

2017 Countywide Comprehensive Transportation Plan

Volume I

May 24, 2017

**PUBLIC
REVIEW
DRAFT**



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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, 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.

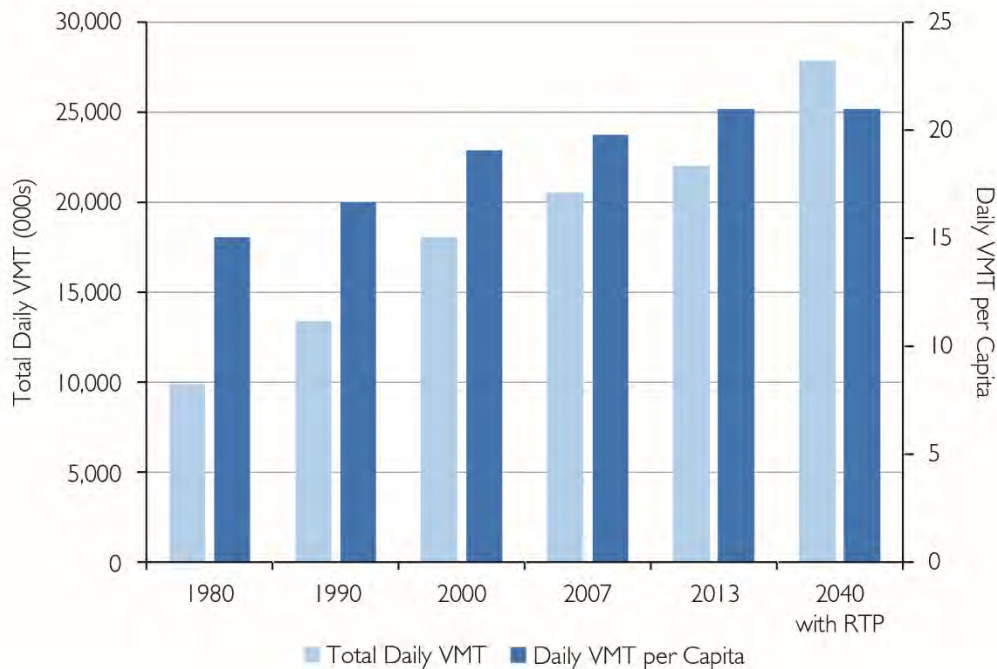
In addition, as more families move to Contra Costa County, especially into the East County, Central, and Tri-Valley areas, safe transportation options for school children

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.

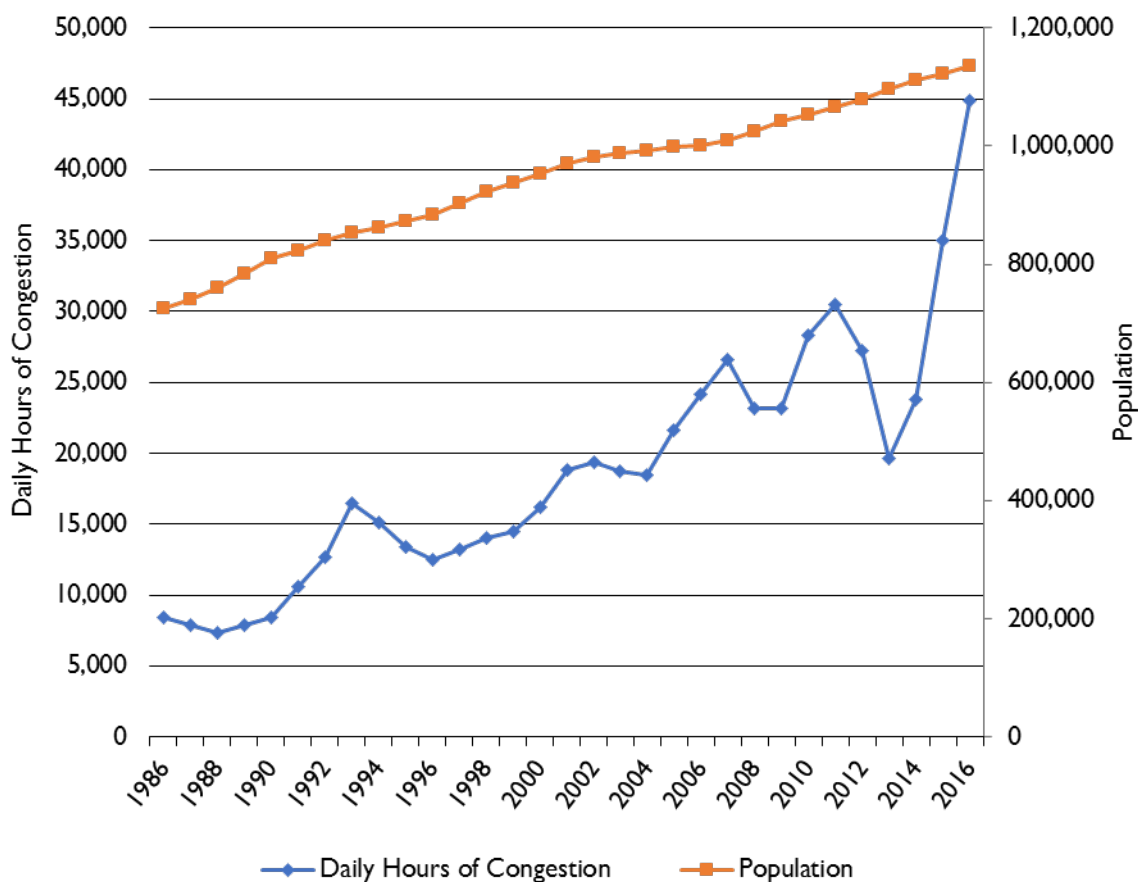
Figure ES-1: Average Weekday VMT and VMT per Capita in Contra Costa County 1980-2040



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, 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, 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.

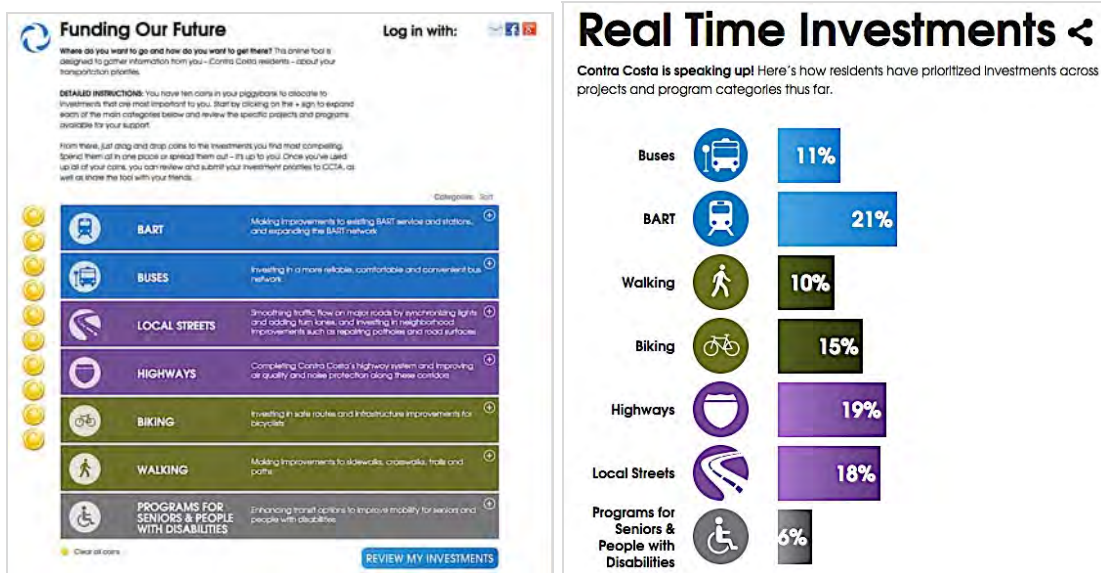
Opportunities

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.

