2016 ALAMEDA COUNTYWIDE TRANSPORTATION PLAN

Final

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ALAMEDA
County Transportation Commission

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1 Introduction

The Countywide Transportation Plan (CTP)

The Alameda Countywide Transportation Plan (CTP) is a long-range policy document that serves as a guide for future transportation projects, programs, policies, and advocacy for all of Alameda County through 2040. It addresses all parts of Alameda County's complex transportation system, including capital, operating, and maintenance activities for all transportation modes. Transportation programs that serve the needs of specific groups throughout the county, such as paratransit services for seniors and people with disabilities, and safe access to schools are also included. This document establishes a vision for Alameda County's transportation system and a path to implementing that vision. It begins with goals for the system, describes current trends and challenges, inventories needs and available funding, describes solutions and investment strategies and how they help meet the goals, and finally identifies gaps where additional funding is needed.

The CTP informs the Regional Transportation Plan (RTP), called Plan Bay Area, and was developed using the Metropolitan Transportation Commission's (MTC) *Guidelines for Countywide Transportation Plans (2014)* (both are more fully described herein).

Acknowledging that the future is unknown, and that changing conditions in the county will place new demands on the transportation system over time, this plan is updated every four years. The CTP was last adopted in 2012.

Alameda County: Heart of the Region's Transportation System

Alameda County extends from the Bay Area's urban core to its rural periphery including 14 cities and several unincorporated communities. The importance of Alameda County's transportation infrastructure cannot be overstated. The county is home to a major port and international airport that are central to the distribution of goods throughout the Western United States. Alameda County also plays a central role in moving people around the region with every BART line traveling through the county, along with two other regional rail systems—Amtrak Capitol Corridor and Altamont Corridor Express (ACE). With six interstate freeways, 10 state routes, and three major bridges, the county shoulders a disproportionate share of the region's congestion (40% of the congestion and 6 of the 10 most congested freeways). More information about the county's transportation system and its critical role in the region can be found in Chapter 5.

Background and Requirements for Countywide Transportation Plans

CTPs were originally authorized in 1988 through Assembly Bill 3705[1] (AB 3705) to provide a solid, locally-grounded basis for development of regional transportation plans. CTPs are voluntary, but in the Bay Area, they have served as a foundation of the integrated and coordinated regional transportation planning that ultimately informs Plan Bay Area. The first CTP was adopted for Alameda County in 1994, and has been updated regularly to reflect changing policies and conditions. The CTP plays a critical role in establishing long-range vision and goals for the system, informing priorities for investment, ensuring strong coordination throughout Alameda County, and supporting the Alameda County Transportation Commission (Alameda CTC) in advocating for additional funding at the regional, state, and federal levels.

This CTP conforms to the most recent guidelines[2] for CTPs issued by MTC (2014). These guidelines are heavily influenced by passage of Senate Bill 375 (SB375) [3], known as the Sustainable Communities and Climate Protection Act of 2008, as well as the Moving Ahead for Progress in the 21st Century Act (MAP-21).[4] As such, this update includes components to address climate change, integrate transportation with land use policies and development (see Chapter 4), and advance Complete Streets policies (see Chapter 8).

SB 375 requires all regions in California to reduce greenhouse gas emissions through improving coordination of land use and transportation planning, and to integrate a land use plan, called a Sustainable Communities Strategy (SCS), into the Regional Transportation Plan (RTP), Plan Bay Area.[5] As directed in the law, the CTP has been closely coordinated with development of the regional Plan Bay Area update. It is through the CTP that jurisdictions throughout Alameda County have a voice in the regional planning process; the CTP ensures that the needs of all the diverse users of the county's transportation system are accurately and strongly reflected in regional

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[1] County Transportation Plans: AB 3705, codified in Section 66531 of CA government code; AB 1619, Chapter 25, Statutes of 1994. http://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=GOV&sectionNum=66531.

[2] 2014 CTP Guidelines: http://mtc.ca.gov/sites/default/files/6b_Attachment-A.pdf.

[3] Sustainable Communities Act: SB 375, Chapter 728, Statutes of 2008. SB 375 requires each of the state's metropolitan areas to reduce greenhouse gas emissions from cars and light trucks through increased coordination of land use and transportation planning and investments. The Bay Area's GHG reduction target is 7% per capita reduction by 2020 and 15% per capita reduction by 2035 (http://www.leginfo.ca.gov/pub/07-08/bill/sen/sb_0351-0400/sb_375_bill_20080930_chaptered.pdf).

[4] Moving Ahead for Progress in the 21st Century Act (MAP-21): http://www.fhwa.dot.gov/map21/.

[5] Sustainable Communities and Climate Protection Act (Sustainable Communities Act, SB 375, Chapter 728, Statutes of 2008.

planning. More information on Plan Bay Area, state mandates, and how land use is taken into consideration in the CTP can be found in Chapter 4.

MTC's *Guidelines for Countywide Transportation Plans (2014)* include the development of an equity analysis tailored to minority, low-income, and underserved populations. The equity analysis serves as an update to the county's six Community-Based Transportation Plans developed between 2004-2009, described below and in Chapter 7.

Evolution of the CTP

Alameda CTC launched a new paradigm of transportation planning with the 2012 CTP update. The 2012 update was the first CTP developed by Alameda CTC, which had recently been formed from a merger of the Alameda County Congestion Management Agency (ACCMA) and the Alameda County Transportation Improvement Authority (ACTIA).[6] This union not only eliminated redundancies and created efficiencies, but also launched a new era of thinking more strategically about the role that this countywide body plays in supporting a multimodal, connected and integrated transportation network.

In 2012, Alameda CTC began using a performance-based process to develop the CTP. This process began with extensive input from the public, city and county staff and elected officials, and the Commission adopted a broad-ranging vision and set of goals that encompassed land use, sustainability, economic vibrancy, and equity. To ensure that projects and programs were consistent with this vision, performance measures were used to measure the impacts of the plan to reflect these goals.

The 2012 update was also affected by new state policy mandates designed to promote sustainability and reduce carbon emissions which required the region to develop an integrated land use and transportation plan to support reductions in greenhouse gas emissions, further described in Chapter 4.

The 2012 CTP signaled a change for the direction of Alameda County's transportation system. Changing the focus from designing a transportation network that manages traffic congestion to a network that maximizes performance of the multimodal transportation system as a whole takes time to fully institutionalize into the policies and daily practices of how transportation funding is allocated and how projects are implemented. This evolution continues today.

Ultimately, Alameda CTC will work in close partnership with project sponsors to plan and implement the best projects to move the county's transportation system

[6] ACCMA previously managed the planning and funding and project delivery of transportation projects in Alameda County, and developed the CTP. ACTIA previously managed the transportation sales tax revenues and expenditures and was responsible for development of the Countywide Bicycle and Pedestrian Plans.

forward, to support its adopted vision and goals. This will impact the types of projects that cities and agencies submit for funding and the types of projects that Alameda CTC sponsors. The next section describes some of the key elements that differentiate this CTP from the 2012 update, and how the CTP relates to other planning efforts.

Interrelationship of Plans

The CTP does not stand alone; it builds on and informs several other county and regional plans. The most salient regional and Alameda CTC planning efforts and their relationship with the CTP are described below.

Modal Plans

Travel patterns and transportation networks cross city boundaries but much of the transportation system is managed by local jurisdictions. One key outcome of the 2012 CTP was a recognition that the connectivity and quality of transportation infrastructure must be looked at beyond the confines of city plans. As a critical next step, the 2012 CTP called for development of a series of countywide plans on different modes.

The agency developed a *Countywide Bicycle Plan* and *Countywide Pedestrian Plan* which looked at cross-jurisdictional connectivity and where gaps existed between networks. These plans were adopted simultaneously with the 2012 CTP. Since 2012, Alameda CTC has developed several additional countywide modal plans that take an in depth look at other modes individually to understand challenges, and opportunities for coordination and investment at the countywide level. The plans are:

- *Transit Plan*: Given the substantial commitment that the local sales tax makes to transit, a countywide Transit Plan has been developed to support an efficient and effective transit network throughout the county. The plan was developed in partnership with transit and paratransit operators and users, local jurisdictions, and the general public, and was designed to complement and support existing planning efforts that are completed or underway in the County. The plan targets a set of improvements in the 14 corridors that are most likely to carry some of the strongest future demand for transit and a set of network recommendations to enable fast, frequent and reliable service (see Public Transit modal strategy in Chapter 6 for more information).
- *Goods Movement Plan*: Given the importance of the Port of Oakland in the regional economy, the impact of trucks on the region's roadways, and the community and environmental impacts created by freight, a countywide Goods Movement Plan was developed to identify efficient and effective freight routes and modes, strategies to support sustainable freight and reduce the impacts of freight movement on residential communities, new technologies for enhancing freight's competitiveness and efficiency, and

other critical topics related to freight movement (see Goods Movement modal strategy in Chapter 6 for more information).

- *Multimodal Arterials Plan*: Given that arterial roads are often the place where local and regional transportation needs intersect, their importance in connectivity for all modes, and Alameda CTC's responsibility as the Congestion Management Agency (see below), Alameda CTC developed a plan that creates a connected network for all modes of transportation that aims to optimize performance for all modes on the county's arterials. The plan was developed with guidance from Alameda County's 15 jurisdictions, major transit agencies, the California Department of Transportation (Caltrans), and non-agency stakeholders (see Roadways modal strategy in Chapter 6 for more information).

The three recently completed modal plans are performance-based; for each mode they a) set goals and objectives that are aligned with the CTP Vision and Goals, b) set performance measures, c) identify gaps and improvement needs, d) identify strategies to address these needs, e) prioritize strategies through an evaluation process, and f) identify actions to move the plans forward. The modal plan performance measures were one input into development of performance measures for this CTP (see Chapter 2).

The CTP ultimately will represent a synthesis of this modal planning work; however, many projects identified in the modal plans have yet to be developed and are not included in the performance evaluation for this 2016 CTP. Following adoption of this plan, Alameda CTC will continue to work with partner agencies on developing projects and programs as identified in the modal plans. Chapter 8 (Projects and Programs) and Chapter 10 (Moving Forward) summarize this upcoming work, including opportunities for the modal plans to support a next generation of projects and programs in the county.

These modal plans and CTP have been, and will continue to be, very closely integrated. It is through these plans that Alameda CTC is working to be more strategic and visionary in the planning, funding, and delivery of transportation projects and programs. These plans were all highly collaborative efforts working closely with stakeholders, jurisdictions, and communities throughout the county.

Congestion Management Program (CMP)

As the designated congestion management agency for Alameda County, Alameda CTC is legislatively required to develop and regularly update a Congestion Management Program (CMP).[7] Alameda CTC adopted the most recent *Congestion*

[7] Congestion Management Program Legislation, California Government Code, Chapter 2.6. Congestion Management (Section 65088–65089.10), http://www.leginfo.ca.gov/cgi-bin/displaycode?section=gov&group=65001-66000&file=65088-65089.10.

Management Program Report in October of 2015. It describes the strategies used to assess and monitor the performance of the county's multimodal transportation system, address congestion, improve system performance, and strengthen the integration of transportation and land use planning. [8]

Comprehensive Investment Plan (CIP)

Alameda CTC reinforces the goals in the CTP by integrating them into their funding allocation processes. Alameda CTC funding decisions have all been streamlined into one unified Comprehensive Investment Plan (CIP). Funding decisions are made through a rigorous evaluation process where project applicants must illustrate how the projects and programs they propose support the countywide vision and goals.

The CTP is a policy framework document used to set vision, identify themes and synergies, and set overall priorities, the CIP directly programs funds to specific projects and programs, including those implemented by Alameda CTC and by other agencies. The CIP has a 5-year horizon and is updated every two years.

