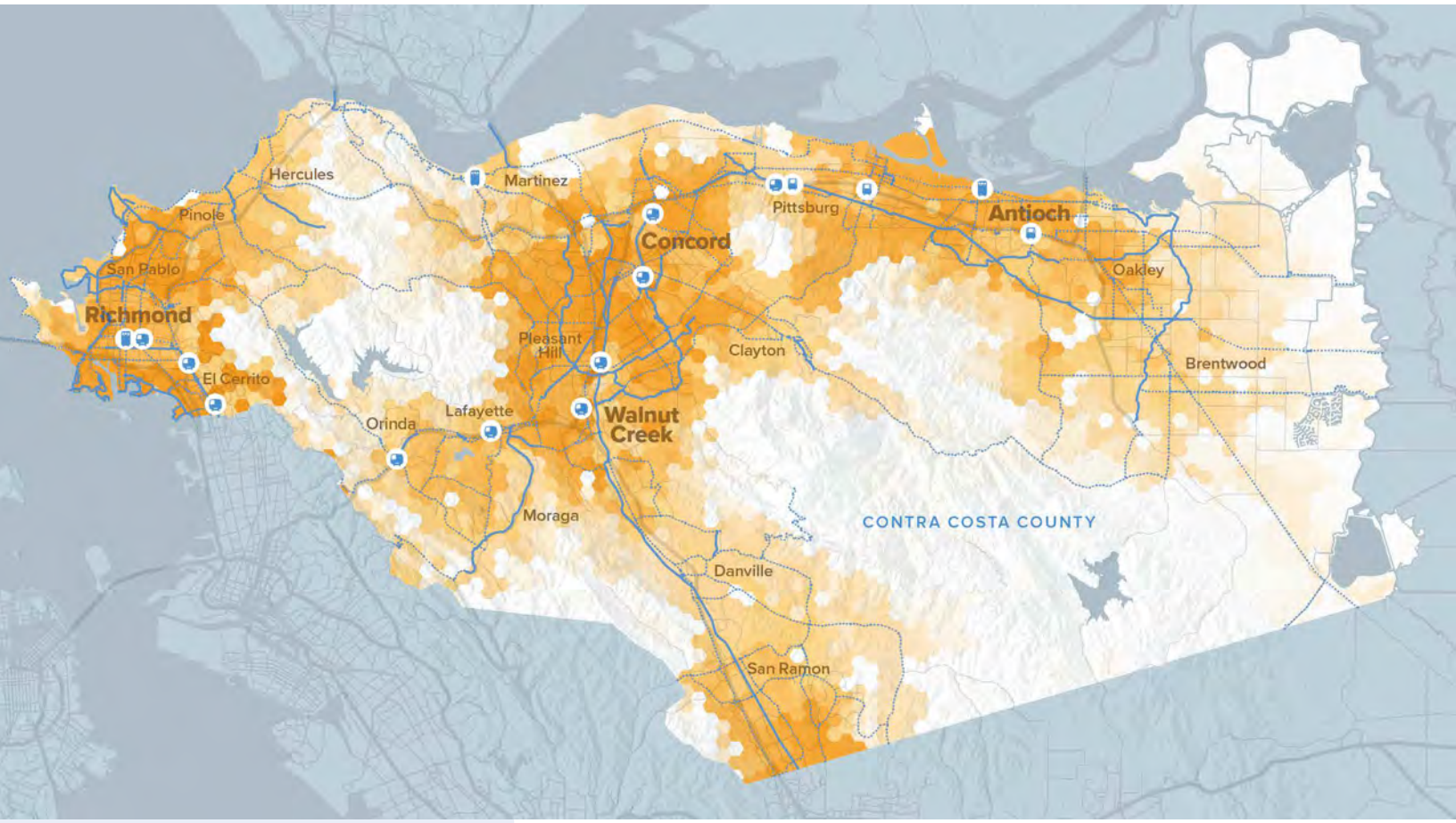
Figure 6-F

LTS on Proposed Low Stress 2018 CBN

Low Stress Bikeway Accessibility

Implementing the low-stress 2018 CBN would result in increased access to jobs and services using low stress bikeways. **Figure 7** on the next page shows the increase from current conditions to full buildout of the low-stress 2018 CBN in the amount of jobs, shopping, parks, schools, and rail transit stations accessible within a 30-minute bike ride using only low stress bicycle facilities. The numbers presented below the map indicate the number of destinations that the average Contra Costan can access before and after implementing the network.

How Does Access to Destinations Change with the 2018 Low-Stress Countywide Bike Network?



What's On the Map?

This map shows the average increase from current conditions to full buildout of the low-stress 2018 Countywide Bikeway Network in the amount of jobs, shopping, parks, schools, and transit stations accessible within a 30-minute bike ride using only low stress bicycle facilities.