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.			

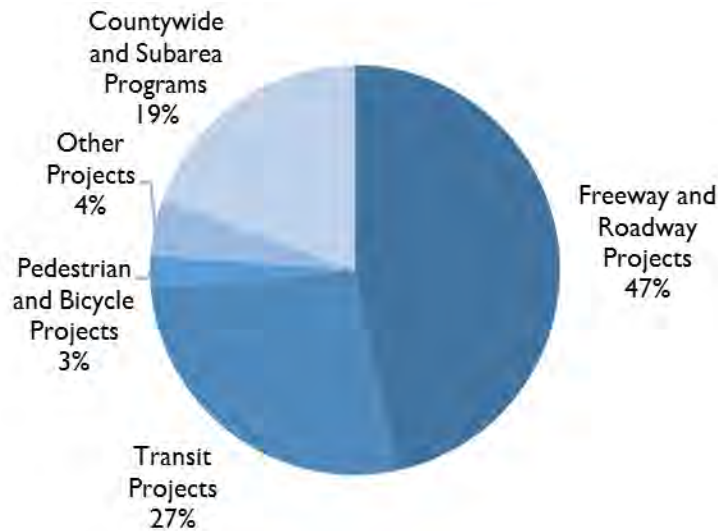
The Authority maintains a “master” project list that includes all projects – completed, under construction, and proposed. Called the Comprehensive Transportation Project List, or CTPL, this financially-unconstrained project list is used to track all potential projects and their funding status. All told, 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 Plan priority. With this in mind, the Authority intends to expand the Regional Transportation Mitigation Program to ensure that fees collected cover the costs of ongoing maintenance. New facilities should not be built if they cannot be maintained. 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.

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 Plan 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 to promote carpools, vanpools and park and ride lots.

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 Communities of Concern and implement the Sustainable Communities Strategies in *Plan Bay Area*.
- Investigating opportunities to extend the Regional Development Mitigation Program to include support for a Transit Mitigation Fund, which could support service expansion, as needed, and programmatic reductions in vehicle miles traveled (VMT) to mitigate the impacts of 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.

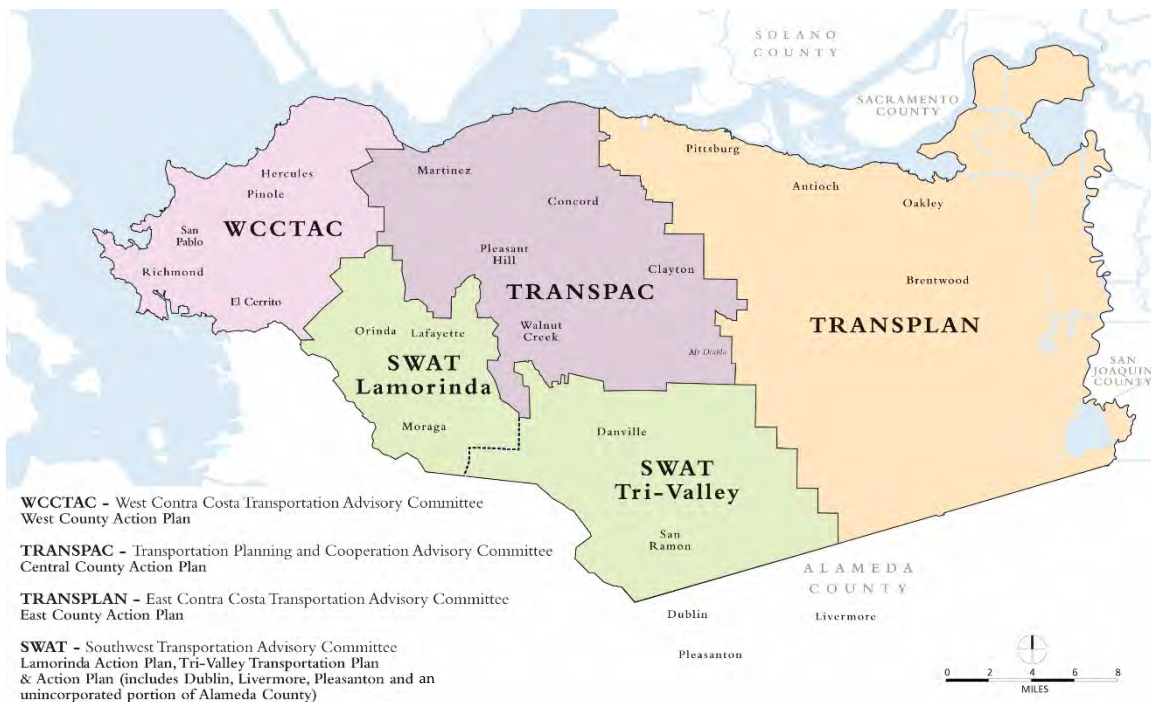
PARTNERSHIPS

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 I-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.

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 2000 update to the CTP. The CBPP establishes goals, describes existing conditions, prioritizes bike corridors and pedestrian improvements, 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*, was adopted in 2013. The 2017 RTP Update is currently underway and is scheduled to be adopted by MTC in July 2017.

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.²

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.

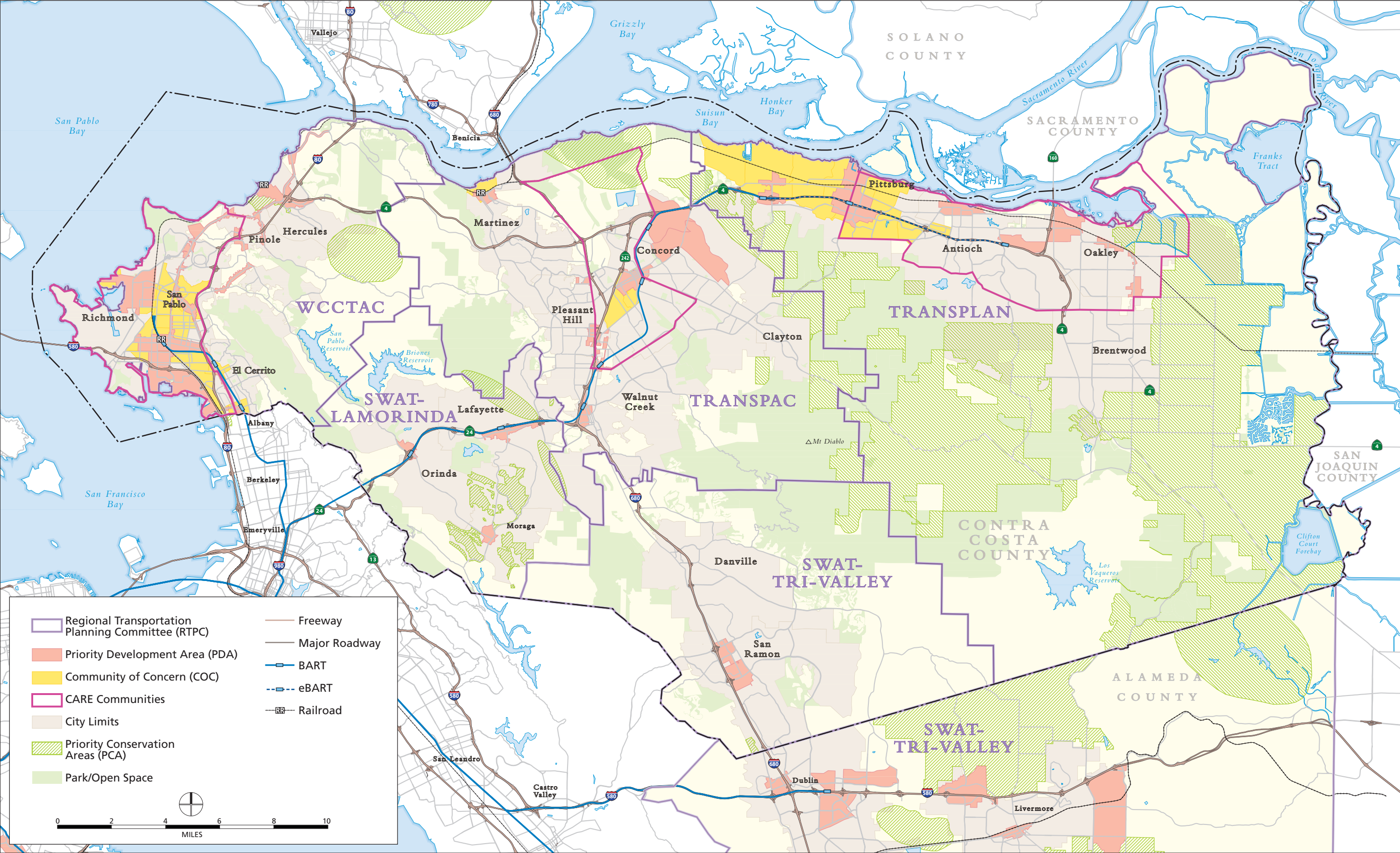
The CTP provides the overall direction and a coordinated approach for achieving and maintaining a balanced and functional transportation system within Contra Costa, while strengthening links between land use decisions and transportation. It outlines the Authority's vision for Contra Costa and its transportation 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.

