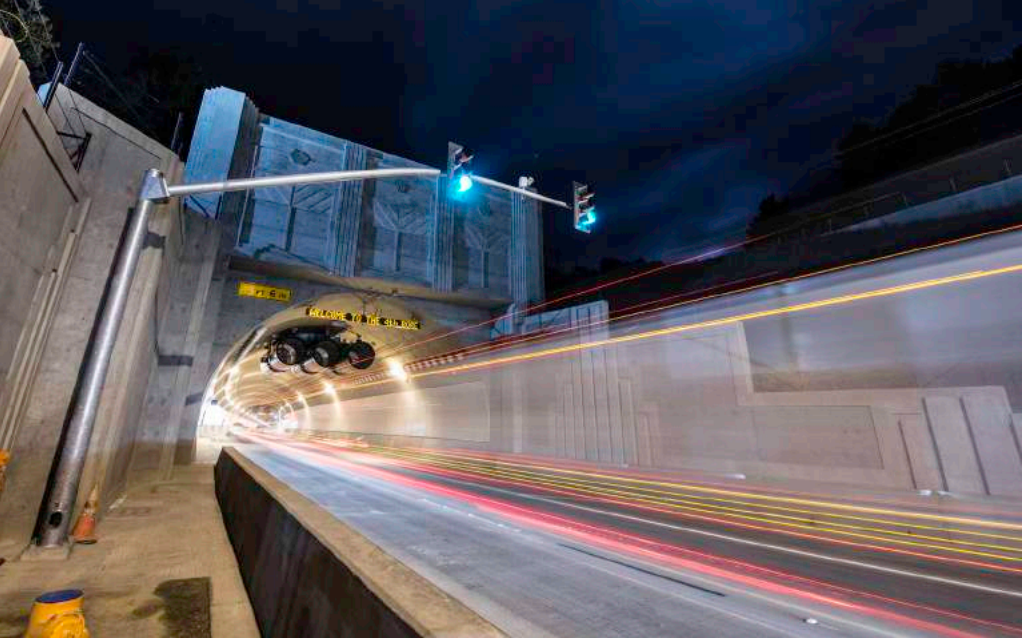

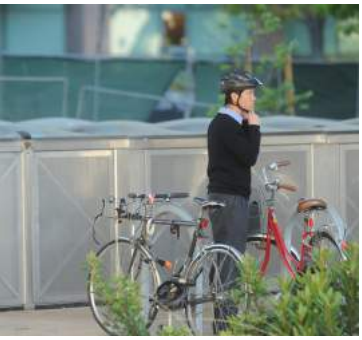

2017 Countywide Comprehensive Transportation Plan

Volume I

Adopted September 20, 2017

CONTRA COSTA
transportation
authority

Contra Costa Transportation Authority

2017
Countywide Comprehensive Transportation Plan

Volume 1

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Table of Contents

List of Figures

List of Tables

Executive Summary

The Contra Costa Countywide Transportation Plan, or CTP, is the blueprint for Contra Costa's transportation system over the coming decades. This long-range vision for transportation identifies the projects, programs, and policies that the Authority Board hopes to pursue. The CTP identifies goals for bringing together all modes of travel, networks and operators, to meet the diverse needs of Contra Costa and to support Plan Bay Area.

By improving the transportation system, we can help to address the challenges that a growing population, more jobs, and more traffic will bring. We also see new opportunities—from technological innovation to the benefits of active transportation—to address the challenges of growth and change without more roads. The CTP lays out a vision for our transportation future, the goals and strategies for achieving that vision, and the future transportation investments needed to promote a growing economy, advance technological changes, protect the environment, and improve our quality of life.

INNOVATION IS THE KEY

Innovation is the guiding theme for this CTP, with the Authority taking the lead on introducing and managing new technology, funding and constructing improvements to the county's transportation infrastructure, and overseeing ongoing transportation programs. These new initiatives, coupled with current programs and projects and the Authority's growth management program, will reduce congestion, improve air quality, and provide mobility options for all residents without undertaking major expansion projects. Since 1989 the Authority has been actively and successfully engaged in long-range planning for critical transportation infrastructure projects and programs that connect our communities, foster a strong economy, manage traffic, expand transit service, improve opportunities for walking and bicycling, and safely and efficiently get people to their destination of choice. Building on prior CTPs, the 2017 CTP sets forth a viable, transformative framework to continue this mission, using technology and innovation to make the best use of available resources.

To be effective and responsive, the Authority works closely with the Regional Transportation Planning Committees (RTPCs), local jurisdictions, transit agencies and paratransit providers and regional and state partners – MTC, ABAG, the Bay Area Air Quality Management District, the Bay Conservation and Development Commission, Caltrans, and the California Air Resources Board, among others.

CHALLENGES AND OPPORTUNITIES

The population of Contra Costa and the region will continue to grow. Nearly 300,000 new people, 88,000 new households and 122,000 new jobs are expected in Contra Costa County by 2040, accounting for between 10 and 13 percent of total growth for the region. Increased population and jobs will place new demands on our transportation system, but we also have new tools and innovative approaches to help meet those demands.

Challenges

The challenges will be to plan for future needs in areas of growth, facilitate economic development, and help local jurisdictions respond to and facilitate new technologies, including electric vehicles, transportation network companies, and connected/autonomous vehicles, to serve development and respond to changing demographics and travel patterns. Responding to environmental mandates, particularly

air quality, and concerns about rising tides, public health, and equity also will be important. And finally, maintaining and operating the system we have remains a pressing challenge.

Projected Growth in Population and Jobs

While the rate of growth in Contra Costa is slowing, the Authority still expects substantial growth through 2040. A 27 percent increase in our population, a 31 percent increase in our workforce, and a 36 percent increase in the number of jobs is expected by 2040 in Contra Costa. To accommodate that growth, Contra Costa will need to provide housing, as well as the schools, stores and other services needed to support the projected population increase.

Table ES-1: ABAG Projections 2013 for Contra Costa County 2010 and 2040

	2010	2040	Change	% Change
Population	1,049,000	1,328,000	279,000	27%
Households	375,000	464,000	89,000	24%
Employed Residents	442,000	580,000	138,000	31%
Jobs	345,000	468,000	123,000	36%

Source: ABAG Projections 2013.

While both jobs and population will increase throughout Contra Costa, growth will be faster in some areas of the county than others. Population growth in West, Central, and East County is expected to be the highest. Job growth in East and Central County is expected to outpace other areas, with the lowest rate of growth found in the Lamorinda subarea.

The demographics of the county will change as well. The median age of the county is likely to increase as "Baby Boomers" age. Seniors may rely more on transit and paratransit than the working population because of mobility challenges. For them, services provided by transportation network companies such as Lyft and Uber and, over the longer term, shared autonomous vehicles, will be a real benefit. However, these private operations will need to adapt to senior's mobility challenges, or the impact on publicly funded paratransit services will be substantial.

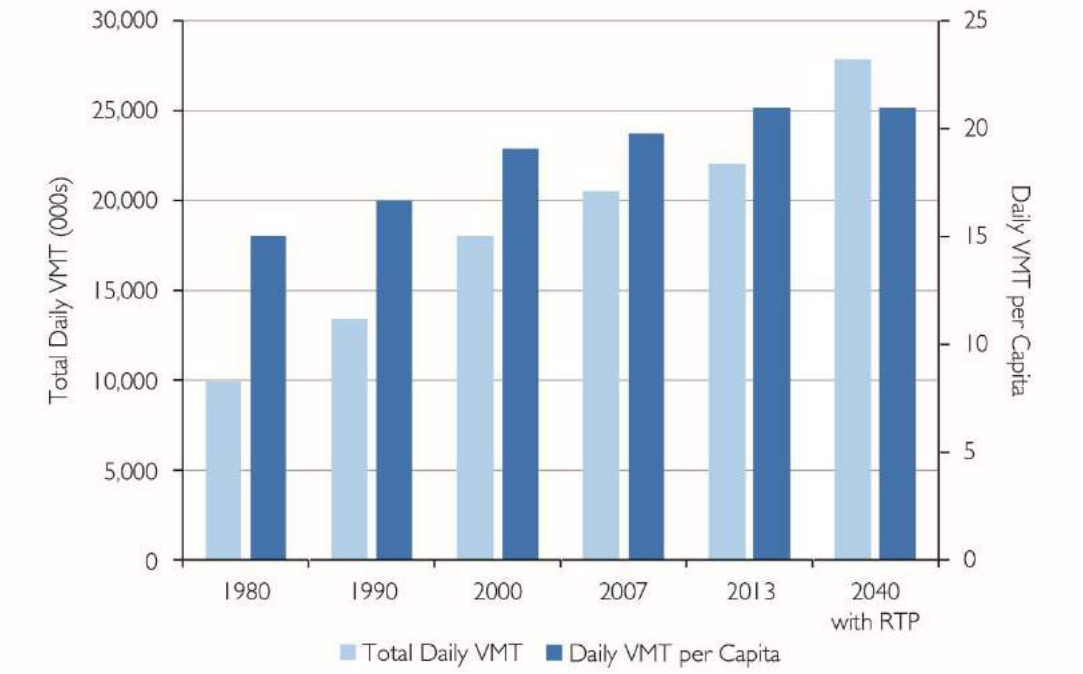
In addition, as more families move to Contra Costa County, especially into the East County, Central, and Tri-Valley areas, safe transportation options for school children

will become increasingly important. The "millennials," as the generation born after 1980 is known, are driving less frequently than older generations, but whether this is a trend or only a short-term phenomenon is not yet clear. Partly, they are responding to the high cost of owning and operating a vehicle, and also many are choosing to live in close-in, walkable neighborhoods. If this trend continues, and it may not, it would mean that forecasts of increased congestion may be excessively dire; however, we also expect more delay on our roadways, especially those used for the daily commute to work.

How Will Growth Affect Travel and Congestion?

The increase in population will increase travel demand throughout the transportation system; it also will affect congestion throughout the county. The share of trips taken by car is expected to remain at about 92 percent of all trips. Therefore, vehicle miles traveled (VMT) will continue to increase even though the amount individuals drive, VMT per capita, is expected to level off, as shown in Figure ES-1. But an increase in total VMT does not translate into more air pollutants; as more electric and clean-fuel vehicles take to the road, tailpipe emissions will become cleaner.

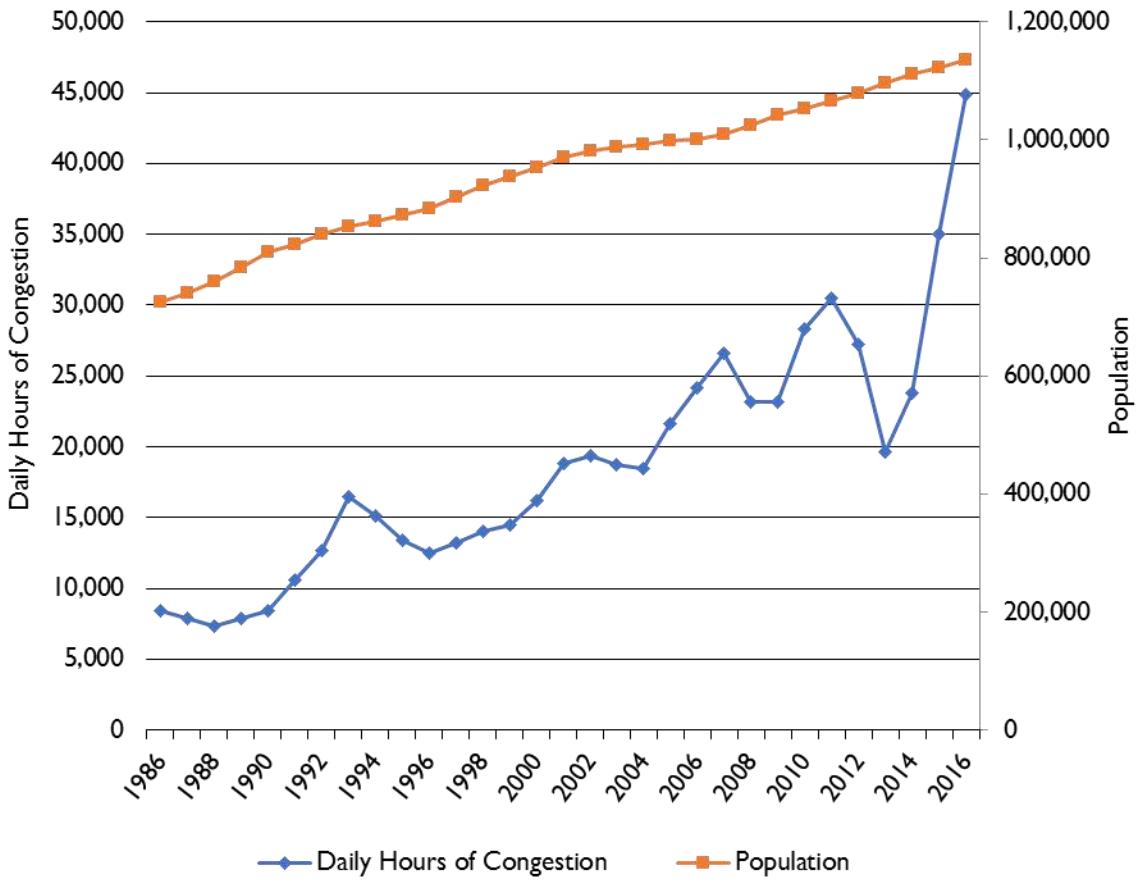
Figure ES-1: Average Weekday VMT and VMT per Capita in Contra Costa County 1980-2040



Source: Year 1980 estimated based on ARB Almanac 2007; Years 1990-2007 from 2005 MTC Travel Forecasts; Year 2013 and 2040 from Fehr and Peers and Dyett & Bhatia, 2015.

Over the past 30 years, overall traffic congestion has increased at a faster rate than population growth, as shown in Figure ES-2. In 1986, for example, drivers in the county experienced about 8,400 hours of delay on streets and highways; by 2012, this delay had increased over three-fold to 27,300 hours. More recently, the past three years show average vehicle hours of delay increasing by 50 percent over 2012. Downturns in the growth trend occurred during economic recessions. The County's population, by contrast, only grew 43 percent during this same time period. Before the fourth bore of the Caldecott tunnel opened at the end of 2013, the SR-24 bottleneck in Orinda was one of the Bay Area's top ten list of worst bottlenecks. The SR-4 widening from four to eight lanes, which was completed in 2015, lessened congestion on this segment of the highway, but further east and in the I-680 corridor, traffic congestion remains an issue.

Figure ES-2: Population Growth and Average Daily Hours of Congestion in Contra Costa County, 1986-2016



Data Sources: Caltrans District 4, 1986-2008 Hi-Comp Report; 2009-2016 Mobility Performance Report

While these improvements added new capacity to our roadway system, and eliminated some bottlenecks, latent demand added new traffic, somewhat offsetting the perceived benefits of these projects. Corridor management techniques, such as the Integrated Corridor Management approach used on I-80, can serve to meter new demand and reduce congestion.

Looking ahead to 2040, congestion is expected to continue to increase with average vehicle delay more than doubling. New roadway and vehicle technologies, as well as multi-modal transportation improvements, however, can serve to reduce vehicle delay and mitigate lost time and productivity spent in traffic. This would be a significant economic benefit.

Environment and Health; the "Vision Zero" Concept

The transportation system affects our environment and public health. It is responsible for about 40 percent of the greenhouse gas (GHG) emissions in California. The system also is vulnerable to the effects of climate change, most notably rising tides, and more needs to be done to make the system resilient to these changes. Air pollution from mobile sources, especially diesel engines, increases the risk of asthma and lung diseases. Traffic collisions cause fatalities and injuries, and time spent in cars directly relates to increased rates of obesity. However, more opportunities for active transportation, and advanced vehicle technology (electric cars and zero emissions vehicles) and better vehicle connectivity can reduce pollution, improve public health, and reduce accidents.

Vision Zero is an international approach to road safety thinking, which originated in Sweden in the mid-1990s and continues to evolve. It can be summarized in one sentence: No loss of life is acceptable. The Vision Zero approach has proven highly successful as a guiding principle for many transportation organizations and plans. For example, the Intelligent Transportation Society of America (ITSA) has adopted Vision Zero as a primary driver towards intelligent transportation technologies that can improve safety. Indeed, a key part of travel safety is vehicle technology, such as connected/autonomous vehicles, but safety also is provided by roadway design, active transportation infrastructure, traffic controls, connectivity, education and training. Increased mobility depends on effective road safety, and this concept is a fundamental component of the CTP.

Equity

The Authority is committed to the principle of fairness, meaning benefits and burdens that occur from transportation investments should be equally distributed to all residents. The Authority also invites all residents to participate in the decision-making processes through outreach activities, which are described on the following pages.

The equity implications of the Long-Range Transportation Investment Program presented in this CTP were evaluated using MTC's performance targets. The results of this analysis are contained in Volume 2. Overall the 2017 CTP supports *Plan Bay Area's* equity targets for the Regional Transportation Plan (RTP) by offering equitable transportation opportunities for all residents, including those living in Communities of Concern and for minority and low-income residents.

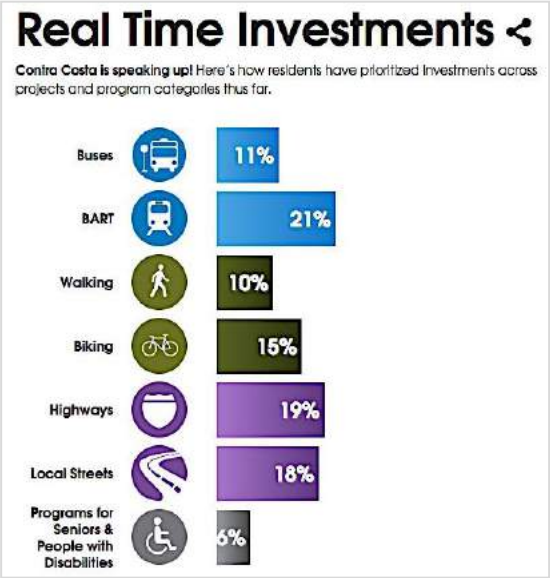
Opportunities

The CTP supports improvements to the efficiency of existing infrastructure, strategic investments in new capacity, advanced technology, and new potential funding sources to provide opportunities to improve the mobility and accessibility in Contra Costa. New technology, which supports express lanes and integrated corridor management, coupled with proven technologies for traffic signal coordination and ramp metering, is already improving the efficiency of existing roads and freeways. Shared-use mobility services through transportation network companies that facilitate carpooling are filling unused seating capacity of the vehicles traveling on the roads. And the technology on the horizon, such as fully connected and autonomous vehicles, provides huge opportunities for improved efficiency through potential reduction of accidents and increased roadway capacity. In addition, transit and active transportation improvements provide new opportunities to improve accessibility and mobility through multi-modal options.

PUBLIC ENGAGEMENT; OUTREACH ACTIVITIES

The CTP has been prepared with substantial public input since work began on the update in 2014. The Authority's outreach spanned the gamut from traditional forums, public meetings and newsletters to new technologies, including social media. This extensive outreach effort enabled the Authority to learn how residents generally viewed the Plan's proposals and transportation needs. An online public engagement survey/comment tool and a telephone Town Hall, one of the first in the Bay Area,

offered individuals the opportunity to engage with the Authority's Board members and senior staff. The Authority also hosted a website portal that enabled residents to express their priorities by showing how they would allocate funding and prioritize investments across an array of projects and programs.



Those participating in the outreach activities supported a broad range of projects and programs; many also expressed concerns about congestion on arterial corridors and highways across the county; funding for bicycle and pedestrian projects; and climate change. These comments guided Authority staff in making revisions that have been incorporated into the 2017 CTP.

Following release of the Draft 2017 CTP, the Authority will initiate a public engagement process that will allow Contra Costa's residents to weigh in on the Draft Plan. This effort will include:

- Countywide workshops using an "open house" format to facilitate participation;
- Meetings with the Authority's Citizens Advisory Committee;
- Public meetings starting in June to enable the Authority to hear comments from residents and others on the Draft Plan and the Environmental Impact Report (EIR) on the Plan;
- Focus group and stakeholder outreach;

- Workshops and study sessions with the Regional Transportation Planning Committees (RTPCs); and
- Presentations to City Councils, boards and commissions, upon request; and
- An online open house from the end of May through July for residents to learn more about the Plan and provide feedback.

VISION, GOALS AND STRATEGIES

The following vision encapsulates the role the transportation system will play in supporting the people, economy, and environment of Contra Costa:

> *Strive to preserve and enhance the quality of life of local communities by promoting a healthy environment and strong economy to benefit all people and areas of Contra Costa, through (1) a balanced, safe, and efficient transportation network, (2) cooperative planning, and (3) growth management. The transportation network should integrate all modes of transportation to meet the diverse needs of Contra Costa.*

To achieve this vision, the Authority identified five goals for the 2017 CTP.

1. Support the efficient, safe, and reliable movement of people and goods using all available travel modes;
2. Manage growth to sustain Contra Costa's economy, preserve its environment and support its communities;
3. Expand safe, convenient and affordable alternatives to the single-occupant vehicle;
4. Maintain the transportation system; and
5. Continue to invest wisely to maximize the benefits of available funding.

For each of these goals, the Authority has identified strategies for achieving them.

Investing Wisely

One of the Authority's goals is to "invest wisely", because our funding needs far exceed our funding resources. Creating a "wise" investment package will require using our funds to attract funds from other sources and evaluating proposed projects to identify those that best meet the Authority's vision.

The 2017 CTP outlines the investment priorities proposed by the Authority., It begins with the priorities expressed in MTC's 2013 RTP, and uses that as a building block to establish new priorities through the Action Plans developed by the RTPCs, from public and stakeholder input, and from recently completed studies that focus on specific corridor issues. It reflects a "bottoms-up" approach, drawing together all of the suggestions for funding that have been submitted since the last CTP was adopted in 2009. Priorities were reviewed with the RTPCs, stakeholders, and the Authority's advisory committees, and the results of packages of project and programs were evaluated and compared using performance measures established by MTC. The building blocks for the Long-Range Transportation Investment Program (LRTIP) included in the CTP reflects the consensus that emerged from these discussions and Authority direction on a preferred approach.

Measure C and Measure J together have made a substantial dent in funding needed for projects and programs, not only from the revenues they generated, but also the funding they attracted from other sources. The following table shows Measure C/J expenditures by category, including the amount of funds leveraged, for a total of 6.5 billion in Year of Expenditure (YOE) dollars.

Table ES-2: Measures C and J Past and Future Project Expenditures (Year of Expenditure Dollars in Millions)

Measure C and Measure J	Past	Future	Total
Roadway (highways, arterials and maintenance)	$755	$1,031	$1,785
Transit (rail, bus, ferry, express bus, paratransit, commute alternatives)	$434	$738	$1,171
Pedestrian & Bicycle, including Transportation for Livable Communities, trails, safe transport for children, and subregional needs	$11	$323	$334
Other	$144	$373	$517
Subtotal	$1,344	$2,464	**$3,808**
Leveraged funds on Measure C & J projects	$1,721	$970	$2,691
TOTAL FUNDS	$3,065	$3,434	**$6,499**

Note: Past expenditures are through FY 2014-15 up to June 30, 2015.

The Authority maintains a "master" project list that includes all projects – completed, under construction, and proposed. Called the Comprehensive Transportation Project List, or CTPL, this financially-unconstrained project list is used to track all potential projects and their funding status. All told, over $29 billion in new projects and programs have been identified to maintain and improve our roads, freeways, transit systems, and bicycle and pedestrian facilities, meaning there is a significant unfunded need.

Table ES-3 presents the proposed 2040 funding program that has been developed by the Authority. It reflects a combination of existing and new potential revenue sources and leverage of local sources through State and federal grant programs, with priority given to those programs and projects that will help transform and maintain the transportation system with technology and innovation.

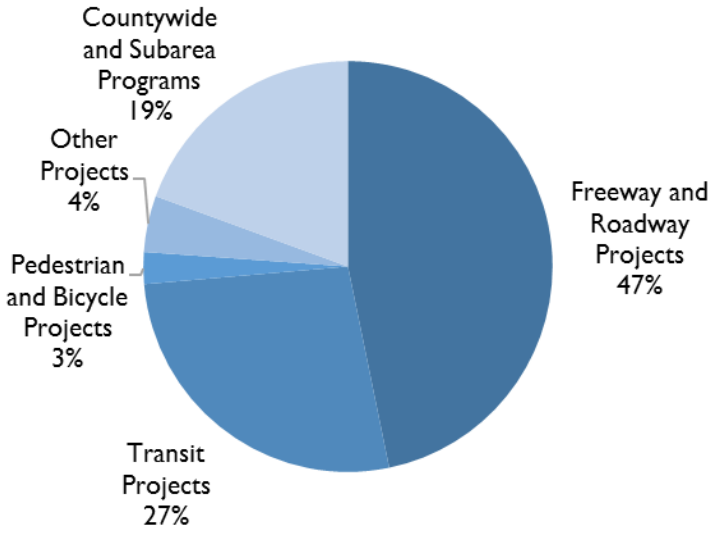
Table ES-3: LRTIP Funding Overview (2017 $ in Millions)

	Total Cost	% of Total
Freeway and Roadway Projects	$3,742	47%
Transit Projects	$2,150	27%
Pedestrian and Bicycle Projects	$200	3%
Other Projects	$355	4%
Countywide and Subarea Programs	$1,555	19%
Subtotal (Additional Revenues)	**$8,002**	**100%**
2013 RTP Projects Total (Assumed Revenues)	$3,672	
TOTAL FUNDS	**$11,674**	

Note: Numbers may not sum precisely due to rounding.

Figure ES-3 shows a high-level summary of the funding allocations in the LRTIP, including the split between projects and programs and the travel modes supported. Public feedback on these allocations will help the Authority determine whether any adjustments should be made in the final plan to be considered for adoption.

Figure ES-3: Funding Allocations in the LRTIP (excluding 2013 RTP)



Maintaining our System

One of the Authority's greatest challenges is to ensure adequate maintenance of the transportation system, so the capital investments that have been and will be made are not compromised. The 2017 CTP includes new strategies to establish effective preventive maintenance and reduce the backlog of transportation rehabilitation and maintenance needs. Creating a stable funding source for long-term maintenance costs is a CTP priority. This funding would not come from the development mitigation fee program as this is not currently allowed by State law. However, under Measure J, the Authority intends to continue to use the Regional Transportation Mitigation Program to ensure that new development pays the cost attributable to the increased demand for transportation facilities reasonably related to that development in order to prevent degradation of the existing level of service, to achieve the level of service found in the local general plan, or to meet multi-modal transportation service objectives (MTSOs) identified in the Action Plans. Deferred maintenance of existing facilities also is addressed, along with the role of external partnerships, such as the California Transportation Infrastructure Priorities Work Group among others, in helping secure needed funding.

IMPLEMENTING THE PLAN

The 2017 CTP will play an important role in shaping our transportation policy and investment decisions. But how will the Plan be carried out? The CTP outlines the strategies, the partnerships and the guidelines essential for a smooth transition from concept to reality. The Authority will need to work with many agencies to fund and prioritize the programs and projects in the LRTIP. New revenue sources will be investigated. The potential for public-private partnership also will be explored as they have proven particularly effective in the Bay Area and elsewhere.

Detailed implementation tasks to follow through on the goals and strategies listed in the CTP are grouped into the following eight broad categories:

- Implement Measure J funding programs
- Plan for Contra Costa's transportation future
- Respond to State and federal legislative mandates
- Support Growth Management Program
- Design and construct transportation improvements
- Improve systems management and maintenance
- Build and maintain partnerships
- Secure long-term funding for transportation improvements

The 2017 CTP represents the Authority's long-term plan for investment in our transportation system, cooperative planning, and growth management. Working with its partner agencies, the Authority will apply the strategies outlined in the 2017 CTP to achieve this vision.

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Introduction

A well-designed, safe, and efficient network of roads, streets, freeways, transit services, and bicycle and pedestrian facilities is essential to the economic and environmental health of Contra Costa. The Authority has a strong track record of working with its partners to plan, fund, and deliver the transportation projects and programs necessary to establish and maintain a strong network of facilities and services.

The 2017 CTP provides the policy framework and steps necessary for the Authority to achieve its vision. It includes an analysis of challenges and opportunities; a definition of the vision, goals, and strategies; and defines how the CTP will be carried out through a Long-Range Transportation Investment Program and an Implementation Program, with defined responsibilities and a schedule of activities.

THE AUTHORITY'S ROLE

The Authority's role in government is to plan, fund, design, and build transportation improvements to enhance the quality of life, promote a healthy environment, and build a strong economy. In fulfilling this role, the Authority works to:

- Deliver the voter-approved projects and programs in Measure C and J;
- Implement the Measure J Growth Management Program (GMP);
- As the Congestion Management Agency for Contra Costa, participate in MTC's programs and oversee implementation of State and federal programs; and
- Create innovative solutions to address growing congestion and air quality issues.

The Countywide Comprehensive Transportation Plan, or CTP, is the Authority's broadest policy and planning document. Besides outlining the Authority's vision and goals, the CTP outlines the various strategies for addressing transportation and growth management issues within Contra Costa and presents a Long-Range Transportation Investment Program.

Part of the Authority's vision for a balanced, safe, and efficient transportation network includes the encouragement of bicycling and walking in Contra Costa County. The Authority adopted its first Countywide Bicycle and Pedestrian Plan (CBPP) in 2009 in recognition of the benefits of walking and bicycling and to provide support for these transportation modes. The CBPP underwent a minor update in 2013 and is currently undergoing a full update.