Low-Stress 2018 CBN

EXISTING — PROPOSED

Change in Access to Destinations with the Low-Stress 2018 CBN

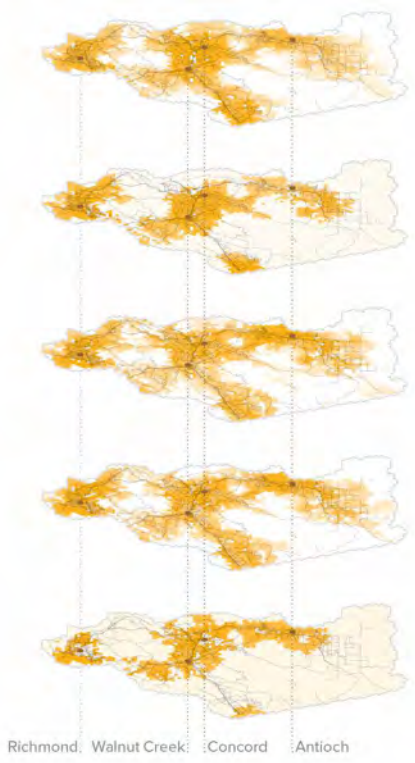
ACCESS IMPROVES — ACCESS STAYS THE SAME

Transit Stations

BART EBART AMTRAK

Where Can You* Get on Low-Stress Bikeways?

Type of Destination	Access Today	Access with 2018 CBN	Change in Access
JOBS	14k	38k	
SHOPPING CENTERS	4	9	
PARKS	20	46	
SCHOOLS	12	30	
RAIL TRANSIT STATIONS	1	2	



* the average Contra Costan

Cost Evaluation

The total cost of all proposed low-stress bicycle facilities identified in the 2018 low-stress CBN are presented in order to provide a base for Contra Costa and local jurisdictions to seek funding opportunities for implementation. **Table 2** summarizes the cost to complete the 2018 low-stress CBN for all infrastructure-related projects. These are planning-level cost estimates for that include contingencies. Local jurisdictions will be tasked with developing detailed estimates during the preliminary engineering stage as individual projects advance toward implementation.

Table 2. Cost to Complete 2018 Low-Stress CBN

Low-Stress Facility Type	Low-Stress Mileage			Cost of Proposed Low-Stress Facilities	
	Existing	Proposed	Total	Per Mile	Total
Shared Use Path or Bike Trail (Class I)	148	154	302	$1,847,000	$283,886,000
Buffered Bicycle Lane (Class II)	0	2	2	$245,000	$551,000
Bicycle Boulevard (Class III)	1	4	5	$358,000	$1,471,000
Protected Bikeway (Class IV)	0	36	36	$2,634,000	$94,964,000
Unspecified Low-Stress Facility	0	317	317	$2,240,000	$710,823,000
Total	**149**	**513**	**662**	**n/a**	**$1,091,695,000**

For over 300 miles of the 2018 low-stress CBN, specific low-stress facilities have not yet been proposed. These segments will require corridor studies by local jurisdictions to identify appropriate low-stress facilities. For cost estimating purposes, it is assumed that the cost to implement unspecified low-stress facilities is the average of the cost per mile to implement Class I and Class IV facilities.

6. Support Programs

To make walking and bicycling more practical, CCTA and its partners will need to take a multi-disciplinary approach involving the "Five E's": engineering, education, encouragement, enforcement, and evaluation. Engineering, the focus of the previous two chapters, is integral in the design of facilities for walking and bicycling. While engineering new or improved facilities is critical, it is only part of making walking and bicycling a more realistic option. This chapter addresses the remaining four E's – education, encouragement, enforcement and evaluation – as well as other support programs and projects that enhance the enjoyment of walking and bicycling, and serve to increase the number of people walking and biking in Contra Costa.

Education

Pedestrian and bicycle education programs provide both information on the benefits of walking and biking and the training and skills needed to walk or bicycle safely. Safe Routes to Schools programs target schoolchildren, and more general education programs target both children and adults.

Safe Routes to Schools

Safe Routes to School (SRTS or SR2S) projects and programs seek to make walking and bicycling to elementary, middle and high schools safer and more convenient for children. The SRTS movement has gained prominence in recent years as a way of addressing multiple concerns: traffic safety, physical inactivity and obesity among children, and traffic congestion in school areas at the start and end of the school day. SRTS projects are usually developed through a collaborative planning process that includes school administrators and teachers, the local PTA, students and their parents, neighborhood groups and residents, the local police department, and staff at local public agencies such as the planning and public works departments. With approximately 180 elementary and middle schools in Contra Costa, opportunities for SRTS projects and programs are numerous. CCTA has sponsored technical assistance for many of these schools and several local school districts have active education and encouragement programs already in place. Through the 511 Contra Costa program, the Authority supports SRTS programs in schools throughout Contra Costa. Their work includes a number of components including curricula for children on walking and bicycling, in-class safety education and encouragement presentations, bicycle helmet fit and distribution, bike and walk to school encouragement events, and bicycle rodeos for children. CCTA's SRTS program also partners with various law enforcement agencies in community-based safety education outreach efforts. CCTA is also developing a bicycle playground within an existing park in

Central Contra Costa County. This playground will serve as a permanent, hands-on bicycle training area designed like a miniature city streetscape where children ride bikes to learn the rules-of-the-road. Technical assistance is provided for minor infrastructure improvements aimed at increasing safe bicycle and pedestrian access to school. Bicycle and skateboard/scooter racks are provided to schools.