Capital Project Delivery Program (CPDP)

The Capital Project Delivery Plan (CPDP) was developed to inform the CIP. It identifies the capital projects funded by the local sales tax revenue that will be implemented directly by Alameda CTC as the project sponsor (for more information on funding sources see Chapter 9). Many of the projects recommended by the modal plans need to be implemented at a countywide level, and are included in the CPDP. It recommends programming Measure BB[9] funds for specific projects and project phases including resources for project management, project monitoring, and project controls. The CPDP only addresses programs and projects implemented directly by Alameda CTC.

Community-Based Transportation Plans (CBTPs)

Background

In the early 2000s, the Metropolitan Transportation Commission (MTC) completed the Lifeline Transportation Study (2001) and the Environmental Justice Report (2001). These analyses identified low-income areas throughout the Bay Area with gaps in provision of transportation services and a need to support local planning efforts. Building on these findings, MTC began a regionwide effort to fund Community-Based

[8] The CMP is required to incorporate five key elements: designated CMP roadway network, level of service monitoring, multimodal performance element, land use analysis program, and capital improvement program. Alameda CTC's CMP: http://www.alamedactc.org/app_pages/view/5224.

[9] Ballot Measure BB, approved by Alameda County voters in November of 2014, authorized the implementation of the Alameda County 30 year Transportation Expenditure Plan and renewed and adjusted the sales tax used to fund the plan. See Chapter 9 for more information on funding and related ballot measures.

Transportation Plans (CBTPs) that identify transportation needs and solutions in historically underserved and disadvantaged communities.

Between 2004 and 2009, Alameda CTC worked closely with communities in Alameda County to complete CBTPs in the following places: Central Alameda County (unincorporated Cherryland and Ashland portions of Hayward and South Hayward, 2004), City of Alameda (2009), City of Berkeley (West and South Berkeley, 2007), and City of Oakland (Central and East Oakland, 2007, and West Oakland, 2006). These plans identified transportation gaps, ways to address these gaps, and potential funding sources for each of these communities.

Update to CBTPs

This CTP serves as an update to the Alameda County CBTPs. As such, equity considerations have been incorporated throughout the planning process rather than as a final step.

First, as part of the development of the plan, the team conducted an equity analysis that compared transportation access and system quality for historically disadvantaged demographic groups and the general population to identify any significant disparities. The methodology for this analysis was rooted in best practices, regional guidance, academic literature, and lessons learned from prior efforts (both regional and nationwide).

A community engagement strategy was developed for this analysis to elicit robust input from communities that were traditionally left out of the conversation. The equity analysis informed both the outreach methods and geographic target areas. Outreach efforts are fully described later in this Chapter.

Using findings from the equity analysis and outreach efforts, the team developed an Equity Strategy (Chapter 7) which updates the CBTPs. The Strategy uses the results of the analysis to identify where transportation gaps persist and additional communities that could be considered for future investments due to transportation inequities burdening their communities. Equity was also a key factor in developing the countywide performance measures (Chapter 2).

Priority Development Area Investment and Growth Strategy

In 2012, the CTP integrated the SCS land use projections, and took a much closer look at coordinating transportation projects and programs with the county's land use patterns than ever before. But it also acknowledged that true integration of land use and transportation would require ongoing efforts in subsequent years. To continue to improve the linkages between transportation and land use, Alameda CTC

developed a *Priority Development Area (PDA) Investment and Growth Strategy*[10] that outlines strategies, policies, funding allocations, and programs to support focused growth in support of Plan Bay Area. Chapter 4 includes further discussion about state and regional mandates and about Alameda CTC's efforts to coordinate land use and transportation.

Alameda County Transportation Commission

Alameda CTC is responsible for development of the Alameda Countywide Transportation Plan (CTP).

> The mission of the Alameda County Transportation Commission (Alameda CTC) is to plan, fund and deliver transportation programs and projects that expand access and improve mobility to foster a vibrant and livable Alameda County.

Alameda CTC is responsible for coordinating countywide transportation planning efforts; programming local, regional, state, and federal funding; and delivering projects and programs including those approved by voters in Alameda County transportation expenditure plans for Measure B, Measure BB, and the Vehicle Registration Fee. These three funding sources make up the large majority of funding available for transportation projects in Alameda County.

Alameda CTC is a joint powers authority governed by a 22-member Commission comprised of elected officials from each of the 14 cities in Alameda County, all five members of the Alameda County Board of Supervisors, and elected representatives from AC Transit and Bay Area Rapid Transit (BART).

Alameda CTC's main responsibilities are to:

- **Plan** for the future of transportation in Alameda County.
- **Fund** critical transportation programs that serve the public including youth, seniors, and people with disabilities.
- **Deliver** innovative transportation projects that extend the life of aging infrastructure, protect the environment, improve transportation access for communities and businesses, and improve goods movement.

Alameda CTC was created in July 2010 by the merger of the Alameda County Congestion Management Agency (ACCMA) and the Alameda County Transportation Improvement Authority (ACTIA), to streamline operations, eliminate redundancies, and save taxpayers' dollars. As a result of the merger, Alameda CTC is able to implement more cost-effective methods for planning, funding, and

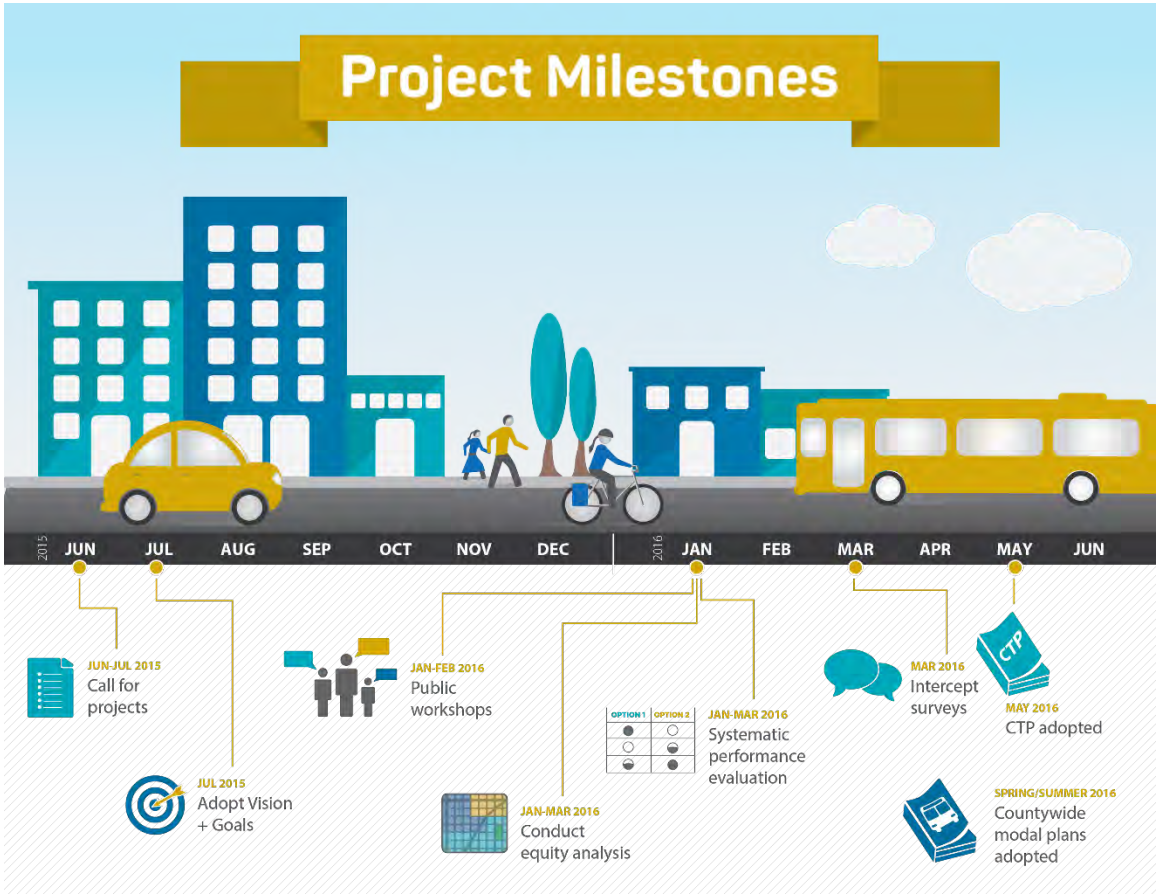
[10] Alameda County PDA Investment and Growth Strategy: http://www.alamedactc.org/app_pages/view/10385.

delivering programs and projects that benefit Alameda County residents and businesses.

Plan Development

The development of the CTP included the key milestones illustrated in Figure 1-1.

Figure 1-1 Plan Development Milestones



Performance-Based Planning

Alameda County and the broader Bay Area region have increasingly moved toward a performance-based planning approach for the past decade. Performance-based planning allows policies and goals to be expressed in quantifiable terms and creates an analytical framework to determine the degree to which investment choices help meet goals. Ongoing monitoring of investment performance helps inform future decision-making and highlights necessary adjustments to be made for the following update. For the purposes of the CTP, performance measures are used to understand how the system as a whole is progressing towards meeting the adopted goals. The specific metrics represent

issues that are important to measure at a system level, such as greenhouse gas emissions, travel time reliability for all modes, mode share, and job accessibility.

The CTP performance-based analyses were conducted on the entire system and not at a project level basis. Any project that is advanced in Alameda County will go through project-specific planning and analyses pursuant to appropriate environmental and regulatory requirements. Performance measures for this 2016 CTP are described in Chapter 2, and performance results are shown in Chapter 8.

Public Engagement

To ensure the CTP is responsive to community needs throughout Alameda County (and in accordance with MTC guidelines), Alameda CTC engaged in an open and inclusive public participation process. There were two key elements of the process:

1. **Stakeholder engagement in modal plans and CTP development:** public workshops, stakeholder interviews, surveys, and meetings were conducted throughout the development of the modal plans and CTP.
2. **Intercept surveys** conducted in March 2016: This strategy was selected to provide targeted input for the equity strategy, ensuring participation from a broader audience that is normally left out of the planning process—especially minority, low-income, and other disadvantaged communities. Three hundred intercept surveys were conducted in the CBTP communities (East and West Oakland, Central Alameda County, South and West Berkeley, City of Alameda) and Livermore to ensure coverage of the full breadth of needs in Alameda County.

Appendix A includes a full summary of the public engagement process, participation, and results.

Structure of this Report

2 Vision and Goals

Introduction

Establishing a vision and a set of goals provides a foundation for developing a comprehensive and measurable Countywide Transportation Plan (CTP) for Alameda County. A compelling vision statement points the way to a better transportation future for the county. Goals further articulate the vision, making it more concrete and creating a basis for a performance-driven, outcome-based approach to making sound transportation investment decisions. Performance measures provide measurable mechanisms to determine the degree to which the CTP is fulfilling its goals for the transportation system.

This chapter includes the vision, goals, and performance measures that have been adopted for this CTP.

Vision and Goals

The vision and goals for the Alameda Countywide Transportation Plan were originally developed during the 2012 CTP update in parallel with development of a new Transportation Expenditure Plan (adopted by over 70% of voters in 2014 as Measure BB). The process was comprehensive and grounded in extensive input from a broad range of stakeholders. As such, the vision statement and goals are comprehensive and capture the broad array of needs and transportation system demands in a county as diverse and large as Alameda County. These goals reflect time-tested values of transportation planning in Alameda County. In July 2015, the Alameda County Transportation Commission (Alameda CTC) reconfirmed and adopted the following vision and goals to guide this 2016 CTP update.

Stakeholder Involvement

The Alameda Countywide vision and goals were developed with the participation of a wide array of stakeholders including residents and groups representing seniors, people with disabilities, bicycle interests, environmental, education and faith-based groups, businesses, labor, and local jurisdictions. Alameda CTC also worked with a Steering Committee, Community Advisory Working Group, and Technical Advisory Working Group. These committees included representatives from 15 local jurisdictions, six transit operators, Caltrans District 4, the Port of Oakland, the Metropolitan Transportation Commission (MTC), and other community and agency stakeholders and the public.