GROWTH MANAGEMENT PROGRAM

The Authority has been implementing its Growth Management Program (GMP) since Measure C was enacted. Under both Measure C and presently Measure J, the Authority has three primary responsibilities to carry out the GMP. First, the Authority must prepare the Countywide Comprehensive Transportation Plan, and encourage cooperative planning among the jurisdictions within Contra Costa. Second, the Authority is responsible for developing and carrying out a Regional Transportation Mitigation Program. The Authority's program is built from the fees and impact programs adopted by the RTPCs. Third, the Authority also develops and maintains

computer models for analyzing the effects of land use changes and transportation improvements.

CCTA AWARDS

Since the last CTP was adopted, the Authority has received numerous awards for its work. Some of the most notable are listed below.

- California Engineering Excellence Award from the American Council of Engineering Companies, 2017
- Platinum Certificate of Achievement for Excellence in Financial Reporting Award from the Government Finance Officers Association, five consecutive years
- Partnering Champion Award from the International Partnering Institute, 2017
- Executive Director Randell Iwasaki named in the "Top 10 Public Sector Transportation Innovator's List" by the ENO Center for Transportation, 2016
- Organization of the Year by the California Transportation Foundation, 2016
- Most Innovative Use of Social Media Award from the Center for Digital Government, 2015
- AAA credit rating from Fitch Ratings, 2015
- National Project Achievement Award from the Construction Management Association of America, 2015

Overview and Program Components

Under Measure J, the GMP remains in effect through 2034. Measure J establishes the overall goal for the Growth Management Program:

> *…to preserve and enhance the quality of life and promote a healthy, strong economy to benefit the people and areas of Contra Costa through a cooperative, multi-jurisdictional process for managing growth, while maintaining local authority over land use decisions.*[1]

This goal emphasizes both the breadth of the Authority's objectives and the need for collaboration in achieving them.

As approved, the Measure J GMP has four objectives:

[1] Contra Costa Transportation Authority, *Measure J Expenditure Plan*, p. 23. July 2004.

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

To receive its share of Local Streets Maintenance and Improvement funds and to be eligible for Contra Costa Transportation for Livable Communities (TLC) funds, each jurisdiction must:

- Adopt a growth management element, as part of its General Plan, that outlines how the jurisdiction will comply with the other requirements listed below;
- Adopt a development mitigation program that ensures that new growth pays for its share of the costs associated with that growth;
- Address housing options by demonstrating reasonable progress in providing housing options for people of all income levels in a report on the implementation of actions outlined in the adopted Housing Element;
- Participate in an ongoing, cooperative planning process with other jurisdictions and agencies in Contra Costa to create a balanced, safe, and efficient transportation system and to manage the impacts of growth;
- Adopt an Urban Limit Line (ULL) that complies with the Countywide, voter-approved ULL or the local jurisdiction's voter-approved ULL;
- Develop a five-year capital improvement program that outlines the capital projects needed to meet the goals of the local jurisdiction's General Plan; and

- Adopt a transportation systems management (TSM) ordinance or resolution, which conforms to the Authority's model Transportation Systems Management Ordinance or Resolution, to promote carpools, vanpools and park and ride lots.[2]

After completing a compliance checklist and receiving approval by the Authority that the requirements of the GMP have been fulfilled, the Authority allocates to each jurisdiction its share of Local Streets Maintenance and Improvement funding (and TLC funding, if applicable and available). Jurisdictions may use funds allocated under this provision to comply with administrative requirements.

CONGESTION MANAGEMENT PROGRAM

Since 1990, following passage of Proposition 111, the Authority has served as the Congestion Management Agency, or CMA, for Contra Costa. As CMA, the Authority is responsible for preparing, and updating every other year, a Congestion Management Program (CMP). The CMP identifies, among other things, performance measures for a network of State highways and principal arterials, a land use evaluation program, and a seven-year capital improvement program.

Perhaps of greater significance, serving the CMA for Contra Costa gives the Authority a voice in discussions of transportation policy and funding at the regional level. In the last five years, the Authority worked together with other CMAs in the development of *Plan Bay Area.* This role also gives the Authority the responsibility for allocating various federal and State transportation funding to a wide range of transportation projects. The Authority also allocated funding to projects throughout Contra Costa through the One Bay Area Grant (OBAG) and Regional Safe Routes to School (SR2S) programs.

New strategies the Authority will pursue as part of its CMA role include:

- Supporting development of a Monitoring "Dashboard" application to help local jurisdictions track development trends in Priority Development Areas and in

[2] The Model Transportation Demand Management Ordinance adopted by the Authority can be found in Appendix G of the Final 2013 Congestion Management Program, which is on the Authority's website at www.ccta.net.

Communities of Concern and implement the Sustainable Communities Strategies in *Plan Bay Area*.

- Investigating opportunities to modify the Regional Development Mitigation Program to address changes in CEQA pursuant to the implementation of SB 743, which will prohibit use of Level of Service (LOS) as a threshold of significance, and require in its place, use of vehicle miles traveled (VMT) as a measure for the mitigation of the impacts of new development.

- Reporting on transportation projects and any related housing impacts that affect Communities of Concern as part of support for MTC's Regional Active Transportation Program (ATP) and statewide guidelines for ATPs adopted by the California Transportation Commission.

PARTNERSHIPS

Local Jurisdictions

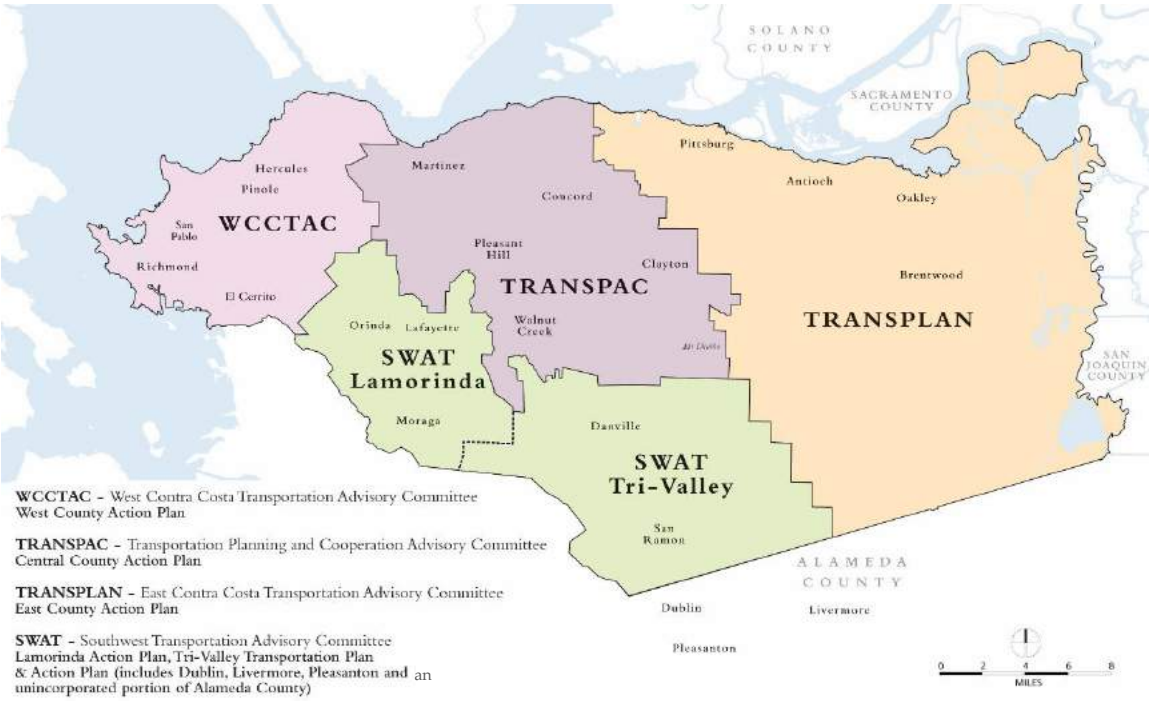
The Authority works with local jurisdictions to prioritize and manage the construction and maintenance of local streets and roads along with investments that support active transportation, particularly walking and biking, and access to transit. In addition, local jurisdictions have authority over land use, which is integral to the planning and efficiency of the transportation system.

Regional Transportation Planning Committees

The Regional Transportation Planning Committees (RTPCs) are made up of elected and appointed representatives from each jurisdiction within that region. Figure 1-1 shows these regional boundaries. Officials from transit agencies and planning commissions also serve on some of the RTPCs, either as voting or ex-officio non-voting members. Each RTPC oversees one Action Plan, except for Southwest Area Transportation Committee (SWAT), which oversees two. In addition to their responsibilities for preparing and updating the Action Plans, the RTPCs are involved in various transportation planning efforts. Central Contra Costa Transportation Committee, also known as the Transportation Planning and Cooperation Advisory Committee (TRANSPAC), for example, was involved in the I-680 High-Occupancy Vehicle (HOV) Express Bus Study, while West Contra Costa Transportation Advisory Committee

(WCCTAC) worked with Alameda County jurisdictions on the I-80 Integrated Corridor Management Project. In East County, TRANSPLAN is participating in the development of a BART extension, and in SWAT, the City of San Ramon and the Town of Danville have developed a new school bus program under Measure J.

Figure 1-1: Regional Transportation Planning Committees



Metropolitan Transportation Commission and Association of Bay Area Governments

The Metropolitan Transportation Commission (MTC) is the transportation planning, coordination, and financing agency for the nine-county San Francisco Bay Area. MTC functions as both the regional transportation planning agency (RTPA)—a state designation—and for federal purposes as the region's metropolitan planning organization (MPO). In these roles, MTC is responsible for the Regional Transportation Plan (RTP), including the Sustainable Communities Strategy to meet regional GHG reduction targets.

While MTC is responsible for transportation planning in the Bay Area, the Association of Bay Area Governments, known by its acronym ABAG, is responsible for more general

planning. ABAG also develops population and economic forecasts, which are used for the Bay Area's Sustainable Communities Strategy and by the Authority in its computer modeling.

In addition, ABAG is responsible for allocating to each local jurisdiction within the Bay Area a share of the region's housing needs, as part of the state's Regional Housing Needs Assessment. Each jurisdiction uses their allocation to prepare their state-mandated housing elements, which are intended to encourage production of housing for low and moderate income households. Compliance with State Housing Element law is an important component of the Growth Management Program.

State of California and Caltrans

The California Department of Transportation (Caltrans) manages more than 50,000 miles of highway and freeway lanes and provides intercity rail services. The Authority partners with Caltrans on design and construction of our interstates and highways, including I-80, I-680, and SR-4 in Contra Costa. In addition, the state provides important funding for transportation projects. For example, the State Transportation Improvement Program funds projects that expand capacity; the State Highway Operation and Protection Program provides funding for maintenance; and the Active Transportation Program focuses funding on bicycle and pedestrian mobility projects.

The Bay Area Air Quality Management District and California Air Resources Board

The Bay Area Air Quality Management District (BAAQMD) in close consultation with the California Air Resources Board (CARB) has prepared plans designed to achieve and maintain federal and State standards for air quality within the Bay Area. These plans—the Air Quality Plan designed to meet federal requirements and the *2010 Bay Area Clean Air Plan* designed to meet the requirements of the California Clean Air Act—include transportation control measures (TCMs) that affect the Authority and other CMAs within the region. CARB is responsible for the State implementation plan required by the federal Clean Air Act; it also has prepared *Vision for California: A framework for Air Quality and Climate Planning*, *Goods Movement Emissions Reduction Plan*, and reports on transportation strategies and air quality.

Transit Providers

Various agencies provide transit services—including rail, bus, ferries, and paratransit—within Contra Costa. Rail service is provided both by the Bay Area Rapid Transit District (BART), the Altamont Corridor Express (ACE), which serves the Alameda County portion of the Tri-Valley, and Amtrak, which runs the Capitol Corridor train to Sacramento and beyond. Four bus providers—AC Transit, WestCAT, the County Connection, and Tri Delta Transit—serve Contra Costa itself and Wheels serves Tri-Valley. Ferry service is available from Larkspur and Vallejo in adjoining counties and service from Richmond to San Francisco will be re-instated in 2018. Paratransit service is also available throughout Contra Costa. The Authority works with these transit providers to achieve its mission through joint committees and other working relationships and through funding for services and improvements.

San Francisco Bay Conservation and Development Commission

The San Francisco Bay Conservation and Development Commission (BCDC) is a California state planning and regulatory agency with regional authority over the San Francisco Bay and shoreline. BCDC is responsible for implementation of the *Bay Plan* and related policies and regulations for public access to the shoreline with the Bay Trail and other trails and pathways and pedestrian connections. It has permit authority over all development within 100 feet of the shoreline. The Authority collaborates with BCDC on coastal hazards such as rising tides and storm surge.

East Bay Regional Park District

East Bay Regional Park District (EBRPD) is the lead agency that operates and develops trails in Contra Costa County. Trails are an important component of the transportation network, providing opportunities for active transportation throughout the county. According to automatic trail counters operated by EBRPD, EBRPD trails in Contra Costa County have an average of two million users per year, which underscores their importance for recreational use.

RELATIONSHIP TO OTHER PLANS AND REGULATIONS

Action Plans for Routes of Regional Significance

In preparing the CTP, the Authority relies on the preparation of "Action Plans" by the RTPCs. The Action Plans, prepared by the RTPCs for these sub-areas, set goals, objectives, and actions to guide sub-area planning and local activities. The Action Plans include Multimodal Transportation Service Objectives (MTSOs) for designated Routes of Regional Significance and specific actions to be implemented by each jurisdiction. The Action Plans also include procedures for reviewing the impacts of proposed local General Plan amendments that could affect the achievement of MTSOs and a process for consultation on environmental documents among jurisdictions. Summaries of the Action Plans are included in Volume 2 as part of the CTP.

Countywide Bicycle and Pedestrian Plan

Contra Costa's Countywide Bicycle and Pedestrian Plan (CBPP) of 2009 grew out of the Authority's original CBPP, which was adopted in 2003. Passage of Measure J in 2004, which included funding for bicycle and pedestrian facilities, and the Metropolitan Transportation Commission's "routine accommodation" policy, which required that new transportation projects consider the needs of bicyclists and pedestrians. The CBPP establishes goals; describes existing conditions; prioritizes bike corridors, pedestrian improvements and regional trails; and outlines implementation tasks. The analysis of and recommendations for pedestrian and bicycle facilities helped to guide the selection of strategic investments in the 2017 CTP update.

Express Bus Study

The Draft Contra Costa Express Bus Study Update (currently underway) assesses service needs and emerging trends in the county. The express bus recommendations are designed to complement BART service with inter-community routes along corridors not served by rail. There is growing support for express bus systems as the public is resistant to congested highways yet in need of alternative means of transportation.

Ferry Service Study

The 2014 Financial Feasibility of Contra Costa Ferry Service examined the financial feasibility of four direct ferry service lines from Richmond, Hercules, Martinez, and Antioch. The study found that under current conditions, only the proposed service route from Richmond could operate under the existing Water Emergency Transportation Authority (WETA) farebox recovery threshold for ferry service without further funding from the State or other sources. The Richmond service is moving forward.

The Regional Transportation Plan / Sustainable Communities Strategy

State and federal law requires MTC to prepare and update a Regional Transportation Plan (RTP) and update it every four years. Similar to the CTP, the RTP is a long-range plan of at least 20 years into the future that specifies the strategies and investments to maintain, manage, and improve the region's transportation network, including bicycle and pedestrian facilities, local streets and roads, public transit systems, and highways.

With the passage of California's Sustainable Communities and Climate Protection Act (SB 375) in 2008, a Sustainable Communities Strategy (SCS) must be developed as part of the RTP. It must outline an integrated transportation and land use plan that can be implemented within the expected financial constraints over the next 25 years, accommodate projected population growth, and reduce GHG emissions.

CTPs must "consider" the most recently adopted RTP, and the CTPs form the basis for the next RTP. To obtain funding through many State and federal sources, projects must be included in the RTP. The most recent RTP, *Plan Bay Area 2040,* although adopted by MTC in July 2017, was not available at the time of preparation of this 2017 CTP. Consequently, the 2013 RTP (*Plan Bay Area*) served as the basis of this 2017 CTP.

CTP Guidelines

In preparing the CTP, the Authority has followed the CTP Guidelines that MTC updated in November 2014. MTC's Guidelines affirm the close relationship between the CTP and the RTP (discussed above), while they also recognize the need for some local flexibility. The Guidelines also call for 10-year and 20-year lists of projects reflecting funding priorities; these are in Appendix C of Volume 2.

Priority Development Areas, Communities of Concern, and CARE Communities

Plan Bay Area focuses investments on maintaining the Bay Area's transportation system, and this focus is carried forward into the strategies of the CTP. In addition, the land use distribution approach utilized by *Plan Bay Area* uses Priority Development Areas (PDAs) and transit priority projects (TPPs) to meet the sustainability goals of the State. PDAs are intended to encourage development near high-quality transit as a key transportation investment of *Plan Bay Area*. Most TPP-eligible areas are within PDAs or within close proximity to transit. In addition, as part of *Plan Bay Area*, Priority Conservation Areas (PCAs) were identified to strategically protect natural resources.

As part of the 2013 *Plan Bay Area* planning process, an equity analysis was conducted to evaluate the transportation and land use planning in relation to environmental justice and equity policy priorities. It identified Communities of Concern, communities that have "multiple overlapping potential disadvantage factors" or concentrations of both low-income and minority populations, throughout the Bay Area. In planning for the transportation system in Contra Costa, it is essential to provide equitable transportation opportunities to the populations in these communities.

In addition, the Bay Area Air Quality Management District (BAAQMD) initiated the Community Air Risk Evaluation (CARE) program in 2004, which aimed to evaluate and reduce health risks associated with exposure to outdoor toxic air contaminants and fine particulate matter in the Bay Area. The program examines and characterizes potential risks associated with toxic air contaminants and fine particulate matter from stationary and mobile sources, and develops and implements mitigation measures to achieve cleaner air, with a focus on priority communities (CARE Communities). Figure 1-2 shows PDAs, Communities of Concern, and the CARE Communities in Contra Costa. Planning for all of these areas is incorporated into the 2017 CTP.

THE COMPREHENSIVE TRANSPORTATION PLAN

The Countywide Comprehensive Transportation Plan (CTP) is one of the Authority's key planning tools. As approved by the voters in 1988, Measure C requires the Contra Costa Transportation Authority to:

> *Support efforts to develop and maintain an ongoing planning process with the cities and the county through the funding and development of a Comprehensive Transportation Plan.*[3]

The Authority adopted its first CTP in 1995. The first major update occurred in 2000, and a comprehensive update tied to renewal of the sales tax was adopted in 2004. In 2009, as Measure J began to go into effect, the 2009 CTP, the third major update, was adopted. This document — the 2017 CTP — represents the fourth major update.

The CTP provides the overall direction and a coordinated approach for achieving and maintaining a balanced and functional transportation system within Contra Costa, while strengthening links between land use decisions and transportation. It outlines the Authority's vision for Contra Costa and its transportation system, along with the goals, strategies, and specific projects and other actions for achieving that vision. The CTP also outlines the Authority's short- and long-range priorities for investing expected revenues, including projects recommended for inclusion in the Regional Transportation Plan prepared by MTC.

The CTP is presented in two volumes:

- **Volume 1:** Includes the vision, goals and strategies, the Long-Range Transportation Investment Program (LRTIP) and the implementation program.
- **Volume 2:** Includes details on the transportation system, summaries of the Action Plans for Routes of Regional Significance, 10-year and 20-year funding targets, and an evaluation of the performance of major projects in the LRTIP, measured against MTC performance targets and an equity analysis.

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[3] Contra Costa Transportation Authority, *Measure C Expenditure Plan*, Section 5.C.4, 1988, as amended and restated by Ordinance 06-02 (Measure J), in 2006.

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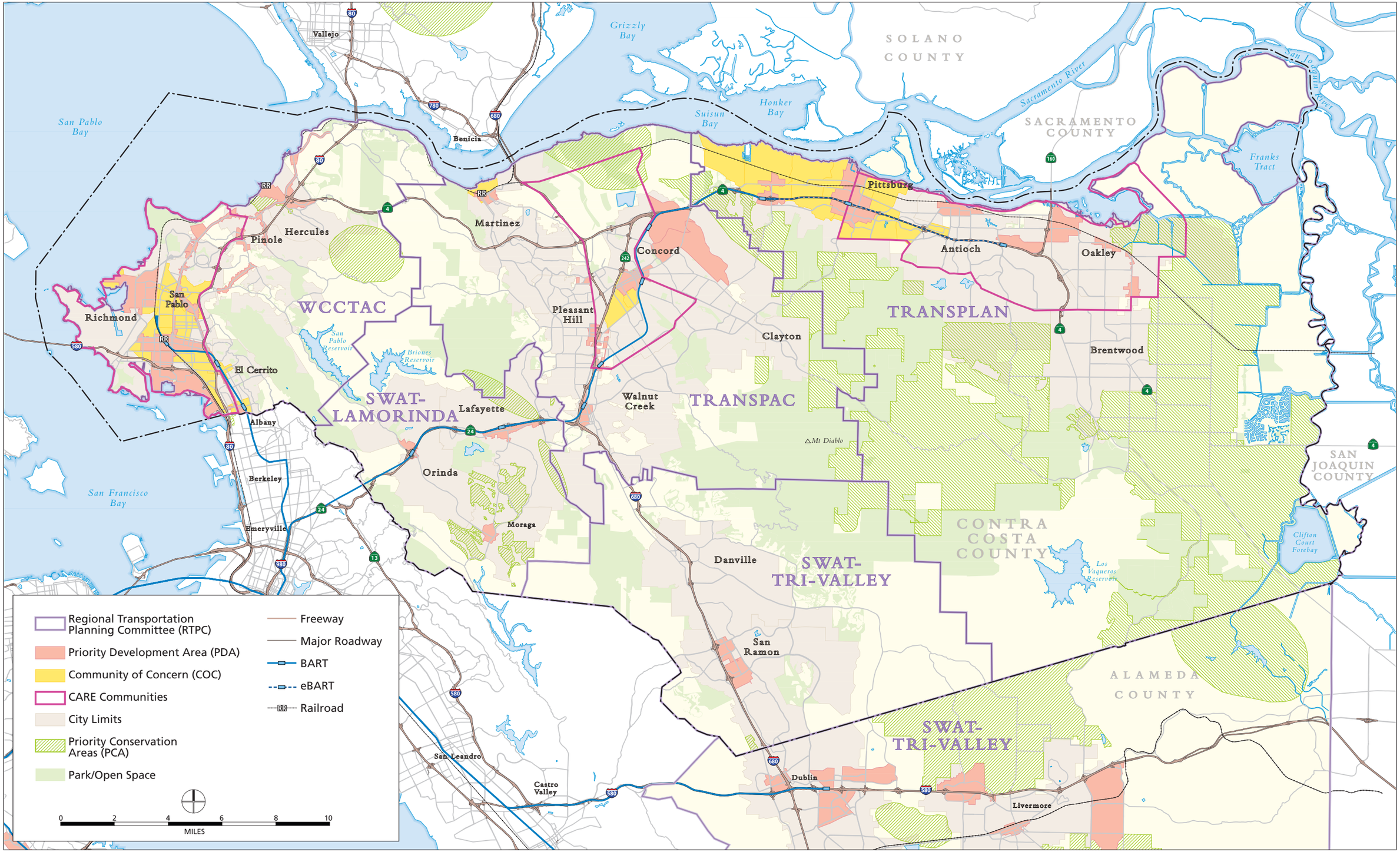
Figure 1-2: PDAs, COCs, and CARE Communities



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OUTREACH

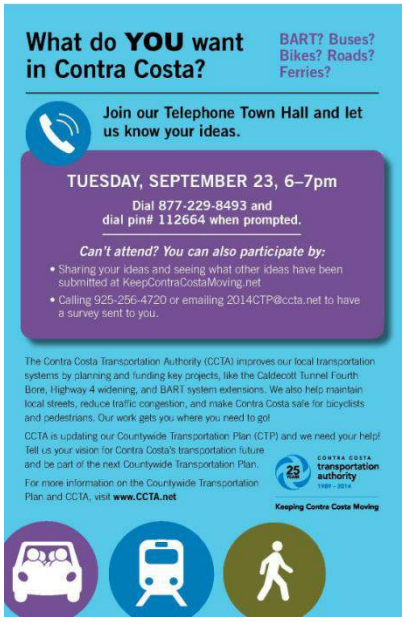
In mid-2014, the Authority undertook an extensive outreach effort to learn how residents view the Plan's proposals and transportation needs in general. The feedback varied throughout the county with positive comments on many of the proposed projects. The outreach effort continued through 2015 and early 2016, to support the Authority's development of a Transportation Expenditure Plan.

Activities and Participation

A variety of techniques were used to reach a broad cross-section of the community, including public workshops, an online public engagement survey/comment tool, and a telephone Town Hall, offering callers the opportunity to engage with the Authority's senior staff. All told, 156 people attended the workshops, 1,378 callers participated in the Town Hall, and over 4,000 unique visitors were recorded as logging in to the website. This was a significant increase in participation compared with prior CTP updates.

Public Workshop and Online Feedback

Workshops were held across the regions in the county, and feedback from the public workshops was generally rather specific to each region:

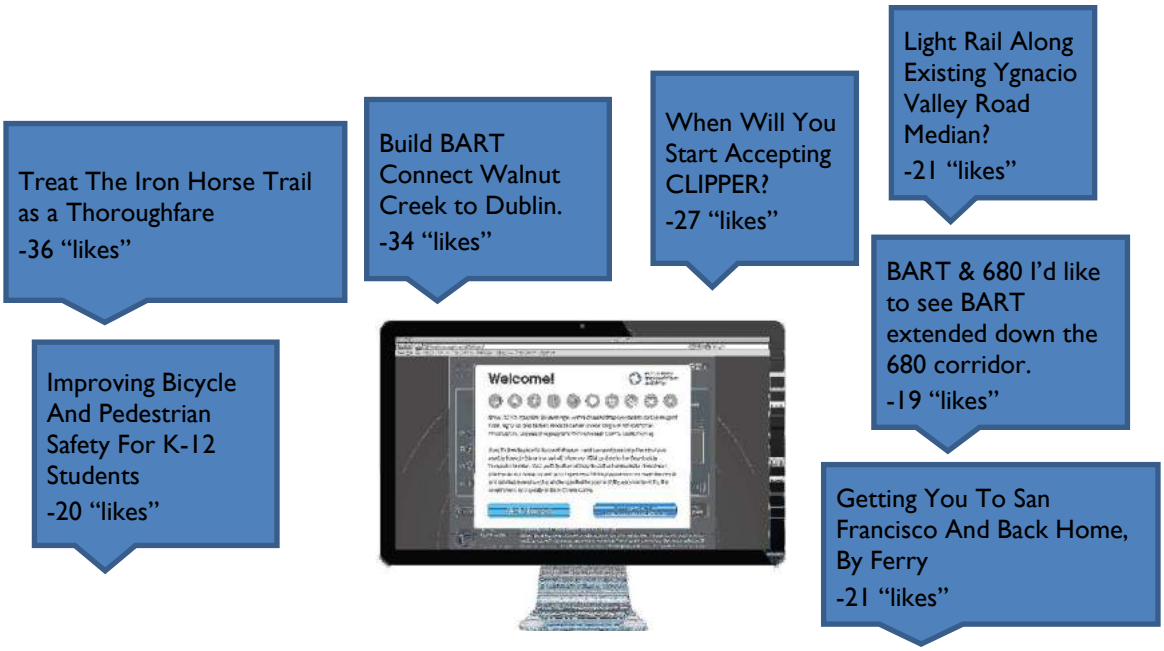


- Those attending the Southwest & Central workshops were concerned about congestion on I-680 and the need for new travel alternatives, including BART, bus, bicycle, and pedestrian facilities.

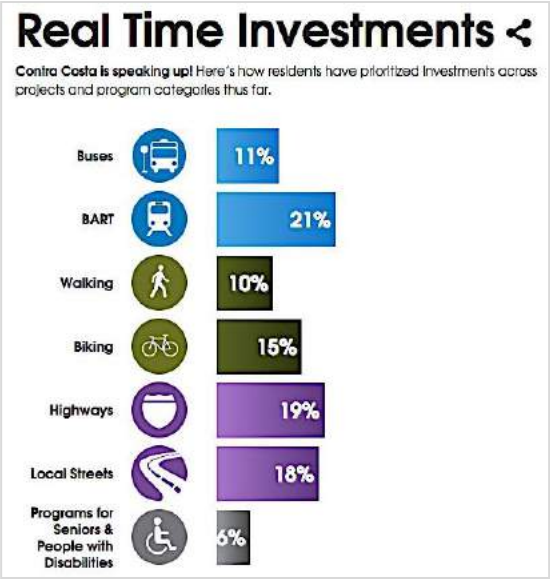
- In West County, strong support was expressed for improved transit options, such as bus, BART, and ferry, to help ease I-80 congestion, without a strong preference for a single solution.

- In Eastern Contra Costa, workshop attendees spoke positively about proposals to improve Vasco Road and other connections to I-580 like Tri-Link.

The online feedback was more project-specific, with "likes" for many projects in the CTP.



Following these efforts, the Authority hosted a website portal called *Funding our Future*, which enabled residents to express their priorities by showing how they would spend money and prioritize investments across an array of programs. The feedback received helped the Authority to develop a Transportation Expenditure Plan for voter consideration in November 2016. Choices included BART and bus projects, improvements to local streets and highways, investments in biking and walking facilities, and investments in programs for seniors and people with disabilities. The results were compiled in "real time", so those responding could compare their choices with how other community members were investing.



This public input guided Authority staff in making revisions that have been incorporated into the 2017 CTP. In summary, there was strong support for transit expansion down the I-680 corridor; BART extensions; expanded parking and transit access to BART stations; bus service expansion and improvements; ferry service; improved access to schools; and maintenance improvements on local streets and roads. Those participating in the outreach activities also expressed concerns about congestion on arterial corridors and highways across the county; funding for bicycle and pedestrian projects; and climate change.