² 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.

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.

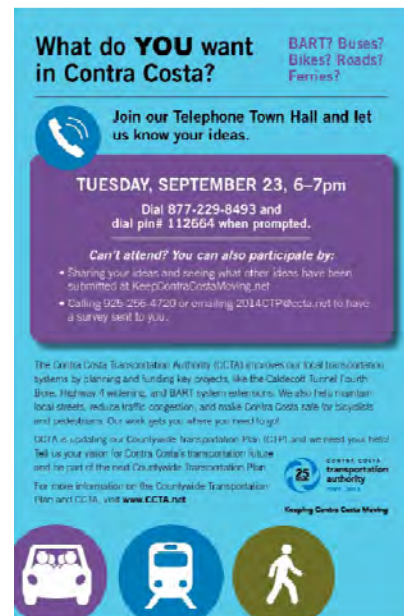
Activities and Participation

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.

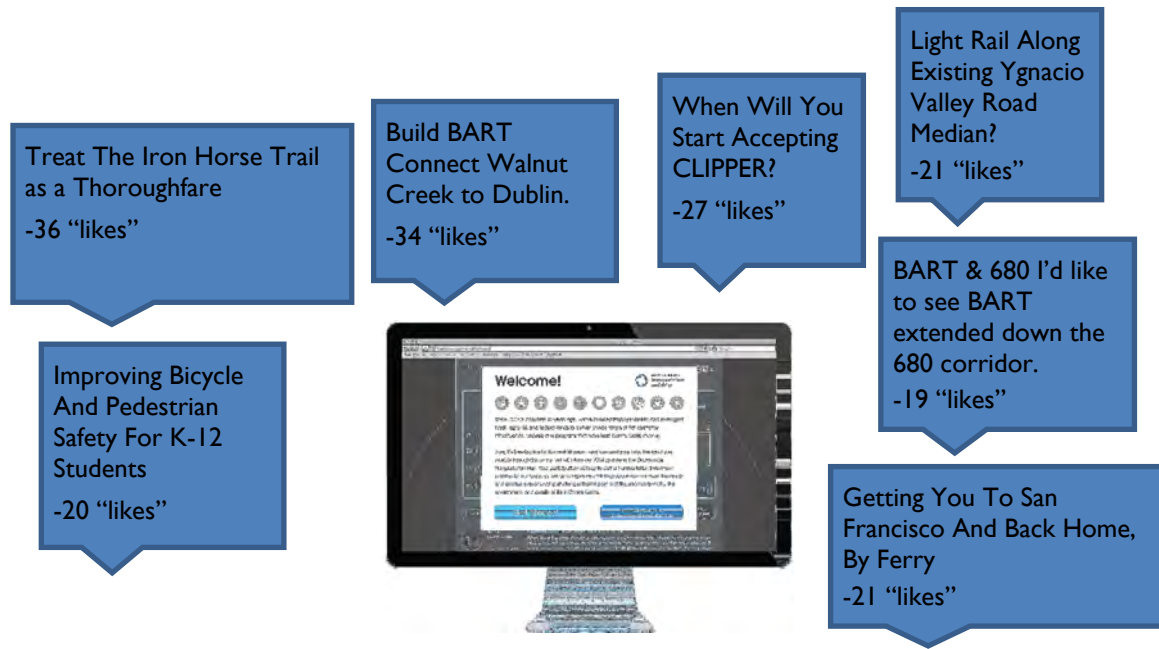
Public Workshop and Online Feedback

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

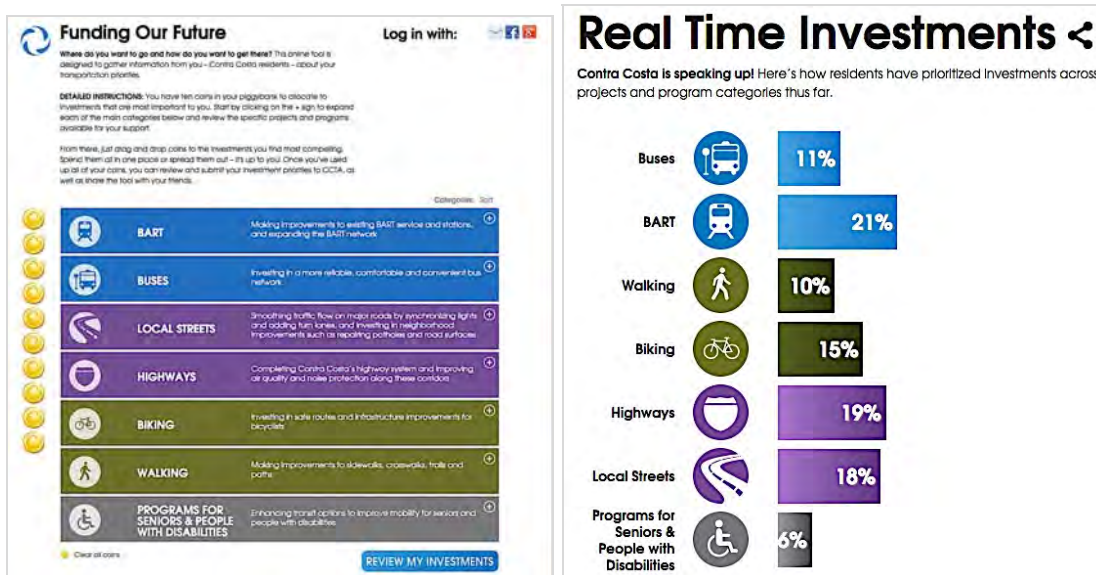
- Those attending the Southwest & Central workshops were concerned about congestion on I-680 and the need for new travel alternatives, including BART, bus, bicycle, and pedestrian facilities.
- In West County, strong support was expressed for improved transit options, such as bus, BART, and ferry, to 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.