Figure 2-1 Vision and Goals for Alameda County's Transportation System

Performance Measures

Based on the goals, Alameda CTC created a set of performance measures to evaluate the performance of the CTP as a whole, shown in Figure 2-2. The Commission adopted these performance measures in January 2016. This performance evaluation is conducted for the system as a whole, not on a project level basis. The process allows Alameda CTC to understand the degree to which projects and programs advance the county towards the adopted vision and goals, and identify where additional efforts are needed.

Performance measures for the 2016 CTP were pulled from and based upon industry best practices, the 2012 CTP, and the performance measures that were used in the countywide modal plans. Utilizing performance measures from the modal plans reinforces the integration of those plans with the CTP and ensures the 2016 CTP is reflective of those efforts. The outcomes of the performance evaluation process are included in Chapter 5.

Figure 2-2 Performance Measures for the 2016 CTP

Performance Measure	Relates to CTP Goal: Multimodal	Accessible, Affordable, & Integrated	Connected	Reliable & Efficient	Cost-Effective	Well-Maintained	Safe	Healthy & Clean Environment
Measures of Transit Use and Active Transportation								
Transit and active transportation mode share: Percent of trips made by non-auto modes	●	●	●	●	●			●
Transit ridership: Daily public transit ridership (all modes) that begin or end in Alameda County	●	●	●	●				●
Transit efficiency: Daily bus transit passengers carried per revenue hours of service	●	●	●	●	●	●		●
Measures of Connectivity and Safety								
Maintenance: Unmet maintenance needs over 25 years assuming current pavement conditions				●	●	●	●	
Safety: Safety incidents		●				●	●	
Network connectivity by mode	●		●	●				
Measures to Improve Economy (Goods Movement, Jobs, and Access)								
Employment accessibility: Number of jobs accessible by 30-minute drive or 45- minute transit trip	●	●	●	●	●			●
Equitable transit availability: Percent of low-income households within 0.25 miles of bus stop	●	●	●	●	●			●
Measures of Travel Efficiency								
Network congestion: Percentage lane miles with moderate to severe congestion		●			●			
Travel time: Travel time by mode (auto, transit)	●	●		●	●			
Travel time reliability: Ratio of average peak to off-peak period travel time by mode (auto, transit)	●	●		●	●			
Measures of Transportation Impacts on the Environment								
Vehicle miles traveled: Vehicles miles traveled (VMT) per capita			●	●	●			●
Carbon emissions: Carbon emissions per capita			●	●	●			●
Particulate emissions: Daily particulate matter (PM2.5) per 1,000 population			●	●	●			●

3 People and Places of Alameda County

Alameda County is the 7th most populated county in California with 1.57 million residents and nearly 700,000 jobs.[11] Located in the East Bay, the county extends from the San Francisco Bay in the west to the Livermore Valley in the east, borders Contra Costa County to the north, and includes a portion of Silicon Valley in the south, bordering Santa Clara County.

The county is characterized by diversity, in land use patterns and demographic characteristics. No single ethnic group makes up more than 33% of the population and 42% of households in Alameda County are non-English speaking households (equity considerations are discussed in greater detail in Chapter 7). Alameda County's development includes dense, urban cities, suburbs, rural communities, agricultural areas, parklands, and everything in between. This chapter offers an overview of the existing demographic conditions in Alameda County.

Current Demographics in Alameda County

Population

Alameda County is currently home to approximately 1.57 million people (2014) over about 739 square miles of land area. Alameda County has grown by about 64,000 residents since the year 2010.[12]

Ethnicity

Alameda County has long been, and is increasingly, a racially diverse county. In 2014, Caucasians represent the largest racial group at 33% of the population, followed by the Asian population (27%) and Latino (23%).[13]

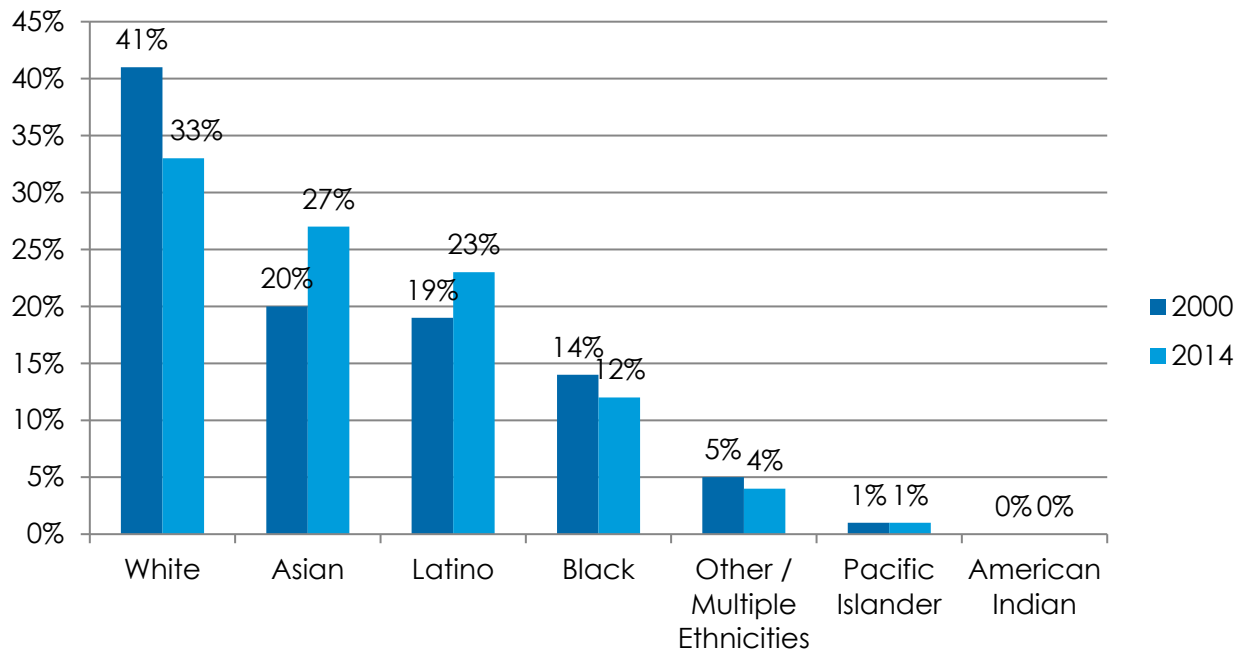
When looking at a trend line in demographic changes, Figure 3-1 shows demographic changes in ethnicity from 2000 to 2014, and Figure 3-2 shows the percentage composition of ethnic diversity in Alameda County in2014.

[11] MTC Vital Signs, *Population* and *Jobs*, http://www.vitalsigns.mtc.ca.gov.

[12] MTC Vital Signs, *Population*, http://www.vitalsigns.mtc.ca.gov/population.

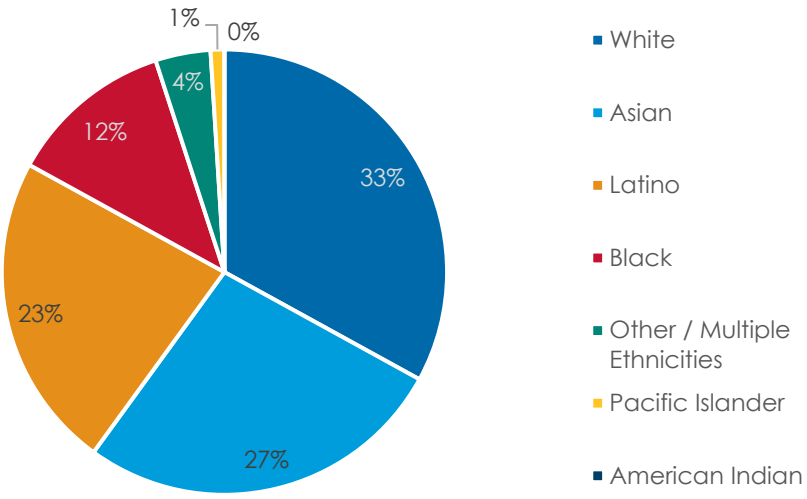
[13] American Community Survey 2010-2014.

Figure 3-1 Increasing Ethnic Diversity in Alameda County (2000 and 2014)



Source: U.S. Census 2000, American Community Survey 2010-2014

Figure 3-2 Ethnic Diversity in Alameda County (2014)

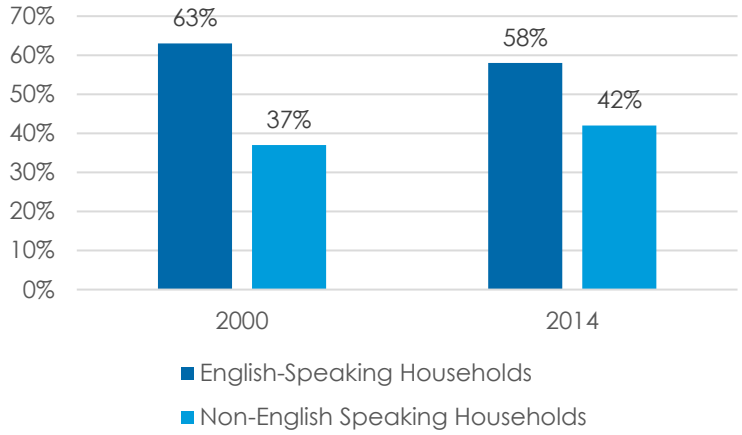


Source: American Community Survey 2010-2014.

Language

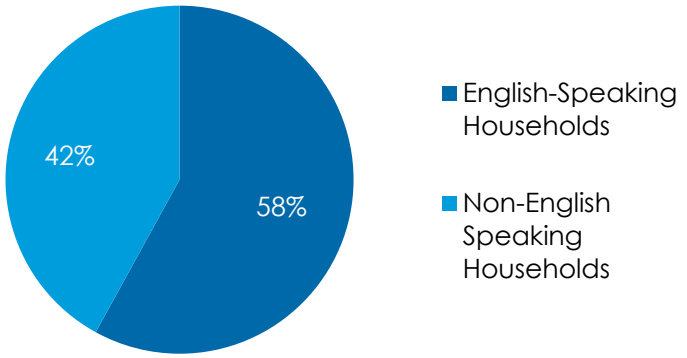
The diversity of Alameda County is also reflected in the growing number of residents who do not speak English or consider English their secondary language. Today, English is the primary language spoken at home for 58% of households. Following English as a primary language are Asian languages (19%), Spanish (14%). and Indo-European languages (8%).[14] When looking at a trend line of language diversity, Figure 3-3 shows changes from 2000 to 2014 for English compared to non-English speaking households, and Figure 3-4 illustrates percentages in 2014.[15]

Figure 3-3 Increasing Linguistic Diversity: English- and Non-English Speaking Households (2000 and 2014)



Source: U.S. Census 2000, American Community Survey 2010-2014.

Figure 3-4 English- and Non-English Speaking Households (2014)



Source: American Community Survey 2010-2014.

Employment

Alameda County is currently home to nearly 700,000 jobs (2013), which accounts for about 20% of the Bay Area's jobs. The largest share of Alameda County's jobs, about

[14] Indo-European includes middle-eastern languages.

[15] American Community Survey 2010-2014.