Safe Routes to School is evolving nationally into a Vision Zero for Youth movement. The 2018 CBPP recommends that the Authority and its partners in Contra Costa consider adopting this approach, which promotes safe travel for children more broadly (not just on school trips). It also works to instill a life-long interest and commitment to transportation safety and to serve as a catalyst for adopting the Vision Zero in the next generation.

Education Programs

In addition to SRTS programs and projects, the Authority supports a variety of outreach and education programs for adults, especially through employer-based transportation demand management (TDM) programs. As in many SRTS programs, this outreach is a key part of the work of 511 Contra Costa. Much of this is done in collaboration with employers and job centers such as Bishop Ranch in San Ramon and the Contra Costa Centre around the Pleasant Hill BART station.

Local agencies can also support or implement walking and bicycling educational efforts targeted at adults. This education can include courses, booklets and signage; training rides and pop-up events for outreach and education along regional trails; and workshops on bicycle commuting and maintenance, as well as training courses and conferences for public agency staff. CCTA could also assist local jurisdictions in educating the public on new infrastructure improvements such as protected bikeways, a key component of the low-stress CBN, and pedestrian hybrid beacons, a proven safety countermeasure for crossing busy, high speed roadways. CCTA will continue to work with local advocacy groups such as Bike East Bay and regional partners such as East Bay Regional Park District to help develop and administer educational programs across Contra Costa.

Encouragement

Encouragement programs provide people will incentives to start walking and biking, or to walk and bike more often. Encouragement programs can include bicycle parking, end-of-trip facilities, transit access, wayfinding, and promotional activities such as rewards or incentive programs.

Community Based Encouragement Programs

Promoting bicycling or walking as fun and rewarding modes of transportation can be accomplished through community or regionally based programs, such as 511 Contra Costa's Summer Bike Challenge Program and Bike to Work Day sponsorship. Opportunities for new ways to promote biking and walking through gamification via apps or web-based programs can promote mode shift as well.

Bicycle Parking

After on- and off-street facilities, bicycle parking is the most important element of a community's bicycling system. Parking for bikes is a low-cost yet effective way to encourage cycling and improve the functionality of a bikeway network. Short-term parking (often referred to as Class II) serves people parking bicycles for two hours or less. While short-term bicycle parking must be secure, the emphasis is on convenience and accessibility. Long-term parking (Class I) is for bicycle parking needs of more than two hours, such as for employees during work or at people's homes.

The 2018 Plan encourages jurisdictions, through the design review and permitting process, to require all new commercial and institutional development and redevelopment that meet certain size criteria to provide adequate bicycle parking racks and lockers. This includes bicycle parking in the development of new community facilities, especially libraries, parks, schools, community centers, and administrative offices. Jurisdictions should also consider requiring organizers of mass attendance events to provide and publicize attended bicycle parking in secure, enclosed areas as a way to mitigate the transportation impacts of such events. The *APBP Bicycle Parking Guidelines, 2nd Edition* provides guidance on bike parking facilities and siting decisions. Additional design considerations are included in Appendix D of this Plan, "Best Practice Bicycle Design Guidelines."

End-of-trip facilities

For commuters who dress formally, travel long distances, or bicycle during wet or hot weather, the ability to shower and change clothing can be as important as bicycle storage. End-of-trip facilities such as showers and changing rooms are provided for employees in Contra Costa at a number of large office parks, large office buildings, and buildings with fitness centers. Local jurisdictions should incorporate showers and changing rooms in the construction of new administrative buildings and should consider requiring developers of employment centers of more than a certain size — such as 50,000 square feet of usable space — to do the same.

Bike Share Programs

Bike share systems have been growing in cities around the world and throughout the state of California over the past decade. They are often implemented as a way to offer residents more active transportation options and increase bicycling, as well as to reduce auto travel and associated greenhouse gas emissions. Bike share can also increase accessibility, improve first/last-mile connections to transit, and enhance public health.

Ford GoBike Station, San Francisco

With bike share, users can make the trip from point A to point B without the cost of owning a bicycle or the hassle of having a bicycle available for that trip. Costs vary by system but typically structured to encourage use for short transportation trips (about 30 minutes).

In most bike sharing systems, an individual "borrows" a bicycle on a very short-term basis and returns the bicycle to the same or another bike sharing station. New dockless systems do not require stations at all, allowing riders to leave bicycles almost anywhere. E-bike (electric bike) and scooter sharing are also becoming more common.

Siting bike share stations – for "docked" systems – is a critical issue. Siting must consider surrounding land use, the density of stations and how the stations are situated in the streetscape and supported by street treatments that pinpoint and protect stations and provide needed wayfinding. In addition, stations must connect to key destinations within the reach of bicyclists via a safe, well-developed system of bicycle facilities. Some general principles for bike share siting include:

- Easy access
- Good visibility
- Operationally feasible
- No conflicts with pedestrian travel, transit stops, or other major streetscape features such as fire hydrants, loading bays, utility boxes or poles, or landscaping
- Best results with stations located a 3- to 5-minute walking distance of one another (no more than one-quarter mile)

Bike share docking and larger systems may require substantial upfront capital costs as well as ongoing maintenance, often paid by the jurisdiction and/or sponsored through an advertising contract.