Following are the key steps for the review and approval process for this Plan Update:

1. Authority releases the Draft 2017 CTP on May 24, 2017.
2. Authority releases the Draft Environmental Impact Report (DEIR) on June 12, 2017.
3. Public and RTPC review: June and July 2017.
4. Close of comment period: July 28, 2017.
5. Review comments on Draft 2017 CTP and EIR and prepare proposed final 2017 CTP Update: July 2017 –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

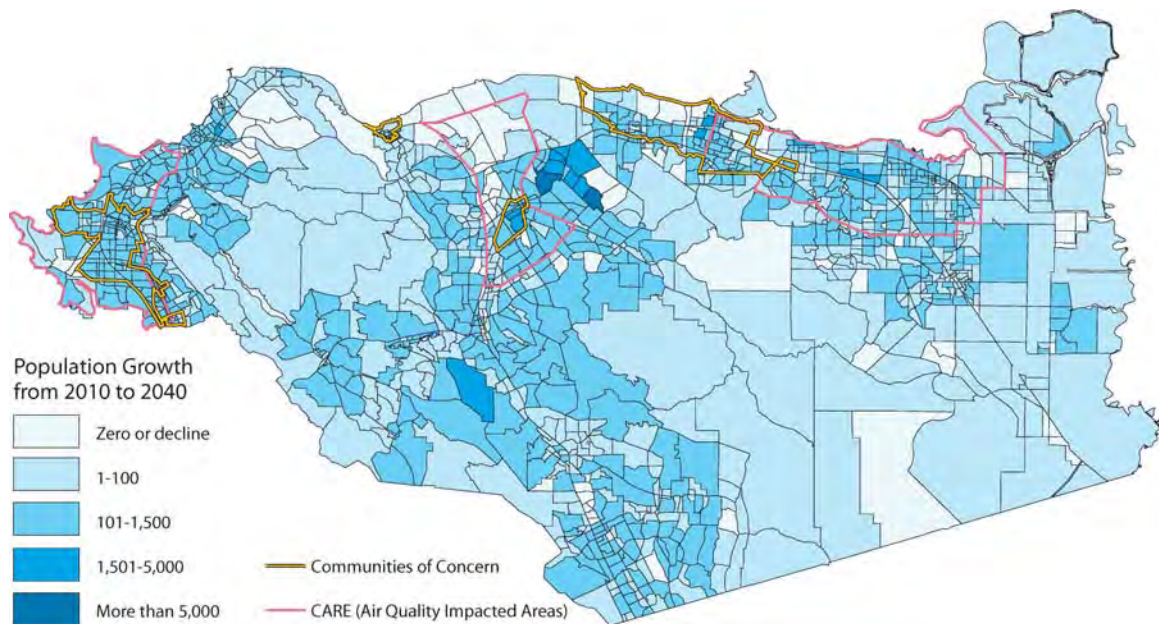
Nine key challenges are anticipated through 2040, including expected population, household, and job growth; an aging population; travel patterns; travel choices; maintenance of the transportation system; climate change and sea level rise; safety; environmental impacts on communities; and equity issues 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		Change 2010-2040	% Change 2010-2040
	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

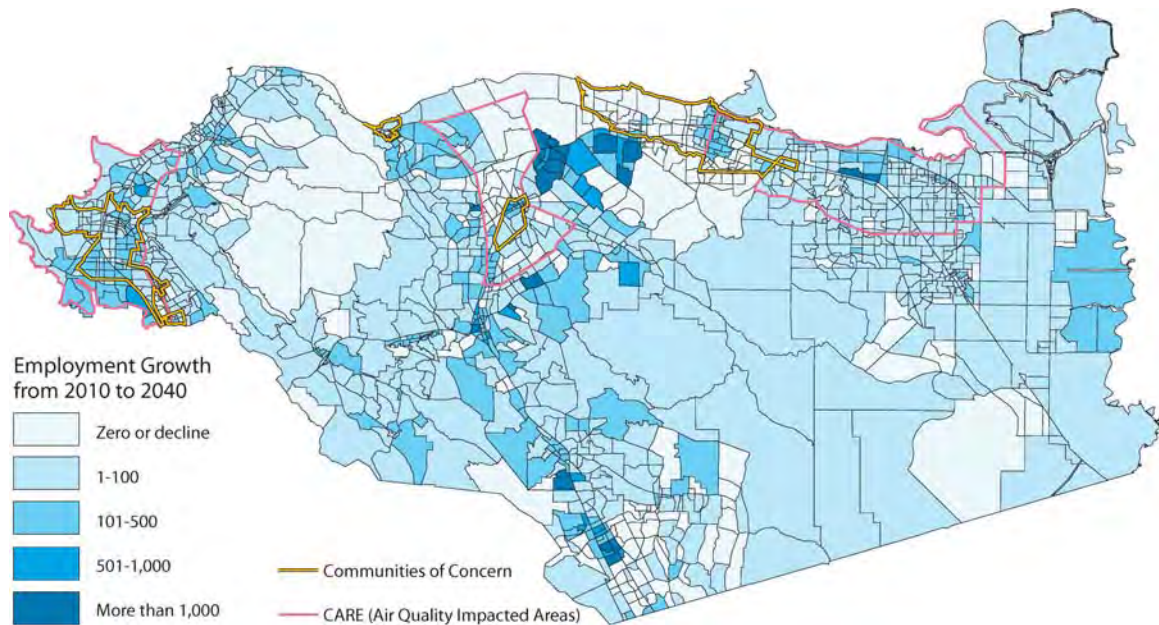


Table 2-2: Jobs and Employed Residents, 2010 and 2040, By Subarea

RTPC	2013 Projections		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

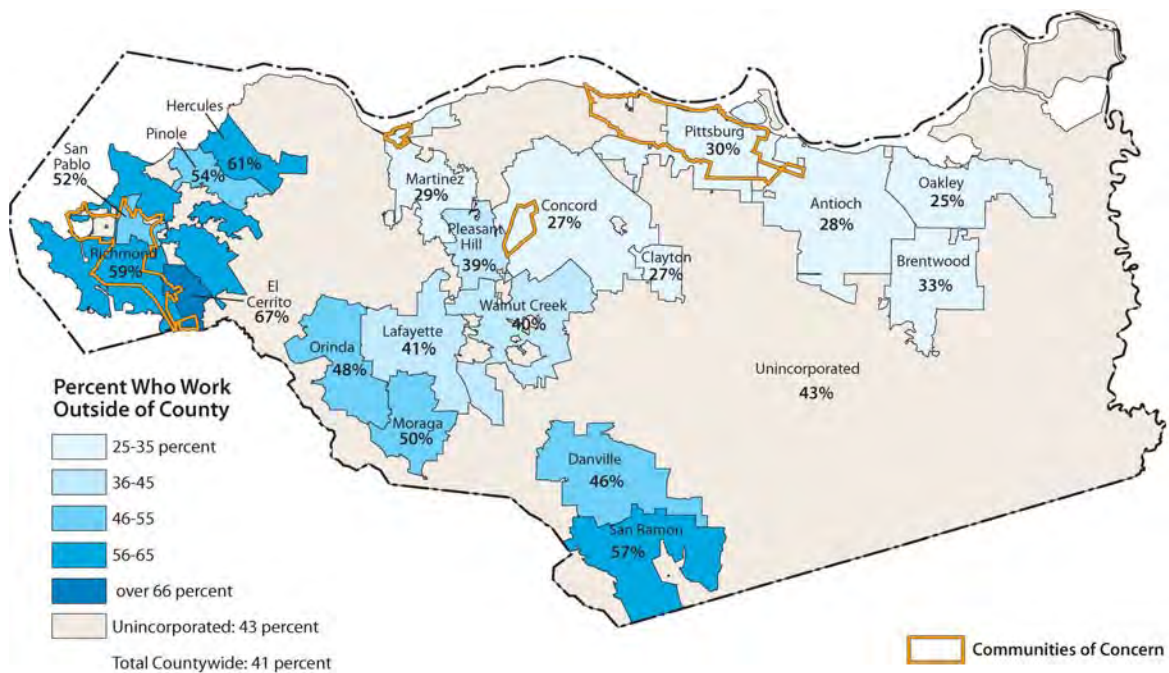
In 2013, just under 260,000 persons, representing about 60 percent of employed Contra Costa residents, commuted out of the county for their primary work, as shown in Table 2-4. This is a higher rate than all counties in the Bay Area except Solano County, and it is about the same rate as Marin and San 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
Stay in or Commute into Contra Costa	165,903	159,254	137,846	158,896