PREPARING AND ADOPTING THE CTP

The 2017 CTP was prepared in close collaboration with local jurisdictions in Contra Costa and with regional partners and State agencies. The CTP builds on the five Action Plans for Routes of Regional Significance, joining these together to create a unified network of programs and projects. The Action Plans also provided an important foundation for the investment program in the CTP. Throughout the process, stakeholders provided input on interim working products. MTC and ABAG also were invaluable sources of technical information.

Because the CTP is subject to the California Environmental Quality Act (CEQA), the Authority is required to prepare an environmental assessment of the Plan's impacts through development of an Environmental Impact Report (EIR). In addition to covering

the impacts of the overall plan, the CTP EIR will enable tiering of subsequent environmental documents for following-on projects during Plan implementation.

Source: Karl Nielsen, Metropolitan Transportation Commission

Supporting the efficient and reliable movement of people and goods, one of the strategies of the CTP, has been accomplished through projects such as the Highway 4 Corridor project.

The key steps for the review and approval process for this CTP Update:

1. Authority releases the Draft 2017 CTP on May 24, 2017.
2. Authority releases the Draft Environmental Impact Report (DEIR) on June 16, 2017.
3. Public and RTPC review: June and July 2017.
4. Close of comment period: August 1, 2017.
5. Review comments on Draft 2017 CTP and EIR and prepare proposed final 2017 CTP Update: August 2017.
6. Authority certifies Final EIR and adopts the Final 2017 CTP Update: September 20, 2017.

2 Challenges and Opportunities

As more people choose to live and work in the Bay Area, every county in the region is expected to continue to grow. Contra Costa's future growth – in the form of new jobs, households, and residents – will strain current transportation resources and increase travel and commute time within the transportation network. Concerns about environmental issues and mandates, public health, and ensuring equitable opportunities for all of Contra Costa's residents are likely to grow as residents, households, and jobs increase in the county.

To minimize these impacts, it is vital that our future transportation network address the challenges of a growing and changing population; we must be innovative and respond to the opportunities of new technology, changing demographics, and emerging travel patterns. The CTP outlines how the Authority will do this to ensure that the transportation system continues to meet Contra Costa's needs through 2040.

CHALLENGES

Nine key challenges are anticipated through 2040, including expected population, household, and job growth; an aging population; travel patterns; travel choices; maintenance of the transportation system; climate change and sea level rise; safety; environmental impacts on communities; and equity issues associated with meeting the transportation needs of all of Contra Costa's residents.

Growth Through 2040

Overall, while the *rate* of growth is expected to slow from the substantial growth of the post-World War II period, Contra Costa is still expected to add 279,000 residents by 2040, a 27 percent increase over 30 years, as the Bay Area overall will grow by 700,000 households over the same time period. Some areas of the county are expected to grow faster than others. Much of the population and household growth is expected in West, Central and East County areas. Job growth is expected to speed up, with the addition of 123,000 jobs by 2040, a 36 percent increase in the county. The number of employed residents is expected to increase as well. Therefore, the ratio of workers to jobs will remain roughly unchanged, with many workers having to commute outside of Contra Costa to get to their jobs.

The growth in out-commuting over the Richmond Bridge, not foreseen a decade ago, is likely to continue with strong demand for service employment in Marin County.

Tables 2-1 and 2-2 show the growth in population, jobs, and employed residents from 2010 to 2040 for each subregion. Figures 2-1 and 2-2 show the expected increase in population and employment growth for the county, by Traffic Analysis Zone (TAZ).

Figure 2-1: Expected Population Growth in Contra Costa County, 2010-2040

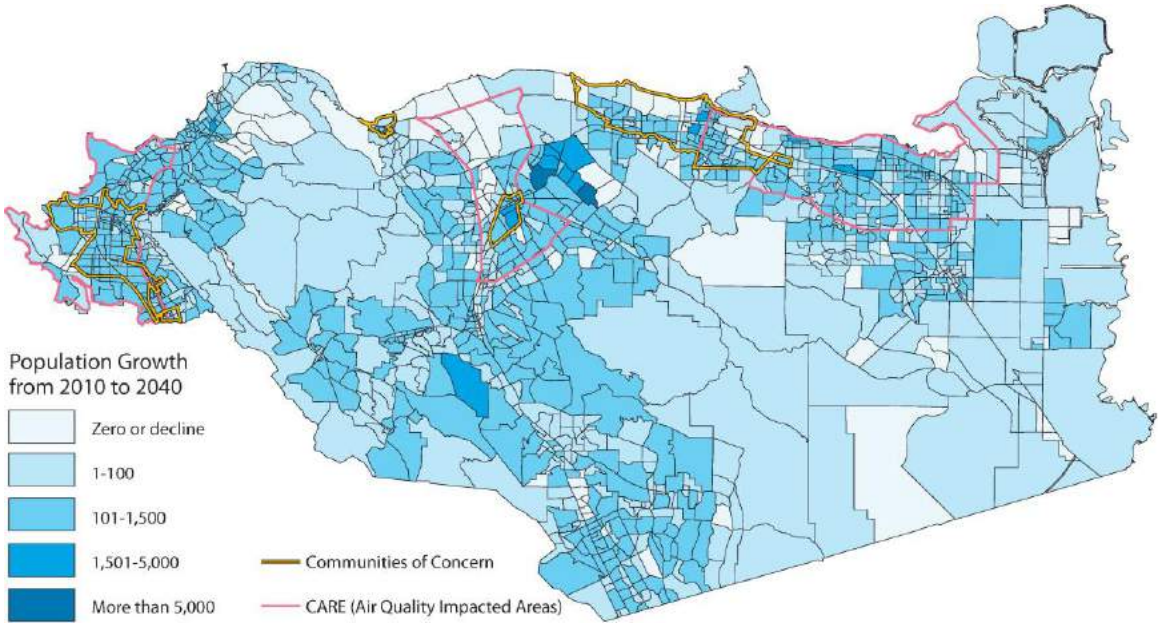


Table 2-1: Population Growth from 2010 to 2040, By Subarea

RTPC	2013 Population Projections 2010	2013 Population Projections 2040	Change 2010-2040	% Change 2010-2040
West	250,419	323,904	73,485	29%
Central	303,490	391,494	88,003	29%
East	293,913	379,989	86,076	29%
Lamorinda	59,118	68,585	9,467	16%
Tri-Valley: Contra Costa	142,085	164,487	22,402	16%
Subtotal	1,049,025	1,328,459	279,433	27%
Tri-Valley: Alameda	202,133	270,375	68,242	34%
Total	1,251,158	1,598,834	347,675	28%

Source: ABAG Projections 2013; Plan Bay Area

Figure 2-2: Expected Employment Growth in Contra Costa County, 2010-2040

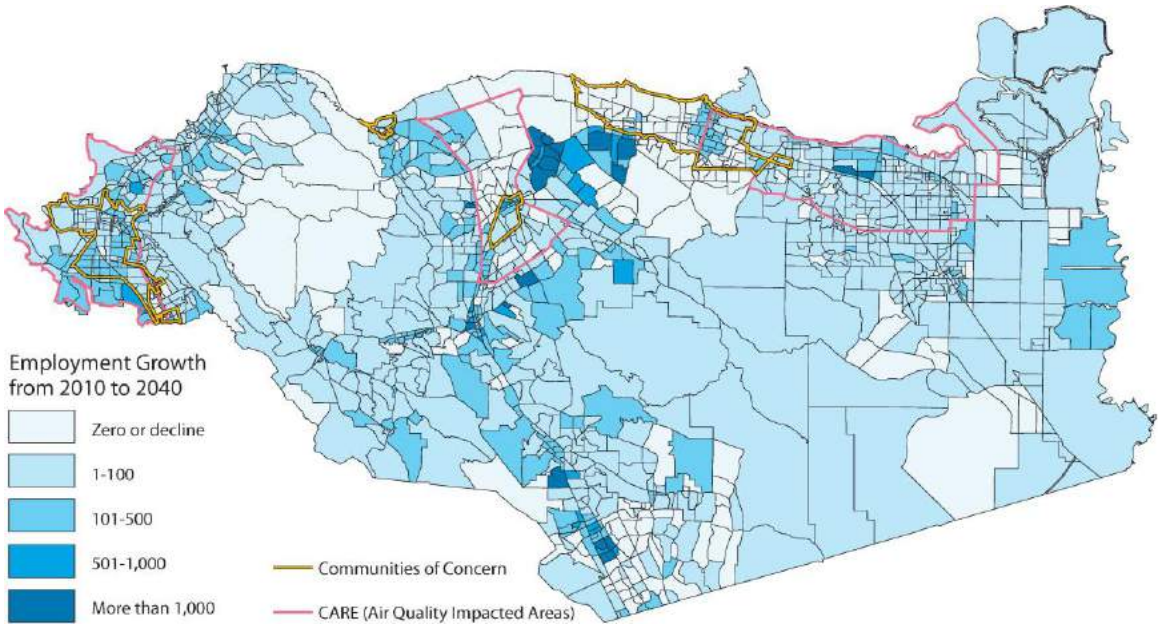


Table 2-2: Jobs and Employed Residents, 2010 and 2040, By Subarea

RTPC	Projections 2013		Change 2010-2040	% Change 2010-2040
	2010	2040		
Jobs				
West	62,571	85,193	22,622	36%
Central	146,331	199,879	53,548	37%
East	51,205	71,473	20,269	40%
Lamorinda	20,707	25,927	5,220	25%
Tri-Valley: Contra Costa	64,087	85,605	21,518	34%
Subtotal	344,901	468,077	123,177	36%
Tri-Valley: Alameda	120,007	169,445	49,438	41%
Total	464,908	637,522	172,615	37%
Employed Residents				
West	104,492	139,041	34,549	33%
Central	137,040	192,459	55,419	40%
East	114,718	147,017	32,299	28%
Lamorinda	24,594	31,961	7,368	30%
Tri-Valley: Contra Costa	61,460	69,768	8,307	14%
Subtotal	442,304	580,246	137,942	31%
Tri-Valley: Alameda	88,163	124,838	36,675	42%
Total	530,467	705,084	174,617	33%

Source: ABAG Projections 2013; Plan Bay Area

Changing Demographics – An Aging Population

Table 2-3 shows the expected growth of the Contra Costa population over 65. The number of Contra Costans above the age of 65 will nearly triple. As the "Baby Boomers" grow older, we can expect to see changes in the coming years. Many may choose to "age in place," which could increase the median age in the county. The mobility challenges of a growing senior population need to be considered as they are expected to rely more on transit and paratransit than the working population. In addition, with more families moving to Contra Costa County, providing safe transportation options for children, including bus service and safe routes to walk and bike, will be important. Improving the transportation system to meet the needs of Contra Costa's diverse communities is a key consideration in the 2017 CTP.

Table 2-3: Growth in Population Over 65 in Contra Costa County, 2010-2040

Age Group	Estimate 2010	Projected 2040	% Increase
65-74	71,635	158,671	121%
75-84	40,546	140,797	247%
85+	19,524	73,976	279%
65+	**131,705**	**373,444**	**184%**

Projections Prepared by Demographic Research Unit, California Department of Finance

Travel Patterns

In 2013, just under 260,000 persons, representing about 60 percent of employed Contra Costa residents, commuted out of the county for their primary work, as shown in Table 2-4. This is a higher rate than all counties in the Bay Area except Solano County, and it is about the same rate as Marin and San Mateo counties. Figure 2-3 shows the percentage of residents who commute out of the county for work by jurisdiction. Notably, in many cities in West County, Lamorinda, and Tri-Valley, over half of the residents commute to work outside of Contra Costa. Commuting out of the county, or "out-commuting," is less common in Central and East County cities, where only a quarter to a third of residents generally commute to work outside the county.

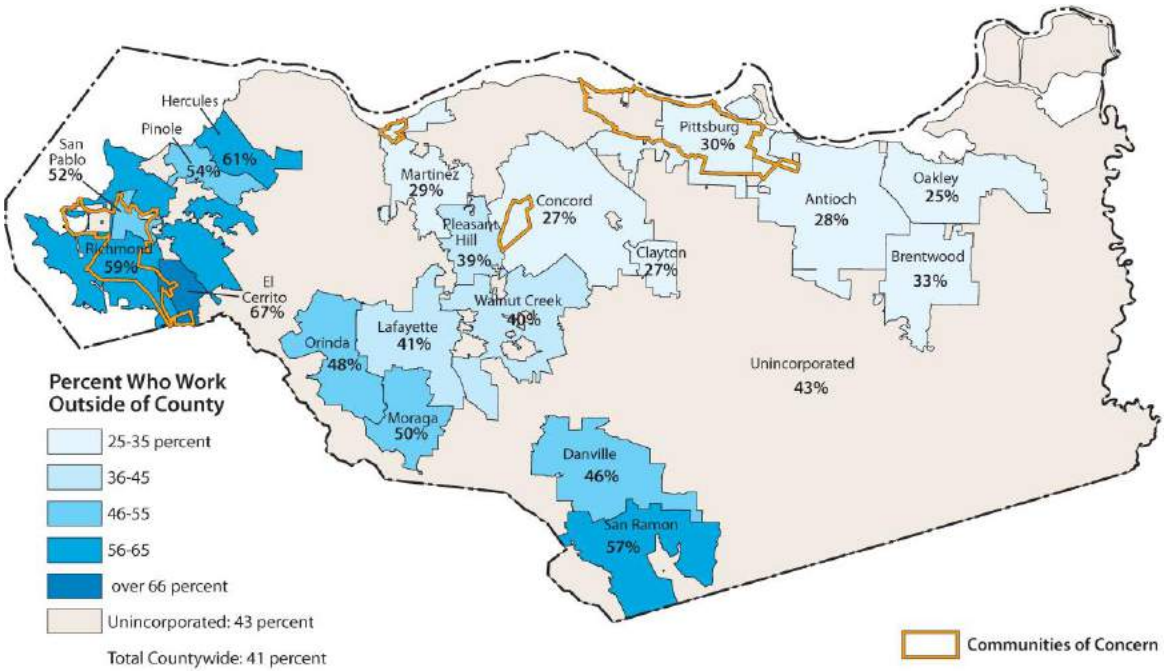
Each day, around 259,000 of Contra Costa's employed residents commuted out of the county in 2013, while 159,000 workers living outside the county commuted in. One decade earlier, in the year 2003, fewer people commuted in and out, and more residents stayed within the county for their work (166,000 vs. 159,000).

Table 2-4: Contra Costa In-Commute and Out-Commute in 2003 and 2013

	Reside in Contra Costa		Reside Outside of Contra Costa	
	2003	2013	2003	2013
Commute out of Contra Costa	219,177	258,691	N/A	N/A
Live and Work in Contra Costa	165,903	159,254	N/A	N/A
Commute in from Other Counties	N/A	N/A	137,846	158,896

Source: Source: U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics.

Figure 2-3: Percentage of 2013 Population in Contra Costa Cities Who Commute Out of the County

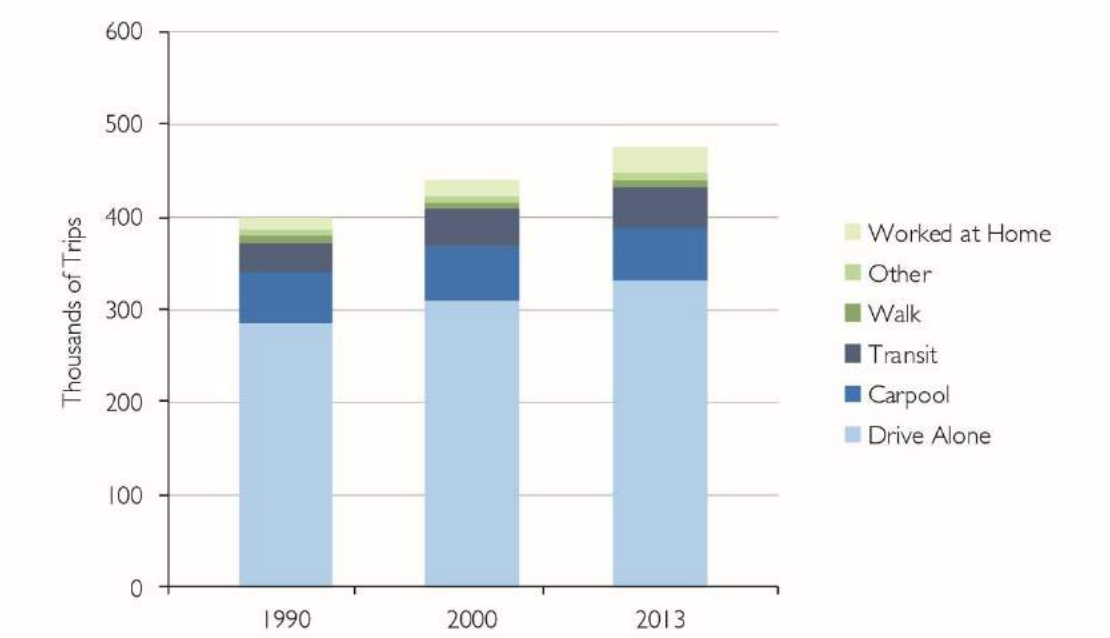


Travel Choices

Contra Costa's complex transportation system includes facilities for a range of transportation modes for residents, including highways, streets, transit, bicycle lanes, sidewalks and trails. With the exception of an increase in the percentage of people working from home, mode share of work commutes has been relatively constant since 1990, even as the number of commuters in Contra Costa has increased by about 20 percent during this period. Shown in Figure 2-4, as of 2013, about 70 percent of commuters drive alone, 12-14 percent carpool, and 8-9 percent took transit.

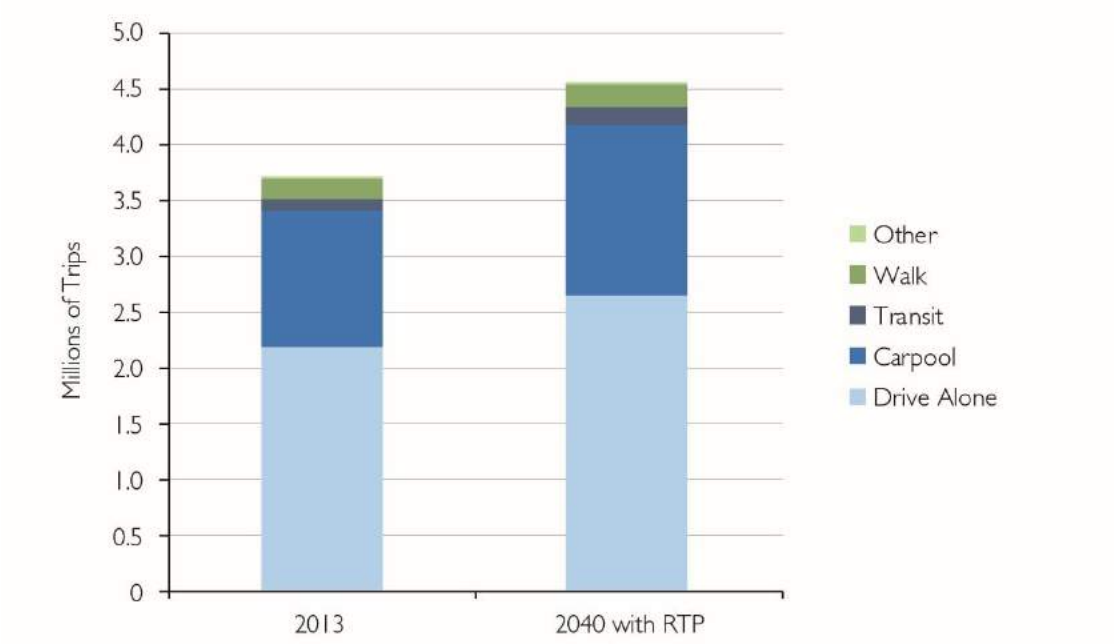
Figure 2-5 shows that the mode share of all trips including shopping, recreational, school, and other types of travel, is expected to stay about the same through 2040, with roughly 58-59 percent of trips made in single-occupant vehicles, 33-34 percent in carpools, and 3 percent on transit. The low transit percentage is not unexpected because, typically, many non-work trips are not on transit, which does not run at night or as frequently on weekends and, if roads are not congested and parking is free, the car is a more convenient mode of travel.

Figure 2-4: Mode Share of Work Commute Trips in Contra Costa County in 1990, 2000, and 2013



Source: 2004 CCTA CTP EIR; 2009-2013 American Community Survey

Figure 2-5: Mode Share of All Trips in Contra Costa County in 2013 and 2040



Source: Fehr & Peers, 2015

Figures 2-6 to 2-8 show the means of transportation to work in 2013 in Contra Costa. The highest percentages of solo drivers are in Central, East, and Tri-Valley cities, where transit is less accessible. About 9 percent commute by public transit, with higher percentages in West County and Lamorinda cities. Over 3 percent of residents use active transportation or other modes to get to work, though percentages are over 5 percent in El Cerrito and Walnut Creek. Continuing to maintain and improve our roads, freeways, transit, and pedestrian and bicycle facilities in ways that sustain our economy, our environment, and our quality of life is a primary concern of the 2017 CTP.

Figure 2-6: Percentage of 2013 Population in Contra Costa Cities Who Drive Alone to Work

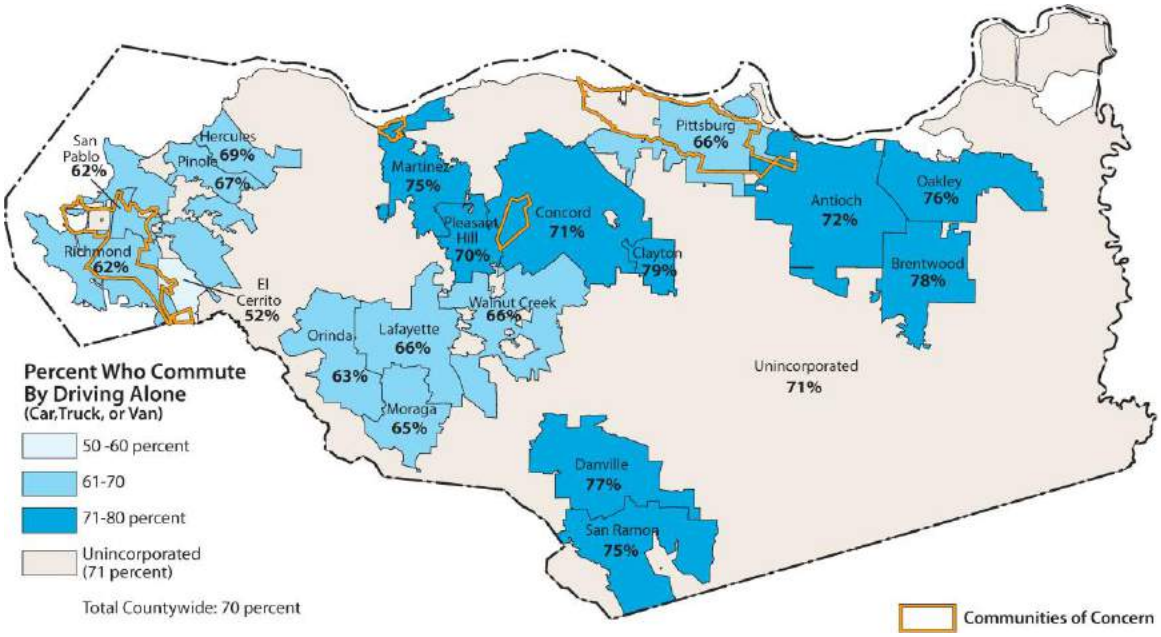


Figure 2-7: Percentage of 2013 Population in Contra Costa Cities Who Commute to Work by Public Transit

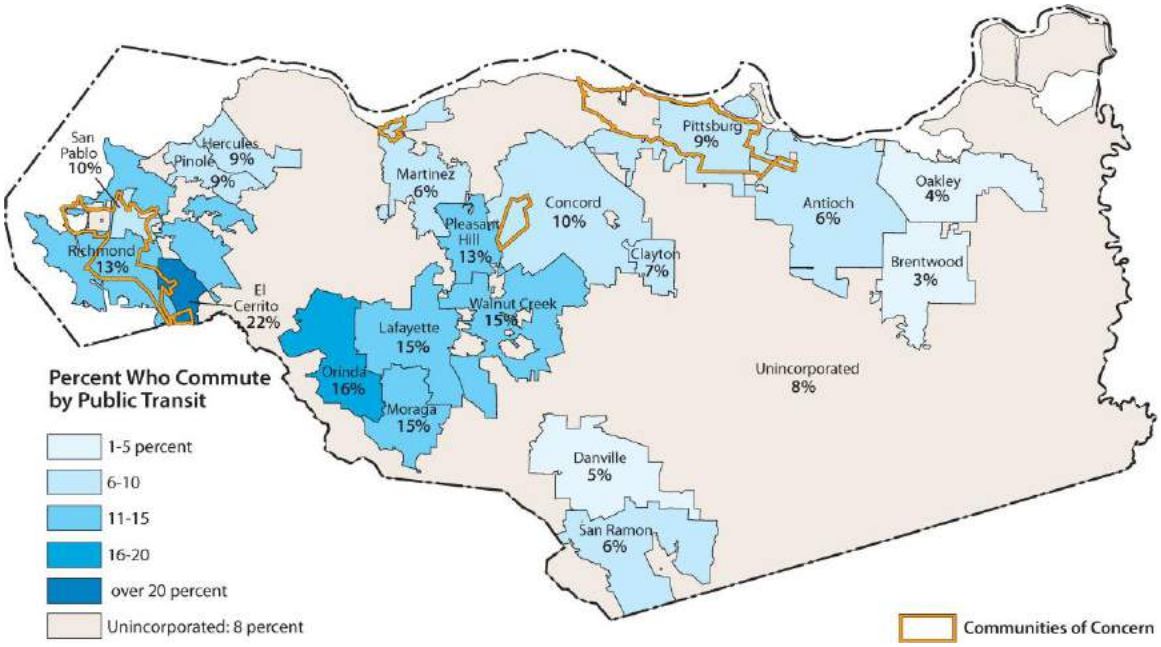
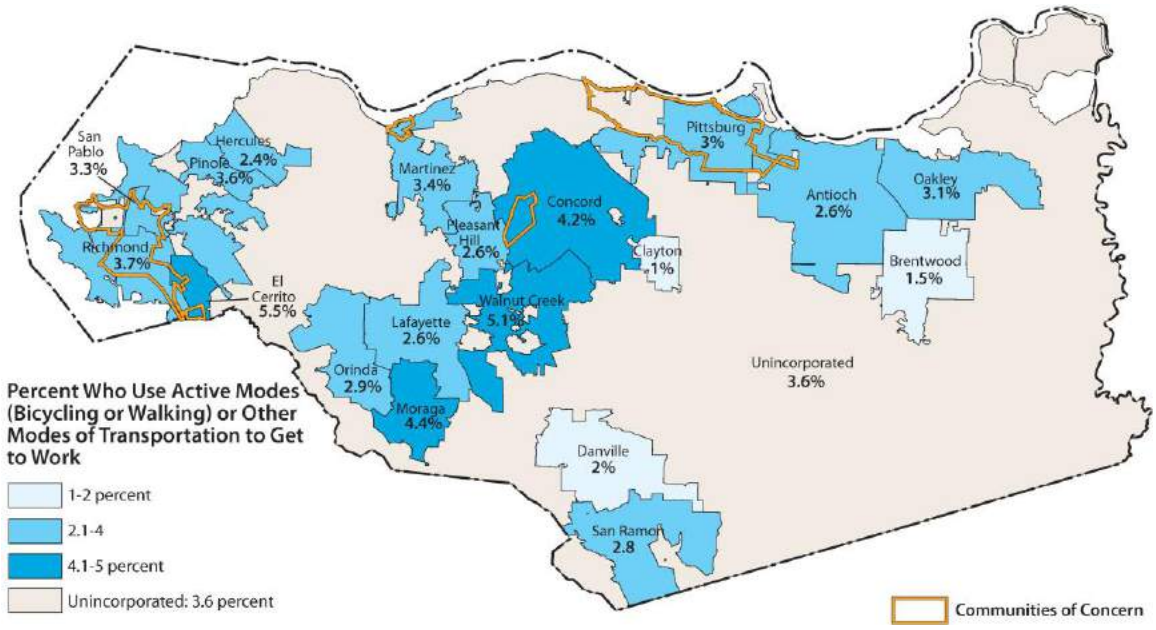
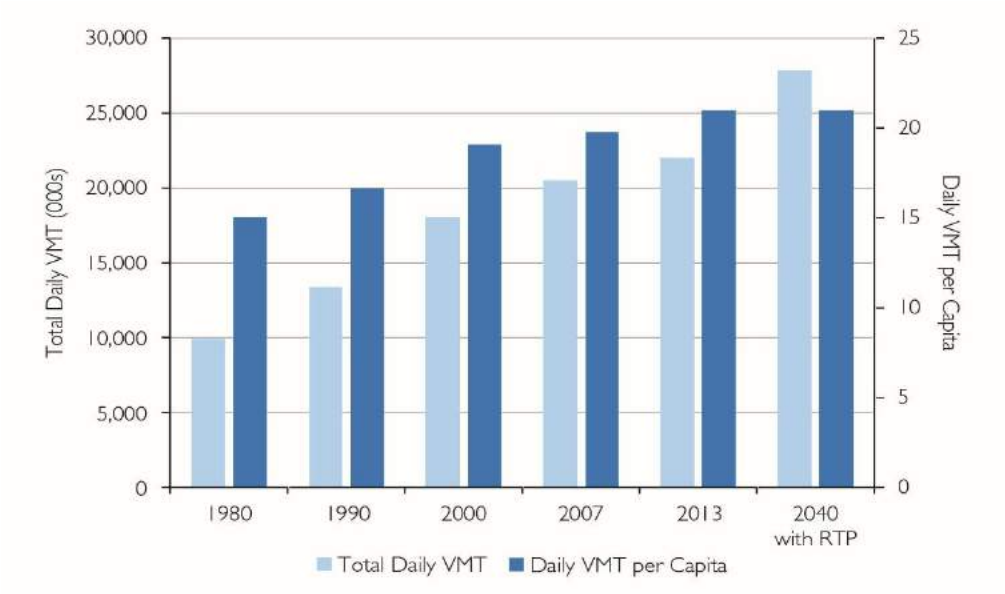


Figure 2-8: Percentage of 2013 Population of Contra Costa Cities Who Use Active Modes (Bicycling or Walking) or Other Modes of Transportation to Get to Work



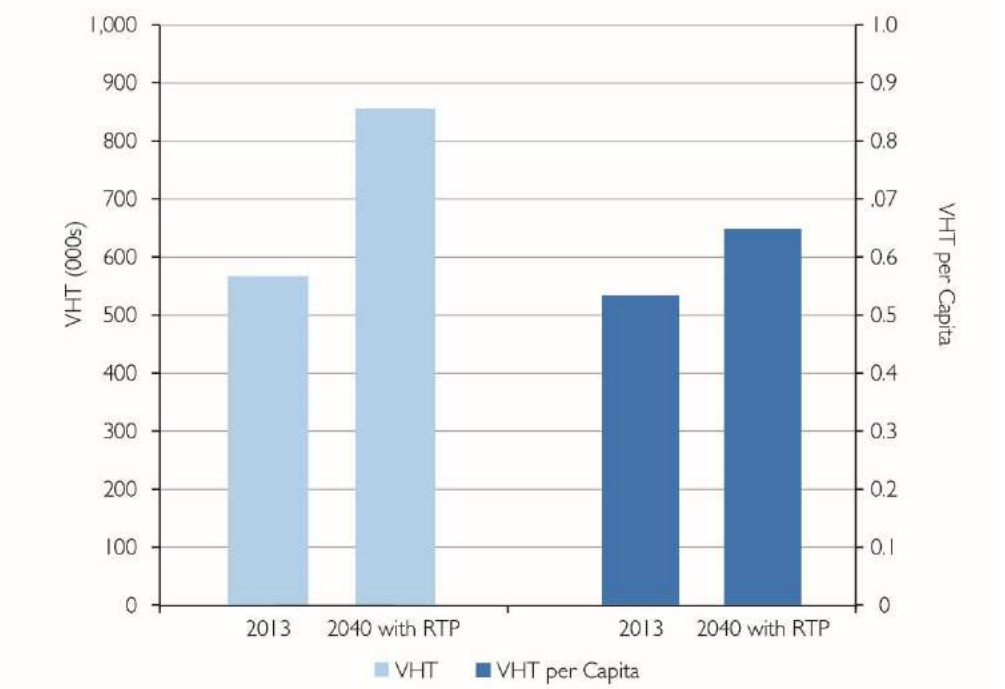
The average amount of weekday driving (measured by vehicle miles traveled or VMT) has increased over the past couple of decades, and this trend is expected to continue through 2040, as shown in Figure 2-9. However, Figure 2-9 also shows that VMT per capita is expected to level off in the future, so that VMT growth will be caused by population growth rather than an increase in the amount individuals drive. Similarly, Figure 2-10 shows that vehicle hours of travel (VHT) is expected to increase, yet VHT per capita is expected to increase by a lesser amount. In addition, total vehicle hours of delay (VHD) due to congestion is projected to increase between 2013 and 2040 as population increases. With more delays on roadways, transit use is likely to increase.