Dockless bike share systems are becoming increasingly popular. They are being implemented in a few jurisdictions in Contra Costa (including a recent deployment in Walnut Creek) and several others are considering implementing these services. Users can locate and unlock dockless bikes using a smartphone app, and bikes can be parked within a certain service area, typically on the sidewalk or at bike racks. These systems have lower upfront costs (often offered to jurisdictions at no cost) and are more convenient for users, since they do not require docking stations. Drawbacks of dockless systems include: managing cluttered bicycles parked on sidewalks, rebalancing bikes to meet demand, maintaining scattered bike fleet and misplaced bikes, addressing inequitable access (if implemented with limited agency control), obtaining privately held data, and addressing the lack of visibility that docking stations can provide.

Lime Bike (Dockless), Seattle

Transit Access

Walking, bicycling, and riding transit are highly complementary. Transit use can increase the range of travel for pedestrians and bicyclists by bridging distances; overcoming physical barriers, such as waterways and hilly terrain; and compensating for other deterrents, such as poor weather and personal safety concerns during nighttime travel. Improving safe access to transit services for pedestrians and bicyclists attracts new transit riders and lessens demand for scarce and costly car parking spaces. Combining walking and bicycling with transit also benefits communities by reducing air pollution, traffic congestion, and energy consumption.

Accessing transit hubs can be challenging for pedestrians and bicyclists. Freeways or busy arterials isolate some stations. In some cases, few or no safe and convenient walkways and bikeways exist between residential areas and transit stops and stations. Intersections and crossings near station areas can be unsafe and unpleasant due to the large volumes of cars traveling to the station. Pedestrians in particular are discouraged by long distances between home and transit.

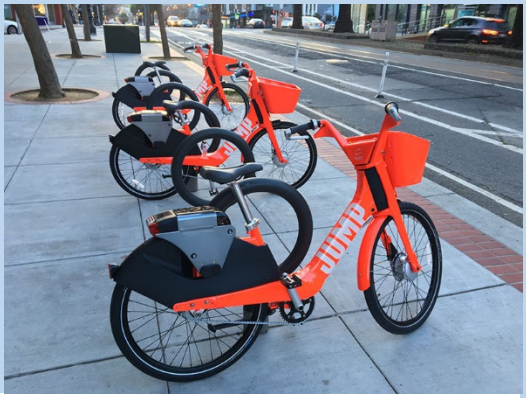
Contra Costa jurisdictions should encourage safe access to transit for pedestrians and bicyclists by prioritizing projects that improve safety near transit hubs such as BART stations, Amtrak stations, and bus transit centers.

Electric Assist Bicycles

The e-bike, or electric bike, integrates an electric motor with a regular bicycle. Some e-bikes have a motor that only assists the rider's pedal-power ("electric assist"); others have a more powerful system, closer to a moped, while retaining the ability to be pedaled by the rider. E-bikes extend the cycling range for the user and encourage longer trips; make cycling in cities with difficult topography more convenient; encourage more bicycling by older people; and enable cycling at a faster speed without the need for a shower at the destination.

Electric assist Bicycle

Increased use of electric bicycles has the potential to replace short distance automotive trips, which would reduce congestion, greenhouse gas emissions, and air quality impacts associated with these trips. Encouraging e-bike use could help overcome perceived barriers to bicycling such as challenging topography and long distances. E-bike usage was recently permitted on the Iron Horse Trail.



Jump dockless e-bike share, San Francisco

E-bike sharing is also becoming more common. San Francisco, for example, recently permitted 250 "Jump" dockless e-bikes for operation over an 18-month period. Lime Bike, another dockless bike share provider, also operates e-bike fleets.

Accessible Transit Vehicles

The American with Disabilities Act requires public transit vehicles and regular transit service to be accessible to people with disabilities. Ways to make vehicles and service accessible include operating "kneeling" or low-floor buses, or buses with lifts or ramps; providing space for wheelchairs and priority seating for people with disabilities and seniors near vehicle entrances; and announcing stops for the benefit of the visually

impaired. For bicyclists, vehicle accessibility means the ability to bring their bicycles aboard buses and trains for use at their destination. Along with providing bicycle parking at stations, allowing bicyclists to bring bicycles on board is key to encouraging cyclists to use transit. Most buses serving Contra Costa are equipped with front-mounted racks that hold two bicycles, usable on a first-come-first-served basis.

Wayfinding

Wayfinding is important to provide reinforcement and education on the preferred walking and bicycling routes in Contra Costa. Wayfinding is a key supporting element for the proposed low-stress CBN, and is important on both trails and on-street bicycle networks, particularly on bicycle boulevards that often wind through residential communities on a variety of streets. The interactive Bike Mapper sponsored by 511 Contra Costa provides online mapping of bike routes based on user input for hill tolerance and most direct route.

Sample bicycle route wayfinding.

Good wayfinding signage is mounted at an appropriate height for bicyclists and pedestrians. Signs confirm directions to nearby destinations and typically include estimated time or distance to those destinations. Wayfinding signs should be compliant with the California Manual on Uniform Traffic Control Devices (CA MUTCD), installed at key decision points in the bicycle network, and include confirmation signs that display destinations and mileage. Contra Costa jurisdictions could also consider a branded wayfinding program for low-stress CBN facilities. Additional details regarding wayfinding best practices are included in Appendix D. "Best Practice Bicycle Design Guidelines."