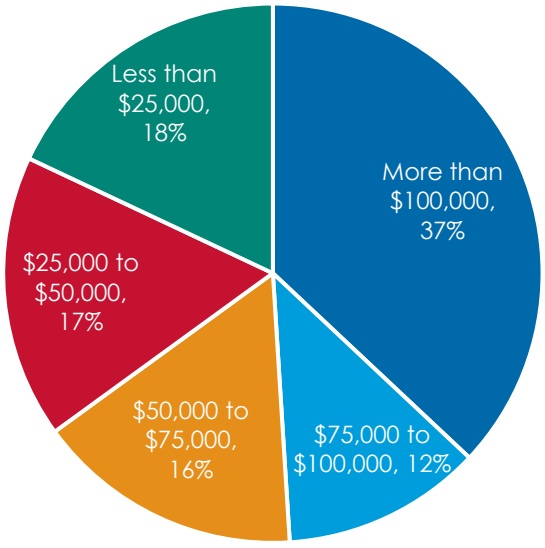
189,000, is located in Oakland. Other important job centers include Berkeley, Hayward, Fremont, Livermore, and Pleasanton.[16]

Alameda County also has one of the most diverse employment bases in the Bay Area, which allows the county to maintain a growing economy and be more resilient in economic downturns. In addition to the goods movement sector, which provides about one-third of the total jobs in the county, Alameda County is home to hubs of manufacturing, technology, education, and health care, among others.[17]

Income

After a period of decline between 2008 and 2011, incomes in Alameda County and throughout the Bay Area have begun to stabilize. Today, the median annual income for an individual worker is $42,700 in Alameda County, compared to $47,000 for the Bay Area. Similarly, the median household income in Alameda County is $72,100 per year, slightly less than that of the Bay Area.

Figure 3-5 Alameda County Annual Household Income (2014)



Compared to other counties in the state, per capita income in Alameda County is the eighth highest in California and 18% higher than the state overall. The largest share of households make more than $100,000 per year (37%), followed by less than $25,000 (18%), demonstrating stark income disparity for Alameda County residents. Over one-third of households make less than $50,000 per year. In a region where many residents experience an increasingly high cost of living, this poses a major challenge to ensure the transportation system remains accessible for all income levels.[18]

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[16] Vital Signs, *Jobs*, http://www.vitalsigns.mtc.ca.gov/jobs.

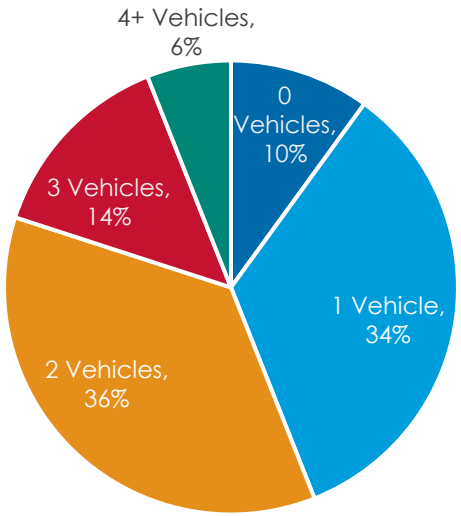
[17] East Bay Economic Development Alliance, *East Bay Economic Outlook 2015-16*, http://www.eastbayeda.org/ebeda-assets/reports/2015/EastBayEDA_Economic_Outlook_FY15-16.pdf.

[18] American Community Survey 2010-2014.

Vehicle Ownership

Most people in Alameda County have access to a personal vehicle (90%). In fact, more than half of households (56%) have access to two or more vehicles, and 10% of households do not have access to a personal vehicle at all.[19]

Figure 3-6 Household Vehicle Ownership (2014)



Changing Demographics and Impact on Transportation

Like the entire Bay Area, Alameda County is experiencing growth, both residential and employment. Alameda County is expected to be home to nearly 2 million residents (30% increase) and 1 million jobs (36% growth) by 2040. (See Chapter 4 for more information about growth in Alameda County.) With this growth, there are several demographic trends that will impact the demands placed on the transportation system. First, a higher share of residents will be over 65 years old which will require providing more services that cater to this more vulnerable portion of the population (see Figure 6-1 and discussion in Mobility for Seniors and People with Disabilities modal strategy).[20] Simultaneously, at the other end of the age spectrum, younger generations are showing changing preferences in their use of the transportation system.

Research shows that younger generations are shunning car ownership and adopting multimodal lifestyles at a higher rate than past generations. These preferences manifest in a reduced rate of car ownership and higher use of transit and other modes. The drivers' license rates among Alameda County residents decreased between 2005 and 2014, dropping from 88 licensed drivers per 100 people to 80

[19] American Community Survey 2010-2014.

[20] Plan Bay Area (2013-2040), adopted June 2013.

licensed drivers. The sharpest decline was in people 30-34 years old, which declined 17% from 96 to 80 licenses per 100 people.[21] Ensuring availability of high quality transit service and other safe and convenient alternatives to driving will be essential to supporting these shifts.

[21] Alameda County Transportation Commission, *2016 Performance Report.*

4 Transportation-Land Use Connection

Overview

In the Bay Area, worsening traffic congestion in a constrained urban environment, changing demographics, and significant population growth have required regional and local agencies to take new approaches to planning efforts to maintain the Bay Area's high quality of life and economic productivity. Transportation tools alone are no longer enough, the region must also look at the location, intensity and form of housing, jobs, and other activity centers to ensure high levels of accessibility.

Therefore, for over a decade, there has been an increasing emphasis on integrating land use planning and transportation investment decisions to allow more people to use transit, walk, or bike for their daily needs. The need to address climate change was also officially introduced into state law with the passage of California Assembly Bill 32 (AB 32, 2006) and Senate Bill 375 (SB 375, 2008), which mandate increasing coordination between land use and transportation planning to reduce greenhouse gas emissions.

Numerous Bay Area organizations have collaborated to respond to these new mandates. The partnership has been led by the Metropolitan Transportation Commission (MTC) and the Association of Bay Area Governments (ABAG); other partners include Alameda CTC and jurisdictions throughout the Bay Area. Collectively these agencies have embarked on a process to examine relationships between land use policies, housing locations, job locations, and transportation policies and infrastructure throughout the Bay Area. The outcome of these efforts was the region's first Sustainable Communities Strategy (SCS), a coordinated regional land use vision that has been incorporated into the Regional Transportation Plan (RTP) under the title *Plan Bay Area*.

This chapter provides an overview of the legislative mandates and regional land use and transportation plans and policies that form the basis for a greater emphasis on coordinating transportation projects and programs with land use plans in Alameda County and the Bay Area.

State Policy Context

Assembly Bill 32 (AB 32): The California Global Warming Solutions Act

Passed in 2006, the California Global Warming Solutions Act (AB 32) mandates that greenhouse gas (GHG) emissions be reduced to 1990 levels by the year 2020.[22] AB 32 sets targets for each of the key sectors responsible for GHG emissions, including

[22] Assembly Bill No. 32, http://www.leginfo.ca.gov/pub/05-06/bill/asm/ab_0001-0050/ab_32_bill_20060927_chaptered.pdf.

land use. The land use sector in the Bay Area must reduce its GHG emissions 7% by 2030 and 15% by 2035. The dominant means to achieve the land use target is reducing vehicle miles traveled (VMT) by cars and light trucks.

It is important to note that land use is only one component of the larger AB 32 strategy to reduce GHG emissions. The targets are aggressive, but acknowledge that due to the magnitude of the existing built environment and transportation infrastructure, change may occur more gradually than in other sectors.

Senate Bill 375 (SB 375): Redesigning Communities to Reduce Greenhouse Gases

Senate Bill 375, Redesigning Communities to Reduce Greenhouse Gases, passed in 2008, defines more concrete requirements and implementation steps to achieve the emissions reduction requirements outlined in AB 32. Namely, SB 375 highlights the connection between land use and transportation as a key component on the path to reductions in GHG emissions.[23]

While near-term development decisions lie mostly with local planning agencies, regional agencies play a major role in development of long-term land use visions and plans. SB 375 proposes a coordinated process between local and regional agencies to integrate the California Environmental Quality Act (CEQA), housing elements, and regional transportation plans. The ultimate goal is to encourage local governments, in coordination with regional planning agencies, to make land use and transportation planning decisions that support the goal of reducing GHG emissions.

SB 375 mandates that each of the 18 major metropolitan areas in California include a SCS in their RTP. Once a region's SCS is in place, certain projects that advance and share goals with the SCS will enjoy streamlined CEQA requirements and other benefits under SB 375. The process and outcomes of the Bay Area's RTP/SCS (Plan Bay Area) are described in the next section.

Regional and Local Policy Context

Regional

Plan Bay Area

Plan Bay Area is the long-range integrated transportation and land-use/housing strategy (SCS/RTP) that has been developed to forecast and plan through the year 2040 in the Bay Area. SB 375 requires that the Plan Bay Area accommodate future population growth in the region, while simultaneously reducing GHG emissions from cars and light trucks. The first Plan Bay Area was approved by ABAG and MTC in 2013

[23] Senate Bill No. 375, http://www.leginfo.ca.gov/pub/07-08/bill/sen/sb_0351-0400/sb_375_bill_20080930_chaptered.pdf.

after a multi-year process of technical analysis and public outreach in each of the Bay Area's nine counties. MTC and ABAG are currently undertaking the first update to Plan Bay Area, called Plan Bay Area 2040; which is scheduled for adoption in 2017.

Plan Bay Area 2013 anticipated that the Bay Area's population will grow from about 7 million today to about 9 million in 2040. The Plan emphasized that accommodating this growth while reducing GHG emissions will require an intentional, synergized strategy for land use and transportation.

For land use, Plan Bay Area established a focused growth strategy that concentrates employment and housing growth in areas defined as "Priority Development Areas" (PDAs) while also designating "Priority Conservation Areas" (PCAs) to ensure the greenbelt surrounding our urban areas stays intact. Plan Bay Area presented a strategy for meeting 80% of the region's future housing needs in PDAs.

PDAs are development areas near transit with a variety of key characteristics. To qualify, a PDA must be an area within walking distance of frequent transit service that offers access to a variety of housing types, basic amenities, and services (e.g., schools, shopping, parks, recreation, etc.). Each PDA is categorized by the local jurisdiction into one of seven future "place types" using the typology from MTC's Station Area Planning Manual (2007), illustrated in Figure 4-1.

FOCUS Program

Planning for focused growth in the Bay Area precedes SB 375. ABAG developed the FOCUS program in 2006 to guide sustainable planning and development in the region. FOCUS was a voluntary, incentive-based program that invited local governments to identify PDAs—infill sites where greater density could be accommodated near transit stops—and PCAs—areas to be conserved—in their communities. MTC provided financial incentives to communities to prioritize development in their PDAs and to develop plans for the protections of PCAs through coordinated planning, purchase of land, or conservation easements.

The FOCUS program created a strong foundation for Plan Bay Area by establishing areas throughout the Bay Area that local communities had already voluntarily identified as appropriate places for targeted growth.

Plan Bay Area's transportation element (2013) specified how anticipated federal, state, and local funds will be spent through 2040 to advance goals of reduced GHG emissions, including maintaining and expanding the transportation network throughout the region. Maintenance and operations was forecasted to receive the bulk of funding (nearly 87%) including 54% for existing public transit; 32% for existing streets, roads, highways and bridges; 7% for transit expansion; and 5% for roadway expansion.[24]

[24] Plan Bay Area (2013-2040), adopted July 18, 2013, http://files.mtc.ca.gov/pdf/Plan_Bay_Area_FINAL/Plan_Bay_Area.pdf.

Figure 4-1 MTC's PDA Place Types

Regional Center

Primary centers of economic and cultural activity with a dense mix of employment, housing, retail, and entertainment that caters to regional markets.

Example: Downtown Oakland

City Center

Magnets for surrounding areas & commuter hubs to the region.

Examples: Downtown Berkeley and Downtown Hayward

Suburban Center

Similar to City Centers but with lower densities, less transit, & more parking and single-use areas.

Example: Pleasanton's Hacienda Business Park and Downtown Dublin

Transit Town Center

Local-serving centers of economic and community activity.

Example: San Leandro Bayfair BART and Downtown Livermore

Urban Neighborhood

Residential areas with strong regional connections, moderate-to-high densities, and local-serving retail mixed with housing.

Example: Oakland's Fruitvale/Dimond District

Transit Neighborhood

Primarily residential areas served by rail or multiple bus lines, with low-to-moderate densities.

Example: Newark's Old Town and Fremont's Centerville

Mixed-Use Corridor

Areas of economic and community activity with rail, streetcar, or high frequency bus service that lack a distinct center.