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

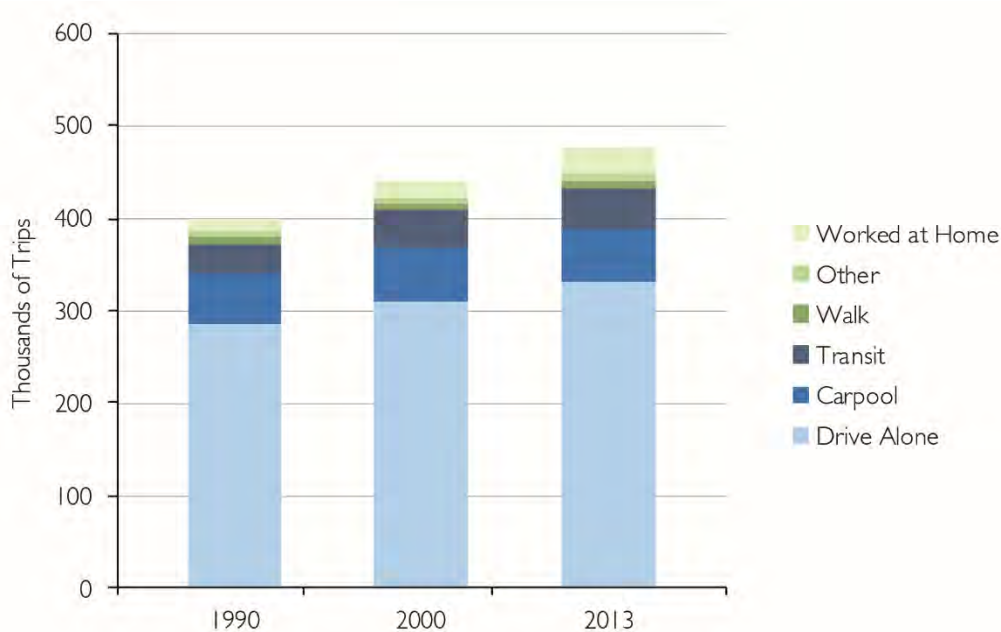
Figure 2-3: Percentage of 2013 Population in Contra Costa Cities Who Commute Out of the County


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.

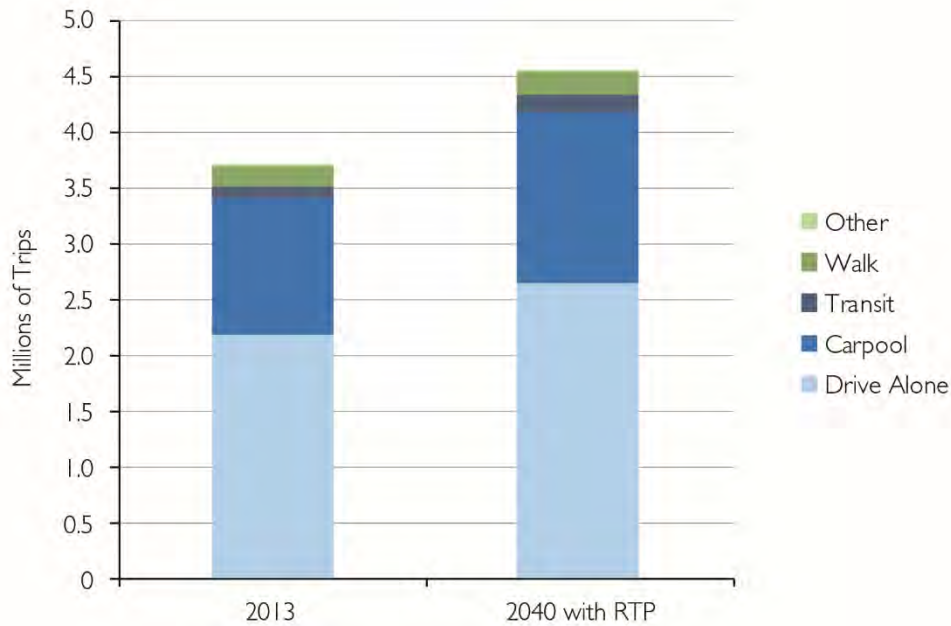
Figure 2-5 shows that the mode share of all trips including shopping, recreational, school, and other types of travel, is expected to stay about the same through 2040, with roughly 58-59 percent of trips made in single-occupant vehicles, 33-34 percent in carpools, and 3 percent on transit. The low transit 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

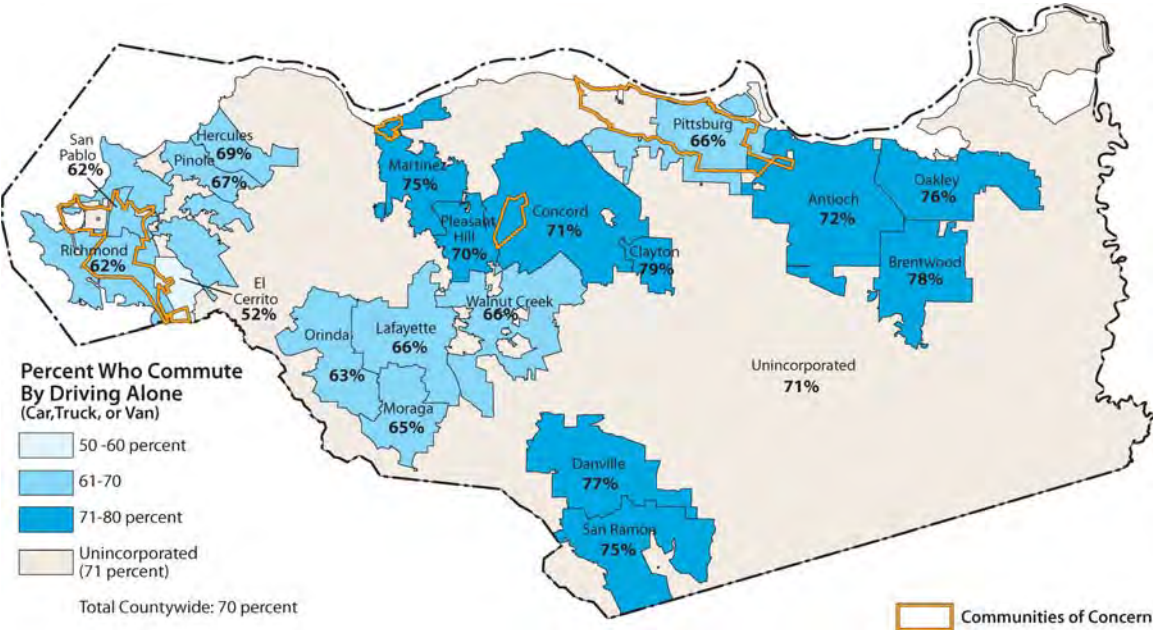


Figure 2-7: Percentage of 2013 Population in Contra Costa Cities Who Commute to Work by Public Transit