Enforcement

Enforcement of the rules of the road, a key part of pedestrian and bicyclist support programs, helps ensure safety for all road users. Enforcing traffic laws is of particular importance to pedestrians and bicyclists, who are the most vulnerable users of the transportation system. Law-enforcement programs can be used to educate and remind drivers, bicyclists, and pedestrians about the rules of the road, discourage unsafe behaviors while encouraging safe ones, and reinforce educational programs and messages.

Increasingly, strategic law enforcement is being considered as a Vision Zero implementation step for jurisdictions who have committed to reducing, and ultimately eliminating, severe injuries and fatalities. This does not necessarily imply more enforcement in a community, but rather targeted and repurposed efforts

that focus on the root causes of the most severe injuries, such as speeding or red light running, and at specified locations and times of day.

Evaluation

Evaluation programs are essential to measure the success of bicycle projects and programs. Strong evaluation programs can also help inform future project prioritization and target investments to the most impactful types of engineering projects and support programs. As part of the 2018 CBPP Update, CCTA will conduct peak hour pedestrian and bicycle counts at up to 20 locations. CCTA will also update the CBPP every two years for two update cycles, including changes to existing and planned facilities, commute mode statistics, and new TIMS collisions data.

"Data Collection and Analysis" was identified as an opportunity area in the benchmarking assessment conducted as part of the State of Walking and Biking in Contra Costa (Appendix A). To improve Contra Costa's pedestrian- and bicycle-related evaluation programs, CCTA could provide technical assistance to local jurisdictions to:

- Conduct local pedestrian and bicycle counts,
- Maintain inventories of bike parking, sidewalks, pathways, pedestrian signs, traffic calming installations, or maintenance needs,
- Perform before-and-after studies on pedestrian and bicycle projects,
- Understand how to use "big data" (e.g. cell phone data) for pedestrian and bicycle projects such as road diets, and
- Data on collisions involving bicyclists and pedestrians.

More information on best practice data collection and evaluation programs is included in Appendix B, "Best Practice Bicycle and Pedestrian Resources."

7. Implementation

The Authority will implement the 2018 CBPP through its own actions and the collaboration with and actions of its partners: local jurisdictions, 511 Contra Costa, the Bay Area Air Quality Management District, Caltrans, MTC, EBRPD and other agencies and advocacy and community organizations in Contra Costa and the Bay Area. The Authority plays a significant role in the planning, funding, design and construction of new transportation projects and programs in Contra Costa. Similarly, local partners have the power and responsibility to plan, design, construct, maintain, and operate the pedestrian and bicycle improvements and programs outlined in this Plan. The efforts of both the Authority and these partners — and our collaboration on improving conditions for walking and bicycling — will be critical in implementing the 2018 CBPP.

As well as the 20 local jurisdictions in Contra Costa, the four Regional Transportation Planning Committees (RTPCs) will serve as important partners in carrying out the 2018 CBPP. The RTPCs, made up of elected and appointed representatives from each jurisdiction within that region, reflect the county's diverse geography and demographics. They are:

- West Contra Costa Transportation Advisory Committee (WCCTAC) – El Cerrito, Hercules, Pinole, Richmond, and San Pablo;
- Transportation Planning and Cooperation Advisory Committee (TRANSPAC) – Clayton, Concord, Martinez, Pleasant Hill and Walnut Creek;
- East Contra Costa Transportation Advisory Committee (TRANSPLAN) – Antioch, Brentwood, Oakley, and Pittsburg;
- Southwest Transportation Advisory Committee (SWAT) – Lafayette, Moraga and Orinda.

Contra Costa County is also a member of each RTPC.

This chapter outlines the main actions the Authority and its partners will need to take to implement the CBPP, discusses the Authority's funding priorities with respect to pedestrian and bicycle projects, and contains information on funding sources that local jurisdictions can use to fund their non-motorized transportation projects and programs.

Implementation Actions

CCTA

Below are the actions the Authority intends to take toward implementing the CBPP. Following adoption of the CBPP, the Authority — with input from the CBPAC, the Technical Coordinating Committee (TCC), and local and regional agencies involved in pedestrian and bicycle planning and support — will review the following actions and identify the resources needed to accomplish them.

Table 3. Authority Implementation Actions

Category	Action	Description
Plans and Policies	Update the CBPP	Update the CBPP regularly to ensure that the plan reflects current conditions and priorities and helps local jurisdictions to maintain eligibility for grants.
	Incorporate "Complete Street" Principles into Authority policies and procedures	Review and revise Authority policies and procedures to ensure that roadway projects funded or developed by the Authority reflect "complete streets" principles, as appropriate to each project's function and context, so that they provide safe and convenient access to all users.
	Implement the Growth Management Program	Enforce the requirement of the Growth Management Program that local jurisdictions incorporate policies and standards into their development approval process that support pedestrian and bicycle access.
	Coordinate on SB 743	Collaborate with cities, the County and other agencies to address Senate Bill 743.[4] Review Authority programs and procedures to reflect the shift from level-of-service measures to vehicle miles traveled. This review will consider updating the Authority's Implementation Documents and Technical Procedures to consider policies that support bicycle-pedestrian projects as CEQA mitigations. Consideration will also be given to the Regional Transportation Mitigation Programs, to incorporate major pedestrian and bicycle projects into those programs so that funding streams are identified and captured.
	Sponsor the Countywide Bicycle and Pedestrian Advisory Committee	Continue to sponsor the Countywide Bicycle and Pedestrian Advisory Committee, particularly in their efforts to establish project priorities; recommend projects for funding; review complete streets checklists; identify and implement multi-jurisdictional projects and programs; and, more generally, address countywide pedestrian and bicycle transportation issues.
	Implement Vision Zero and Systematic Safety	Support a countywide Vision Zero policy, and systematic pedestrian and bicycle safety analyses.