Example: Albany's Solano Avenue

One Bay Area Grant Program

To fulfill the focused growth strategy outlined in Plan Bay Area, a variety of strategies are needed to support and encourage development in PDAs including funding, policies, and multi-jurisdictional coordination. In 2013, MTC created the One Bay Area Grant Program (OBAG)[25] to provide funding to advance the region's focused growth vision. OBAG prioritizes funding in PDAs to support cities willing to take on new growth. The region's Congestion Management Agencies play a large role in determining appropriate distribution of these funds.

MTC Resolution 3434

MTC Resolution 3434, the Transit-Oriented Development Policy for Regional Transit Extension Projects, establishes minimum thresholds for the number of housing units that must exist or be planned within one-half mile of transit stations in order for the transit project to receive regional discretionary funding. If a project does not meet the threshold, a working group is formed to determine if it is possible to increase the planned or existing density nearby. The thresholds only apply to those projects included in the Resolution when it was adopted in 2005.

Alameda County

Growth in Alameda County

Plan Bay Area projects the Alameda County population will continue to grow, reaching nearly 2 million residents by 2040. This represents the largest growth of all nine Bay Area counties, an increase of 30% over the 2010 population. Employment in Alameda County is also expected to grow substantially (36%) by 2040 to nearly 1 million jobs. PDAs are projected to take on a significant share of this projected growth over time, while designated PCAs will ensure preservation of Alameda County's open spaces.

Alameda County's PDAs

Alameda County has 43 locally-nominated PDAs, which vary in character, largely due to the county's diversity, but most are aligned along the county's major bus and rail corridors. These communities encompass a wide range of population densities, land use patterns, and employment opportunities and vary significantly in terms of the income, age, and race of their populations. The PDAs in Alameda County are summarized in Figure 4-2 and mapped in Figure 4-3.

[25] One Bay Area Grant Program: http://mtc.ca.gov/our-work/invest-protect/focused-growth/one-bay-area-grants.

Figure 4-2 Summary of Alameda County's PDAs

Geographic Area	Number of PDAs	PDA Locations
North County	17	Alameda (2), Albany (1), Berkeley (6), Emeryville (1), Oakland (7)
Central County	12	Hayward (5), San Leandro (3), Castro Valley (1), San Lorenzo (1), Other unincorporated Alameda County/Ashland/Cherryland (2)
South County	7	Fremont (4), Newark (2), Union City (1)
East	7	Dublin (3), Livermore (3), Pleasanton (1)

TOD in Alameda County

In support of the regional focused growth vision and development in PDAs, Alameda CTC is working with local jurisdictions and transit agencies to encourage the creation of Transit-Oriented Communities (TOCs) and Transit-Oriented Development (TOD) through the Countywide Transit Plan. TOCs and TOD provide land use patterns and Complete Streets networks that concentrate destinations and people around transit facilities in a multi-use environment, which results in higher transit ridership and supports achievement of the goals in the CTP.

Benefits of TOCs include:

- Increasing transit mode share and ridership by clustering walkable districts, neighborhoods, and other places around existing transit services and planned transit investments.
- Improving pedestrian, bicycle, and local transit access to major transit corridors and stations, which makes transit service more accessible to major destinations and makes the choice to walk or bicycle to transit as easy as driving.
- Accommodating increased residents and jobs at a lower rate of emissions per person by creating options for living and working near transit stations and supporting the choice to walk or bike rather than drive.
- Supporting a state of good repair for transit, both directly and indirectly. Direct support can come through increased ridership that results from an increase in the density of jobs and residents within TOCs. This improves fare box return and value capture methods. Development around transit stations could provide funding for transit capital projects and/or operations and maintenance (e.g., transportation impact fees). Indirect support for state of good repair could result from the positive experiences that people have from living and working in a TOC and using transit; this could increase their level of support for funding mechanisms to invest in state of good repair.

Many of Alameda County's communities already include TOCs. Some of them were originally developed as neighborhoods and corridors served by streetcars or near

commuter rail stations. Some are more recent, characterized by compact TODs surrounded by more disperse auto-oriented development. Many of these neighborhoods are captured in the PDA designations. The quality of TOCs will have an effect on deciding where transit investments should be made and the success of transit investments in attracting riders, and attracting funding from regional, state, and federal sources.

The Countywide Transit Plan's recommended framework for TOCs in Alameda County seeks to balance these relationships to support community values, the economics of development, and the need to invest public funds for transit wisely.

Priority Development Area Investment and Growth Strategy

As part of the OBAG program, Alameda CTC has also developed a *Priority Development Area (PDA) Investment and Growth Strategy*[26] that establishes to priority-setting process for distribution of OBAG funds and outlines a series of other strategies, policies, and programs to support PDA development in support of Plan Bay Area.

The Strategy guides the agency in supporting PDA development over a long time horizon. It includes several components:

- **PDA Inventory**: Catalog of existing conditions in the county's PDAs including housing and job growth projections and existing affordable housing policies
- **PDA Readiness Evaluation**: PDA readiness assessment that considers the extent to which planning has been completed and new housing and job growth is likely to occur within a PDA in the near-term
- **Housing Development Assessment**: Assessment of jurisdiction's performance in producing sufficient housing for all income levels through the Regional Housing Needs Allocation (RHNA) process (updated annually)
- **OBAG Priority-setting Process**: A process for prioritizing OBAG funding to support and encourage residential and commercial development in PDAs in both the near and long term
- **Funding Priorities**: PDAs prioritized for transportation capital investments during the current funding cycle
- **Funding Allocations**:
  - **Supportive Transportation Capital Investments**: Process and criteria used to select capital projects for funding and a list of funded projects
  - **PDA Planning and Implementation Funds**: Allocations for the Sustainable Communities Technical Assistance Program created by Alameda CTC to

[26] Alameda County PDA Investment and Growth Strategy: http://www.alamedactc.org/app_pages/view/10385.

support activities such as PDA planning and implementation, implementation of Complete Streets policies, and smaller-scale bicycle and pedestrian technical projects in PDAs

- **Complete Streets and Housing Elements Status**: Status of adoption of Complete Streets elements and updates to General Plan Housing Elements for all cities in Alameda County
- **PDA Strategic Plan**: Describes how PDA growth and development can be supported and monitored in the longer term including how the Strategy is coordinated with other planning efforts
- **PCA Inventory**: Inventory of the PCAs within Alameda County, further described as follows

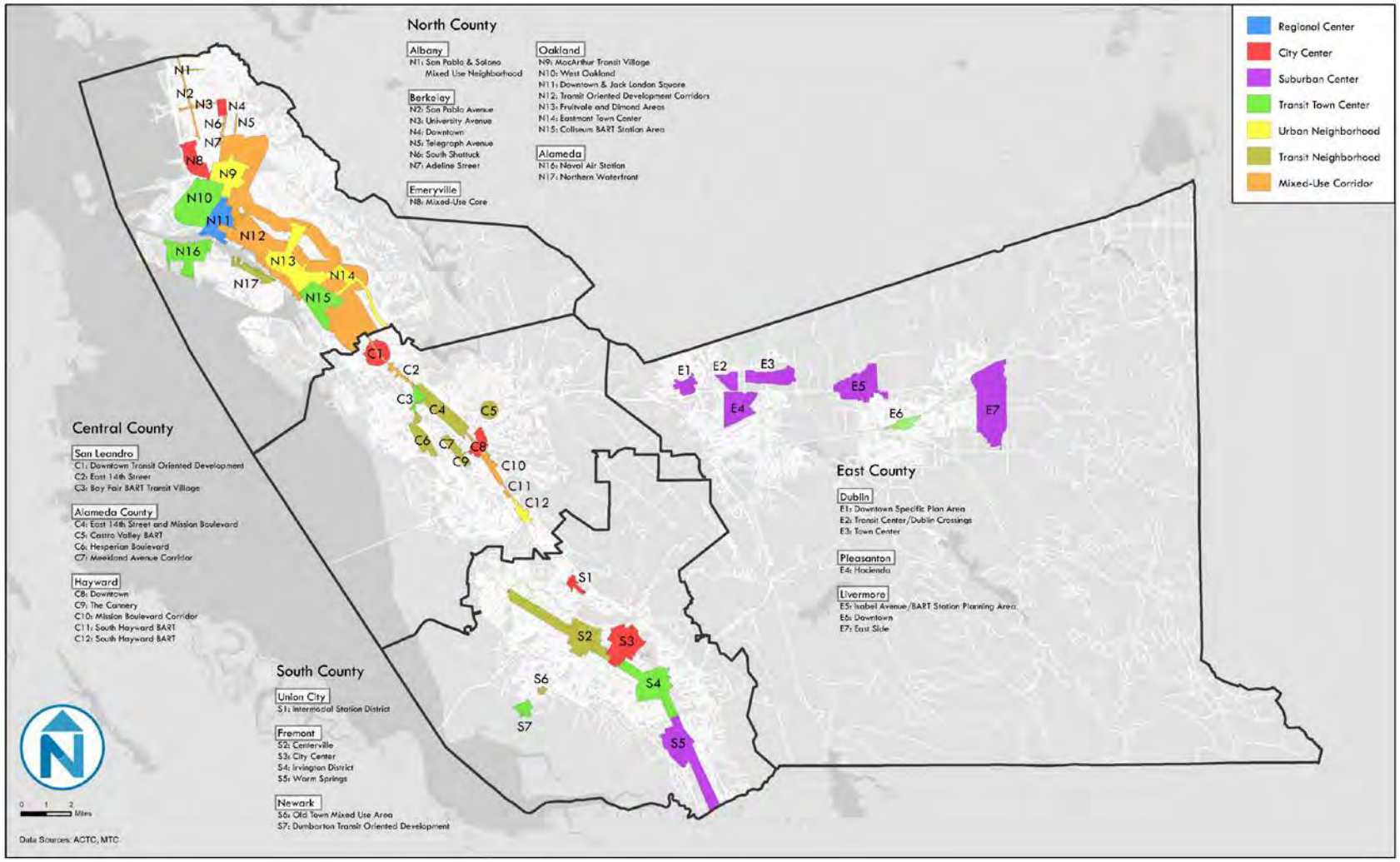
This strategy is a key repository and guide for Alameda CTC's ongoing efforts to improve the linkages between transportation and land use. Alameda CTC adopted its first *PDA Investment and Growth Strategy* in 2013, and has updated it annually in accordance with MTC requirements in 2014 and 2015.

CTP and Land Use

As a key component to achieving shared sustainability goals, the CTP aims to acknowledge and strengthen linkages between transportation and land use in response to these regional and state policy mandates. This is reflected in several aspects of the CTP's development:

- **Goals**: The CTP has an explicit goal to create a transportation system that is "integrated with land use patterns and local decision-making."
- **Performance Measures**: Building off the goals, the CTP also incorporates land use concepts into its performance measures. Performance measures include employment accessibility, activity center accessibility, and equitable transit availability (see Chapter 2 for CTP goals and performance measures).
- **Demographic and Land Use Projections**: Finally, housing and employment projections are a critical component of the performance evaluation process for the CTP. To ensure alignment with the RTP, and support an environmentally sustainable future, the CTP uses the same focused growth projections as Plan Bay Area.

Figure 4-3 Map of Alameda County's Priority Development Areas by Place Type



Alameda County's PCAs

There are 16 PCAs in Alameda County, summarized in Figure 4-4. These include natural landscapes, urban greening areas, regional recreation areas, or agricultural areas of regional significance that have broad community support and an urgent need for protection.