Figure 2-9: Average Weekday VMT and VMT per Capita in Contra Costa County 1980-2040



Source: Year 1980 estimated based on ARB Almanac 2007; Years 1990-2007 estimated based on total VMT data from 2005 MTC Travel Forecasts; Year 2013 and 2040 from Fehr and Peers 2015.

Figure 2-10: AM Peak Period VHT and VHT per Capita in Contra Costa County 2013 and 2040



Source: Fehr and Peers 2015 based on 4-Hour AM Peak Period.

Maintenance of the Transportation System

Over the last century, the Authority, along with the State and federal governments, has invested billions of dollars to create the transportation system that serves our needs today. But now that it is mostly constructed, millions of dollars are needed to maintain it and ensure that it continues to serve us into the future. In particular, the county's local streets and roads are aging, but they must accommodate more trucks, more traffic, and multiple transportation modes. According to the 2014 California Statewide Local Streets and Roads Needs Assessment report, Contra Costa's average pavement condition of local streets and roads has worsened in the past decade and is now considered "at risk" and could fall into "poor" condition without adequate maintenance and repair.[4] Funding improvements to repair and maintain local streets and roads can help ensure our transportation network functions safely, smoothly, and reliably in the future. However, the decision to fund maintenance must be balanced with addressing growth and the need for additional and improved transportation facilities.

Adapting to Rising Tides

The Contra Costa County Adapting to Rising Tides Program, led by the San Francisco Bay Conservation and Development Commission, has been helping local jurisdictions assess the complex climate change issue, in particular the hazards of sea level rise and storm surge. This is one of the biggest challenges facing the planet today, and transportation is one of the largest contributors to climate change through the emission of GHGs. In California, the transportation sector is responsible for almost 40 percent of the state's GHG emissions. There are three main ways to reduce emissions from the transportation sector:

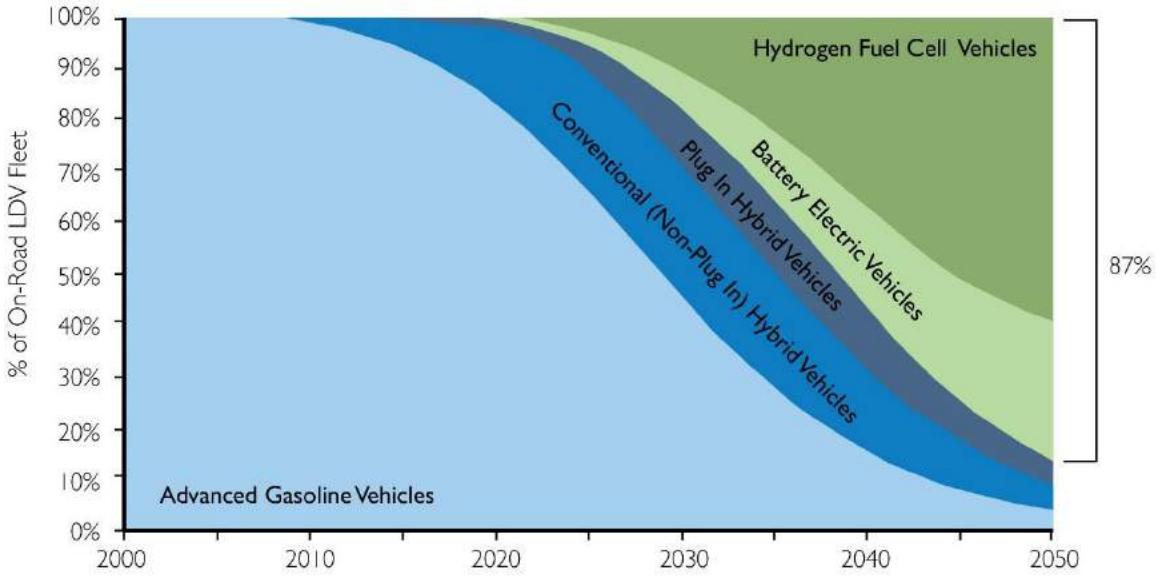
- Increase vehicle efficiency;
- Increase fuel efficiency; and
- Improve transportation options to reduce vehicle miles traveled.

To achieve greater emission reductions than we have in the past and reduce future hazards affecting the transportation system, greater penetration of zero emission

[4] California Local Streets and Roads Needs Assessment, 2014 Update, www.savecaliforniasstreets.org.

vehicles will be needed in California's vehicle fleet. In fact, according to the California Air Resources Board, zero emissions vehicles will need to comprise 87 percent of the fleet by 2050 to meet the GHG target established by the Governor's Executive Order B-16-2012, as shown in Figure 2-11. This calculation does not make any assumptions about future changes in travel patterns or VMT per capita.

Figure 2-11: On Road Light Duty Vehicle Scenario to Reach 2050 Goal



Source: California Air Resources Board, 2013.

Figure 2-12 shows the additional reductions in GHG emissions for the transportation sector in Contra Costa that may be achieved by 2050 with implementation of State, regional and local climate action plans. More specifically, these additional reductions in GHG emissions are anticipated due to increases in the number of zero emissions vehicles in the fleet and additional reductions from the projected 2040 VMT per capita, which are both reasonably expected by 2050 with additional State regulations and incentives to achieve transformation for cars and trucks through deployment of cleaner technologies. A 60 percent reduction from the 2040 total annual GHG emissions in the transportation sector, resulting from a combination of 58 percent zero emission vehicle penetration in the fleet and a 15 percent reduction from projected 2040 VMT per capita (from 21.0 to 17.1), would allow Contra Costa to achieve the SB 32 (2016) amendments to the California Global Warming Solutions Act of 2006, mandating a 40 percent reduction in GHG emissions below the 1990 level by 2030, and the Governor's Executive Order B-

16-2012 to reduce transportation sector GHG emissions to 80 percent below 1990 levels by 2050.

As currently conceived, the CTP's LRTIP, presented in Chapter 4, would provide funding for investments in transportation innovation in Contra Costa, which could be used to accelerate the deployment of clean car and clean truck technology into the vehicle fleet. Accelerated clean vehicle deployment would likely result in faster achievement of the 2050 target, as represented in the green line in Figure 2-12. The California Air Resources Board's *2030 Target Scoping Plan* underscored the importance of such local actions as critical to achieving federal and State air quality standards and the State's climate goals.

Without such initiatives, the impacts of climate change, especially rising tides, wind-driven waves, Delta freshwater inflows, and storm surge, would threaten the transportation system fronting on San Francisco Bay. For example, with a 1.0-meter rise in sea level, 1,460 miles of roadways and 140 miles of railways in the Bay Area are at risk of a 100-year flood, due to an increase in the frequency and intensity of flooding.[5] According to the Bay Conservation and Development Commission (BCDC), climate change also may affect the frequency and/or intensity of coastal storms, El Nino cycles, and related weather and processes.[6] Strategies to make the system more resilient and adapt to rising tides include realignment of corridors and structural improvements, such as engineered flood protection, embankments, and increased permeable surfaces.

Plan Bay Area identifies an integrated land use and transportation system that will meet regional GHG emission reduction targets approved by the State: a 7 percent per capita reduction by 2020 and 15 percent reduction by 2035 under 2005 levels. *Plan Bay Area* is projected to achieve the targets through a variety of strategies, including improving transit service; providing infrastructure for walking and bicycling; and shifting land use patterns so that jobs, housing, and other destinations are more accessible by all modes of transportation and vehicle miles traveled are reduced.

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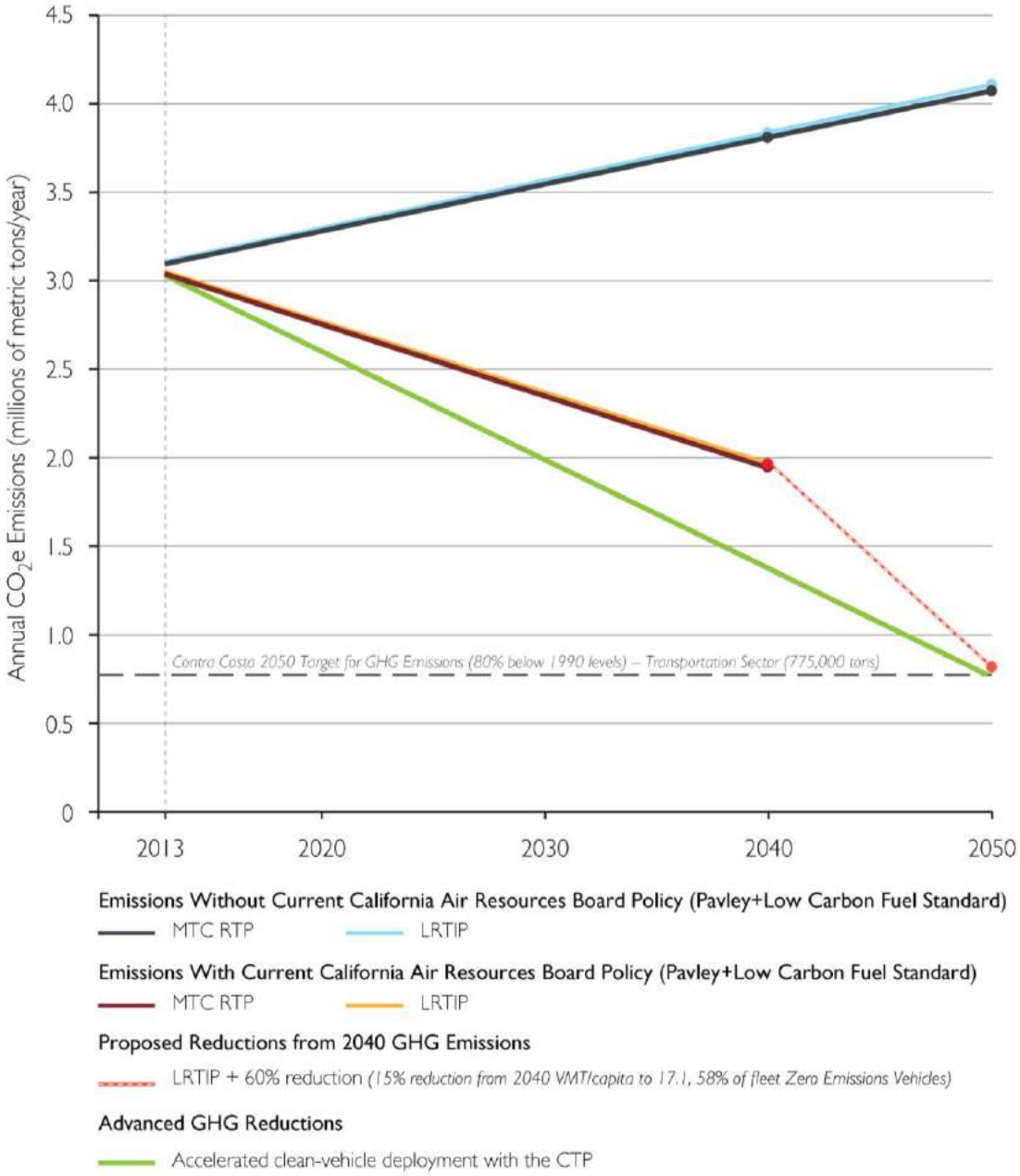
[5] Pacific Institute, *The Impacts of Sea Level Rise on the San Francisco Bay*, 2012.

[6] Pg. 2-3, San Francisco Bay Conservation and Development Commission, *Adopting to Rising Tides - Contra Costa Sea Level Rise Vulnerability Assessment, 2016.*

Figure 2-12: Governor's Executive Order B-16-2012: GHG Emissions Target for Contra Costa's Transportation Sector, 2013-2050



Source: Ramboll Environ, 2016; Dyett & Bhatia, 2016.

In the coming years, Contra Costa County will see increased efforts to stem GHG emissions and address vulnerabilities to climate change. In parallel, efforts to increase resiliency of the transportation system in preparation for possible changes in weather and tide pattern will contribute to the long-term health and economy of Contra Costa.

Health and Safety

The transportation system affects public health in several ways. Traffic collisions are the leading cause of death in the United States for people under the age of 34.[7] Fortunately, studies show that policy, safety education, and improved transportation options that reduce reliance on automobiles can effectively reduce traffic injuries.[8]

Dependency on automobiles for mobility is also associated with other health concerns. According to one study, every hour spent each day in a car increases a person's risk of being obese (and thus of developing heart disease and diabetes) by six percent; in contrast, every hour walked each day decreases a person's risk of being obese by five percent.[9] For these public health reasons, MTC has adopted a performance target in the RTP to increase the average time each person spends walking or biking for transportation daily by 70 percent for an average of 15 minutes per person per day.

Vision Zero

The Vision Zero (zero vehicle and pedestrian fatalities) movement, which started in Sweden in the mid-1990s and most recently has been embraced by 15 countries, has been growing across the US, with significant interest in many California cities and counties. It can be summarized in one sentence: No loss of life is acceptable. The Vision Zero has proven highly successful as a guiding principle for many transportation organizations and plans. For example, the Intelligent Transportation Society of America (ITSA) has adopted Vision Zero as a primary driver towards intelligent transportation technologies that can improve safety.

The Authority supports Vision Zero, but the challenge is how to implement this concept in a diverse county. Some communities have seen resistance to traffic calming measures and lower speed limits, which improve traffic safety but are viewed as constraining

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[7] Centers for Disease Control and Prevention. National Center for Health Statistics, National Vital Statistics System, produced by: Office of Statistics and Programming, National Center for Injury Prevention and Control, Ten Leading Causes of Death and Injury, 2006.

[8] Ewing, Schmid, Killingsworth, Zlot, Raudenbush, Relationship between Urban Sprawl and Physical Activity, Obesity, and Morbidity, *American Journal of Health Promotion* 18: 47–57, 2003.

[9] Ewing, Frank, Kreutzer, *Understanding the Relationship Between Public Health and the Built Environment: A Report to the LEED-ND Core Committee*, 2006.

mobility. Through this CTP, the Authority hopes to become a leader in scaling Vision Zero, capitalizing on its longstanding role in facilitating coordination and collaboration between local jurisdictions and our partners and expanding on what has already been done to promote Intelligent Transportation Systems (ITS), Transportation for Livable Communities, and traffic safety. We have the resources and through the LRTIP, the RTPCs and the Action Plans, the ability to support investments in technology for improved traffic safety, alternative modes, and active transportation which, together, will further the Vision Zero effort. Many of these initiatives are beyond the capacity of local cities to handle on their own due to a lack of necessary funding and limited staff resources and expertise.

Environmental Impacts on Communities

The construction of transportation facilities and subsequent use of the transportation system can affect the environment and, in particular, air quality and noise levels. Air pollutants from mobile sources that are of greatest concern include ozone, fine particulate matter, and toxic air contaminants. These are largely caused by highway traffic, and people who live and work near pollution sources often have the greatest exposure to these harmful pollutants. Large areas of San Pablo, Concord, Antioch, and other jurisdictions in Contra Costa are impacted communities. The 2017 CTP strives to reduce and mitigate impacts on these communities with funding for cleaner transportation technology and reduced emissions and health risks along major trade corridors.

Equity Concerns

Meeting the diverse transportation needs of all of Contra Costa's residents, including those with limited resources and limited choices, is an important priority for the 2017 CTP. The Equity Analysis prepared for the 2017 CTP was informed by Title VI of the Civil Rights Act of 1964 and environmental justice considerations. It included analysis of the overall performance of the Long-Range Transportation Investment Program in relation to equity policy considerations (see Volume 2 for details). The ultimate goal was to help policymakers, local partners, and the general public understand the equity implications of implementing the 2017 CTP for disadvantaged Communities of Concern (as defined by MTC for the 2014 *Plan Bay Area*), by examining the distribution of benefits and burdens between Communities of Concern and the rest of the county under the

2017 CTP.[10] With its Action Plan update process, the Authority created a collaborative planning process that involves residents in low-income communities, community- and faith-based organizations that serve low income communities, transit operators, and stakeholders.

Focus on Contra Costa's Communities of Concern

In 2014 MTC identified seven Communities of Concern in the county, and they provide a home for 17.6 percent of the total population.[11] Compared to the county as a whole, residents in these communities are predominantly minority (85 percent) and low-income (41 percent). The percentage of households who do not own a car is three to four times higher than the average in the balance of the County. The data on how residents travel to work shows a greater use of transit by residents of Communities of Concern than the average resident. Table 2-5 summarizes the commute mode for all workers in each of the Communities of Concern.

Table 2-5: Modes of Transportation in Communities of Concern, 2013

	% of Workers by Modes of Transportation			
Contra Costa County	**Drive Alone/ Carpool**	**Public Trans-portation**	**Walk**	**Bike/Taxi/ Motorcycle/Work at Home/Other**
El Cerrito	56%	32%	2%	10%
Richmond	78%	16%	3%	4%
San Pablo/North Richmond	82%	12%	2%	4%
Martinez	73%	14%	11%	2%
Concord	77%	12%	6%	6%
Bay Point/Pittsburg/Antioch	84%	9%	2%	5%
Overall County	82%	9%	2%	9%

Source: 2009 American Community Survey; 2013 American Community Survey.

[10] For the State's Cap and Trade Program, designations of "disadvantaged communities" are used, which are derived from the California Communities Environmental Health Screening Tool developed by the Office of Environmental Health Hazard Assessment to identify communities most burdened by pollution from multiples sources and most vulnerable to its effects, taking into account socioeconomic characteristics and underlying health status. How the 2017 CTP would specifically serve these communities was not separately analyzed.

[11] While the CoC boundaries are those used for the 2014 Plan Bay Area, the demographic data used in the Equity Analysis for the 2017 CTP was updated to reflect the 2013 American Community Survey.

OPPORTUNITIES

Environmental Impacts

Currently, the State is updating how transportation-related environmental impacts are measured under the California Environmental Quality Act (CEQA) to be more consistent with the State's goals to reduce GHG emissions. A new metric for environmental impacts is the amount of vehicle travel resulting from a project (vehicle miles traveled) instead of the amount of automobile congestion (Level of Service). More specifically, Senate Bill (SB) 743 (Steinberg, 2013) changed the way that transportation impacts are analyzed under CEQA. Specifically, SB 743 required the Governor's Office of Planning and Research (OPR) to amend the CEQA Guidelines to provide an alternative to LOS for evaluating transportation impacts. Particularly within areas served by transit, those alternative criteria must promote the reduction of GHG emissions, the development of multimodal transportation networks, and a diversity of land uses. Measurements of transportation impacts may include vehicle miles traveled, vehicle miles traveled per capita, automobile trip generation rates, or automobile trips generated. Once the CEQA Guidelines are amended to include those alternative criteria, auto delay will no longer be considered a significant impact under CEQA. Transportation impacts related to air quality, noise and safety must still be analyzed under CEQA where appropriate. SB 743 also amended congestion management law to allow cities and counties to opt out of LOS standards within certain infill areas. In response to this legislation, the Authority is reviewing and will update as necessary, its Technical Procedures and Implementation Guide to conform to the amendments to CEQA Guidelines.

Technology

Evolving transportation technology is an important consideration in addressing the needs of Contra Costa's transportation system and will help the Authority be "transformative" in response to the challenges we face. Technology helps make vehicles cleaner by reducing emissions; it also can connect vehicles to each other and to active traffic management operations, which will help achieve the goal of traffic safety. Ridesharing is easier with smart phone "apps." Bus operations can be enhanced with better communications equipment and scheduling software, particularly those offering express service. Intercity freight and urban goods movement can also benefit from

technology supporting better logistics, scheduling, drop-offs, and pick-ups. Harnessing this potential will be central to successful implementation of the CTP.

Connected Vehicles and Vehicle Automation

Connected Vehicles and Autonomous Vehicles (CV/AV) and shared autonomous vehicles (SAVs) will have a profound impact on both the safety and efficiency of our roadways. Already, a certain level of CV/AV technology is incorporated in some new cars, including collision warning and automatic braking. Future improvements in CVs , AVs, and SAVs would allow vehicles to communicate with each other to inform drivers of roadway conditions, traffic, and accidents well in advance and will enable greater lane capacity on freeways with "platooning", meaning vehicles would be more closely spaced. AV technology promises to deliver cars that can drive themselves without any human control in the coming decades.

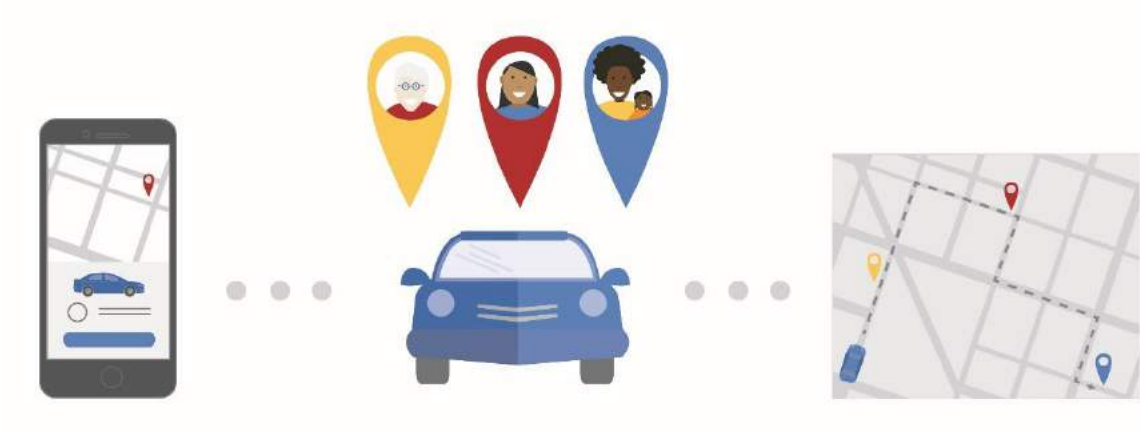
To help transition CV/AVs from a science-fiction dream to reality, in October 2014, the Authority helped establish a test facility for self-driving vehicles, called GoMentum Station, at the site of the former Concord Naval Weapons Station. Contra Costa's CV/AV vehicle testing facility is built on a public/private partnership model, allowing the private sector space to innovate and test while providing the public sector with access to new technologies as they are being developed. The work being carried out at GoMentum Station helps to inform policy, regulation, and planning decisions around the technology.

Intelligent Transportation Systems

Intelligent transportation systems (ITS) can also benefit Contra Costa's transportation network by improving safety and efficiency. ITS encompasses many techniques, including electronic toll collection (such as FasTrak in the Bay Area), ramp metering, traffic signal coordination, demand-responsive transit, real-time information sharing, and traveler information systems, for freeways, arterials and transit systems. The I-80 Integrated Corridor Management (ICM) and the I-680 Enhanced Transit and Innovative Transportation Systems Management projects ("Innovate I-680"), which incorporate these and other improvements, are expected to improve freeway operations and safety and express bus operations.

Shared-Use Mobility

Technology has also allowed for a burgeoning new industry in shared-use mobility services. Transportation network companies facilitate ride services, demand-responsive paratransit serves those with limited access to vehicles, and car-share programs, like ZipCar® and Getaround®, allow drivers to gain access to cars in their neighborhood on-demand, rather than owning their own vehicles.[12] Ride services that employ smartphone-based applications, or "apps," such as Uber® and Lyft®, are revolutionizing the taxi and limousine service industries, and quickly innovating new services, such as new carpool options. In Contra Costa, pilot programs have made traditional carpooling easier by helping match drivers and passengers.



As technology advances, it is shifting the ways that people access and use the transportation system.

Fully automated vehicles and shared autonomous vehicles also may have the ability to provide first-and-last-mile connections for transit users, for example, picking up and drop off passengers at transit connections. This concept was specifically explored in Innovate I-680 (the 2015 Transit Investment and Congestion Relief Options Study).

[12] Shaheen *Greenhouse Gas Impacts of Carsharing in North America,* 2010.

Easy Mile provides driverless shuttle services at Bishop Ranch in San Ramon.

Hybrid and Electric Vehicles

California has always been a national front-runner in low-emissions vehicle technology. In 2014, the Governor signed the Charge Ahead Initiative to put one million electric vehicles on the road within ten years, a target that has since been increased to 1.5 million zero-emission and plug-in hybrid vehicles by 2025. More hybrid and electric cars in the fleet will reduce harmful air pollution and GHG emissions, help achieve the 2050 GHG reduction targets, and provide fuel savings for households. In Contra Costa, hybrid buses, such as those in the County Connection fleet, will reduce fuel costs and GHG emissions by about 20 percent, which will support efforts to meet the Governor's Executive Order B-16-2012 previously discussed.

The Authority is strongly committed to the accelerated deployment of Zero Emission Vehicles in Contra Costa to achieve the statewide GHG emission reduction goal. As we will see in Chapter 4, a separate category for innovation is established to help with this effort.

CCTA-funded EV charging station at Pleasant Hill City Hall.

PAST SUCCESSES AND POTENTIAL IMPROVEMENTS

Delivery Record

Since adoption of the last CTP in 2009, all of Contra Costa has benefitted from the transportation improvements funded by Measure C and J and federal, State and regional funding available to the Authority. The Caldecott Tunnel Fourth Bore; the widening of State Route 4; a BART extension in East County; new BART parking; high occupancy vehicle (HOV) lanes; railroad grade separations; and the Hercules, Martinez, and Pacheco inter-modal centers have all been funded at least in part using local sales tax dollars. Measures C and J also support funding of local street maintenance, transit and paratransit operations, school bus services, commute alternative programs, express buses, and Transportation for Livable Communities programs.

Other accomplishments include:

- Completion of all of the SR 4 East freeway widening out to Antioch
- Completion of the SR 4 Bypass
- Implementation of ramp metering on SR 4

- I-80 Smart Corridor improvements and activation
- SR 4/SR 160 connector ramps
- HOV – lane extension on southbound I-680 in Walnut Creek
- Completion of the I-680 auxiliary lanes from Sycamore Valley Road to Crow Canyon Road
- Richmond Intermodal Transit Center and Richmond BART parking structure
- Parking expansion at the Martinez Intermodal Station
- Tri Delta Transit Dynamic Routing Pilot Program
- Support for Safe Routes to Schools and Transportation for Livable Communities
- Support for Lifeline Transportation Program
- Construction of the Riverside Elementary school overcrossing over I-80
- Deployment of Realtime Ridesharing pilot programs

In addition to projects, the Authority completed a number of studies:

- SR 4 Integrated Corridor Analysis
- I-680 Transit Investment and Congestion Relief Study, which fed into the Innovate I-680 Initiative
- In partnership with the Water Emergency Transit Authority (WETA), completed the Ferry Study for Contra Costa
- Sustainability Study and SR 239 Feasibility Study
- Countywide Bicycle and Pedestrian Plan (October 2009) and Comprehensive Wayfinding System for West County BART stations

The Authority has also been working closely with ABAG, MTC, and local jurisdictions on implementation of the Priority Development Area (PDA) Investment and Growth Management Strategy.