[4] Senate Bill 743 (SB 743) and how it is altering CEQA analyses and development mitigation programs is discussed in more detail in Appendix B, "Best Practice Bicycle and Pedestrian Resources."

Table 3. Authority Implementation Actions

Category	Action	Description
	Ensure Equity in Bicycle and Pedestrian Investments	Consider equity in funding decisions, to ensure that MTC Communities of Concern and disadvantaged communities identified by CalEnviroScreen[5] receive a fair share of bicycle and pedestrian investments.
	Establish Project Priorities	Work with the CBPAC and RTPCs to systematically review the safety, connectivity, accessibility and potential for mode shift of the transportation system to establish short- and long-term pedestrian and bicycle project priorities. These priorities will be used to evaluate applications for Measure J funds.
Support for Local Efforts	Maintain an Online Bicycle and Pedestrian Toolbox	Maintain an up-to-date online "toolbox" that provides a directory of best practices, model policies, standards and guidelines, and other resources for local agencies related to the planning, design and implementation of pedestrian and bicycle facilities and programs and pedestrian- and bicycle-friendly developments. The toolbox should include a tool for assessing the impact of bicycle and pedestrian improvements on travel behavior.
	Support and Participate in Complete Street Corridor Studies	Support and participate in studies to determine appropriate and cost effective solutions to pedestrian and bicycle access issues. Support can include direct funding or technical or staff support.
	Improve Wayfinding	Improve wayfinding for pedestrians and bicyclists in Contra Costa and the region. Work with local agencies to explore development of a countywide signage scheme, including directional and destination signs for bikeways and trails and location maps in pedestrian districts. Incorporate wayfinding components into Authority-funded projects consistent with the wayfinding program recommendations.
	Help Develop Local Plans	Help local jurisdictions develop bicycle or pedestrian plans, whether by adapting the CBPP, with necessary amendments, or by developing new local plans or updates. Encourage updates to local plans where plans do not address Class IV and other new facility types or do not incorporate the level of traffic stress concept.
	Assist with Complete Streets Requirements	Assist local project sponsors in complying with the Complete Streets requirements of the Metropolitan Transportation Commission that require consideration of the needs of bicyclists and pedestrians in the design of new transportation improvements, and encourage the implementation of bike and pedestrian facilities as part of other projects.
	Support "Quick Build" Projects	Support local efforts to implement "quick build" projects to test innovative designs, using materials that can easily be modified and adapted.

[5] The California Environmental Protection Agency's (CalEPA) California Communities Environmental Health Screening Tool, Version 3.0 (CalEnviroScreen 3.0) designates communities as disadvantaged community (DACs) census tracts in accordance with California Senate Bill 535. Appendix A. "State of Walking and Biking in Contra Costa" presents the CalEnviroScreen 3.0 results for census tracts in Contra Costa.

Table 3. Authority Implementation Actions

Category	Action	Description
	Curbside Management	Assist local jurisdictions in inventorying, assessing, enhancing, and prioritizing curb spaces to meet the multi-modal demands (e.g. on-street parking, vehicle pick-up/drop-off, biking, transit, etc.) at the curb in a safe an efficient way.
Funding	Help Fund Improvements	Help fund pedestrian and bicycle improvements, including both facilities and support programs that implement the priorities in the CBPP.
	Publicize Funding Opportunities	Inform local agencies of funding opportunities for pedestrian and bicycle projects and provide them with assistance, as appropriate, in developing grant applications.
	Provide Technical Assistance	Provide technical assistance and training to local agencies in planning and designing, bicycle, pedestrian, and safe routes to school improvements.
	Maintain a List of Funding Sources	Maintain an updated online list of funding sources for pedestrian and bicycle projects available to local jurisdictions.
	Consider Active Transportation Needs in Funding Requests	Consider pedestrian and bicycle funding needs when requesting earmarks or other special funds from the State or Federal government, especially funding for projects to overcome important gaps or obstacles in the Countywide Bikeway Network and in designated pedestrian districts.
	Consider Bicycle and Pedestrian Improvements as CEQA Mitigation Measures	Identify and add bicycle, pedestrian and transit projects as part of traffic impact fee project lists or Environmental Impact Report (EIR) mitigation measures
	Streamline Calls for Projects	Combine calls for projects for separate programs into a single coordinated application process.
Monitoring	Collect and Publish Monitoring Data	Regularly collect and make available data on walking and bicycling countywide, including trip-making, shares of total trips, and crashes involving pedestrians and bicyclists.