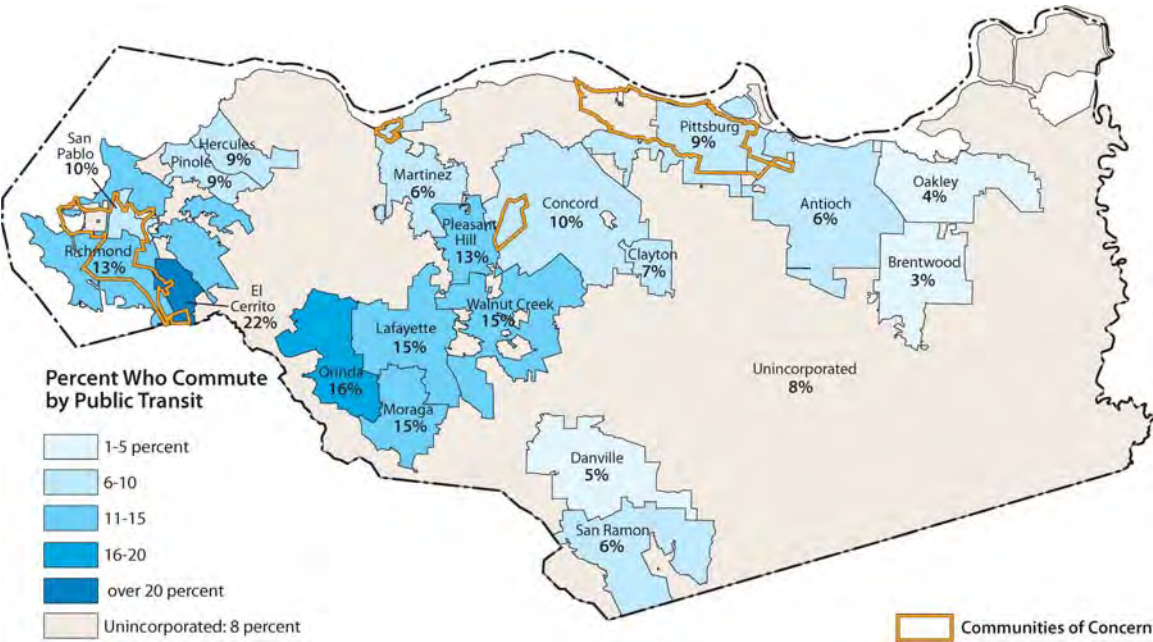
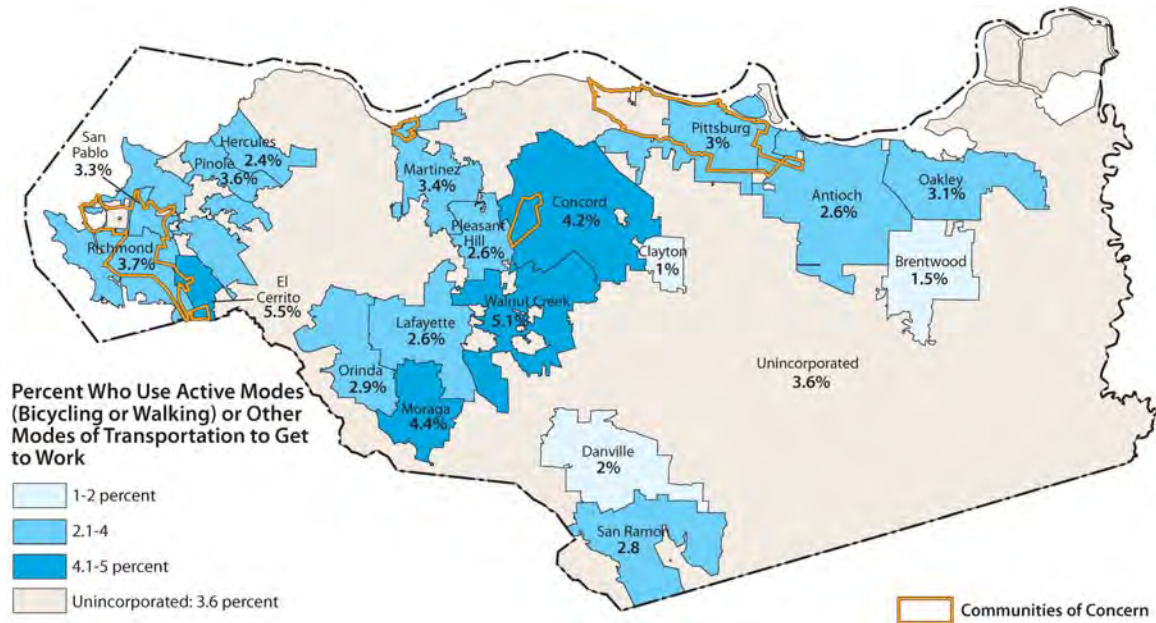
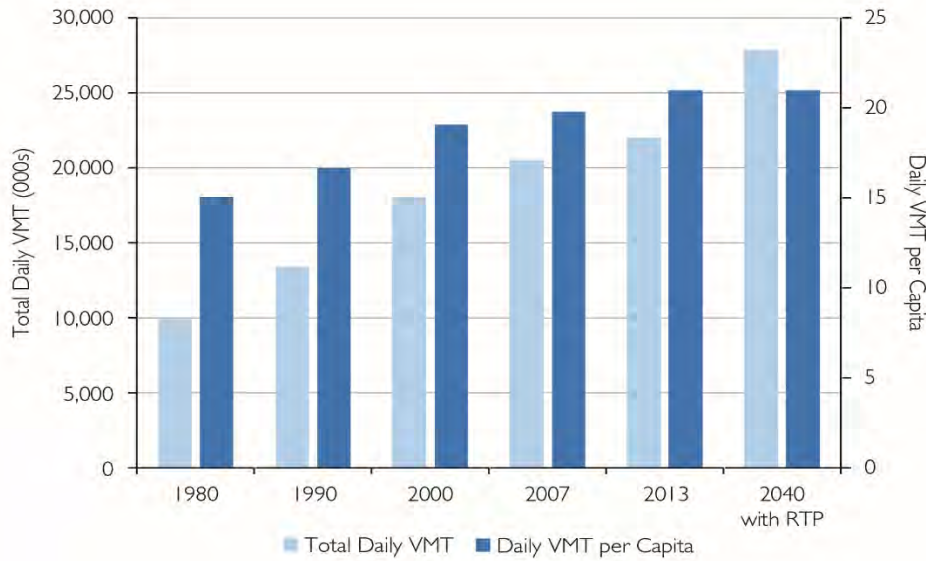


Figure 2-8: Percentage of 2013 Population of Contra Costa Cities Who Use Active Modes (Bicycling or Walking) or Other Modes of Transportation to Get to Work