Funding

Funding is critical to meeting the stated goals of the CTP and helping Contra Costa remain one of the most desirable places to live and work in the Bay Area. Measure C and Measure J together have made a substantial dent in funding needed for projects and programs, not only from the revenues they generated, but also the funding they

attracted from other sources. The following table shows that total past and future expenditures on projects, including the State and federal funds leveraged by the two measures, total $6.5 billion. Future funding sources are discussed in Chapter 4, Investment Program.

Table 2-6: Measures C and J Past and Future Project Expenditures

Measure C and Measure J (Year of Expenditure Dollars in Millions)	Past	Future	Total
Roadways (highways, arterials, and maintenance)	$755	$1,031	$1,785
Transit (bus, ferry, express bus, paratransit, commute alternatives)	$434	$738	$1,171
Pedestrian & Bicycle Facilities (including Transportation for Livable Communities, trails, safe transportation for children, and subregional needs)	$11	$323	$334
Other	$144	$373	$517
Subtotal	**$1,344**	**$2,464**	**$3,808**
Leveraged funds on Measures C & J projects	$1,721	$970	$2,691
Percent Leveraged	**128%**	**TBD**	**TBD**
TOTAL FUNDS	**$3,065**	**$3,434**	**$6,499**

Potential Improvements

Making new improvements, while maintaining what we have, is a prominent issue for the 2017 CTP. Each component of Contra Costa's transportation system – roads, freeways, transit, ferries, bicycle and pedestrian facilities, goods movement facilities – could be improved to help achieve the Authority's vision and goals.

Each RTPC proposed improvements to the transportation system as part of their Action Plans. Overall, the updated Action Plans demonstrate an increased concern for intra-regional routes and the impact of traffic diverting from inter-regional routes to local streets. They also recognize BART and the BART extension from Antioch to Brentwood, and freeway management as important inter-regional strategies. The RTPCs' strategies and priorities are supported in the 2017 CTP.

Many of Contra Costa's highways and major arterials face heavy traffic volumes throughout the day, and making improvements to increase safety and efficiency is a priority for the Authority. However, resources and right-of-way are limited, making substantial expansion of Contra Costa's major arterials and highways unlikely beyond what will be done through the SR 239 (Tri-Link) project in East County. Evolving

transportation technology can play a role in improving and facilitating traffic flow and providing transit and highway information as well as trip alternatives. The 2017 CTP considers how evolving transportation technology should be incorporated into our transportation system and what needs to be done to capitalize on the benefits offered by technological innovation.

Improvements to transit facilities and operations are another important component of the 2017 CTP. These include support for BART operations and maintenance, bus service improvements, and paratransit service. Facilities for active transportation, emphasized in the 2017 CTP, provide alternative choices for residents to move around the county. Lastly, funding improvements to repair and maintain local streets and roads will help ensure Contra Costa's transportation network functions safely, smoothly, and reliably in the coming decades. In fact, maintenance of transportation infrastructure is more cost-effective and beneficial than allowing the obligations of deferred maintenance to mount and then having to spend more to completely rebuild system components.

3 Vision, Goals and Strategies

Looking ahead to the year 2040, we can begin to identify some of the difficulties that continued growth in population and employment and associated increases in traffic will bring, but it is up to us to identify a vision for where we want to end up. For the Authority, that Vision is:

> *Strive to preserve and enhance the quality of life of local communities by promoting a healthy environment and strong economy to benefit all people and areas of Contra Costa, through (1) a balanced, safe, and efficient transportation network, (2) cooperative planning, and (3) growth management. The transportation network should integrate all modes of transportation to meet the diverse needs of Contra Costa.*

The goals and strategies in this Chapter show how the Vision will be realized.

FINDING THE RIGHT BALANCE

Achieving the Vision will require the Authority to find the right balance among the different, and sometimes competing, needs of Contra Costa's residents and businesses, including:

- Improving the regional system of roads, transit and pathways, while ensuring that the existing system is well maintained;
- Balancing the needs of through traffic with the access needs and quality of life in adjoining neighborhoods and business areas;
- Recognizing the differing needs and situations of Contra Costa's residents and subareas, while developing a workable approach to countywide and regional initiatives;
- Where feasible and beneficial, improve the capacity of roadways, while recognizing that these improvements will not, in the long run, eliminate congestion; and
- Supporting and encouraging the use of transit, carpools, bicycling and walking, often within limited rights-of-way.

All of these needs are important, and the goals and strategies contained in the 2017 CTP are designed to meet them. Finding the right balance among these needs, however, will require perseverance, cooperation among the jurisdictions of Contra Costa, and the support of residents and the business community.

GOALS

The Authority has adopted five goals for the CTP:

1. Support the efficient, safe, and reliable movement of people and goods using all available travel modes;
2. Manage growth to sustain Contra Costa's economy, preserve its environment and support its communities;
3. Expand safe, convenient and affordable alternatives to the single-occupant vehicle;
4. Maintain the transportation system; and
5. Continue to invest wisely to maximize the benefits of available funding.

To achieve these goals, the Authority will pursue the following strategies:

STRATEGIES

GOAL 1. Support the efficient, safe, and reliable movement of people and goods using all available travel modes

Getting people and goods safely, efficiently and reliably to where they need to go is a primary goal of every transportation system. The Authority has established the following strategies to provide this accessibility.

1.1. EFFICIENCY: Increase the efficiency of highways and arterial roads through capital investments, operational enhancements, and use of technology.

The efficiency of the transportation system is based on how well our system and investments are used. With funding remaining under Measure J, the Authority plans to commit $3.67 billion for projects and programs to improve the transportation system. This will include funding for capital projects that will increase efficiency on highways and roadways, such as by interchange improvements to reduce weaving and congestion at the I-680 and SR-4 interchange, and operational improvements proposed by the Innovate I-680 project for transit investment and congestion relief through enhanced bus service and use of technology to support connected and autonomous vehicles. The I-80 SMART Corridor (previously known as the I-80 Integrated Corridor Mobility (ICM) project) has created a network of electronic signs, ramp meters, and other state-of-the-art elements between the Carquinez Bridge and the Bay Bridge to enhance motorist safety, improve travel time reliability, and reduce accidents and associated congestion. Similar projects for more active traffic management are in the Innovate I-680 initiative, which also proposes bus-on-shoulder operations, allowing buses to bypass congestion while staying close to the freeway entrances and exits.[13] Implementation of an ICM project on SR-4 is also

[13] Contra Costa Transportation Authority, I-680 Transit Investment and Congestion Relief Study, November 2015.

underway. The Authority recently received a U.S. Department of Transportation (DOT) grant to help fund this project.

In addition, the Authority will use technology to improve efficiency. One example of this is GoMentum Station, recently named one of the ten National Automated Vehicle Proving Grounds by the U.S. DOT. The idea is to facilitate testing and information sharing around automated vehicle technologies, foster innovation that can safely transform personal and commercial mobility, expand capacity, and open new doors to disadvantaged people and communities. In fact, GoMentum Station is one of the largest secure proving grounds in the country, enabling the Authority's partners to safely push their technologies to its limits while testing vehicles there.

1.2. PARTNERSHIPS: Engage in partnerships with jurisdictions, stakeholders, and other agencies to identify and implement strategies for managing congestion and increasing multimodal mobility.

Users of Contra Costa's transportation system want a seamless system and do not overly differentiate among streets or transit facilities they use or jurisdictions they travel through. They just want to get to their destinations safely and reliably. Given this, partnering with other agencies at the federal, State, regional and local level will be essential to achieving the Authority's goals and meeting our users' needs.

For example, partnerships for the I-80 SMART Corridor project and the Innovate I-680 initiative involve Caltrans and local jurisdictions in the corridor as well as MTC. Similarly, the Authority is working closely with BART on the extension of rail transit to East County and with the Water Emergency Transportation Authority on starting ferry service from Richmond. For implementation of the Countywide Bicycle and Pedestrian Plan, partners include the East Bay Regional Park District and the Countywide Bicycle Network among others. Our partnerships with local jurisdictions have led to increased cooperation among them and establishment of development mitigation programs to help fund projects that address the impacts of growth and the needs in PDAs.

In the future, the Authority will continue to engage with our partners and a diverse group of stakeholders to:

- Secure support for improvements needed in disadvantaged communities, and neighborhoods affected by poor air quality due to transportation emissions;
- Expand Express Lanes on I-680 and elsewhere;
- Undertake advance planning for regional mitigation;
- Help improve freight mobility and urban goods movement;
- Maintain our existing transportation system; and
- Improve safety and connectivity.

1.3. SEAMLESS NETWORKS: Eliminate gaps in the existing highway, arterial, and trails systems, especially those in the regional high-occupancy vehicle (HOV) lane and express lane network.[14]

Building on MTC's express lanes plan and the Authority's own plans for I-680, the Authority has been working closely with the RTPCs to identify needed additions and then determine which of these makes the most sense from a performance perspective and cost basis. Plans to eliminate I-680 gaps are well underway; I-680 Express Lanes in the northbound direction are about to open, and engineering for southbound Express Lanes is underway. The Authority also will fund local bicycle and trails projects that will eliminate gaps and improve connections in these systems.

1.4. STREET AND ROADWAY IMPROVEMENTS. Improve the highway and arterial system to influence the location and nature of anticipated growth in accordance with the General Plans of local jurisdictions and consistent with the Authority's adopted Countywide Transportation Plan.

Linking land use and transportation is a fundamental concept for the Authority. It underpins the Growth Management Program, which brings these relationships together through a cooperative transportation and land use planning effort

[14] Express Lanes (formerly known as High-occupancy Toll (HOT) lanes) are HOV lanes that have been modified to allow single occupant vehicles to travel in the HOV lane, provided they pay a toll.

among Contra Costa's local jurisdictions, transportation agencies, and other partners. This process involves the RTPCs, relies upon the Action Plans, and incorporates the PDAs to support local land use patterns that make more efficient use of the regional transportation system. Similarly, the requirement for five-year local Capital Improvement Programs, coupled with the Authority's Measure J Regional Transportation Mitigation Program (RTMP), ensures that needed transportation improvements are supportive of proposed land use changes.

This strategy has been implemented through projects such as the Caldecott Tunnel Fourth Bore, the BART extension in East County, the State Route 4 widening and interchange improvements, the I-80 and I-680 projects mentioned earlier, the Marina Bay Parkway grade separation project in Richmond, and the 23rd Street Specific plan improvements in San Pablo, all of which support plan growth with the urban limit lines (ULLs) and regional connections between communities. In addition, Authority support for the Measure J Transportation for Livable Communities program along with funding under MTC's One Bay Area Grant program has funded many local transportation improvement projects needed to serve planned development within local jurisdictions. The 2017 CTP will continue and expand on these funding commitments, with support for complete streets, Geary Road improvements, and Contra Costa Boulevard.

1.5. FREIGHT MOVEMENT. Identify new strategies to improve freight movement on freeways and rail lines to improve air quality and the safety and efficiency of goods movement.

The Authority has been working closely with the California Freight Advisory Committee on the California Freight Mobility Plan and the Sustainable Freight Action Plan to develop strategies and funding for freight-related transportation improvements. Additional insights are provided through the Authority's representation on the National Freight Advisory Committee. These efforts will support economic growth, minimize congestion, reduce air pollution, improve the safety, security and resilience of the State's freight system, and encourage innovation. The Northern Waterfront Revitalization Study explores strategies that will help bring green jobs to the area along the Carquinez Straits to make it competitive in the 21st century global economy. Other Authority-supported projects from the improved freight movement include the Marina Bay Parkway

grade separation in Richmond, which has been completed, and truck climbing lanes on Kirker Pass.

For freight-related air quality improvements, the Authority will use funding from the California Air Resources Board to help local agencies reduce emissions and health risks along major trade corridors. This program will help owners of equipment used in freight movement upgrade to cleaner technologies. Looking ahead, the Authority will evaluate new strategies on goods movement being developed by MTC, and determine which ones are best for Contra Costa.

GOAL 2. Manage growth to sustain Contra Costa's economy, preserve its environment and support its communities

The proponents of Measure C, the precursor of Measure J, realized that a coordinated approach to growth management involving all jurisdictions in Contra Costa was essential to realize the full benefits of transportation investments. This goal expresses multiple facets that need to be considered: economic vitality, environmental protection, and the quality of life of our communities. Supporting local communities also means providing equitable opportunities for all residents and avoiding disparate impacts on low-income and minority residents. The Authority has established the following strategies to achieve this goal.

2.1. COOPERATIVE PLANNING. Continue to require cooperative transportation and land use planning among Contra Costa County, cities, towns, and transportation agencies.

Multi-jurisdictional cooperative planning will continue to be one of the key principles underlying the Authority's Growth Management Program (GMP), which has been in place since Measure C passed in 1988. The drafters of Measure C, with its requirement for the GMP, recognized that no one jurisdiction by itself can address countywide or regional problems. It requires jurisdictions working together to address mutual transportation and planning issues. The SR-4 Integrated Corridor Analysis and the I-680 Transit Investment and Congestion Reduction Study are examples of such cooperative planning.

Cooperative planning has a number of benefits. Jurisdictions come together to support corridor improvement plans, cooperate on school bus service, coordinate

connections between local street plans and bike and trail systems, and create regional development mitigation programs. Having growth management elements in local General Plans facilitates the process by providing a common reference point and shared understanding of actions that further the goals of the CTP.

The RTPCs play a key role in this process, preparing Action Plans that set multi-modal transportation service objectives and include projects and implementation actions to achieve these objectives, reviewing local General Plan amendments, and working together on plans and studies.

RTPC study sessions facilitate cooperative planning.

2.2. *REGIONAL PLANNING. Participate in a regional cooperative land use planning process with agencies both within and outside of Contra Costa.*

The Authority will continue to work with MTC and ABAG on matters of mutual concern related to *Plan Bay Area* - the Regional Transportation Plan and the Sustainable Communities Strategy. The regional planning process is particularly helpful in addressing air basin-wide strategies that are needed to achieve State emissions reduction targets and coordinate planning for coastal hazards such as

rising tides and storm surge. This cooperative process includes coordination on submitting projects for funding under State and federal programs and referrals of General Plan amendments, as required by the Growth Management Program.

INNOVATE I-680: AN INTEGRATED APPROACH TO IMPROVING MOBILITY

Along with the economic recovery, commuters have experienced increasing congestion levels on the I-680 corridor. Through the CTP public outreach effort the community has told the Authority that improved transit service in the I-680 corridor should be a priority. In response, consistent with Goals 1 and 2, CCTA conducted a study in 2015 on potential transportation investments in the I-680 corridor that could relieve congestion and improve transit. The study builds on the I-680 Investment Options Analysis (2003), ongoing Measure J investments, and MTC investments in express lanes along the I-680 corridor.

The study was conducted in collaboration between CCTA staff and consultants, a Policy Advisory Committee, and a Technical Advisory Committee. The initial investment options considered five modes: connected vehicles/autonomous vehicles, bus transit, light rail, ultra-light rail, and BART. The projected performance of the initial options was assessed using a set of evaluation criteria, and then the highest-performing options were checked for financial feasibility with potential new funding sources. The recommended investment strategy focuses on improved transit service and freeway operations, with technology and infrastructure investments to enhance mobility. The key features of the recommended strategy are grouped into four categories:

- **Enhanced Bus Service:** Improve and expand transit with investments including new park-and-ride facilities with shuttle service to BART, addition of auxiliary and shoulder lanes for exclusive bus use, and expanded school bus services.
- **Connected and Autonomous Vehicle Support on I-680:** Facilitate limited self-driving automation with enhanced pavement markings, vehicle-to-infrastructure communication radios and processors, and increased roadway maintenance.
- **Active Traffic Management:** Provide technology to collect data and communicate with drivers including roadside digital signs, vehicle detection and surveillance, adaptive ramp metering, and in-vehicle smart-corridor traffic management.
- **Demand-Responsive Transit Service:** Provide demand-responsive service between park-and-ride locations and other destinations with investments in electric Shared Autonomous Vehicles (SAVs) and infrastructure.

Coupled with proposed spot improvements at key bottlenecks, these strategies and investments – collectively known as Innovate I-680, are expected to reduce congestion for single-occupant vehicles, enable greater use HOV express lanes, and increase travel options for transit users. The Authority is now working to secure funding and implement these recommendations.

2.3. LAND USE. Support land use patterns within Contra Costa that make more efficient use of the transportation system, consistent with the General Plans of local jurisdictions.

The Authority implements this strategy through its Measure J Growth Management Program and the required ULLs and its participation in *Plan Bay Area* and the Priority Development Area (PDA) Growth and Investment Program. In addition, the Transportation for Livable Communities (TLC) Program funds projects that enable efficient use of transportation systems through supportive land use. TLC funding is available for transportation projects that facilitate, support and/or catalyze the developments of affordable housing and transit-oriented or mixed-use development as well as projects that support economic development and job creation, and that encourage use of alternatives to the single occupant vehicle, or promote walking, bicycling and/or transit usage. TLC funding also will be available to help expedite development and funding of the forthcoming "Priority Production Area" in the Northern Waterfront under the County's Northern Waterfront Economic Development Initiative.[15] Typical investments have included pedestrian, bicycle, and streetscape facilities, traffic calming, and transit access improvements. These investments help support walkable neighborhoods, particularly popular among "millennials" and recent retirees, who are interested in being able to get around without owning a vehicle. TLC funding also may support rail improvements with economic development benefits that also help make efficient use of the transportation system.

2.4. DEVELOPMENT IMPACTS. Require local jurisdictions to (i) evaluate and report on the impacts of land use decisions on the transportation system, (ii) identify capital and/or operational improvements needed for development, and (iii) have new growth pay its fair share of the cost of such improvements.

The Authority's *Implementation Guide* and the *Model Growth Management Element* provide details on how local jurisdiction can meet the Growth Management Program (GMP) requirements. Under Measure J, jurisdictions are to "evaluate changes to local General Plans and the impacts of major development projects for their effects on the local and regional transportation system and the ability to

[15] MTC and ABAG are considering the development of Priority Production Areas for incorporation into the 2021 RTP.

achieve the Multimodal Transportation Service Objectives established in the Action Plans." The methods for evaluating these changes are spelled out in the Authority's *Technical Procedures*. The GMP also requires jurisdictions to identify needed projects and programs through their capital improvement programs and through the Action Plans. Finally, the GMP requires jurisdictions to establish mitigation programs, both individual programs for local improvements and subarea programs for each RTPC. These programs require that traffic impacts be minimized or eliminated by on-site or off-site improvements or payment of a fee in lieu of constructing improvements that can be used to fund local or regional mitigation. Over more than 25 years, these programs have generated millions of dollars for transportation projects and hundreds of individual improvements, which overall have substantially reduced the impacts of development on the transportation system.

2.5. *LAND USE-TRANSPORTATION LINKAGES. Link transportation investments to support (i) a voter-approved urban limit line endorsed by voters in the County and each city and town, (ii) new developments which enhance transportation efficiency and economic vitality, and (iii) infill and redevelopment in existing urban and brownfield areas.*

Voter-approved ULLs were put in place after Measure J was approved, and local General Plans and related transportation improvements must be consistent with and respect these lines in order to qualify for Local Streets and Maintenance ("return to source") funding. Furthermore, through the development mitigation programs that local jurisdictions established under the GMP, this linkage is now part of their development approval process. The Authority confirms that these actions have taken place through the biennial GMP "checklist" process. For the second and third criteria listed above, the Authority has put in place a number of funding programs that pay for supportive investments.

2.6. *SUSTAINABILITY. Ensure that new transportation projects are environmentally sustainable and fiscally viable, increase safety, respect community character, promote environmental justice, and maintain or enhance the quality of life for our communities.*

All of these factors are criteria the Authority uses in priority-setting and project screening for funding over which the Authority has discretion. These factors also reflect the performance measures set forth in *Plan Bay Area*. For the 2017 CTP,

two criteria were added to express explicitly the Authority's commitment to meeting its obligations under federal and State law: "increase safety" and "promote environmental justice."

GOAL 3. Expand safe, convenient and affordable alternatives to the single-occupant vehicle

To meet this goal, the CTP sets forth a comprehensive set of strategies to support alternative modes of travel, including expansion of transit and paratransit services and funding for "active transportation", meaning walking and biking. Active transportation is a CTP priority because it will provide community health benefits as well as help achieve reductions in GHG emissions and realize air quality improvements. The Authority uses the following strategies to promote alternative modes of travel.

3.1. TRANSIT SERVICE EXPANSION. Help fund the expansion of existing transit services and regional express lanes, and maintenance of existing operations, including BART, bus transit, school buses, and paratransit.

Five Measure J-funded programs support this strategy: BART Parking Access and Other Improvements, Bus Services, Express Bus, Commute Alternatives, and Safe Transportation for Children. Additional funding for these programs is included in the Long-Range Transportation Investment Program. Details are in Chapter 4.

3.2. TRANSIT SERVICE COORDINATION. Link transit investments to increased coordination and integration of public transit services, and improved connections between travel modes.

Measure J explicitly added the concept of "multi-modal" to the definition of transportation service objectives, so the idea of this linkage has underpinned work on the Action Plan updates as well as development of the 2017 CTP.

The Authority is working with local agencies to address specific multi-modal transportation issues and identify potential approaches and recommended actions to address them. This includes studies of potential transit options in West County and along the I-680 Corridor in Central and Southwestern Contra Costa County and system-wide opportunities for improving express bus services.

The Draft 2016 Express Bus Study Update included development of service assessment criteria; a review of existing Express Bus service and infrastructure; an assessment of current funding and opportunities for new funding; and identification of priority areas that are likely to have high transit use. The study focused on strategic operational improvements for existing service providers based in Contra Costa. Information on the regional network, including service providers from Solano and Alameda Counties, was provided by MTC's Transit Consolidation Study. In addition to infrastructure and service adjustments, the potential for bus on shoulder operations, bus on ramp and in-line stations, real-time information sharing among operators, alternative fuel and electric bus and autonomous vehicle technologies were examined. Service improvement recommendations were developed and evaluated using performance measures and equity criteria. After public review, the Authority will support the service improvements that are cost-effective, viable from operators' perspectives, and best meet residents' needs.

3.3. COMPLETE STREETS. Require local jurisdictions to incorporate policies and standards for "complete streets" that support transit, bicycle and pedestrian access in new developments, infill development areas ("Priority Development Areas"), and transit priority areas.

The GMP *Implementation Guide* requires that local jurisdictions incorporate policies and standards into their development approval processes that support transit, bicycle, and pedestrian access in new developments. The State also has required that "complete streets" concepts be incorporated into any General Plan that is updated after 2011, and that General Plan Circulation Elements include a balanced, multi-modal transportation network that meets the needs of all users. The San Pablo Avenue Specific Plan is one example of a "complete street" retrofit within an urban area, while CCTA's 2012 Appian Way Alternatives Analysis and Complete Streets Study shows what can be done in a less developed setting. The focus on Priority Development Areas has been reinforced by adoption of *Plan Bay Area*, while planning for transit priority areas was codified by State legislation in 2011 (see Government Code Section 65470). Whether to require specific zoning for transit priority areas and incentive programs for transit priority projects, particularly for BART extension station areas in East Contra Costa and Bus Rapid Transit Corridors, as part of the GMP or simply provide

guidance on best practices will be determined by the Authority as part of CTP implementation.

3.4. WALKWAYS AND TRAILS. Support transit-oriented and pedestrian-friendly developments, and invest in trails, walkways, and pedestrian-oriented improvements.

Measure J specifically provides funding for pedestrian-friendly development with the Transportation for Livable Communities Program and funding for Pedestrian, Bicycle and Trail Facilities. The Contra Costa Countywide Bicycle and Pedestrian Plan (CBPP) identifies "pedestrian-priority" locations where the Authority will give funding priority for projects; it also illustrates what the countywide bicycle network would look like, with on-street and off-street facilities, and describes how the CBPP will improve bicycling opportunities throughout Contra Costa by improving connections between neighborhoods, shopping areas, employment centers, transit hubs, schools, parks and recreational facilities. Finally, the CBPP explains how local jurisdictions can use the CBPP to become eligible for funds from the State's Active Transportation Program and provides guidance on the application of the Americans with Disabilities Act to public rights-of-way. Figure 3-1 shows the Bicycle Master Plan for Contra Costa, including existing and proposed bike facilities.

3.5. ALTERNATE MODES. Promote the formation of more carpools and vanpools, and greater use of transit, bicycling, and walking.

Support for alternative modes of transportation is a key priority for the CTP. As part of the GMP, CCTA requires local jurisdictions to adopt and implement a Transportation Systems Management ordinance or an alternative mitigation program. CCTA also provides funding for travel demand management efforts through the Commute Alternatives program and for school bus programs. And, through "Complete Streets" policies in General Plans, project and programs that support use of transit, bicycle, and walking are being implemented. Funding for specific improvements that implement this strategy comes from the Transportation for Livable Communities and the Pedestrian, Bicycle and Trails programs.

3.6. ELECTRIC VEHICLES. Help local jurisdictions develop a connected and coordinated network for electric vehicles.

The Authority has funded installation of 43 charging stations for electric vehicles with money from the Bay Area Air Quality Management District's (BAAQMD's) Transportation Fund for Clean Air. Additional funding will be available through the Authority's Local Streets and Maintenance Program. Building a connected and coordinated system of charging stations will help meet the target of 1.5 million zero-emission vehicles (ZEVs) on the road in California by 2025 and, by 2050, the targeted reductions in GHG emissions statewide.[16] Further work on network development will come through the Authority's support for technological innovation and GoMentum Station and through local jurisdictions amendments of their parking regulations to require a minimum number of charging stations in lots serving non-residential development.

Source: NRG eVgo at Flickr Creative Commons

CCTA has funded 43 electric vehicle-charging stations with grant money from the Transportation Fund for Clean Air.

3.7. SERVING ALL CONTRA COSTA RESIDENTS. Support the expansion of a coordinated system of transit and paratransit service to address the mobility needs of low-income, elderly, young

[16] Established by Executive Order B-16-2012. The Order also establishes specific targets for ZEVs in new state vehicle fleet purchases: 10 percent by 2015 and 25 percent by 2020.

and disabled travelers, households without cars, single-parent households, and people paying more than 50 percent of their income for rent.

Measure J established funding for several specific programs for this strategy, including Bus Services, Transportation for Seniors and People with Disabilities, and Safe Transportation for Children, including the Low Income Student Bus Pass Program in West County. The Authority facilitates coordination among these programs and, through the RTPCs, also supports subregional planning to ensure that the mobility needs of these groups are considered in the Action Plans and calls for projects for funding under the Regional Transportation Plan. The Authority also supports and helps fund transportation services operated by local non-profit organizations that help provide mobility to people who, due to frailty or disability, cannot reasonably access public transit or paratransit. As previously noted, support for transportation network companies, shared autonomous vehicles, and micro transit, will help meet the mobility needs of many people. The 2017 CTP continues and expands on these commitments.

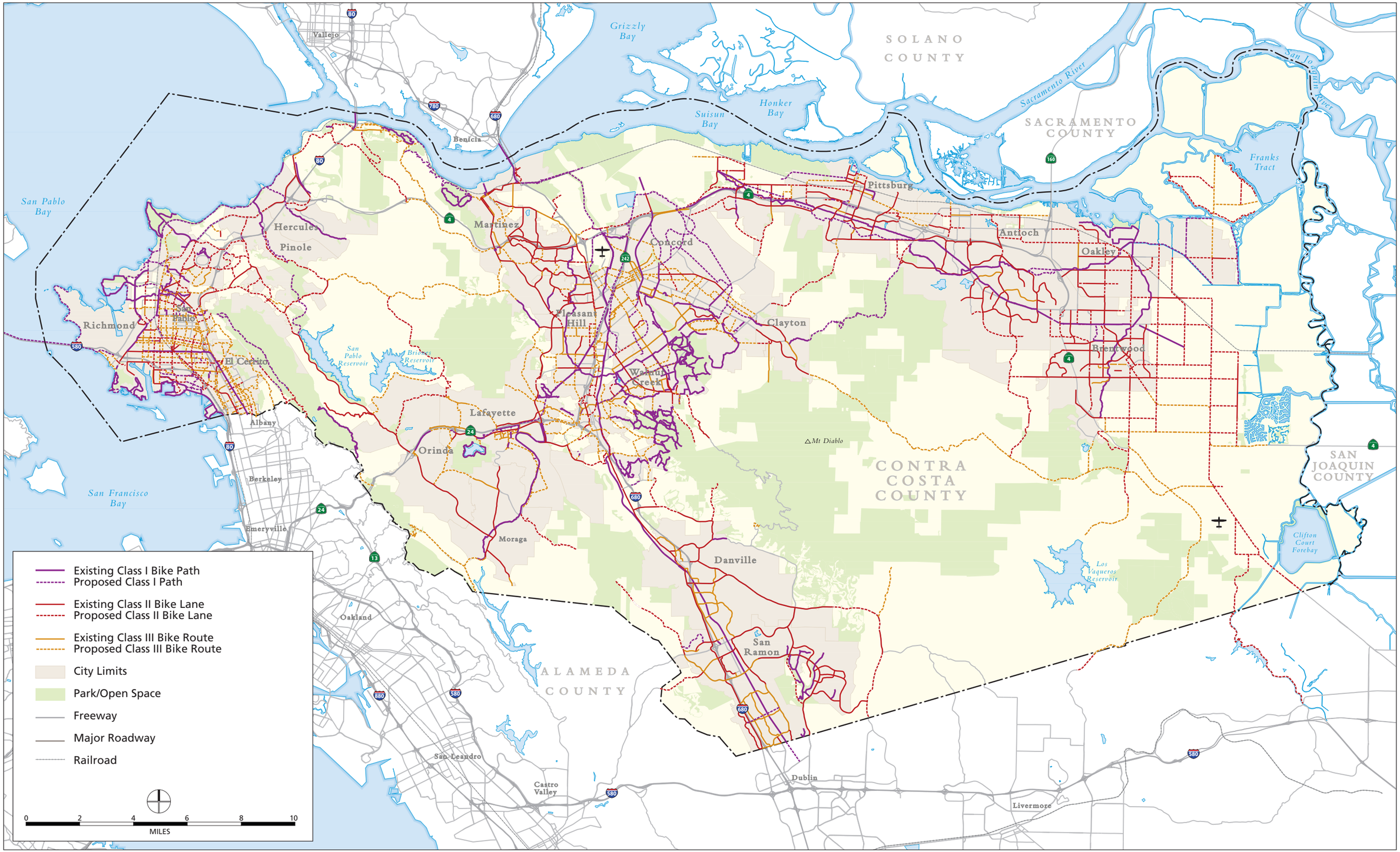
To further support mobility opportunities for seniors and people with disabilities, the Authority will develop an Accessible Transportation Service (ATS) Strategic Plan. The plan will evaluate how accessible services are delivered by all agencies and where appropriate coordination can improve transportation services. The ATS Strategic Plan will also determine the investments and oversight of funding and identify timing, projects, service delivery options, administrative structure, and fund leverage opportunities.