The Authority will carry out these actions through a variety of means. Many — such as "Implement the Growth Management Program" and "Assist with Complete Streets Requirements" — will be done directly by Authority staff. Other actions will be carried out by Authority staff with support from consultants. Identifying a countywide Vision Zero approach and collecting monitoring data are two actions that would involve consultant support.

Local Jurisdictions

The Authority encourages local jurisdictions, and the RTPCs as appropriate, to take the following actions toward implementing the CBPP.

Table 4. Local Implementation Actions

Action	Description
Adopt Bicycle and Pedestrian Plans	Develop local pedestrian and bicycle plans or adopt the CBPP, with amendments as necessary. Plans should be consistent with the CBPP and should be detailed enough to meet requirements under Caltrans' Active Transportation Plan (ATP) funding program.
Implement Priority Projects	Implement types of projects identified as priorities in the CBPP. Jurisdictions will need to identify specific improvements, conduct detailed planning and design, seek funding (including from the Authority) and, lastly, construct them.
Accommodate Pedestrians and Bicyclists	Accommodate pedestrians and bicyclists in all new and rebuilt projects, consistent with the facility's function and context. In particular, the Authority will expect this of projects built with funding from the Authority.
Increase Bicycle Parking	Increase the availability of bicycle parking. Adopt bicycle parking ordinances applicable to both public and private developments, and install or provide bicycle racks for installation at existing buildings and sites.
Revise Plans	Revise general and specific plans to strengthen or incorporate policies that promote pedestrian- and bicycle-friendly development patterns.
Adopt Guidelines and Standards	Adopt guidelines and standards to accommodate walking and bicycling in new developments and major redevelopments. This can be accomplished by modifying zoning and subdivision ordinances, and review and approval processes for development projects and will comply with the requirements of the Measure J Growth Management Program.
Support for 511 Contra Costa	Continue to support the implementation and improvement of pedestrian- and bicycle-related initiatives of 511 Contra Costa.

Other Agencies

County, regional, and state agencies are encouraged to take the following actions to assist in the implementation of the CBPP:

Table 5. Other Agencies Implementation Actions

Agency	Action	Description
Caltrans	Approve the CBPP	This is the responsibility of Caltrans' Bicycle Facilities Unit.
	Enforce Deputy Directive 64	Enforce Deputy Directive 64 to address the safety and mobility needs of bicyclists and pedestrians in all projects, regardless of funding.
BART	Station Improvements	Make station areas more pedestrian and bicycle friendly.
All Transit Operators	Increase Bicycle Parking	Increase the availability of bicycle parking at all stations and stops in Contra Costa to accommodate current and projected demand.

EBRPD, EBMUD and Contra Costa Water District	Improve Regional Trails	Improve regional trails in Contra Costa. While the Authority can make funding available, these agencies will need to identify, plan, design, construct, operate and maintain improvements.

Technical Assistance for Local Jurisdictions

Since its creation in 1988, the Authority has provided a variety of technical assistance to local agencies. This assistance ranges from planning and design to construction management. The previous CBPPs, for example, included design resources on planning, designing and implementing bicycle and pedestrian projects. In 2015–16, the Authority provided assistance to 14 agencies with 17 technical assistance reports for schools within their jurisdictions.

As with prior countywide plans, CCTA should make technical support available to local jurisdictions in support of this Plan's implementation. The 2018 CBPP, like the previous CBPPs, provides local jurisdictions with best practice design guidance for pedestrian and bicycle facilities, which are included in Appendix C, "Best Practice Pedestrian Treatment Toolbox," and Appendix D, "Best Practice Bicycle Design Guidelines."

CCTA could also support local bicycle and pedestrian projects by providing technical assistance and/or resources on innovative public engagement strategies. These strategies can help people overcome their mental, behavioral, and logistical barriers to walking and bicycling. Some people, for example, might not think of walking to transit as a viable commute alternative; others might want to give bicycle commuting a try but do not know where to turn for basic information. Examples of innovative public engagement strategies include pop-up outreach booths and temporary "Living Preview" installations to create a real-world, three-dimensional model of proposed improvements.

As another example, the CCTA Safe Routes to School Plan included a Technical Assistance program that provided site assessments for 17 schools throughout Contra Costa. Each school had a walking audit with a consultant team to discuss issues and opportunities surrounding each campus. Recommendations and initial concepts were then developed to help each school and jurisdiction apply for grant funding or include the project in a Capital Improvement Program. This type of strategy could be included in other planning projects or developed as a standalone program available to jurisdictions.

Complete Streets Corridor Studies

In recent years, agencies across the United States from the national to the local level have adopted the Complete Streets approach. California law now requires cities, towns and counties to incorporate this

approach into their General Plan. In a complete streets approach, all streets are planned, designed, operated, and maintained to enable safe, convenient, and comfortable travel and access for all users, regardless of age, ability or mode of travel. Implementing a Complete Street is relatively easy when designing and constructing a new street; the more common and more challenging task is to retrofit an existing roadway. The roadway's right-of-way is usually constrained, and any changes will involve many stakeholders: elected officials, city departments, transit agencies, and the general public.