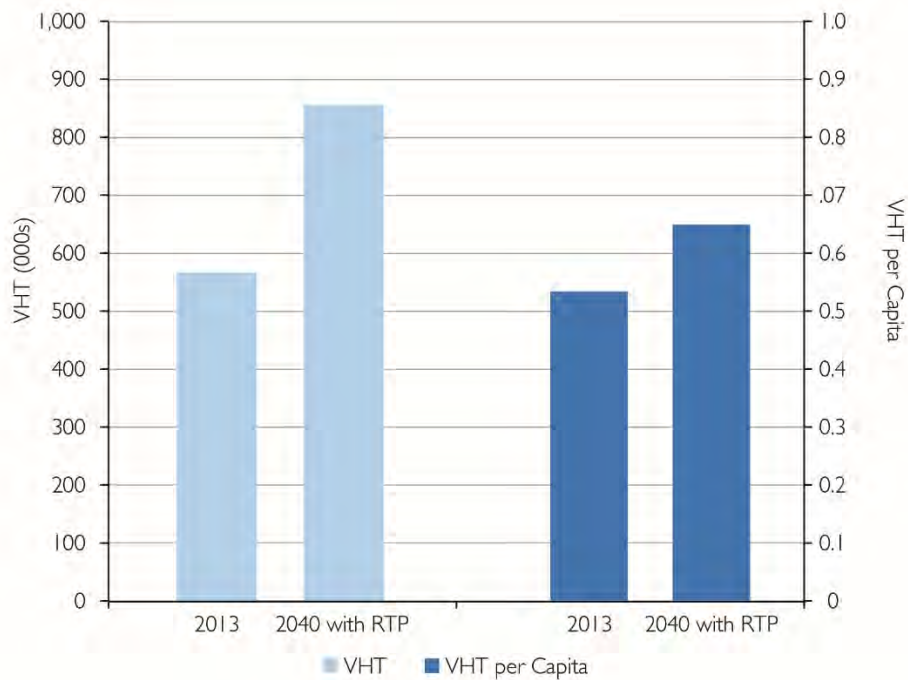
The average amount of weekday driving (measured by vehicle miles traveled or VMT) has increased over the past couple of decades, and this trend is expected to continue through 2040, as shown in Figure 2-9. However, Figure 2-9 also shows that VMT per capita is expected to level off in the future, so that 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.³ 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:

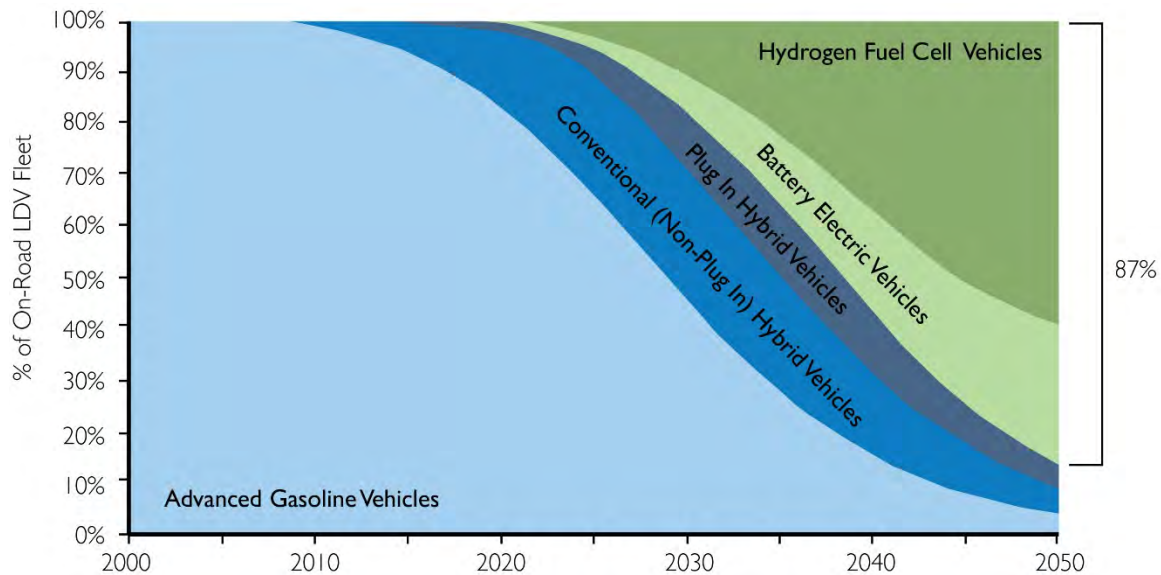
- Increase vehicle efficiency;
- Increase fuel efficiency; and
- Improve transportation options to reduce vehicle miles traveled.

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

3 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.

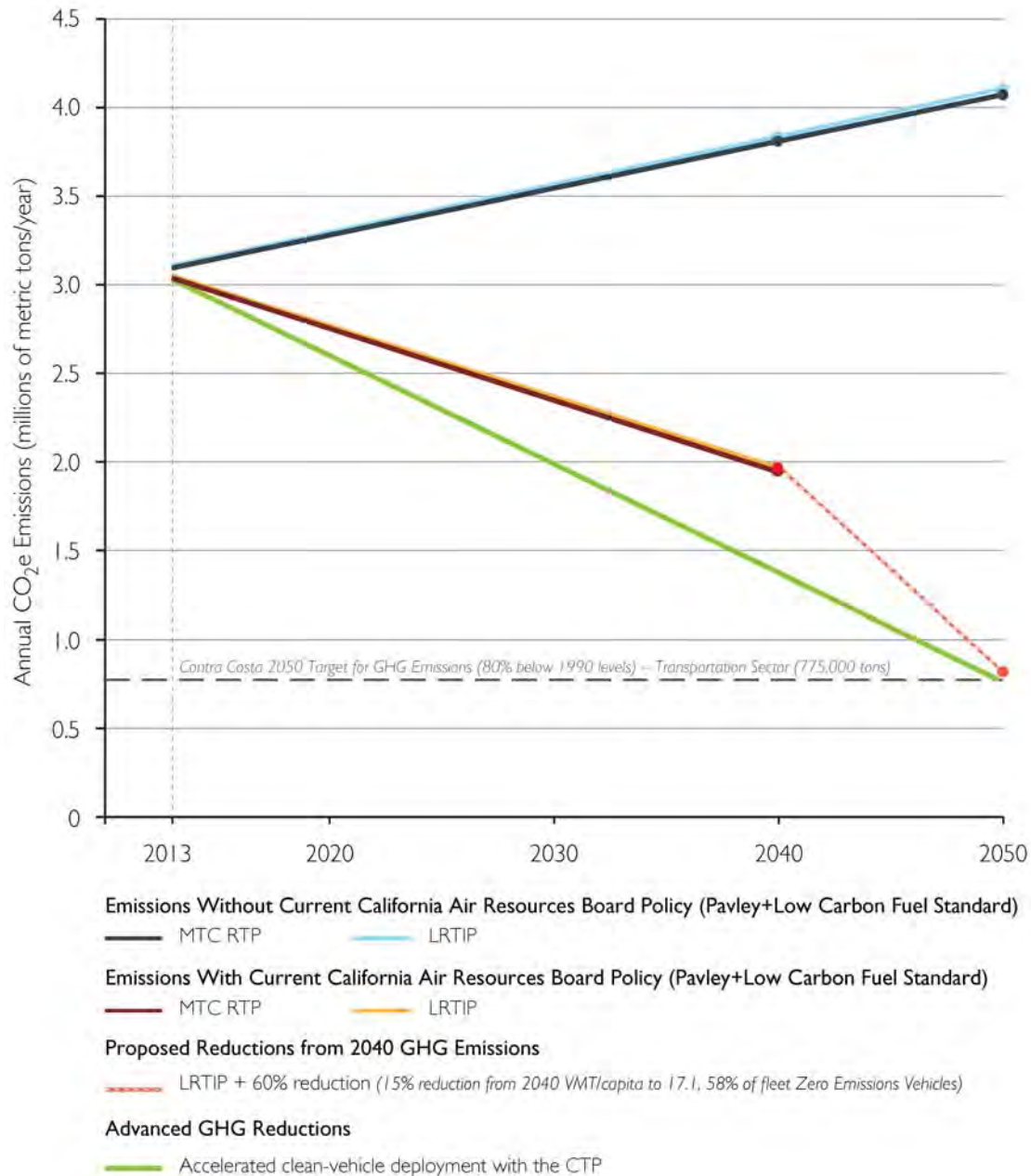
Without such initiatives, the impacts of climate change, especially rising tides, wind-driven waves, Delta freshwater inflows, and storm surge, would threaten the transportation system fronting on San Francisco Bay. For example, with a 1.0-meter rise in sea level, 1,460 miles of roadways and 140 miles 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.⁴ 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 processes⁵. 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.