Bike to Work Day in the City of Richmond.

3.8. EXPANDED BICYCLE FACILITIES. Encourage local jurisdictions and other agencies to develop a connected and coordinated system of bicycle facilities through financial assistance, technical support, other aid, and encouragement.

Measure J specifically provides funding for these improvements with up to $30 million available. The CBPP describes how local jurisdictions can use the Authority's CBPP to become eligible for funds from the Active Transportation Program. Finally, mapping done for the CBPP helps local jurisdictions plan connections to the countywide system.

Figure 3-1:
Bicycle Master Plan



Source: Contra Costa Countywide Bicycle and Pedestrian Plan, 2013 Update

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3.9. PRICING PROGRAMS. Support congestion pricing and parking pricing programs, transportation demand management programs and other innovative strategies that reduce greenhouse gas emissions.

In the GMP *Implementation Guide*, the Authority has a Model Transportation System Management Ordinance to help local jurisdictions craft policies and procedures for transportation demand management that will demonstrate compliance with Measure J's GMP requirements. The basic idea is to use transportation demand management tools to accomplish one or more of the following outcomes:

- Reduce single occupant vehicle use;
- Spread peak-hour trip-making to off-peak time periods; and
- Shift trips to alternate modes;

Looking ahead, these transportation demand measures, coupled with technological innovation and vehicle automation, will help improve air quality and support regional and State efforts to reduce GHG emissions.

Congestion pricing and parking pricing programs have been successful in other metropolitan areas. With this in mind, the Authority will be considering the lessons learned from these programs, as well as their costs, as it determines how it might initiate additional actions, in concert with its partners. A specific implementation task is included for this effort in Chapter 5.

3.10. SAFE ROUTES TO SCHOOLS. Support Safe Routes to Schools projects and programs.

There is sustained and growing interest in Safe Routes to School efforts throughout Contra Costa. Safe Routes to School (abbreviated as SR2S) activities can take many forms, but all have the basic objective of improving safety for pedestrians and cyclists around schools. The benefits of having more children walk or bike to school include reduced vehicular traffic around schools, improved public health outcomes through increased physical activity, and an enhanced sense of community for the neighborhood around the school.

Authority support for SR2S falls into two categories: (1) capital projects that enhance the physical infrastructure around schools to allow for safer and more convenient walking and bicycling; and (2) programs that promote safety and encourage walking and bicycling activities through student and parent education and outreach. To assess the overall need for SR2S projects and programs throughout Contra Costa, the Authority prepared a comprehensive assessment that estimated the overall costs of improving access to all public schools in Contra Costa. Examples of current programs include those run by Contra Costa Health Services, San Ramon Valley Street Smarts, and Street Smarts Diablo (supported by the Authority). In some instances, SR2S funding supports programs as an adjunct to a school bus program; in others, there is a separate program created.

Continued support for SR2S is a priority for the Authority, and additional funding is listed in the Chapter 4's LRTIP. The Authority also provides technical assistance on request to facilitate local planning and programming.

GOAL 4. Maintain the transportation system

Since passage of Measure C, the Authority has collectively invested billions to create the complex and extensive transportation system that serves Contra Costa's transportation needs. However, current levels of funding for public infrastructure are inadequate, and dealing with deferred maintenance is one of the greatest challenges we face. The following strategies are intended to help the Authority meet this goal.

4.1. STABLE FUNDING SOURCES. Advocate for stable sources of funds for transit operations and other programs that support the transportation system.

The Authority actively monitors State and federal legislative programs that have a bearing on transportation funding and testifies on key measures that have a direct bearing on our mission. What is most important, from the Authority's perspective, is that a dedicated and predictable source of future funding be created, as has been done with Measure J. In recent years, federal and State sources have been unstable. To correct this, the Legislature has been considering bills to address this need with a variety of strategies, including raising the gas tax and vehicle license fees (just done with SB 1), establishing a "carbon tax," and

using performance measures to administer funding. The Authority will be closely tracking this effort and advocating for CCTA's interests, as appropriate.

4.2. *MAINTENANCE. Require and fund programs for effective preventive maintenance and rehabilitation of the transportation system ("deferred maintenance").*

(*Commentary below)*

4.3. *LONG-TERM NEEDS. Secure funding that will maintain the long-term health of all components of the transportation system.*

Finding money for infrastructure maintenance is a top priority for local governments. While new development projects can be required to cover the capital costs of facilities needed to serve them, long-term maintenance costs are not always fully funded. SB1, the Repair and Accountability Act of 2017, was approved by the Governor on May 28, 2017. It generates new funds for transportation through an increase in the gas tax and through other fees on auto and trucks. While SB 1 will provide an estimated $52 billion over a ten-year period to help rebuild the State's infrastructure, it still falls short in the backlog of repairs needed for the transportation system, which exceed $137 billion[17]. The 18 percent "return to source" funding for the Measure J Local Streets Maintenance and Improvement Program has been a welcome revenue stream, but it does not cover all local needs.[18] More complicated, as noted in Strategies 4.2 and 4.3, is funding the backlog for pavement rehabilitation and related projects, which may require new State legislation above and beyond SB 1. The Authority's implementation actions for these three strategies will focus on:

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[17] Pg. 4, Next 10, *Beyond the Gas Tax, Funding California Transportation in the 21st Century, 2017.*

[18] Using cost data from the 2013 Caltrans State of the Pavement Report, total cost for pavement reconstruction of 740 miles of roads in Contra Costa classified as "at risk" and "poor/failed" would be about $1.9 billion, which far exceeds the 18 percent allowance for the Local Streets and Maintenance Program under Measure J. If only roads rated as "poor/failed" are reconstructed the cost would be on the order of $1.2 billion. The ultimate cost could be 50 to 100 percent higher because of the difficulties involved in local street reconstruction, including accommodations needed for utilities, equipment staging, traffic re-routing, maintaining grade, and ADA requirements, which are not as large a cost factor on the state highway system. For more information, please see the Introduction of Volume 2 of the CTP.

- ***What the Authority can do to ensure long-term maintenance of all new improvements***. The Authority's Local Streets and Road Maintenance and Improvement Program, also know as "return to source" funding, provides local jurisdictions with resources they can use for long-term maintenance. The Authority will conduct an analysis of how the Measure J funds, combined with other existing revenue sources, coupled with the new SB1 funds, will change the picture for roadway maintenance. Based upon this assessment, the Authority will be able to re-examine roadway system maintenance needs and move forward to develop appropriate strategies for addressing those needs.

- ***What the Authority can do to assist with deferred maintenance of existing facilities***. Funding will be available through the Local Streets Maintenance and Improvements (LSM&I) Program and subregional programs created to meet the needs of specific areas within Contra Costa. The Authority also will provide guidance on best practices and will support efforts to seek potential additional funding sources.

- ***What the Authority can do through external partners***. The California Transportation Infrastructure Priorities Work Group among others has been investigating how Road User Charges and other mechanisms might be used to provide a secure source of funding for maintenance, rehabilitation and reconstruction needs at the local level. At a regional level, the OBAG program also will help meet these needs.

Each of these actions will be undertaken in close consultation with the RTPCs and local jurisdictions and with opportunities for public input at key decision points.

GOAL 5. Continue to invest wisely to maximize the benefits of available funding

The Authority will seek to obtain the greatest benefits for Contra Costa residents from the funding it has available by using performance measures and calculations of return on investment in its decision-making. The benefits of these investments also will need to be fairly allocated, so there are no disparate impacts on low-income or minority residents. The following strategies reflect this commitment.

5.1. PERFORMANCE MEASURES. Use performance measures to evaluate and compare transportation investments.

Since Measure J was passed, the Authority has been using multi-modal transportation service objectives in the Action Plans. More recently, after adoption of *Plan Bay Area*, MTC's performance measures have been used to compare projects and programs in the evaluation of transportation investment options that led to creation of the Investment Program in Chapter 4. Chapter 4 also includes a summary of this analysis, with details related to the 2017 CTP Update contained in Volume 2. The performance criteria used address not only traditional system measures of transportation efficiency, as expressed by vehicles miles travelled per capita, vehicle hours of delay, access and travel modes, and transit ridership, but also the indirect effects on transportation and housing affordability, displacement, and support for the Priority Development Areas Growth and Investment Program. The Authority also uses performance measures in evaluating projects requesting funding through different programs, such as OBAG and the Measure J Pedestrian, Bicycle, and Trail Facilities program. The latter measures are found in the Countywide Bicycle and Pedestrian Plan.

5.2. MATCHING FUNDS FOR LEVERAGING. Seek matching funds, whenever possible, to leverage Measure J funds, and offer incentives and priority funding to projects that provide greater return on investment.

The Authority has always used its sales tax revenues to attract funding from other sources. The leveraging that these revenues can provide has helped us secure the funding necessary to build most of the major projects in the Measure J expenditure plan. More specifically, leveraging refers to the amount of additional new funds that can be garnered from State and federal programs using revenues from the Measure J sales tax. By way of example, the Caldecott Tunnel, which cost $417 million, was constructed using $119 million in Measure J funds. The Authority received additional funding in the amount of $194.3 million through the American Recovery and Reinvestment Act, and $103.7 million from other sources. Overall, the Measure J funding allocated to the Caldecott Tunnel project was leveraged 2.5:1. That is, for each Measure J dollar expended, the Authority received 2.5 additional dollars in funding from other sources.

Another example of leveraging is the BART extension to Antioch. The cost of this project is $526.4 million, of which $140.6 million came from Measure J. This project is leveraged at 2.75, with additional funding from Proposition 1B, Regional Measures 1 and 2, AB 1171, subregional fees (ECCRFFA), State Transit Assistance, Traffic Congestion Relief Program, and the Regional Transportation Improvement Program (RTIP).

A third example of leveraging can be seen in the funding received for the Transportation for Livable Communities and the Pedestrian, Bicycle and Trails programs. In this instance, the additional funding ($28 million versus $22 million in Measure J funding allocated to these programs to date) represents a leveraging ratio of 1.27:1. About 46 percent of the additional funding is federal, 29 percent local, six percent State, and 19 percent from impact fees, developer contributions, and the like.

More can be done to offer incentives and prioritize funding, but for this to happen, the Authority will need to develop a consistent approach and methodology for measuring returns on investment. A fair and explicit procedure is essential so all applicants know what the rules are and how they will be applied. As part of CTP implementation, the Authority will investigate methodologies used by other transportation agencies and then determine what specific calculations should be done and what evaluation criteria will be used. The findings of this work will be incorporated in the *Implementation Guide* and the Authority's procedures for project funding.

5.3. PUBLIC-PRIVATE FUNDING PARTNERSHIP. Develop public-private partnerships and pursue innovative financing mechanisms to accelerate project delivery.

State law allows regional transportation agencies, such as the Authority, and Caltrans to enter into public-private partnerships (P3s) to develop and operate transportation projects to accelerate goods movement, improve air quality and facilitate California's economic development. The Presidio Parkway is one example of a successful partnership executed by the San Francisco County Transportation Authority. P3s have been used for decades with great success in Europe, Canada and Australia. In Southern California two toll roads (SR91 and

SR125) are P3s, and lessons learned from these projects could inform the Authority's consideration of how best to approach P3s.

The Tri-Link Study explored a P3 to fund a $750 million freeway project to connect Tracy to Brentwood in East County. The Authority continues to oversee this effort. Since at this time public funding is not available for project development and construction, the Authority is exploring the feasibility of private funding sources with revenues through tolling.

In the near to mid-term, the Authority will investigate the feasibility of initiating one or more specific projects that could capitalize on the P3 model. These projects may use either a "user fee" model where the private partner receives a return on investment through fees paid by users of the facility, or an "availability" model, with payments tied to the public access and use of the facility and deductions in payments due the private sector partner when performance standards are not met. Under this latter model, there is no risk related to an inadequate number of users to generate a reasonable rate of return.

To bolster Measure J sales tax revenues, the Authority will revisit Regional Transportation Mitigation Program (RTMP) policies, to clarify that fee revenues from new development may be used to pay for bicycle facilities and streetscape infrastructure, subject to the appropriate nexus findings.

5.4. EQUITY. Consider the needs of all areas and communities in Contra Costa in funding decisions to ensure fairness in the Authority's transportation investments.

This strategy is rooted in the basic concept of fairness in terms of the distribution of benefits and burdens that occur from transportation investments, and seeks to involve all residents in Contra Costa in the decision-making processes that affect them. To accomplish this, the Authority embraces three fundamental equity principles:

- To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations;

- To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process; and
- To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

The Authority will monitor all of its project funding and collect data to inform the public and decision-makers about the presence and extent of any inequities in transportation funding based on race and income and to describe what actions could be employed to minimize disproportionate impact.

In all of its planning activities, the Authority uses a collaborative process that involves residents in low-income communities, community- and faith-based organizations that serve them, transit operators, regional agencies, and stakeholders. Several of the performance measures that the Authority has used in the 2017 CTP also reflect these equity priorities, including reducing auto-related injuries and increasing walkability, preserving and increasing affordable housing in growth areas, and improving local access to schools. More specifically, transportation investment scenarios – packages of projects and programs – were evaluated using these measures, and the results have informed the Authority's work on its Long-Range Transportation Investment Program described in Chapter 4.

5.5 EDUCATION AND OUTREACH. Continue to support education and outreach to inform the public about related transportation issues.

The Authority will continue to work with partners to educate the public about the local and regional transportation system, including potential improvements and their benefits. Education and outreach will help inform residents and businesses about their transportation options, taxpayers about how transportation funds are collected and distributed, and voters about potential measures used to fund transportation.

4 Investment Program

Carrying out the strategies identified in the 2017 CTP and achieving its vision and goals will require resources. Federal and State governments provide some funding for transportation projects and programs, but the portion of the Authority's resources coming from these sources is expected to diminish even with additional revenues from SB 1. Therefore, the Authority relies increasingly on local sources to provide funding for its projects and programs. Because resources are limited, the Authority will need to make hard decisions on how to invest to best achieve the Authority's vision and goals and support the strategies established for the CTP.

A Long-Range Transportation Investment Program is presented in this chapter to show the level of support and funding needed for various projects and programs that are planned. The Authority also continues to investigate other potential revenue sources and leverage local sources through State and federal grant programs.

FUNDING THE INVESTMENT PROGRAM

The LRTIP was created by starting with the building blocks of project and program costs and then matching these with estimates of available funds over various time periods. Input from the RTPCs helped to define a scenario, with public outreach and stakeholder interviews providing further input on priorities, timing, and allocations by transportation mode. Public outreach through online engagement tools, telephone Town Halls, and other outreach provided additional input.

Most of the money used for transportation projects in Contra Costa is generated from the taxpayers who pay fuel taxes, sales taxes, and other fees. These tax dollars flow into federal, State, and local funding pots. The federal funds are used primarily for capital projects, such as new highways and rail construction. State funds go to capital projects and also cover maintenance and operations of our state highway and transit systems. Local funds are used for capital projects, operations, and maintenance, as well as to match federal and State grants.

When it comes to actually funding a project, however, the project sponsor confronts a myriad of programs at different levels of government, with a daunting set of application and review requirements. This makes understanding the funding picture more challenging, especially if one is unfamiliar with the acronyms of transportation finance and the timetables for various funding programs.

Revenues Available and New Funding Needed

To help inform its various planning and funding efforts, the Authority maintains a "master" project list of all projects that are completed, under construction, or proposed. Called the Comprehensive Transportation Project List (CTPL), this database is developed through submittals received from the County, cities, and various other sponsoring agencies in the county in response to periodic "calls for projects". All project sponsors have access to the database, and the Authority relies on them to enter, edit, and update project descriptions. The CTPL is meant to be a "living document" in that it is updated as new information becomes available. The CTPL is financially unconstrained. Therefore, the total cost of the projects and programs currently in the CTPL far exceeds the amount of funding that is likely to be available for Contra Costa's projects and programs through 2040.

One important source of funding for Contra Costa's transportation projects and programs comes through the Regional Transportation Plan (RTP) for the nine-county Bay Area, which has a $292 billion investment program in year of expenditure dollars (232 billion in committed investments plus $60 billion for discretionary investments). The 2013 RTP will provide $3.67 billion in committed and discretionary funding for some projects and programs in Contra Costa. The total amount of funding by mode for the 2013 RTP is shown in Table 4-1. Figure 4-1 shows major roadway and HOV projects and programs in the 2013 RTP, while Figure 4-2 shows the 2013 RTP's major transit, bicycle, and pedestrian projects and programs. Projects classified as "committed" are approved with secured funding; the other projects are considered discretionary, meaning there could be adjustments in funding as priorities or matching sources change.

Revenue Estimate for Long-Range Transportation Investment Program

More funding is needed to meet Contra Costa's transportation priorities and needs in the coming years, and choices must be made about which projects and programs to fund in an investment program. There are numerous challenges to establishing an investment program for transportation projects and programs in the CTP, including uncertain funding amounts and sources, changes in program requirements, competing needs for projects and programs, and ultimately, the constraint of limited financial resources. To help guide future investments, the Authority developed a financially-constrained transportation investment program, as part of the process of preparing the updated CTP, an Environmental Impact Report (EIR), and a potential future transportation sales tax measure. This program is intended to show how additional funding, on the order of $ 6.447 billion with State and federal grants and potential sales tax funds, could be invested in projects for which funding is not currently committed and available in the 2013 RTP. An additional $1.55 billion is assumed for the extension and expansion of existing Measure J programs.

Table 4-1: 2013 Regional Transportation Plan – Committed and Discretionary Funding for Contra Costa Projects by Mode ($ 2017 in Millions)

	2013 RTP	
	Funding	Percent of Total
Freeways and Roadway Projects		
Arterial/Roadway	$635	17.3%
Freeway	$530	14.4%
Goods Movement	$19	0.5%
High-Occupancy Vehicles	$161	4.4%
Integrated Corridor Management	$85	2.3%
Interchange Improvements	$562	15.3%
Subtotal	**$1,991**	**54.2%**
Transit Projects		
BART Improvements and Expansion	$670	18.2%
Bus Transit Improvements and Expansion	$81	2.2%
Regional Rail	$82	2.2%
Express Bus/ Bus Rapid Transit	$44	1.2%
Ferries	105	2.9%
Park-and-Ride Projects	$2	0.0%
Subtotal	**$982**	**26.8%**
Bicycle and Pedestrian		
Bicycle and Pedestrian Projects	$51	1.4%
Subtotal	**$51**	**1.4%**
Projects Subtotal	**$3,024**	**82.4%**
Countywide & Subarea Programs[1]		
Paratransit Service	$183	5.0%
Pedestrian, Bicycle, and Trail Improvements	$85	2.3%
Safe Transportation for Children	$36	1.0%
School Bus Pass	$26	0.7%
School Bus Service	$200	5.4%
Transportation for Livable Communities including Northern Waterfront Initiatives	$117	3.2%
Programs Subtotal	**$648**	**17.6%**
TOTAL	**$3,672**	**100.0%**

Note: Numbers may not sum precisely due to rounding.

1. Does not include Local Streets Maintenance and Improvement Funds (LSM) for Contra Costa, which are shown in the 2013 RTP as $4.3 billion. The Measure J share, based on 20% of actual annual Measure J revenues (FY 2015-16), is $451 million (0.2 x $83,468,000/year) x 27 years (2013-2040).

Figure 4-1: 2013 RTP
Roadway and HOV Projects and Programs

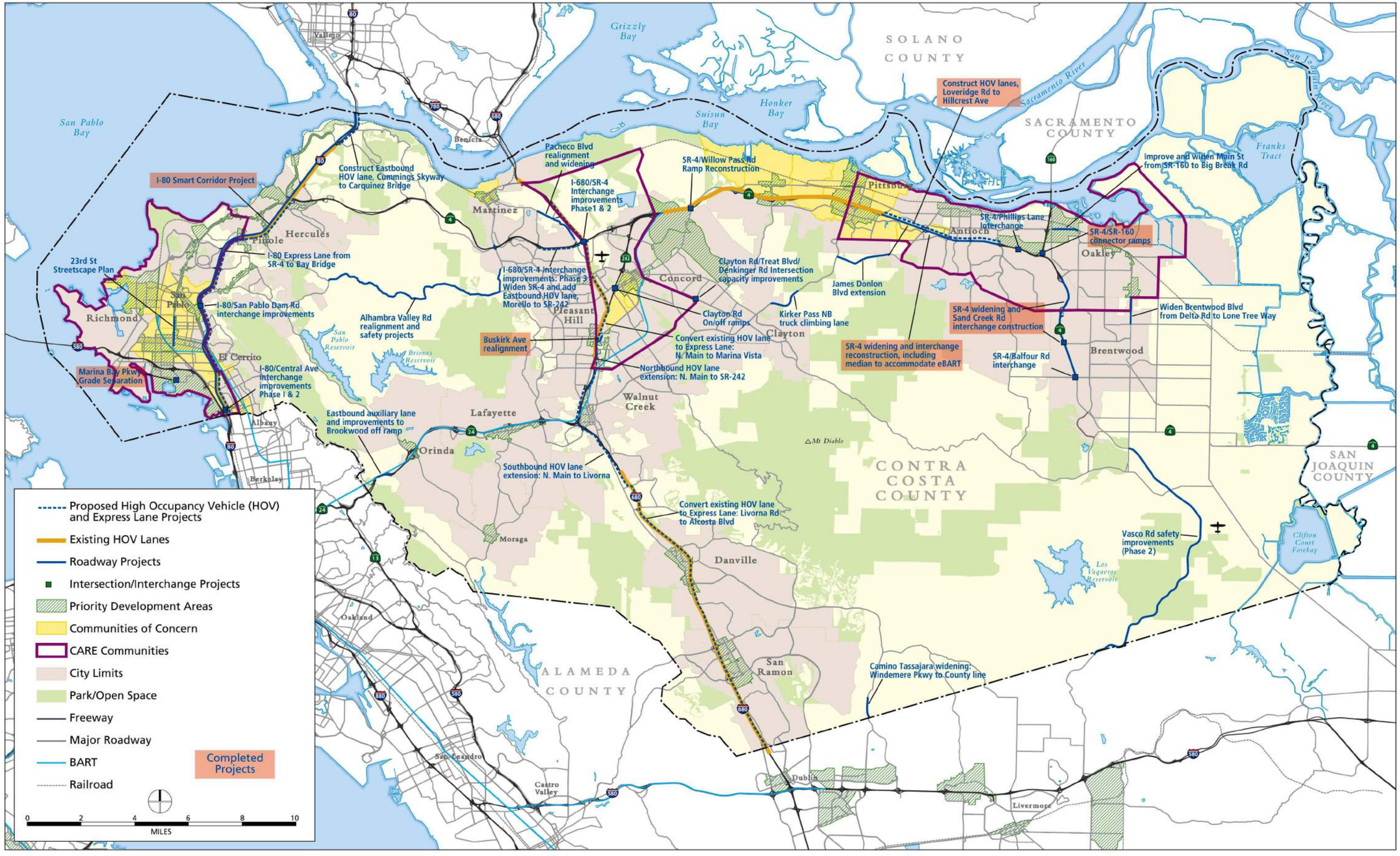

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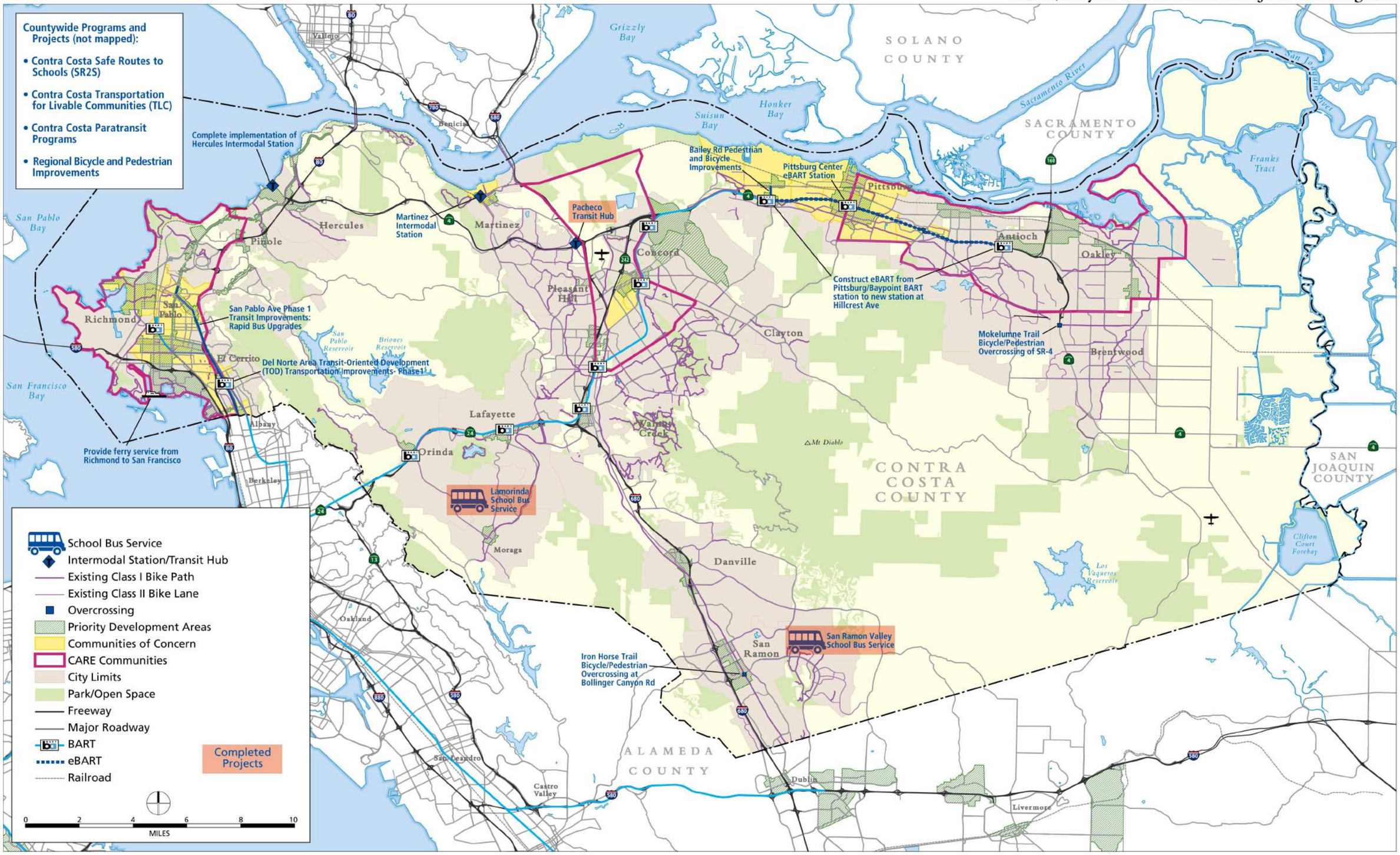
Figure 4-2: 2013 RTP
Transit, Bicycle and Pedestrian Projects and Programs



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To increase funds for transportation projects and programs, the Authority has successfully leveraged revenue generated through Measures C and J to bring in funding from other sources. Leveraging refers to the amount of additional new funds that can be garnered from regional, State, federal, and private sources once a new sales tax is in place, and it is one of the key strategies in the CTP Long-Range Transportation Investment Program (LRTIP). The 2017 CTP fund estimate for the LRTIP assumes revenue from new funding sources, such as supplementing the existing sales tax measure (Measure J) through voter approval of an additional half-percent sales tax. Assuming a half-percent sales tax for 25 to 30 years, revenues that are likely to be available through a potential new sales tax, plus an assumption of 2-1 leveraging, funds are estimated to be $6.447 billion in 2017 dollars. This assumes that the new sales tax begins in 2019 or shortly thereafter, and although funds could continue to flow from the new measure beyond 2040, the fund estimate is derived by assuming a limited timeframe from 2019 through the year 2039. For the overall funding program, an average leveraging rate of 2:1 was assumed. This assumption is based upon potential increased leveraging for programs through new sources such as cap-and-trade, and funds from continued leveraging of projects at historic levels.

The LRTIP offers the Authority, its appointed review committees, and the public a distinct framework of choices for how to allocate the limited funding that could be available over 10- and 20-year time horizons to projects and programs identified by the RTPCs and other stakeholders.