Each Complete Street is unique and must reflect the context of its particular community. One Complete Street might include bike lanes while another might include a separated bikeway. One might narrow travel lanes and another might implement a road diet. The components included, or not included, will need to reflect the specific conditions and users of that street, and thus require individual studies.

To develop the low-stress CBN identified in the 2018 CBPP Update, local jurisdictions are encouraged to carry out complete streets corridor studies on sections of the CBN that are currently high-stress – as well as where low-stress facilities are not yet been proposed in other planning efforts – to identify appropriate implementation strategies for low-stress facilities.

Funding

This section describes the funding sources available to fund the projects and programs identified in this plan, and presents a snapshot of the estimated funding currently available for these projects.

Funding Sources

Federal, state, regional, county, and local organizations provide funding for pedestrian and bicycle projects and programs. **Table 6** summarizes the applicability of these various funding sources to projects, planning efforts, and programs proposed in this Plan Update. The most applicable funding sources for the improvements proposed are Contra Costa Measure J, the Active Transportation Program (ATP) and Highway Safety Improvement Program (HSIP). The appendix includes details about current programs used to fund existing scheduled projects, and an assessment of upcoming programs as of January 2018. These may change as state and local programs adapt to the federal funding under the Fixing America's Surface Transportation Act (FAST Act). A more thorough presentation of these funding sources is included in Appendix H. Funding Sources."

Table 6. Funding Sources

Funding Source	Class I Bicycle Path	Class II Bicycle Lane	Class III Bicycle Route	Class IV Protected Bikeways	Pedes-trian Projects	Other Projects	Planning and Programs
Congestion Mitigation and Air Quality Improvements Program (CMAQ)	◒	●	●	●	●	◒	◒
Regional Surface Transportation Block Grant (RSTBG)	●	●	●	●	●	●	●
Highway Safety Improvement Program (HSIP) Grants	◒	●	◒	●	●	●	○
Caltrans Transportation Planning Grants	○	○	○	○	○	○	●
Local Transportation Fund (LTF)	●	●	●	●	●	●	○
California State Parks Recreational Trails Program (RTP)	●	○	○	○	○	○	○
Land and Water Conservation Fund (LWCP)	●	○	○	○	○	○	○
Active Transportation Program (ATP)	●	●	●	●	●	●	●
Transportation Development Act (TDA)	●	●	●	●	●	●	●
Affordable Housing and Sustainable Communities Program (AHSC)	◒	◒	◒	◒	◒	◒	◒
California Office of Traffic Safety Pedestrian and Bicycle Safety Grants	○	○	○	○	○	○	●
East Bay Regional Park District (EBRPD) Measure WW	●	●	●	●	●	○	○
Metropolitan Transportation Commission (MTC) One Bay Area Grants (OBAG)	●	●	●	●	●	●	●
Bay Area Air Quality Management District (BAAQMD) County Program Manager Fund	●	●	●	●	○	○	○
BAAQMD Transportation Fund for Clean Air (TFCA)	●	●	●	●	○	○	○
Measure J, Transportation for Livable Communities (TLC)	●	●	●	●	●	◒	◒
Measure J, Pedestrian, Bicycle and Trail Facilities (PBTF) program	●	●	●	●	●	○	○

Notes:

● Indicates that finds may be used for this category, ○ indicates that funds may not be used for this category, and ◒ indicates that funds may be used, though restrictions apply.

Project Costs and Available Funding

The Authority has estimated the costs for developing the bicycle, pedestrian and safe routes to school projects identified by our partners. CCTA's Comprehensive Transportation Project List (CTPL) contains 328 bicycle-pedestrian or Safe Routes to School projects with a total cost of over $1.4 billion (see **Table 7**).

The funding committed to those projects — $172 million — will reduce the amount of funding needed to $1.23 billion. Through 2040, the Authority estimates that another $790 million in potential future funding could be available for bicycle, pedestrian and safe routes to school projects. This leaves a remaining shortfall of $443 million.

Table 7. Bicycle & Pedestrian Project Costs and Committed Funding

Category	Cost / Funding Estimate
Project Costs	
2017 Bicycle / Pedestrian Projects	**$1,405,736,000**
Committed Funding as of 2017	
Bicycle/Pedestrian	$136,000,000
Safe Routes to School	$36,000,000
Total	**$172,000,000**
Potential Future Funding through 2040	
Complete Streets	$177,000,000
Safe Routes to School	$290,000,000
Pedestrian, Bicycle, and Trail Facilities	$279,000,000
Safe Transportation for Children	$44,000,000
Total	**$790,000,000**
Deficits	
With Committed Funding 2017	**-$1,233,736,000**
With Potential Future Revenues Through 2040	**-$443,736,000**

This may, however, underestimate the funding need for these project types. The Authority earlier conducted an assessment for safe routes to school needs. This assessment found a funding need for SRTS projects of $243 million with an annual cost of $58 million for SRTS programs. Further, local jurisdictions, often with Authority support, will develop bicycle, pedestrian and corridor plans that continue to identify new projects and actions. These new projects will add to the total cost of meeting the need for safe, connected active

transportation facilities. The recent Olympic Boulevard Trail Corridor, developed jointly by the County, Lafayette and Walnut Creek, identified about $12 million in new bicycle and pedestrian projects.