⁴ Pacific Institute, *The Impacts of Sea Level Rise on the San Francisco Bay*, 2012.

⁵ 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 34.⁶ Fortunately, studies show that policy, safety education, and improved transportation options that reduce reliance on automobiles can effectively reduce traffic injuries.⁷

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.⁸ 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

6 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.

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

8 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 CTP⁹. 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 population¹⁰. 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 Transportation	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.

⁹ 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.

¹⁰ 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.¹¹ 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).

¹¹ 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.¹² Implementation of an ICM project on SR-4 is also underway. The Authority recently received a U.S. Department of Transportation (DOT) grant to help fund this project.

¹² Contra Costa Transportation Authority, I-680 Transit Investment and Congestion Relief Study, November 2015.

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 and arterial system, especially those in the regional high-occupancy vehicle (HOV) lane and express lane network.¹³

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 among Contra Costa's local jurisdictions, transportation agencies, and other partners. This process involves the RTPCs, relies upon the Action Plans, and

¹³ 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.

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 and that encourage use of alternatives to the single occupant vehicle, or promote walking, bicycling and/or transit usage. Typical investments have included pedestrian, bicycle, and streetscape facilities, traffic calming, and transit access improvements.

- 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 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 plan to become eligible for funds from the State's Bicycle Transportation Account 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.¹⁴ Further work on

¹⁴ 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.

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 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.

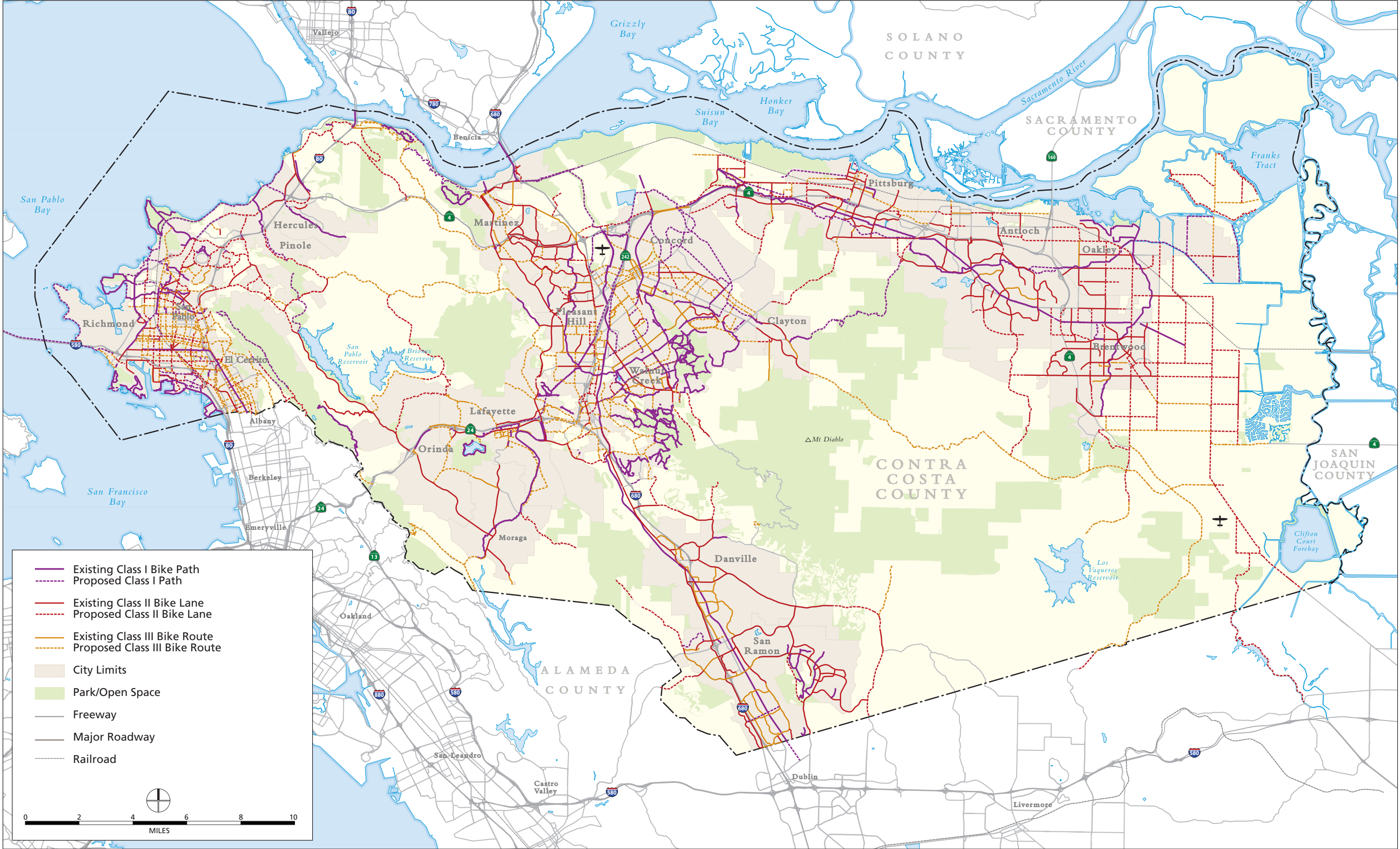


Bike to Work Day in the City of Richmond.

- 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 State's Bicycle Transportation Account. 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

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. While SB 1 will provide an estimated \$52 billion over a ten-year period to help rebuild the State's infrastructure, it does fall short in the backlog of repairs needed for the transportation system, which exceed \$137 billion¹⁵. 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.¹⁶ With this in mind, the Authority will be looking at ways to expand the current Regional Transportation Mitigation Program (RTMP) to ensure that fees include the costs of ongoing maintenance for a stated period of time if assessment districts or other funding arrangements will not be in place. The basic idea is that local jurisdictions should not build new transportation facilities if they cannot take care of them. More complicated, as noted in Strategies 4.2 and 4.3, is funding the backlog for pavement rehabilitation

¹⁵ Pg. 4, Next 10, *Beyond the Gas Tax, Funding California Transportation in the 21st Century*, 2017.

¹⁶ 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.

and related projects. The Authority's implementation actions for these three strategies will focus on:

- *What the Authority can do to ensure long-term maintenance of all new improvements.* One option is to require commitments to long-term maintenance of new improvement as a condition of approval of a development mitigation program. Modifications of the RTMP program requirements would be needed to accomplish this.
- *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 may require commitments to putting in place policies and procedures for long-term maintenance as a condition of continuing eligibility for LSM&I Program funds.
- *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 received 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 investigate the feasibility of augmenting its Regional Transportation Mitigation Program (RTMP), so additional revenues could be used to support transit services as well as street and highway improvements and also be available to pay for bicycle facilities and streetscape infrastructure. If, based on public input, this initiative seems worth pursuing, the Authority could commission a "nexus" study and an economic feasibility study.

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.