SETTING PRIORITIES

The Long-Range Transportation Investment Program was not developed in a vacuum, but builds on the Authority's accomplishments over the past 29 years, since Measure C was passed in 1988, and on local and regional transportation planning efforts. More specifically, the LRTIP is intended to be consistent with and to reinforce past and current investments in transportation projects and programs that support all travel modes; meet the needs of all segments of the community, including low-income and minority residents; reduce impacts on the environment; sustain the economy; and support local communities and their General Plans. Maintenance of the system also has become increasingly important in an era of fiscal constraints. With all of these considerations in

mind, it was deemed important to establish a specific set of criteria to guide creation of the LRTIP for the 2017 CTP. These are listed below.

Program Design Criteria for the LRTIP

1. The LRTIP must support the vision and goals of the CTP, but it can do so with varying mixes of projects and programs reflecting different emphases and priorities.
2. The LRTIP is "financially-constrained", meaning that it must meet a pre-determined funding limit expected to be reasonably available from current and future revenue sources with reasonable "leveraging" assumptions based upon past experience.
3. The LRTIP must represent a balanced approach, considering all travel modes and the need to provide incentives for technological innovation, respond to subregional needs, and provide "fair share" allocations of transportation investment to each region and also to communities of concern where many low-income and minority residents live.
4. The LRTIP must reflect the principles of social equity and environmental justice, as required by State and federal law, and meet the needs of low-income and minority residents as well as the needs of other residents and employers.
5. The LRTIP must contribute to regional efforts to reduce emissions of greenhouse gases from transportation sources and adapt to sea level rise.
6. The LRTIP must be able to accommodate new initiatives suggested by stakeholders, that are consistent with the overall goals of the CTP.
7. The LRTIP must perform within the context of ABAG's projections of jobs and housing set out in *Plan Bay Area*, the supporting land use framework in local General Plans, and designations of Priority Development Areas.
8. Specific projects and programs identified by the RTPCs for funding with a potential future sales tax measure must be included.

Selection of projects and program for the 2013 RTP was done by MTC as part of the *Plan Bay Area* process, using information provided by the Authority. The Authority will apply the results of future RTP updates toward funding programming decisions.

Building on the program design criteria listed above, the priorities and needs for the LRTIP were designed in coordination with the public, RTPCs, transit agencies, Authority committees, and other stakeholders. They relied on key ideas put forward by the public during the Authority's public outreach, as described in the Introduction. Ultimately, the LRTIP is intended to help the Authority achieve the vision and goals of the CTP, including the strategies under the "Invest Wisely" goal that are discussed under the Vision, Goals and Strategies (Chapter 3).

INVESTMENT PROGRAM

The LRTIP reflects distinct choices the Authority must make: 1) how to support alternative modes, particularly "active transportation," and help build healthy communities; 2) how to support economic development and job creation; and 3) how to advance the goals of environmental justice and climate protection. The decision made in formulating the project list for the investment program reflected tradeoffs among these choices.

The Authority is committed to invest in projects and programs that support job creation and economic development in the County, while also accommodating "active transportation" and social and environmental goals. This will be done by giving priority to freeway, roadway and transit projects that serve employment centers or facilitate access to jobs and to projects that support and improve urban goods movement. There also will be funding for capital improvements to transit systems, freeways and local roads, and integrated corridors ("smart" freeways and Complete Streets); and funding for cycling, recreational trails and pedestrian improvements. Representative projects include:

- SR 4 Operational Improvements, new SR 4 interchanges; and SR 4/I-680 HOV connection and ramps;
- Construction of a BART extension to Brentwood and BART seismic improvements;
- I-680 and West County High-Capacity Improvements;
- Construction of the four-lane SR 239 freeway (Tri-Link) between Tracy and Brentwood;
- Closing critical gaps in the Regional Trail System;

- Infrastructure for connected and automated vehicles; and
- Continued bus operations.

Ferry projects would be funded under the LRTIP only when their fare-box-recovery ratio meets WETA requirements, and when their potential economic benefits are likely to be comparable with those associated with projects that would more directly provide benefits to commuters and urban goods movement. By way of example, ferry service to Richmond, which meets the WETA criteria, is to be reinstated in 2018.

Program Cost Assumptions

Funding for future programs was based on the existing structure of Measure J. For example, the Transportation for Livable Communities Program, is assumed at five percent, and the Local Street Maintenance and Improvement Program ("Return to Source") is assumed at 20 percent of the total, with flexibility to assign a portion of those programs to bike, pedestrian and trail improvements.

Program funding is highly variable and more dependent on available funding sources than on identified need. Funding for programs is also highly dependent on the willingness of a public agency to subsidize services, such as transit and paratransit. For the LRTIP, program funding is assumed to be separate from the $6.45 billion (2017 dollars) project fund estimate used to develop the 10-year and 20-year project lists shown in Appendix C in Volume 2.

The LRTIP

Figures 4-3 and 4-4 show the major projects and programs for roadways and HOV facilities and for transit, bicycle, and pedestrian facilities that are included in the proposed LRTIP. Table 4-2 summarizes the overall funding proposed for projects by mode and programs in the LRTIP in 2014 dollars.

Table 4-3 summarizes the funding for projects and programs in year of expenditure dollars, compared to 2017 dollars.

Table 4-2: LRTIP by Mode ($ 2017 in Millions)		
	Total Cost	**Percent of Total**
Freeway and Roadway Projects		
Arterial/Roadway	$1,064	13.3%
Complete Streets	$177	2.2%
Freeway	$921	11.5%
Goods Movement	$42	0.5%
High-Occupancy Vehicles	$84	1.0%
Integrated Corridor Management	$49	0.6%
Interchange Improvements	$346	4.3%
Local Streets & Roads	$697	8.7%
Operations	$293	3.7%
Safety	$69	0.9%
Subtotal	**$3,742**	**46.8%**
Transit Projects		
BART Improvements and Expansion	$686	8.6%
Bus Transit Improvement	$198	2.5%
Express Bus/Bus Rapid Transit	$291	3.6%
Ferry Service	$134	1.7%
I-680 Transit Investment	$377	4.7%
Paratransit Service	$5	0.1%
Park-and-Ride Projects	$28	0.3%
West County High Capacity Transit	$380	4.7%
Other Transit	$52	0.7%
Subtotal	**$2,150**	**26.9%**
Other Projects		
Innovation	$65	0.8%
Safe Routes to School	$290	3.6%
Subtotal	**$355**	**4.4%**
Projects Subtotal	**$6,447**	**80.6%**

Countywide and Subarea Programs[1]		
BART Rail Cars	$207	2.6%
Bus Transit Enhancements	$204	2.5%
Local Streets & Road Maintenance and Improvement	$473	5.9%
Pedestrian, Bicycle, and Trail Facilities	$279	3.5%
Safe Transportation for Children	$44	0.5%
Transportation for Livable Communities	$69	0.9%
Transportation for Seniors and People with Disabilities; Support for Ridesharing and Other Paratransit	$279	3.5%
Programs Subtotal	**$1,555**	**19.4%**
TOTAL	**$8,002**	**100.0%**

Note: Numbers may not sum precisely due to rounding.
[1] Assumes the extension and expansion of Measure J programs.

Table 4-3: Comparison of Program Costs: 2017 (Constant) Dollars vs. Year of Expenditure Dollars ($ in Millions)

	Total Cost	Percent of Total
Constant Dollars (2017)		
Freeway and Roadway Projects	$3,742	58%
Transit Projects	$2,150	33%
Pedestrian, Bicycle, and Trail Projects	$200	3%
Other Projects	$355	6%
Subtotal	**$6,447**	**100%**
Additional Countywide and Subarea Programs	$1,555	N/A
Total[1]	**$8,002**	**N/A**
Year of Expenditure $ [2]		
Freeway and Roadway Projects	5,044	47%
Transit Projects	2,898	27%
Pedestrian, Bicycle, and Trail Projects	270	3%
Other Projects	495	4%
Countywide and Subarea Programs	2,096	19%
Total[1]	**$10,787**	**100.0%**

Notes:

1. Numbers may not sum precisely due to rounding.
2. Assuming an inflation factor of 2.75% through 2040 and uniform expenditures for programs and projects over a 22-year period.

Figure 4-3: Investment Program
Roadway and HOV Projects and Programs

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Figure 4-4: Investment Program

Transit, Bicycle and Pedestrian Projects and Programs

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WHAT WILL THE LONG-RANGE TRANSPORTATION INVESTMENT PROGRAM ACCOMPLISH?

Regional Distribution of Funding

Table 4-4 shows the geographic allocation of the LRTIP funding by RTPC, as the programs are largely intended to provide benefits countywide. East County will receive the highest percentage (24.7 percent of the total), followed next by West County (21.7 percent). However, over 30 percent of the funding is for countywide projects.

Table 4-4: Allocation of LRTIP Funding by RTPC ($ 2017 in Millions)

Planning Area	Total Cost	Percent of Total
West County	$1,735	21.7%
Central County	$896	11.2%
East County	$1,976	24.7%
Lamorinda & Tri-Valley	$762	9.5%
Countywide	$2,634	32.9%
Total	**$8,002**	**100.0%**

Note: Numbers may not sum precisely due to rounding.

Meeting CTP Goals

The LRTIP supports the CTP goals, particularly Goal 2 (Manage growth to sustain Contra Costa's economy, preserve its environment, and support its communities) and the Plan's emphasis on community building, economic development, and the environment. Table 4-5 shows how this will be done in qualitative terms for easy reference.

Table 4-5: How the LRTIP Supports Plan Goals

Plan Goals	Level of Support
Support the efficient, safe, and reliable movement of people and goods using all available travel modes;	Moderate Support
Manage growth to sustain Contra Costa's economy, preserve its environment and support its communities;	Strong support for the economy
Expand safe, convenient and affordable alternatives to the single-occupant vehicle;	Moderate support
Maintain the transportation system; and	Strong support
Continue to invest wisely to maximize the benefits of available funding.	Supports through economic development

Expanding Travel Choices and Increasing Capacity

The LRTIP was evaluated with the Authority's computer modeling of the transportation system, and the results reveal that while it will add some capacity, it will also expand travel choices throughout Contra Costa County. The 2040 RTP scenario served as a baseline for comparison—it is based on the transportation projects and programs and the 2040 land use projection from the 2013 *Plan Bay Area* RTP. Compared to the 2040 RTP scenario, the LRTIP will reduce countywide drive-alone trips. Vehicle hours of delay (based on 4-hour AM peak period travel times) will decrease by (14 percent) compared to the 2040 RTP results. Vehicle hours traveled (based on 4-hour AM peak period travel times) also will decline by 4 percent. However, vehicle miles traveled will increase by 1 percent because of limited system improvements.

Increasing transportation choice is an important objective for the 2017 CTP that is supported by the LRTIP. There will be a substantial increase in the use of transit, based on daily trips, plus 4 percent compared to the 2040 RTP. In addition, active transportation modes, based on daily numbers, are supported compared to the 2013 RTP results. More specifically, walking and biking will increase by 4 percent.

Overall, the modeling results show that the LRTIP helps to achieve the Authority's goals, benefits local communities in Contra Costa, and will improve upon the 2040 RTP scenario.

Performance Evaluation using Plan Bay Area Targets

Table 4-6 presents a qualitative evaluation of how the LRTIP performs relative to *Plan Bay Area* targets; for details, see Volume 2.

Table 4-6: Summary of Performance Assessment of Transportation Investment

Plan Bay Area Performance Target		Relative Performance
Climate Protection	1. Reduce Per Capita CO2 by 15%	↑
Adequate Housing	2. House 100% of the Region's Population	↑
Healthy and Safe Communities	3. Reduce Exposure to Particulate Emissions	N/A[1]
	4. Reduce Injuries and Fatalities from Collisions	↑
	5. Increase Walking and Biking	↑
Land Preservation	6. Maintain the Urban Limit Line	↑
Equitable Access	7. Reduce Percentage of Housing and Transportation Costs for Low-Income Households	↑
Economic Vitality	8. Increase Gross Regional Product	↑
Reduce Vehicle Miles Traveled	9. Decrease Travel Time for Transit by 10%; Reduce Automobile Vehicle Miles Travelled Per Capita by 10%	↓
Maintenance	10. Maintain the System in a State of Good Repair	↑

Legend:

↑ Target Supported

↓ Target Not Supported

– Neutral Rating - No Significant Impact; Cumulative Effects Unknown/Speculative

1. See EIR for details.

Equity Findings

The Authority's vision, goals and strategies are predicated on the principle of fairness, meaning benefits and burdens that occur from transportation investments should be equally distributed to all residents. The Authority also promotes participation of all residents in the decision-making processes that affect them. It does this through a collaborative process that involves residents in Communities of Concern along with other community members in outreach activities.

The performance of the LRTIP was evaluated using criteria similar to those employed by MTC in its equity analysis of *Plan Bay Area*. Table 4-7 presents a qualitative summary of this assessment. Volume 2 of the CTP contains the detailed Equity Analysis along with the discussion of how the LRTIP supports *Plan Bay Area* performance targets.

Overall, the LRTIP in the 2017 CTP offers equitable transportation opportunities for residents in Communities of Concern and for minority and low-income residents. For most measures, the travel benefits are proportionally greater than for the typical Contra Costa resident. None of the project and program elements are judged to have an adverse impact on transportation affordability. Additionally, because *Plan Bay Area* land use is assumed with no changes in local General Plans proposed, and because the 2017 CTP supports economic growth, with trickle-down income benefits expected, the LRTIP would not have any substantial effect on the potential for displacement. Furthermore, local Housing Elements must include policies and programs that will ensure a balanced housing supply and equal housing opportunity for all residents and promote the expansion of housing opportunities for special needs groups, such as seniors, single-parent households, people with disabilities and homeless individuals. Because the differences compared to the 2013 RTP are relatively small, in terms of travel times, vehicle hours of delay, and transit use, these are not likely to translate into effects on the local real estate market that can be isolated and quantified in a way that substantiates a finding of a statistically significant, differential impact.

Table 4-7: Summary of Equity Analysis of LRTIP

Equity and Environmental Justice Component		Relative Performance
Travel Time Reductions vs. Averages Countywide	1. Minority Residents	↑
	2. Low-Income Residents	↑
Transit Use	3. Minority Residents/Low-Income Residents	↑
Transportation Investments	4. Minority Residents/Low-Income Residents	↓/–
Benefits to Residents in Communities of Concern vs. Typical Contra Costa Resident	5. Access to Jobs: 30-minute Auto Trip or 45-Minute Transit Trip	↑
	6. Ratio of Transit to Auto Job Accessibility	↑
	7. Mode Share: Transit	↑
	8. Mode Share: Active Modes	↑
	9. Transit Use	↑
Transportation Affordability	10. Does the Option have an Adverse Effect on Minority and/or Low-Income Residents?	No
Potential for Displacement	11. Does the Option have an Adverse Effect on Minority and/or Low-Income Residents?	No

Legend:

↑ Outcome is greater than outcome for typical Contra Costa resident

↓ Outcome is lesser than outcome for typical Contra Costa resident

– Neutral Rating - No significant difference between outcome for typical Contra Costa resident

For measure #4, the benefits are not the same as or greater than the countywide averages for other investment programs considered. This conclusion is based on an analysis of locally-sponsored projects and the benefits that would then accrue to each resident group. However, the countywide program investments in bus service, safe transportation for children, transportation for seniors and persons with disabilities, and bus passes for students may more than compensate for the potential inequities associated with the city-sponsored projects.

Because of the potential in the region for adverse effects on low-income and minority residents and on Communities of Concern, several initiatives were included in *Plan Bay Area* to provide incentives for community stabilization and minimize existing and future displacement pressures on low-income households. These initiatives include:

- **One Bay Area Grant (OBAG) program guidelines**. Using regional discretionary transportation funding available to MTC, OBAG incentivizes local community stabilization efforts to combat displacement pressures in two ways: (1) only local jurisdictions with a General Plan housing element that has been certified by the California Department of Housing and Community Development (HCD) are eligible for OBAG funds; and (2) the OBAG distribution formula rewards jurisdictions based on the construction of housing for very low- and low-income households as well as the jurisdiction targets for providing very low- and low-income units.

- **Bay Area Transit Oriented Affordable Housing (TOAH) Fund**. In 2010, MTC launched the Bay Area Transit Oriented Affordable Housing Fund with a $10 million commitment to establish a revolving loan fund to finance land acquisition for affordable housing development in select locations near rail and bus lines, creating a $50 million fund total. Other investors include major banking institutions, national and regional foundations, and six community development financial institutions. In February 2013, MTC approved an additional $10 million to support TOAH through the Priority Development Area (PDA) Planning Grant program as part of the One Bay Area Grant (OBAG) program, which combined with matching funds will grow this fund to at least $90 million.

- **Bay Area Regional Prosperity Plan.** In recognition of ongoing concerns about current and future displacement pressures in the region, MTC and ABAG received funding from the U.S. Department of Housing and Urban Development Sustainable Communities Program to develop a Regional Prosperity Plan. The

> goal of the Plan is to implement a regional growth strategy to help create middle-income jobs and develop and preserve affordable housing in transit-served communities by (1) providing community-response grants to grass-roots organizations; (2) developing a regional displacement "early warning system"; and (3) identifying strategies that can prevent displacement in at-risk communities.

Contra Costa will benefit from these initiatives, and the Authority intends to complement them with its own PDA Investment and Growth Management Strategy, which was reviewed by stakeholders and the Authority's Technical Coordinating Committee and Planning Committee and then adopted by the Authority Board.

REFINING THE LRTIP

The Authority's LRTIP combines project and program funding in a way that balances meeting the Plan's goals and objectives, the priorities expressed by the RTPCs, and feedback about the preliminary options received from members of the public through the public review process.

The Draft 2017 CTP will also be informed by the additional outreach planned for later in the year. The 2017 RTP is expected to essentially carry forward the 2013 RTP financially constrained project and program list for Contra Costa, and while it will include the addition of a number of new projects, including SR 4 Operational Improvements, its system performance and mode split are unlikely to differ substantially from the 2013 RTP when modeled.

The CTP's required 10- and 20-year priorities are presented in Volume 2. If revenues are greater in the coming years, the Authority will work with MTC and the RTPCs to select additional projects to be funded from the vision list of projects and from the 10- and 20-year priorities in Volume 2.

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5 Implementation Program

The 2017 CTP will play an important role in shaping our transportation policy and investment decisions. But how will the Plan be carried out? The Authority will need to work with many agencies to fund the Long-Range Transportation Investment Program and with local communities and stakeholders to set short- and mid-range funding parameters for the programs and projects that will work towards achieving our goals. In this chapter, we outline the tasks, responsibilities and scheduling of implementation activities, the partnerships, and the guidelines that we will use to carry out the strategies and priorities in the CTP, building on lessons learned since the first CTP was prepared, MTC's CTP Guidelines, and on best practices in other metropolitan areas.

ROLES AND RESPONSIBILITIES

The Authority must take the lead in putting the strategies of the CTP into effect. Few of these strategies, however, can be effectively carried out without the support and active participation of residents, local officials, other stakeholders, and especially through partnerships with the Metropolitan Transportation Commission (MTC), the Bay Area Air Quality Management District (BAAQMD), Caltrans, transit providers, and Non-Governmental Organizations (NGOs). The Authority also will be looking into public-private partnerships. The Authority will work closely with stakeholders within the county, including the RTPCs and local jurisdictions. As an example, RTPCs have authority over updating the Action Plans, and the Authority will support this effort, as appropriate, to ensure countywide consistency. Also stakeholders along the I-680 corridor will prove integral to implementing the Innovate I-680 initiative.

To implement the strategies of the CTP, the Authority also will work with regional and State entities. The extension of BART to East County through Measures C and J requires close partnership with BART. In addition, as MTC develops the 2017 RTP, the Authority will work closely with the regional bodies to help develop the regional plan and contribute to the list of transportation investments. Contra Costa's CTP and those of the eight other Bay Area counties form the basis for the RTP. Other partnerships include working with WETA on initiating ferry service from Richmond, as well as with the BAAQMD on implementation of the Transportation Fund for Clean Air. All improvements to the State Highway System, including relieving bottlenecks on SR-4 and monitoring the I-80 Smart Corridor performance, will require close coordination with Caltrans. Public input will be provided by the Authority's advisory committees and through meetings, open houses, online forums and surveys, and social media.

DETAILED IMPLEMENTATION TASKS

Table 5-1 outlines actions and tasks to achieve the vision and goals and implement the goals and strategies of the 2017 CTP. These tasks are organized into eight categories:

- Implement Measure J funding programs
- Plan for Contra Costa's transportation future
- Respond to State and federal legislative mandates
- Support Growth Management Program

- Design and construct transportation improvements
- Improve system management and maintenance
- Build and maintain partnerships
- Secure long-term funding for transportation improvements

Table 5-1: Implementation Activities Needed to Carry Out the Strategies in the 2017 CTP

Task	Description	Schedule	Responsibility	Supporting Agencies
Implement Measure J Funding Programs				
Prepare "Calls for Projects"	Work with RTPCs and local agencies to identify the best projects to carry out the goals of several of the various Measure J funding programs: bus transit; paratransit; express bus; Pedestrian, Bicycle and Trail Facilities; and TLC.	2017 and beyond	Authority staff	TCC, BTCC, PCC, RTPCs and local jurisdictions and transit agencies
Identify "leveraging" opportunities	Review State and federal funding programs, including SB 1 funding, to determine how best to leverage remaining available Measure J funds.	2017 and beyond	Authority staff	RTPCs and local jurisdictions and transit agencies
Update Measure J Strategic Plan	Update the projects and programming schedule to reflect changes in estimated revenues and project design.	Biennial	Authority staff	Caltrans, RTPCs, local jurisdictions, transit operators
Develop Program-Specific Strategic Plans and Incentives for Innovation	Working with various committees to apply program guidelines, select projects and program funding through Measure J or program-specific Strategic Plans and develop an incentive program to support use of technology and innovation.	2017 and Beyond	Authority staff	TCC, BTCC, PCC, RTPCs and local jurisdictions and transit agencies

Table 5-1: Implementation Activities Needed to Carry Out the Strategies in the 2017 CTP

Task	Description	Schedule	Responsibility	Supporting Agencies
Plan for Contra Costa's Transportation Future				
Convene Innovation Summit	Design and implement a program for an "innovation summit" to secure input from experts on Vision Zero, the use of technology in transportation planning, system operations and infrastructure maintenance, and the role of pricing and other incentives, including pubic private partnerships (P3), to support innovation and achieve the Authority's goals.	2018	Authority staff	CTC, Caltrans, RTPCs, local jurisdictions, transit operators, and selected university departments
Update the CTP	Update the policies, strategies, incentives, programs and projects designed to achieve the Authority's vision for the Plan consistent with the requirements of Measure J; the update will build on and incorporate changes made during the update of the Action Plans and will conform with MTC guidelines for the preparation of CTPs and will be coordinated with implementation and updating of *Plan Bay Area*.	2019-2021	Authority staff	All affected agencies
Update the Land Use Information System (LUIS) to align with *Projections for Plan Bay Area*	Incorporate the detailed land use and demographic information from ABAG's next *Projections* report into the Authority's modeling system.	Biennial	Authority staff	Local jurisdictions
Prepare a Development Monitoring "Dashboard" to Track Development Trends	Concurrent with the Land Use Information System (LUIS) update, work with local jurisdictions on creating an application to see how much development is going into PDAs and Communities of Concern.	2017-18	ABAG/MTC staff	Local jurisdictions, CCTA

Table 5-1: Implementation Activities Needed to Carry Out the Strategies in the 2017 CTP

Task	Description	Schedule	Responsibility	Supporting Agencies
Update the Countywide Transportation Model	Using consultant support, update the Countywide Transportation Model to incorporate improvements to modeling techniques. Include work needed to 1) transition to an activity-based model; 2) incorporate new capabilities to address TNCs and CV/AVs; and 3) reflect accelerated ZEV rollout and the resulting effects on GHG emissions.	Ongoing	Authority staff	Consultant; Technical Modeling Working Group, TCC, RTPC-TACs
Update the Countywide Bicycle and Pedestrian Plan	Working with the Countywide Bicycle and Pedestrian Advisory Committee, update the CBPP every five years to reflect changes in facilities, policies and guidelines and new requirements.	2017–2019	Authority staff	CBPAC, local jurisdictions, transit agencies
Prepare Studies to Address Specific Transportation and Implementation Issues, including use of Technology	Work with local agencies to address specific transportation issues and identify potential approaches and recommended actions to address them. These would include the ongoing studies on I-680 HOV access, Express Buses, ITS, and management of the I-80 corridor; planned studies of transit options in West County and elsewhere; implementation of I-680 Forward; a potential study of improving connectivity and travel in the vicinity of the SR 4/I-80 interchange and Sycamore Drive; a study of trail and street intersections along the Iron Horse Trail; an expansion of the development mitigation program to include a "Transit Mitigation Bank"; and programmatic VMT reductions and accelerated ZEV rollout to mitigate the impacts of development and reduce GHG emissions.	Ongoing	Authority staff	RTPCs, local jurisdictions, transit agencies, Caltrans, MTC and other groups as appropriate

Table 5-1: Implementation Activities Needed to Carry Out the Strategies in the 2017 CTP

Task	Description	Schedule	Responsibility	Supporting Agencies
Participate in a Countywide Goods Movement Plan	Evaluate trends, issues, and opportunities specific to the County and development policies and strategies to address them, including greater use of technology for communications and scheduling, funding for equipment upgrades for air quality improvements with cleaner technology, and an advocacy platform for goods movement and guidance for local jurisdictions.	2018-2020	Authority staff	CARB, RTPCs, local jurisdictions, MTC, and other groups as appropriate
Explore the Role of the Authority in Addressing Complete Streets and Resilient Transportation Systems	Initiate a study to look at emerging policy issues related to complete streets, goods movement and truck routes, and transportation systems resilient to the effects of climate change and how the Authority might address them within the context of Measure J. This study should also consider issues such as congestion pricing and emerging trends (such as alternative fuels, telework, and mobile apps for trucking), and how the Authority might respond.	2018–2020	Authority	RTPCs, local jurisdictions, regional agencies, transit agencies
Explore the Role of the Authority in Addressing Freight Mobility and Freight Funding	Review recommendations of the California Freight Mobility Plan, the San Francisco Bay Area Goods Movement Plan, and related regional and local studies and determine how the Authority might address them. This review should also consider opportunities for public-private partnerships to augment limited public funding.	2018–2020	Authority	MTC, RTPCs, local jurisdictions, regional agencies, state agencies
Explore the Role for the Authority in Connected Vehicles/ Autonomous Vehicles	With the expected advent of connected vehicles/autonomous vehicles, the Authority will explore what changes to transportation infrastructure will be needed and what new responsibilities will the Authority need to take on to support this new technology	Ongoing	Authority, Regional and State agencies, automobile and equipment developers and manufacturers	City of Concord and other partners in GoMentum Station

Table 5-1: Implementation Activities Needed to Carry Out the Strategies in the 2017 CTP

Task	Description	Schedule	Responsibility	Supporting Agencies
Initiate the Accessible Transportation Service Strategic Plan	To ensure that services are delivered in a coordinated system, the Authority will develop a strategic plan for accessible transportation service.	Ongoing	Authority	RTPCs, local jurisdictions, regional agencies, transit agencies
Support the Northern Waterfront Economic Development Initiative	Continue to advocate for the expedited development and funding of a Priority Production Area program, and support a shortline rail study in the Northern Waterfront area.	Ongoing	Authority	MTC, ABAG, transit operators and other, as appropriate
Respond to State and Federal Legislative Mandates				
Track Implementation Actions for AB 32/SB 375	Work with MTC and local agencies to address implementations issues and actions needs that are related to GHG mitigation, Sustainable Communities initiatives, and *Plan Bay Area*.	Ongoing	Authority staff	RTPCs, local jurisdictions, ABAG, MTC and other agencies and groups as appropriate
Review GMP Implementation Guide and Technical Procedures to Implement SB 743	Work with the TCC and local agencies to address new CEQA requirements for assessing transportation impacts in transit priority areas and on infill sites where LOS can no longer be used. Seek ways to streamline the process with menus of programmatic mitigation related to VMT reductions.	2017-2018	Authority staff	RTPCs, local jurisdictions, and other groups as appropriate
Participate in Implementing Mobility Management Concepts in Response to the Social Service Transportation Improvement Act (AB 120)	Work with MTC and transit operators on formulating, adopting and implementing a viable Mobility Management Plan to enable better coordination of transportation services for Contra Costa's aging population as required by AB 120.	2017-2018	Authority staff	County Connection and other groups as appropriate

Table 5-1: Implementation Activities Needed to Carry Out the Strategies in the 2017 CTP

Task	Description	Schedule	Responsibility	Supporting Agencies
Assess the funding implications of SB 1 on Local Street Maintenance and Improvement Funds	Analyze how SB 1 will augment funding for roadway maintenance and then re-examine roadway system maintenance needs and priorities and leveraging opportunities. Develop appropriate strategies to address these needs that use of SB 1 funding most effectively.	2018	Authority	Local jurisdictions and other, as appropriate
Support Growth Management Program				
Update Action Plans	Review MTSOs and actions and modify to reflect changing conditions, Plan Bay Area performance measures, and CEQA compliance under SB 743.	To be determined	RTPCs	Authority staff
Update RTMP Guidance	Clarify that revenues from new development may be used to pay for bicycle facilities and streetscape infrastructure, subject to the appropriate nexus findings, and address changes in CEQA related to SB 743 and the implications for the RTMP.	2018-2019	Authority staff	RTPCs, local jurisdictions, and other groups as appropriate
Monitor Compliance with Growth Management Program	Prepare biennial Compliance Checklists for reporting local compliance with requirements of the Growth Management Program; distribute to local jurisdictions; and report on their compliance with those requirements	Ongoing	Authority staff	Local jurisdictions
Biennial CMP Update	Update the Contra Costa Congestion Management Program as required by State law to reflect changes to legislation and update the projects and programs recommended	Biennial	Authority staff	TCC, local jurisdictions
Monitor Regional Transportation System	Monitor the performance of the regional transportation system using a set of measures of overall performance and impacts on low-income and minority populations and communities of concern	Biennial	Authority staff	Caltrans