Figure 4-4 Summary of Alameda County PCAs

PCA Type	Potential Needs for Protection	PCAs
Large open space areas in East and South County	▪ Land acquisition or easements to protect important habitat, watershed, recreational, and agricultural resources ▪ Public access improvements ▪ "Farm-to-market" and local food system infrastructure needs assessment and feasibility study	▪ Bethany Reservoir, East County ▪ Cedar Mountain, East County ▪ Chain of Lakes, East County ▪ Duarte Canyon, East County ▪ Potential Tesla Area, East County ▪ North Livermore and South Livermore Valley, East County ▪ Coyote Hills, South County
Hillside areas in North, Central and South Alameda County	▪ Land acquisition or easements to protect important habitat, watershed, recreational, and agricultural resources ▪ Public access improvements, including recreational trails	▪ Union City Hillside Area, South County ▪ South Hills, San Leandro Creek, North County [PCA has been protected] ▪ Leona Canyon Creek Tributaries, North County ▪ Ridgemont West, North County ▪ Butters Canyon, Peralta Creek, North County [PCA has been protected] ▪ Temescal Creek/North Oakland, North County ▪ Albany Hill, North County
Major multi-use greenways/trails and urban needs for conservation	▪ Right-of-way acquisition ▪ Trail planning, design, and construction ▪ Land acquisition or easements to protect important habitat, watershed, recreational, and agricultural resources	▪ East Bay Greenway, North, Central, and South County ▪ Potential Oakland Gateway Area, North County ▪ Bay and Ridge Trail Gaps ▪ Livermore Arroyos, Parks and Trails ▪ Oakland Natural Landscapes ▪ Oakland Priority Creek Trails ▪ Oakland Priority Creeks ▪ Oakland Priority Estuaries ▪ Oakland Recreational Trails ▪ Oakland Urban Greening

5 The Transportation System Today

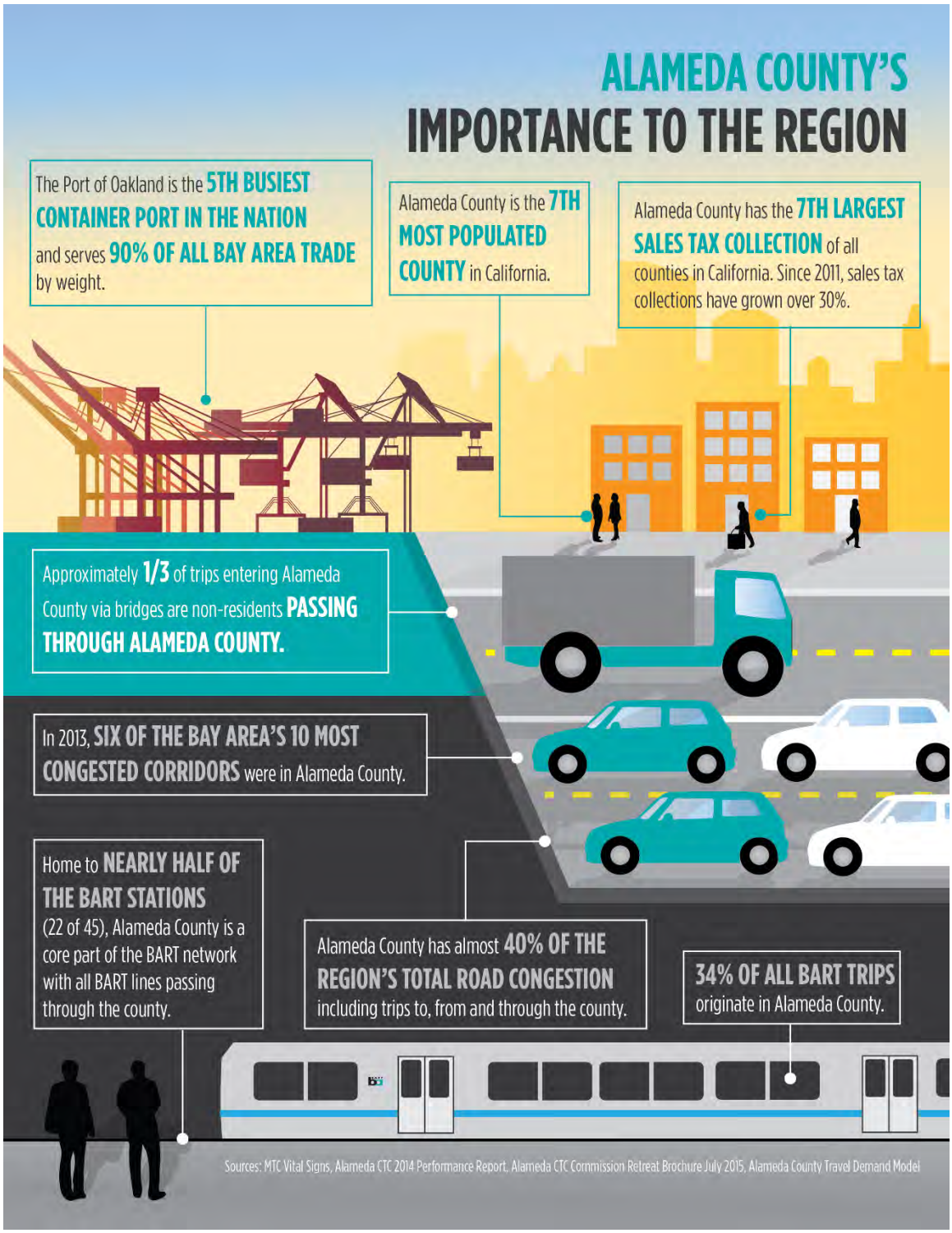
Introduction

Alameda County's transportation network plays a central role in supporting the region's economic vitality and overall livability. By way of its central location in the Bay Area, Alameda County's transportation system supports a significant share of the Bay Area trips made by all transportation modes, most notably automobile, transit, and goods movement. Alameda County is home to 3,600 miles of roadway comprised of six interstate freeways, multiple major state routes, and numerous arterials and local roads.[27] Vital accessibility is provided by transit in the county, including rail, bus, ferry, and shuttle services operated by both public and private entities. The Port of Oakland and Oakland International Airport serve as major gateways for goods transported throughout the Western United States,

All transportation modes are important to serve the needs of residents and businesses in Alameda County and beyond. The interconnected multimodal system of highways and roads, public transit systems, and active transportation facilities combine to serve the transportation needs of people and goods within and through Alameda County. This chapter offers an overview of the existing transportation conditions in Alameda County.

[27] Highways in Alameda County: Facts, Challenges and Opportunities (fact sheet), 2015.

Figure 5-1 Alameda County in Context

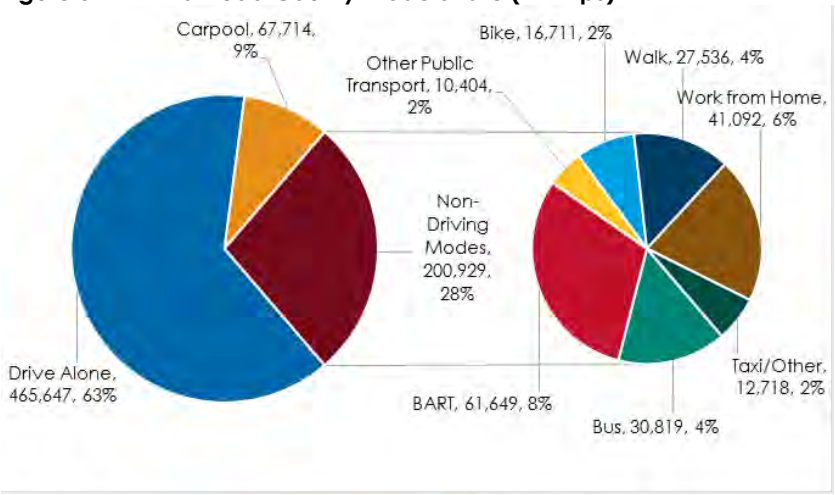


How People Travel

Mode Share

Nearly 8 million trips are made in Alameda County each year. The overall mode share for these trips is shown below.

Figure 5-2 Alameda County Mode Share (All Trips)[28]



The majority of work trips are made by driving alone in an automobile (63%), for non-work trips, people are more likely to carpool and use active modes including bicycling and walking. Transit use makes up about 14% of work trips. The trend of work travel mode share changes over time is shown in Figure 5.2.

Transit Use

Alameda County is home to six public transit operators. In 2014, about 99 million riders boarded transit in Alameda County. Bus trips make up about 51% of annual transit boardings, followed by BART at 47% of boardings. Ferry and commuter rail combine for 2% of boardings.[29]

[28] Alameda CTC Performance Report (2015).

[29] Alameda CTC Performance Report (2015).

Figure 5-3 Long-term Trends in Mode Share, Alameda County Residents[30]

	Mode Share				Difference in Mode Share		Mode Share Margin of Error
	2000	2005	2010	2014	2014 v. 2010	2014 v. 2000	2014
Drive Alone	66.4%	69.8%	66.9%	63.4%	-3.5%	-2.9%	0.9%
Carpool	13.8%	11.1%	10.8%	9.2%	-1.6%	-4.6%	0.5%
Bus	4.5%	4.6%	3.7%	4.2%	0.5%	-0.3%	0.5%
BART	5.3%	5.1%	5.8%	8.4%	2.6%	3.1%	0.4%
Other Public Transport	0.8%	0.8%	1.3%	1.4%	0.2%	0.7%	0.2%
Bike	1.2%	0.9%	1.4%	2.3%	0.9%	1.0%	0.2%
Walk	3.2%	2.9%	3.2%	3.8%	0.5%	0.5%	0.4%
Work from Home	3.5%	3.6%	5.9%	5.6%	-0.3%	2.1%	0.4%
Taxi/Other	1.3%	1.2%	0.9%	1.7%	0.8%	0.4%	0.3%

Active Transportation

Walking and bicycling are on the rise in Alameda County. The travel demand model estimates that over 1 million trips are made by walking or biking every day in the county, though this may not reflect actual numbers due to the travel demand model's tendency to underrepresent trips by these modes. The rate of bicycling to work has nearly doubled in Alameda County over the past 10 years.[31] Further, nearly every trip, regardless of mode, involves walking for some part of the trip, and therefore a safe and pleasant pedestrian environment is an important component of the transportation system.

Goods Movement

Alameda County is a gateway for the transportation of goods throughout Alameda County, the San Francisco Bay Area, Northern California, and the Western United States. The Port of Oakland and Oakland International Airport serve as the busiest seaport and airport in the Bay Area for goods movement. More than 17 million tons

[30] Alameda CTC Performance Report (2015), American Community Survey, Table B08006.

[31] MTC Vital Signs, Commute Mode, http://www.vitalsigns.mtc.ca.gov.

of goods[32] and nearly 2.4 million shipping containers moved through the Port of Oakland in 2012 and 2014 respectively.[33] Overall, 99% of containerized cargo from Northern California passes through the Port of Oakland.

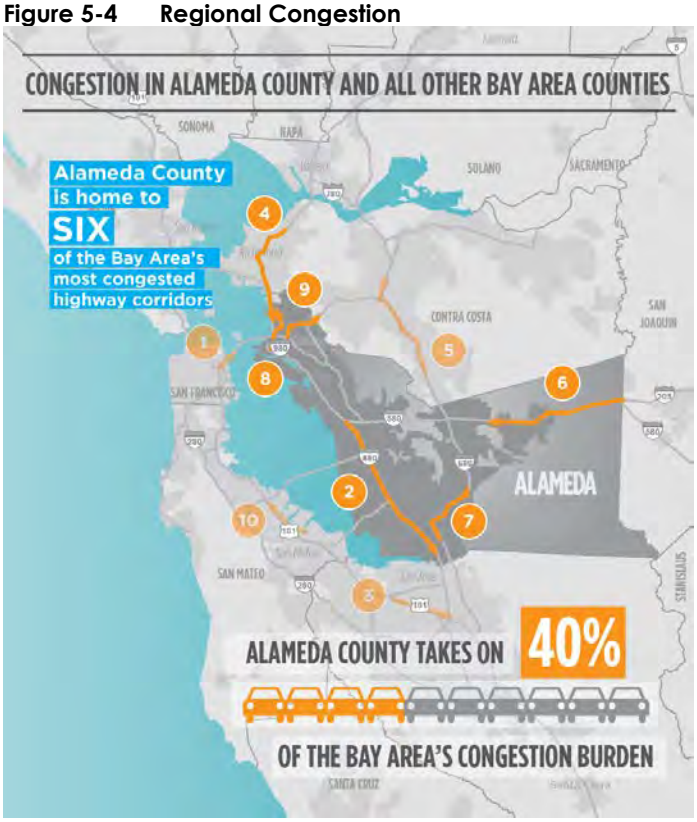
In addition to the Port of Oakland and Oakland International Airport, Alameda County's network of railroads, interstate highways, and arterial roads serve as key components of the Bay Area's goods distribution system. Freight movement by truck is a very important part of goods movement in Alameda County as about 72% of goods in tons are moved by truck.[34]

Roadway Conditions

Congestion

Due to its central geographic location within the region, Alameda County experiences a disproportionate share of the region's congestion. From 2000 and 2013, Alameda County has consistently shouldered about 40% of the region's congestion (in vehicle hours of delay).[35] Additionally, Alameda County has consistently been home to many of the region's most congested freeway segments, including, six of the Bay Area's 10 most congested corridors (see map, at right).