Table 5-1: Implementation Activities Needed to Carry Out the Strategies in the 2017 CTP

Task	Description	Schedule	Responsibility	Supporting Agencies
Design and Construct Transportation Improvements				
Design and Construct Major Transportation Improvements	Working with Caltrans, BART and other agencies, design and develop major transportation improvements. This task includes work on th East County rail extension (eBART) and I-680 Phase 3.	Ongoing	Authority staff	Caltrans, BART and other agencies, as needed
Work with Project Sponsors to Implement Projects	Monitor the development of projects funded through Measure J, MTC, federal and State programs to ensure reasonable progress on their development and avoid problems in funding and implementation	Ongoing	Authority staff	Various project sponsors
Provide Safe Routes to School Technical Assistance	Help local jurisdictions and schools identify and design needed improvements around schools in Contra Costa	Ongoing	Authority	Local jurisdictions, schools, RTPCs, SR2S partners
Improve BART Station Access with Technology	Help BART identify and evaluate how technology might be used to improve station access along with other improvements and pricing policies.	Ongoing	Authority	BART; local jurisdictions
Improve System Management and Maintenance				
Develop Strategies to Better Manage and Maintain the System	Working with local, regional and State agencies, define strategies, whether for specific corridors, specific needs (e.g. goods movement), or regionally, to improve the operation and maintenance of the transportation system.	Ongoing	Authority staff	Local agencies, transit providers, Caltrans, MTC and others, as needed
Support Ways to Lower Transit Costs for Low-Income Residents	Work to expand the Lifeline Transportation Program and other programs that will improve mobility for low-income residents.	Ongoing	Authority staff	RTPCs, MTC, and transit operators
Support Continued TDM Efforts	Continue to deliver Transportation Demand Management services and improvements throughout Contra Costa	Ongoing	511 Contra Costa	Authority staff, local agencies, businesses and the general public

Table 5-1: Implementation Activities Needed to Carry Out the Strategies in the 2017 CTP

Task	Description	Schedule	Responsibility	Supporting Agencies
Build and Maintain Partnerships				
Continue Involvement in Bay Area Partnership	Work with regional and State agencies including MTC, BAAQMD, and Caltrans, to develop approaches to improve the efficiency of the regional transportation system, improve air quality and address funding issues	Ongoing	Authority staff	MTC, BAAQMD, other CMAs, Caltrans
Initiate Public-Private Partnerships (P3s), Where Viable	Work with the private sector and regional and State agencies to develop procedures for P3s and then issue a "call for projects" for those judged most promising, based on public, RTPC and technical input	2018-2020	Authority Staff	RTPCs, local jurisdictions, MTC, Caltrans
Continue support for services for seniors and those with special needs	Work with CCTA's current partners and others to help provide more efficient services for seniors and those with disabilities.	2017-2019	Authority staff	Transit operators and others, as appropriate
Explore How Best to Collaborate on Regional Advance Mitigation Planning (RAMP)	Work with infrastructure and natural resource agencies involved in RAMP to identify opportunities for strategic mitigation in advance, allowing for more efficient and lower cost project approvals and better resource conservation.	Ongoing	Authority staff	MTC, State Coastal Conservancy, FHWA, Caltrans, US Corps of Engineers and others as appropriate
Expand Involvement with Ridesharing Services and transportation connection companies (TNCs)	Work with current partner and others to apply technology to help provide more efficient ridesharing services.	2017-2019	Authority staff	Local jurisdictions and others, as appropriate
Support for Housing and Infrastructure Improvements in PDAs	Work to facilitate use of Cap & Trade funds for Affordable Housing and Sustainable Communities (AHSC) and other programs to provide additional incentives for development.	Ongoing	Authority staff	Strategic Growth Council, local jurisdictions and others as appropriate

Table 5-1: Implementation Activities Needed to Carry Out the Strategies in the 2017 CTP

Task	Description	Schedule	Responsibility	Supporting Agencies
Secure Long-Term Funding for Transportation Improvements				
Manage Funding Programs: Seek Matching Funds; and Leverage State, federal and other funding whenever possible	Oversee the selection of projects, the programming of funds, and progress on the construction or operation of these projects. This task will cover both Measure J and regional, State and federal funds. Programming documents will include the Measure J Strategic Plan, the STIP and TIP, and recommendations to MTC on its programs.	Ongoing	Authority staff	MTC, BAAQMD, other CMAs, Caltrans
Support Expanded Funding Programs	As part of the Authority's legislative program, support legislation that would expand funding to meet needs for maintaining and improving the transportation system and supporting growth management.	Ongoing	Authority	
Develop performance and equity measures and apply them in project selection	In coordination with MTC and other regional agencies, develop performance and equity measures for the county's transportation system and use them to assess the impacts, particularly on Communities of Concern, and cost-effectiveness and environmental justice considerations of projects being considered for funding. Collect data about project funding and monitor funding distribution and effects with regards to the performance and equity measures.	Ongoing	Authority staff	MTC, BAAQMD, Caltrans, and other agencies, as needed
Develop return on investment measures, incentive programs, and guidance for public-private partnerships	Initiate studies of best practices and then recommend methodologies, incentive programs, and related guidance to augment the Authority's funding capacity (To be coordinated with P3 work above)	2018–2020	Authority	Caltrans, MTC, RTPCs, local jurisdictions, transit agencies, and other stakeholders

Table 5-1: Implementation Activities Needed to Carry Out the Strategies in the 2017 CTP

Task	Description	Schedule	Responsibility	Supporting Agencies
Develop Transportation Funding Priorities	Working from the financially-unconstrained CTPL, the CTP Investment Program, and the projects and programs that correspond to the actions listed in the RTPCs' Action Plans, develop a refined financially constrained list of projects and programs to serve as an advocacy document to seek new sources of funding.	2017–2018	Authority	Local jurisdictions, transit agencies, RTPCs, other stakeholders

6 Appendices

1. Routes of Regional Significance
2. Glossary

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APPENDIX A: ROUTES OF REGIONAL SIGNIFICANCE

Currently designated Routes of Regional Significance for Contra Costa County are listed below, organized by geographic area.

West County (WCCTAC)

Interstate 80
- Solano County to Alameda County

State Route 4
- I-80 to TRANSPAC/WCCTAC boundary [at Cummings Skyway]

Interstate 580
- Marin Co. to Alameda Co. [north of I-80]

23rd Street
- San Pablo Ave/Road 20 to I-580

Appian Way
- (San Pablo Ave to San Pablo Dam Rd)

Carlson Boulevard
- 23rd St to San Pablo Ave

Central Avenue
- I-580 to San Pablo Avenue

Cummings Skyway
- San Pablo Ave to SR 4

San Pablo Avenue
- I-80/Pomona Street in Crockett to Alameda Co. including Parker Avenue through Rodeo

San Pablo Dam Road
- San Pablo Ave-Broadway Avenue to WCCTAC / SWAT boundary [near Bear Creek Rd]

Richmond Parkway
- Fitzgerald Dr to I-580 including Castro St./Garrard Blvd. couplet

Central County (TRANSPAC)

Interstate 680
- Solano Co. to SWAT/TRANSPAC boundary [between Rudgear Rd & Livorna Rd interchanges]

State Route 242
- I-680 to SR-4

State Route 4
- WCCTAC/TRANSPAC boundary [at Cummings Skyway]
- to TRANSPLAN/TRANSPAC boundary [at Willow Pass Grade]

Alhambra Avenue (including northern portion of Pleasant Hill Road) Alhambra Avenue (Arch Street to Martinez/Pleasant Hill city limit) + Pleasant Hill Road (Martinez/Pleasant Hill city limit to Taylor Blvd [north])
Bailey Road Clayton Rd to TRANSPLAN/TRANSPAC boundary
Clayton Road Treat Blvd to Ygnacio Valley Rd-Kirker Pass Rd
Contra Costa Boulevard Center Ave to Boyd Rd
Geary Road Pleasant Hill Rd to I-680
Kirker Pass Road Clayton Rd to TRANSPLAN/TRANSPAC boundary
North Main Street Boyd Rd to I-680 interchange [north of downtown Walnut Creek]
Pacheco Boulevard Marina Vista to Center Ave
Pleasant Hill Road (central portion) Geary Rd to Taylor Blvd
Taylor Boulevard (including western portion of Willow Pass Road) Taylor Blvd (Pleasant Hill Blvd to Contra Costa Blvd) + Willow Pass Road (Contra Costa Blvd to SR 242)
Treat Boulevard I-680 to Clayton Rd
Ygnacio Valley Road I-680 to Clayton Rd

East County (TRANSPLAN)

State Route 4 (freeway) TRANSPLAN/TRANSPAC boundary [at Willow Pass Grade] to San Joaquin County
State Route 160 SR 4 to Sacramento County
Auto Center Drive (formerly Somersville Road) Buchanan Rd to W. 10th Street
Bailey Road Willow Pass Rd to TRANSPAC/TRANSPLAN boundary
Balfour Road Deer Valley Rd to Brentwood Blvd
Buchanan Road Railroad Ave to Somersville Road

Byron Highway (non SR 4 section) SR 4 to Alameda Co.
Camino Diablo Marsh Creek Road to Vasco Road
Cypress Road/Bethel Island Road Cypress Rd (Sellers Ave to Bethel Island Rd) + Bethel Island Rd (Cypress Rd to Bethel Island bridge)
Deer Valley Road Hillcrest Rd/Davison Dr to Marsh Creek Rd
East 18th Street A St to SR-160
Fairview Avenue Lone Tree Way to Balfour Rd
Hillcrest Avenue SR 4 to Lone Tree Way
James Donlon Boulevard (6) Somersville Road to Lone Tree Way
Laurel Road SR 4 Bypass to BNSF rail line
Leland Road/Delta Fair Boulevard San Marco Blvd to Pittsburg/Antioch city limit
Lone Tree Way/A Street E. 18th St to Brentwood Blvd
Main Street/Brentwood Boulevard (former SR 4) SR-160 to SR-4
Marsh Creek Road Deer Valley Rd to SR 4 Ninth/Tenth Streets Couplet Auto Center Dr to A Street Pittsburg-Antioch Highway West 10th Street to Auto Center Dr
Railroad Avenue/Kirker Pass Road Tenth St to TRANSPAC/TRANSPLAN Boundary
Sand Creek Road SR 4 to Brentwood Blvd
Somersville Road Buchanan Rd to James Donlon Blvd
Vasco Road Walnut Blvd to Alameda Co.

Walnut Boulevard/Oak Street

Brentwood Blvd to Vasco Rd

West/East 10th Street

Railroad Avenue to Pittsburg-Antioch Highway

Wilbur Avenue

A St to SR 160

Willow Pass Road

SR 4 to W. 10th St

Lamorinda

State Route 24

Alameda Co. [Caldecott Tunnel] to I-680

Pleasant Hill Road

Taylor Blvd to SR-24

San Pablo Dam Road/Camino Pablo

WCCTAC/SWAT boundary [near Bear Creek Rd] to SR 24

BART Pittsburg/Bay Point Line

Service to/from Orinda and Lafayette Stations[20]

Tri-Valley (Contra Costa portion)

Interstate-680

TRANSPAC/SWAT boundary [between Rudgear Rd & Livorna Rd] to Alameda Co.

Danville Boulevard

(TRANSPAC/SWAT boundary [between Rudgear Rd & Livorna Rd] to La Gonda Way

San Ramon Valley Boulevard

Hartz Ave to Alameda Co.

Camino Tassajara/Tassajara Road

Sycamore Valley Rd to Alameda Co.

Sycamore Valley Road

San Ramon Valley Blvd to Camino Tassajara

Alcosta Boulevard

San Ramon Valley Blvd to Village Parkway

[20] Authority policy (adopted on July 17, 2014) allows RTPCs the option to include Regional Transit Routes (such as BART) and Non-motorized Regional Routes (such as the Iron Horse Trail) in an Action Plan; however, any MTSOs, actions, review policies, etc. adopted by an RTPC as a result of having designated a non-roadway facility as a Regional Route are: a) limited to consideration within the RTPC; and b) de-coupled from the Authority's Growth Management Program compliance requirements.

Bollinger Canyon Road
San Ramon Valley Blvd to Alcosta Blvd (being extended east to Dougherty Road)
Crow Canyon Road
Alameda Co. to Camino Tassajara
Dougherty Road
Crow Canyon Rd to Alameda Co.
Iron Horse Trail
TRANSPAC/SWAT boundary to Alameda Co.

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APPENDIX B: GLOSSARY

ABAG, Association of Bay Area Governments. The regional land use planning agency for the nine-county Bay Area; among its other responsibilities, ABAG develops forecasts of population and employment growth in its Projections series. See http://www.abag.ca.gov/.

Action Plan. A document prepared by a Regional Transportation Planning Committee that includes: (1) a specific program for each designated Route of Regional Significance, consisting of multimodal transit service objectives, actions, and responsibilities for achieving them; (2) regional actions for reducing congestion such as land use policy changes and demand management strategies; and (3) a process for monitoring and review of activities that might affect the performance of the regional transportation system.

ACTC. Alameda County Transportation Commission. The Commission plans, funds, and delivers more than $200 million each year in transportation programs and projects in Alameda County. See http://www.alamedactc.org/.

ADA, Americans with Disabilities Act of 1990. Federal law that prohibits discrimination based on disability and requires access by the disabled person to public facilities, including streets and transit facilities.

Authority. The Contra Costa Transportation Authority, see "CCTA" below

BAAQMD, Bay Area Air Quality Management District. The agency charged with implementation of the Clean Air Act including the establishment and implementation of transportation control measures. See http://www.baaqmd.gov/.

BART, Bay Area Rapid Transit District. The agency that operates the rapid rail transit system within Alameda, Contra Costa, San Francisco, and San Mateo counties. See https://www.bart.gov/.

BCDC, San Francisco Bay Conservation and Development Commission. A California State commission charged with protecting and enhancing the San Francisco Bay and encouraging the Bay's responsible use. See http://www.bcdc.ca.gov/.

BTCC, the Bus Transit Coordinating Committee. A committee that coordinates bus services and advises the Authority on bus transit policies and investments.

Capitol Corridor. Amtrak intercity rail service — daily round-trip trains supported by connecting feeder bus services — between Auburn and San Jose with stops in Martinez and Richmond. See http://www.capitolcorridor.org/.

Caltrans, California Department of Transportation. The Department manages more than 50,000 miles of highway and freeway lanes, provides inter-city rail services, permit more than 400 public-use airports and special-use hospital heliports, and works with local agencies. See http://www.dot.ca.gov/.

CARB, California Air Resources Board. Established in 1967, CARB is a department within the California Environmental Protection Agency. The mission of CARB is to promote and protect public health, welfare and ecological resources through the effective and efficient reduction of air pollutants while recognizing and considering the effects on the economy of the state. See https://www.arb.ca.gov/homepage.htm.

CARE, Community Air Risk Evaluation program. CARE is a program of the Bay Area Air Quality Management District that unites government, communities, and businesses to address areas of concentrated air pollution and related public health effects in the Bay Area.

CV/AVs, Connected Vehicles/Autonomous Vehicles. Connected vehicles can communicate with the driver, other cars on the road, roadside infrastructure, and other internet sites through a variety of different communication technologies. Autonomous vehicles have different levels of automation, including full automation in which the vehicle is "self-driving" without any human interference into steering, acceleration, or braking.

CCTA, **Contra Costa Transportation Authority.** CCTA is a public agency formed by Contra Costa voters in 1988 to manage the county's transportation sales tax program and to undertake countywide transportation planning. See http://www.ccta.net/.

CEQA, California Environmental Quality Act. The State legislation that requires the review of the environmental impacts and the development of mitigation measures for proposed projects; the definition of "project" includes both construction activities, such

as the widening of a road, and plans, such as the preparation of a countywide transportation plan.

CMA, Congestion Management Agency. The agency designated for a given area, usually a county, to develop and manage the Congestion Management Program. In Contra Costa County, the Contra Costa Transportation Authority is the designated CMA. Congestion management agencies came into existence as a result of State legislation and voter approval of Proposition 111 in 1990.

CMP, Congestion Management Program. A document prepared by a CMA consistent with Section 65088 et seq. of the California Government Code. It is meant to outline the CMA's strategies for managing the performance of the regional transportation within its county.

Community of Concern. Low income and minority communities defined by MTC as experiencing potential transportation accessibility disparities.

CTC, California Transportation Commission. State commission responsible for programming and allocating funds for the construction of highway, passenger rail and transit improvements throughout California. See http://www.catc.ca.gov/.

DOT, Department of Transportation. The federal department responsible for funding and overseeing all federal transportation facilities. See http://www.transportation.gov/.

eBART. The proposed extension of rail transit service into eastern Contra Costa county using diesel multiple unit (DMU) trains.

Environmental Impact Report. An informational document, required under CEQA, which will inform public agency decision-makers and the general public of the significant environmental effects of a project, possible ways to minimize significant effects, and reasonable alternatives to the project.

EPAC, Expenditure Plan Advisory Committee. Authority's EPAC represented a broad range of stakeholders in Contra Costa County and advised the Authority on the development of a Transportation Expenditure Plan for the failed 2016 revenue ballot measure.

Express Lane: High-occupancy vehicle (HOV) lane that has been modified to allow single occupant vehicles to travel in the HOV lane, provided they pay a toll.

General Plan. A policy document required of California cities and counties by State law that describes a jurisdiction's future development in general terms. All land use decisions must be derived from the document, which includes text, maps, and other information. The General Plan contains a set of broad policy statements about the goals for the jurisdiction, and it also must contain seven mandatory elements: Land Use, Circulation, Housing, Conservation, Open Space, Noise, and Safety.

GHG, Greenhouse Gas. Gases that absorb and emit radiation within the thermal infrared range and are the fundamental cause of the greenhouse effect. The main greenhouse gases in the Earth's atmosphere are water vapor, carbon dioxide, methane, nitrous oxide, and ozone.

GMP, Growth Management Program. The voter-approved *Measure J Growth Management Program* for cooperative planning within Contra Costa.

GoMentum Station. A vehicle testing facilitating in Concord for a collaborative consortium led by the Authority that is aimed at accelerating the next generation of transportation technologies by testing connected vehicles and autonomous vehicles and facilitating policy development for them. GoMentum Station is one of ten National Automated Vehicle Proving Grounds so designated by the U.S. Department of Transportation.

HOT Lane, High-Occupancy Toll Lane: Former term for Express Lane.

HOV, High-occupancy vehicle. A term generally used to describe carpools or vanpools but also, depending on the context, used to describe bus transit vehicles; HOV lanes are travel lanes set aside for the use by carpools, vanpools and buses.

HOV Lane, High-Occupancy Vehicle Lane: An exclusive road or traffic lane that typically has a higher operating speed and lower traffic volumes than a general purpose or mixed-flow lane. In California, vehicles that typically can use HOV lanes include carpools, vanpools, buses, and other multi-passenger vehicles, and motorcycles and emergency vehicles. Also known as carpool lane.

HCD, California Department Housing and Community Development. The State department charged with increasing safe and affordable housing for all Californians by financing the construction of affordable homeownership and rental housing, assisting local communities in developing shelter and transitional housing for the homeless, and providing incentives for economic and community development. It also protects public health and safety through updates of residential building codes, licensing dealers and registering owners of manufactured homes, and providing titling services. See http://www.hcd.ca.gov/.

ICM, Integrated Corridor Mobility Project. A system of primarily operational improvements within the I-80 corridor to improve safety and traffic flow.

ITS, Intelligent Transportation Systems. The integration of information and communications technologies with vehicles and infrastructure to improve the safety and efficiency of the multi-modal transportation system.

Integrated Corridor Management. Integrated Corridor Management, also known as Corridor System Management, is used to establish multi-jurisdictional and multi-modal management of a highway corridor experiencing delay due to congestion. A management plan may include a listing and phasing of recommended operational improvements, Intelligent Transportation System (ITS) strategies, and system expansion projects to preserve or improve performance measures within the corridor. Such plans are required by Caltrans for all projects receiving Proposition 1B (2006) Corridor Mobility Improvement Account funding.

JPC, Joint Policy Committee. The committee coordinating the regional planning efforts of the Association of Bay Area Governments (ABAG), the Bay Area Air Quality Management District (BAAQMD), the Bay Conservation and Development Commission (BCDC) and the Metropolitan Transportation Commission (MTC). This coordination includes current regional initiatives on focused growth, climate protection, and development of a sustainable communities strategy pursuant to SB 375.

Lamorinda. A reference to the area within Contra Costa County that includes Lafayette, Moraga, and Orinda.

LOS, Level-of-Service. Level-of-service standards describe the range of possible traffic conditions as represented by the letters A through F, with A being excellent and F being poor.

LUIS, Land Use Information System. A computer database created for the Authority's travel demand model, which include land use and demographic data for traffic analysis zones (TAZs).

MTC, Metropolitan Transportation Commission. The regional transportation planning agency established by the State of California for the nine-county Bay Area region. See http://mtc.ca.gov/.

MTSO, Multimodal Transportation Service Objective. A flexible, but quantifiable, measure of transportation performance, such as delay index or level of service, established under Measure J. MTSOs replaced TSOs (Traffic Service Objectives) as required Action Plan elements under Measure J.

MPO, Metropolitan Planning Organization. An agency established through federal law to carry out the regional transportation planning functions established in federal legislation. In the Bay Area, MTC is the designated MPO.

OBAG, One Bay Area Grant Program. Program of grants distributed to local jurisdictions by MTC and ABAG to support planning and infrastructure investments in accordance with *Plan Bay Area*.

PCC, Paratransit Coordinating Council. Committee charged with advising the Authority on issues related to the provision of a comprehensive, customer-oriented, and cost-effective transit system serving seniors and persons with disabilities in Contra Costa County. PCC responsibilities include review and prioritization of paratransit funding applications; providing a forum for paratransit stakeholders to discuss issues of mutual interest and to assist in the resolution of concerns; promoting the development and coordination of a comprehensive, integrated paratransit system.

PCI, Pavement Condition Index. An index between 0 (worst) and 100 (best) that indicates the condition of pavement. It is usually measured manually by visual observation of distresses in the pavement, although there is technology that can identify distresses.

PDA, Priority Development Area. Locally-identified, infill development opportunity area within an existing community where that community is committed to developing more housing along with amenities and services to meet the day-to-day needs of residents in a pedestrian-friendly environment served by transit.

Performance Standard. A statement representing a commitment by a public agency to attain a specified level or quality of performance through its programs and policies.

Plan Bay Area. The name given to the 2013 Regional Transportation Plan (or Sustainable Communities Strategy (SCS)) developed by MTC and ABAG. It also serves as the Bay Area's Regional Transportation Plan through the year 2040.

Regional Measures 1 and 2. Also known as RM1 and RM2, these measures were approved by Bay Area voters in 1988 and 2004 and raised the tolls on the region's seven state-owned toll bridges. The funds raised paid for bridge and highway improvements and, in 2004, established a Regional Traffic Relief Plan.

Regional Route. A roadway designated by the Contra Costa Transportation Authority, consistent with procedures described in the Implementation Guide: Traffic Level-of-Service Standards and Programs for Routes of Regional Significance.

RHNA, Regional Housing Needs Assessment. Quantifies the need for housing within each jurisdiction of a region based on population growth projections. ABAG assigns these targets within the Bay Area. Communities then address this need through the process of completing the housing element of their general plan.

RTMP, Regional Transportation Mitigation Program. A program, required by Measure J, to establish fees, exactions, assessments, or other measures to fund regional or subregional transportation improvements needed to mitigate the impacts of a development project.

RTP, Regional Transportation Plan. A plan (required in California Government Code Chapter 1253) that requires regional agencies to prepare regional transportation plans as a condition for receiving State transportation funds. RTPs must establish transportation goals, address transportation issues and the needs of the community, identify system options and alternatives, and finally develop actions and financing necessary for recommended projects.

RTPC, Regional Transportation Planning Committee. The four committees identified in Measure J as the key forum for participating in the cooperative, multi-jurisdictional planning process. The RTPCs are charged with, among other things, preparing and updating the Action Plans for Routes of Regional Significance. There are four RTPCs: WCCTAC in West Contra Costa, TRANSPAC in Central Contra Costa, TRANSPLAN in East Contra Costa, and SWAT in Southwest Contra Costa. A fifth committee, called TVTC, represents the southern end of SWAT, and includes the Alameda County jurisdictions of the Tri-Valley.

SB 1: Also known as the Road Repair and Accountability Act of 2017, SB 1 is a landmark transportation investment, creating a new Road Maintenance and Rehabilitation Program to rebuild California by fixing neighborhood streets, freeways and bridges in communities across California and targeting funds toward transit and congested trade and commute corridor improvements. SB1 calls for investing $5.4 billion annually over the next decade to address a backlog of repairs and upgrades, while ensuring a cleaner and more sustainable travel network for the future.

SCS, Sustainable Communities Strategy. An integrated strategy of transportation improvements, land use changes, and other actions designed to reduce GHG emissions that MPOs must prepare and incorporate into their RTPs, as required by SB 375.

SOV, **Single-Occupant Vehicle.** A vehicle with one occupant — the driver — who is sometimes referred to as a "drive alone".

SR, **State Route.** A highway owned and maintained by the State of California and assigned a route number in the California Streets and Highways Code.

STIP, State Transportation Improvement Program. The biennial program of projects in California to be funded with State and federal funds. The STIP is prepared and adopted by the CTC based on recommendations from the regional MPOs in California such as MTC and Caltrans.

SWAT, Southwest Area Transportation Planning Committee. The Regional Transportation Planning Committee for Lamorinda and Tri-Valley. See http://ccta-swat.net/.

SWITRS, Statewide Integrated Traffic Records System. A database that serves as a means to collect and process data gathered from a collision scene.

TAC, Technical Advisory Committee. A committee, usually comprised of engineers and planners, who provide technical advice to a policy board.

TAZ, Traffic Analysis Zone. A geographic unit used to compile land use and demographic data to forecast future demand on the transportation system with the Authority's computerized travel demand model.

TCC, Technical Coordinating Committee. A committee consisting of transportation planning and engineering staff from local jurisdictions, transit agencies, MTC and Caltrans; the TCC advises the Authority on technical matters. See http://www.ccta.net/_resources/detail/38/1.

TCM, Transportation Control Measure. An action or set of actions designed to achieve or maintain the air quality standards established in federal and State clean air legislation.

TDM, Transportation Demand Management. Programs to increase the efficiency of the transportation system, reduce travel demand on roadways during the peak hour and otherwise affect travel behavior to reduce travel demand and improve efficiency.

TFCA, Transportation Fund for Clean Air. Funds generated from vehicle registration fees and overseen by the BAAQMD to help improve air quality.

TIP, Transportation Improvement Program. The primary spending plan for federal funding expected to flow into the region for all types of transportation facilities.

Travel Demand Model. A computerized model that uses information on current and future land use, transportation facilities, and demographics to forecast future demand on the transportation system.

TLC, Transportation for Livable Communities. A Measure J program intended to support projects that support alternative travel modes and a balanced transportation system.

TNC, Transportation Network Company. An organization, which may be a corporation, partnership, sole proprietor, or other form, operating in California that provides prearranged transportation services for compensation using an online-enabled application (app) or platform to connect passengers with drivers using their personal vehicle.

TOD, *Transit-Oriented Development*. Characterized by compact development, mixed use, minimum densities, and local transportation systems designed to facilitate access to rail transit stations or corridors with high levels of transit service.

TRANSPAC, Transportation Partnership and Cooperation. The Regional Transportation Planning Committee for Central County in Contra Costa. See https://transpac.us/.

TRANSPLAN. The Regional Transportation Planning Committee for East County in Contra Costa. See https://transplan.us/.

The Tri-Valley. The planning subarea that includes the Livermore, Amador and San Ramon valleys, encompassing the local jurisdictions of Danville and San Ramon in Contra Costa County and Dublin, Pleasanton and Livermore in Alameda County, as well as the unincorporated areas of both counties.

TVTC, Tri-Valley Transportation Council. The Regional Transportation Planning Committee for the Tri-Valley. See http://www.tvtc-jpa.com/.

TSM, Transportation Systems Management. See TDM.

VHT, Vehicle Hours Traveled. The estimated running time for all vehicles that are on the road during a given time period, usually a peak hour (AM or PM).

VMT, Vehicle Miles Traveled. The number of miles traveled by all vehicles on the roadway during a given time period, usually a peak hour (AM or PM) or peak period.

WCCTAC, West Contra Costa Transportation Advisory Committee. The Regional Transportation Planning Committee for West County in Contra Costa. See http://www.wcctac.org/.

YOE, Year of Expenditure. A term referring to the time period when a capital expenditure takes place. It is used distinguish the value of future dollars, also known as current dollars, from constant dollars, which are also known as real-dollar values in a specific year. For the 2017 CTP, constant dollars are 2017 dollars.

ZEV, Zero Emissions Vehicle. A vehicle that does not emit air polluting gases or particles.

Contra Costa Transportation Authority

Executive Staff

Randell H. Iwasaki
Executive Director

Martin R. Engelmann
Deputy Executive Director, Planning

Tim Haile
Deputy Executive Director, Projects

Randall O. Carlton
Chief Financial Officer

Peter Engel
Director of Programs

Linsey Willis
Director of External Affairs

Susan H. Miller
Director, Projects

Management Staff Contributors

Bradley D. Beck
Senior Transportation Planner

Hisham Noeimi
Engineering Manager

Mathew Kelly
Associate Transportation Planner

Stephanie Hu
Associate Transportation Engineer

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