Figure 5-4 Regional Congestion



Source: MTC's Annual Top 10 Congested Corridors (2014).

[32] Alameda County/Regional Goods Movement Plan, *Final Technical Memorandum: Freight Forecast and Growth in Freight Demand*, http://www.alamedactc.org/app_pages/view/13783.

[33] MTC Vital Signs, *Seaport Activity*, http://www.vitalsigns.mtc.ca.gov/seaport-activity.

[34] Alameda County/Regional Goods Movement Plan, *Final Technical Memorandum: Freight Forecast and Growth in Freight Demand*, http://www.alamedactc.org/app_pages/view/13783.

[35] Congestion data sourced from MTC's State of the System reports (2000 through 2008). Vehicle hours of delay are not available from 2009 to 2012. 2013 congestion data sourced from MTC's 2013 Vital Signs Congestion Report.

In addition to trips made by Alameda County residents, a significant number of trips are made to, from, and through Alameda County by non-residents. Today, the three bridges connecting to Alameda County facilitate approximately 412,000 trips on an average day. Of these, about 35% are estimated to be pass-through trips and 33% are estimated to be trips to Alameda County. The remaining 32% of trips are made from an origin in Alameda County.[36]

Pavement Conditions

Regional growth resulted in more use of Alameda County's roadways and bridges in 2014 than in prior years. In 2014, around 22% of the local streets and roads in Alameda County reported poor or failing pavement conditions (measured by pavement condition index (PCI) of "poor" or "failed").[37] Several cities have overall average pavement conditions considered "at risk" (i.e., PCI less than 60) including Albany, Berkeley, and San Leandro. At the other end of the spectrum, Union City and Dublin have PCIs exceeding 75, which is in the very good/excellent condition range.[38]

[36] Alameda CTC Travel Model.

[37] Alameda County Transportation Commission, *2014 Performance Report: State of the Transportation System in Alameda County.*

[38] MTC Pavement Condition Needs Assessment through 2040.

Figure 5-5 2016 Pavement Condition Index by Jurisdiction[39]

Jurisdiction	2005	2006	2007	2008-9	2010	2011	2012	2013	2014
Alameda County	71	72	69	75	73	72	71	71	71
Alameda	64	60	64	63	72	67	66	68	67
Albany	60	66	63	60	58	56	58	55	56
Berkeley	58	61	60	58	61	58	58	58	58
Dublin	78	82	80	80	87	84	87	85	85
Emeryville	82	78	76	74	80	79	75	73	80
Fremont	71	68	66	64	63	63	63	67	69
Hayward	67	69	68	69	70	68	69	67	66
Livermore	80	79	77	77	80	78	76	77	76
Newark	78	69	67	71	68	75	76	76	76
Oakland*	52	61	57	58	54	60	61	58	56
Piedmont	66	69	67	72	72	74	67	67	67
Pleasanton	74	75	76	78	77	76	77	78	78
San Leandro	62	60	59	56	56	56	57	57	56
Union City*	76	75	75	79	80	78	80	79	83

Notes: Average PCI is based on a weighted average of functional classifications, with weighting based on centerline mile distance.

* PCI was correlated from an alternate scale prior to 2007.

Safety

The total number of injuries and fatalities from automobile crashes has remained fairly steady in recent years in Alameda County. Since 2006, between 72 and 106 fatalities were reported in Alameda County, with the exception of 2010 and 2011 with 64 and 59 fatalities respectively. In 2012, there were 309 injuries and 77 deaths from automobile crashes, including collisions with pedestrians and bicyclists.[40]

Performance Measurement

Many of the performance measures that were adopted for this plan (Chapter 2) encompass the information presented here. Future results for these measures are described in Chapter 8.

[39] Alameda CTC Performance Report (2015).

[40] MTC Vital Signs, *Fatalities and Crashes*, http://www.vitalsigns.mtc.ca.gov/fatalities-crashes.

6 Modal Strategies

A. Public Transit

Introduction

Image from Nelson\Nygaard.

Public transit is one of the foundations of our transportation system. It provides numerous economic, environmental, and social benefits. A robust transit system can reduce household costs by enabling households to own fewer vehicles or go car free. High quality transit improves access to employment, education, health care, and other opportunities while enabling employers to have access to a larger pool of employees. More people using transit instead of driving improves air quality and reduces greenhouse gas emissions and energy consumption. Transit allows urban areas to accommodate higher densities where appropriate and reduces demand for parking, freeing up land for higher-value uses.

Successes

Robust Existing System

Transit service in Alameda County includes multiple modes (rail, bus, ferry, and shuttle) and is provided by a number of public and private operators. The two major operators in the county are San Francisco Bay Area Rapid Transit District (BART) and Alameda-Contra Costa Transit District (AC Transit), which account for the vast majority of transit usage (close to 95%), Union City Transit provides local transit service in Union City, and Livermore Amador Valley Transit Authority (LAVTA) operates WHEELS, which provides local bus service in Dublin, Pleasanton, and Livermore. The Amtrak Capitol Corridor and Altamont Corridor Express (ACE) Commuter Rail provide inter-regional service through Alameda County to other nearby cities and counties. The San Francisco Bay Area Water Emergency Transit Authority (WETA) provides ferry service from Oakland and Alameda to San Francisco and South San Francisco. Shuttles also play a significant role in the county's transit network, as they often bridge gaps between employment centers, medical or educational institutions, shopping centers, and BART.

New Services and Ridership Growth

Alameda County's transit system has experienced some notable successes in Alameda County in recent years which illustrates the strengths of the current system and sets the stage for future growth.

Image from Nelson\Nygaard.

- Transbay ridership has grown significantly on both BART and AC Transit Transbay service - 24% on BART between 2010 and 2014 and 20% on AC Transit between 2013 and 2015.
- Measure BB enables AC Transit to expand service hours for all vehicles, given the number of hours that each vehicle provides service, by approximately 14%.
- AC Transit is constructing the first full Bus Rapid Transit (BRT) route in Alameda County along International Blvd. (see Technology and Innovation section for more information).
- BART now directly serves Oakland International Airport with a fixed-guideway (a line anchored by capital infrastructure such as overhead wires, or in this case, rail investment) connection that operates between the Coliseum BART Station and Oakland Airport. This project received significant funding from Measure B.
- BART is completing construction of an extension from the Fremont station to a new station in Warm Springs South Fremont; this extension is scheduled to open in late 2016 or early 2017.
- Future transit expansions are currently under environmental review including extending BART to Livermore/ACE and ACE Forward, as well as many station area improvements planned throughout Alameda County.

Countywide Transit Plan

Alameda CTC has developed a Countywide Transit Plan to help Alameda County realize its vision to "create an efficient and effective transit network that enhances the economy and the environment and improves quality of life." This plan is designed to complement and support specific planning efforts completed or underway in the County.

Images from Nelson\Nygaard.

The Transit Plan targeted a set of improvements in the 14 corridors that are most likely to carry some of the strongest future demand for transit. The identification of these corridors can serve primarily as a guidepost for maximizing future transit investments in the county. The Transit Plan also outlines a set of network recommendations with the types of improvements that can enable fast, frequent, and reliable service to capture ridership demand and address the unique needs of each corridor. (All recommendations are provided on a corridor level, and route alignments and stop placements will require extensive further evaluation by operating agencies and local jurisdictions before implementation.)

This plan reflects a collaborative effort among the diverse stakeholders who are invested in improving the future of transit in Alameda County including transit and paratransit operators and users, local jurisdictions, and the general public.

Regional Transit Partnerships

In recognition of the need for transit to serve anticipated growth, increasing attention and resources are being directed to the challenges transit faces. Several studies have been completed and/or are underway, and regional partnerships have formed to start tackling the toughest issues for transit competitiveness and sustainability — examples include the MTC Transit Sustainability Project and Transit Performance Initiative,[41] the MTC Core Transit Capacity Study,[42] LAVTA Wheels

[41] http://mtc.ca.gov/our-work/invest-protect/investment-strategies-commitments/transit-21st-century/transit.

[42] http://mtc.ca.gov/our-work/plans-projects/other-plans/core-capacity-transit-study .

Comprehensive Operations Analysis, the Capitol Corridor Vision Plan, the WETA Strategic Plan, BART's extension to Livermore/ACE, the Dumbarton Corridor Study, and the AC Transit Plan ACT, which includes a Major Corridors Study (MCS) and Service Expansion Plan.[43] The MCS and the Countywide Transit Plan are developed in alignment with each other.

Trends and Challenges

Alameda County has significant existing transit service and conditions that are supportive of higher transit ridership, yet many challenges remain to realize this ridership potential in support of the Alameda Countywide Transportation Plan goals.

Image from Nelson\Nygaard.

Alameda County Has a Strong Overall Transit Market

The majority of communities in Alameda County have strong transit markets, both now and in the future. Transit markets reflect population and land-use characteristics that can determine the likelihood of trips being taken by transit. Transit market strength was analyzed for the Transit Plan using a Transit Competitiveness Index (TCI) tool. The TCI assessment examined all travel markets and showed an overall transit-competitive market for travel within, into and out of Alameda County.

Looking forward, transit is projected to become increasingly attractive for work and non-work trips throughout the county. The 2010 baseline showed approximately 54% of all trips and 43% of work trips are in transit competitive markets, whereas by 2040 these percentages are expected to rise to 58% and 48% respectively.

While a significant number of existing transit routes in Alameda County operate in strong transit markets, the ridership on these routes does not fully reflect the high potential for transit use. Capturing the trips in these underperforming transit markets is critical to increasing transit ridership in the county and was one of the primary areas of focus of the Transit Plan.

[43] http://www.actransit.org/PLANACT/.

Issues and Opportunities

While Alameda County has market conditions supportive of a greater share of transit trips, there are significant obstacles to overcome. The following facts provide evidence that improvements are necessary system-wide:

- **Strong transit markets are not resulting in strong transit ridership**: Despite the high overall transit competitive markets shown by the TCI analysis, transit currently captures only 11% of commute trips in the county (Chapter 5).
- **Decade-long trend of flat intra-county bus ridership growth:** Bus ridership within Alameda County declined between 2006 and 2012 and then remained relatively flat until 2014. However, in the transit markets where transit service is frequent, reliable, and highly competitive with vehicle travel times, such as the East Bay-San Francisco Transbay corridor, transit ridership has grown significantly.
- **Rate of ridership growth is not keeping pace with increasing operating costs:** The cost of providing transit service is increasing faster than inflation and outpacing any growth in ridership and fare revenues. Higher operating costs combined with fluctuations in transit funding and revenues have necessitated cutbacks in service which have a negative impact on ridership.
- **Bus speeds and reliability could worsen if no action taken**: Buses stuck in traffic cause longer travel times and unreliable service for customers; this affects both ridership and the financial sustainability of the bus operators. Increasing roadway congestion threatens to increase bus delay and worsen on-time performance. In order to address this trend it is critical to develop ways for bus service to avoid the unpredictability of congestion and road incidents.

Growth

Compounding the existing transit challenges, population and employment are forecast to continue their growth by more than 30% and 36% respectively by 2040. Improving transit's share in the overall transportation market is a fundamental component that will be required to accommodate increases in population and changing mobility needs that are increasing the popularity of transit.

Needs

The Countywide Transit Plan presents ways in which Alameda CTC can help improve the transit system and service for the future by focusing improvements in areas that have the greatest potential to increase transit ridership. The best opportunities to improve transit performance and increase transit ridership include:

Bus bulbs, like this one in Ottawa, improve the flow of traffic overall.

Image from Nelson\Nygaard.

- **Address geographic and temporal gaps in service:** While transit service generally covers a large area in Alameda County, gaps in hours of operation, frequency of service, and the amount of service on a route can deter ridership growth.
- **Increase speed, frequency, and reliability for bus transit**: For bus corridors identified in the vision Transit Network a variety of potential improvements can improve performance; examples include:
  - Adding an approach to a signalized intersection, known as a "queue jump"
  - Adding "transit lanes" which allow transit to efficiently operate and can be applied during peak periods or all-day; or combined with peak period parking restrictions to avoid taking a lane of travel
  - Retiming traffic signals to prioritize bus flow known as "transit signal priority"
- **Improve transit integration and coordination**: For a transit system to be successful, it needs to have both physical and institutional integration that allow the customer to experience a seamless transit trip. Improving coordination between operators can makes travel more convenient and less costly.

Vision for the Future

Transit Network Recommendations

The Transit Network Recommendations in the Countywide Transit Plan resulted from an in-depth analysis of future travel (year 2040) for 14 study corridors shown to be among the strongest transit markets in the county. Investing in fast and frequent transit service in these corridors is estimated to result in the largest benefits to the network. The Countywide Transit Plan will provide a comprehensive set of

recommendations for better integrating all tiers of transit service into a fully functional, effective, and efficient transit network.

The Transit Plan network recommendations also included an evaluation of near- and long-term cost and service delivery impacts on Americans with Disability Act (ADA) Paratransit services. This evaluation identified opportunities and strategies to more effectively meet Alameda County ADA Paratransit requirements and other accessibility needs in conjunction with the implementation of the proposed Transit Network Recommendations.

Transit Tiers

The Transit Plan created a transit tier structure consisting of five tiers that form the transit network in Alameda County. Tiers are not intended to denote priorities, rather they are used to describe distinct characteristics of types of transit service. The tiers are shown and described below.

Figure 6-1 Alameda County Transit Tiers

- **Inter-regional –** Longer distance lines, usually greater than 40 miles, such as Amtrak Capitol Corridor and ACE Commuter trains
- **Regional Express –** Service connecting Alameda County with adjacent counties, such as BART and AC Transit Transbay Service
- **Urban Rapid –** Higher capacity routes connecting major nodes, which in Alameda County would likely be bus rapid transit (BRT) routes
- **Local Frequent –** Local bus service along corridors with dispersed origins and destinations

- **Community Connector –** Service providing community access in less productive areas that can include shuttle services that provide connections between a major transit service and the first and/or last mile of a trip, known as "first and last mile connections"
- **Streets Plus –** All land use characteristics supportive of the remaining transit tiers occurs on our streets network and includes pedestrian and bicycle transit supportive infrastructure, park-and-ride services, and traffic signals, among others.

How to Make Transit Tiers into Transit Oriented Communities

The Transit Plan tiers provide a guidepost for matching appropriate transit improvements to the diverse travel corridors throughout the county; the tiers also offer an important complement for furthering County land use goals. The Transit Plan includes detailed guidance for local jurisdictions on how best to enable Transit Oriented Development (TOD) along the corridors identified in the plan.

Transit Corridors

While every tier in the transit network is critical, the Transit Plan has highlighted the fact that the **Regional Express** and **Urban Rapid** tiers represent the highest potential for improving transit service quality for the most people and thereby increasing ridership throughout Alameda County.

Image from Nelson\Nygaard.

Regional Express Tier Corridors

BART Corridor:

- **Livermore—Dublin/Pleasanton** to San Francisco/Daly City

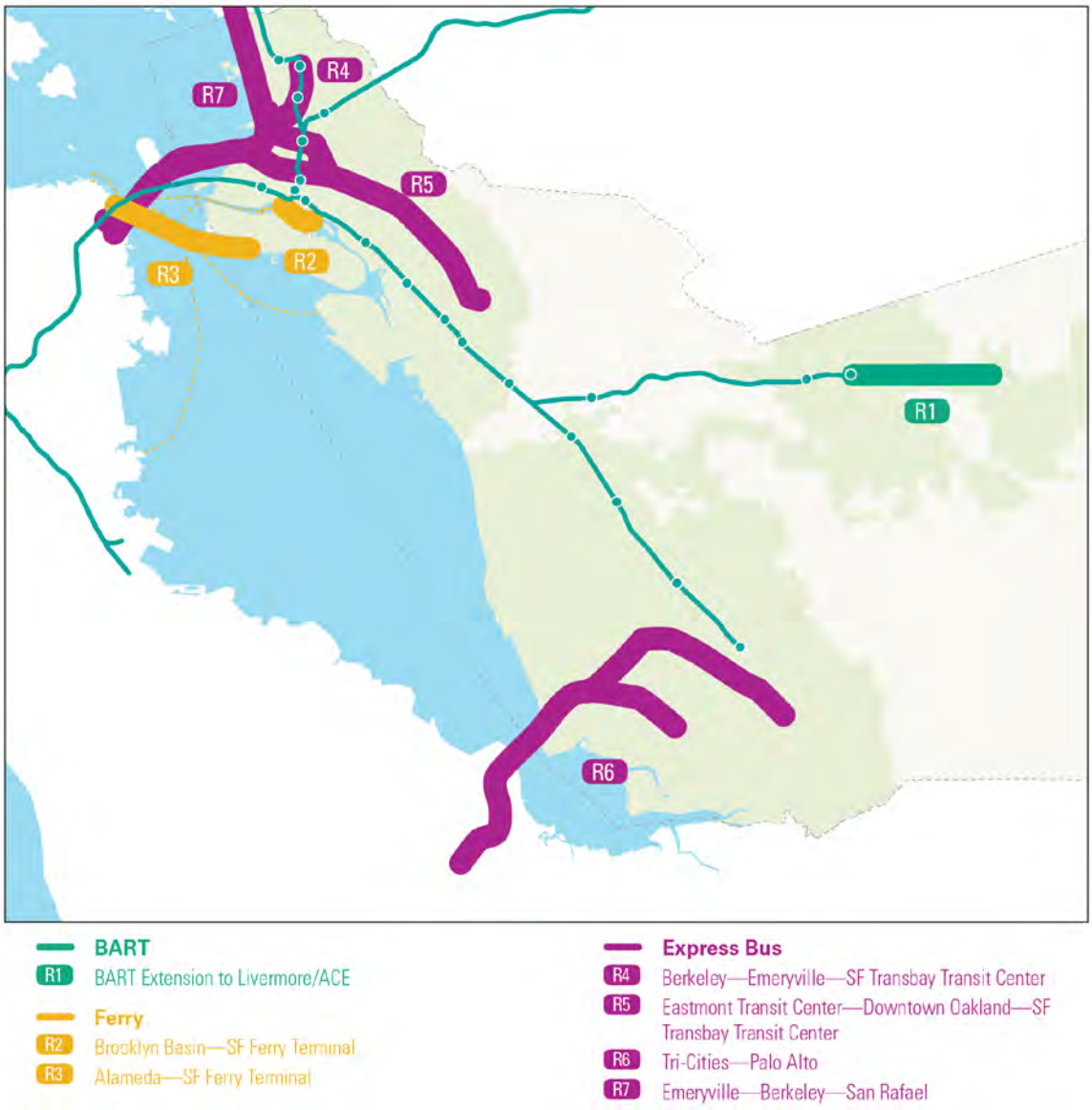
Ferry Transit Corridors:

- **Brooklyn Basin—SF Ferry Terminal**: Oakland to Alameda to San Francisco with an extension to Brooklyn Basin (includes Estuary). Brooklyn Basin may also be served by improved bus transit to the existing ferry terminal at Jack London Square as part of Urban Rapid service described as follows.
- **Alameda to SF Ferry Terminal:** Alameda to San Francisco with a new terminal at Alameda Point in addition to the Harbor Bay terminal.

Transbay Surface Corridors:

- **Berkeley—Emeryville—San Francisco Transbay Transit Center:** This route provides Transbay service from Berkeley and Emeryville (generally conforms with AC Transit Route F).
- **Eastmont Transit Center—Oakland—San Francisco Transbay Transit Center:** This routes services the Maxwell Park and Laurel Districts via MacArthur/Grand to downtown Oakland and San Francisco (generally conforms with AC Transit Route NL).
- **Tri-Cities—Palo Alto:** Enhanced improvements in the Tri-Cities area of southern Alameda County serve the Transbay market to Palo Alto (generally conforms with AC Transit Routes U, DB, and DB1).

Figure 6-2 Regional Express Tier Corridors Map



Urban Rapid Tier Corridors

Image from Nelson\Nygaard

- **Emeryville—Bay Fair BART Station:** Downtown Oakland-International Blvd. District to San Leandro (generally conforms with AC Transit Route 1R), but potentially extends service to Emeryville
- **Richmond Parkway Transit Center—Jack London Square Amtrak**: From Richmond to downtown Oakland via San Pablo Avenue (generally conforms with AC Transit Route 72R)
- **Berkeley—Brooklyn Basin:** Downtown Berkeley to downtown Oakland and with a potential extension to Brooklyn Basin (generally conforms with AC Transit Route 1R)
- **Berkeley—Fruitvale BART:** Downtown Berkeley via College/Broadway to downtown Oakland and Alameda connecting to Fruitvale BART with an extension to serve Alameda Point (generally conforms with AC Transit Route 51A/51B)
- **Bay Fair BART—Union City BART:** Connecting San Leandro, Hayward, and Union City via Hesperian Boulevard (generally aligns with AC Transit Route 97)
- **Bay Fair BART—Warm Springs BART:** Connecting San Leandro, Hayward, and Fremont via Mission Boulevard (generally aligns with AC Transit Route 99)
- **West Dublin BART—Livermore ACE:** To Los Positas College and downtown Livermore via Stoneridge Mall Rd, Dublin Blvd., North Canyons Parkway and Portola/Livermore Avenue (realignment of existing Rapid service contingent upon proposed extension of Dublin Boulevard)

Figure 6-3 Urban Rapid Tier Corridors Map

Complementary Strategies for Transit Network Recommendations

In order to accommodate anticipated population and job growth in Alameda County and achieve greenhouse gas emission goals, the vision transit network developed by the Transit Plan is an absolute necessity. To compliment this vision ongoing efforts and partnerships will be needed to further the following strategies:

Image from Nelson\Nygaard

Inter-regional strategies

- Conduct rail study to address needs of passenger and freight rail

Regional Express strategies

- Target resources to expand Transbay capacity
- Enhance interagency coordination
- Refine corridor plans through clearly defined improvements
- Establish an integrated fare structure
- Develop a regional coordinated schedule across all operators
- Develop programs to reduce costs for transit operators

Urban Rapid strategies

- Enhance interagency coordination to focus transit oriented investments and development along transit corridors
- Provide common information tools

Local Frequent/Community Connector strategies

- Improve access for persons with disabilities in conjunction with fixed route service improvements
- Explore public private partnerships to expand transit network

Streets Plus strategies

- Strengthen inter-modal connections among buses, trains, and alternative modes through targeted roadway and mobility improvements.
- Encourage transit oriented planning along Vision transit network corridors

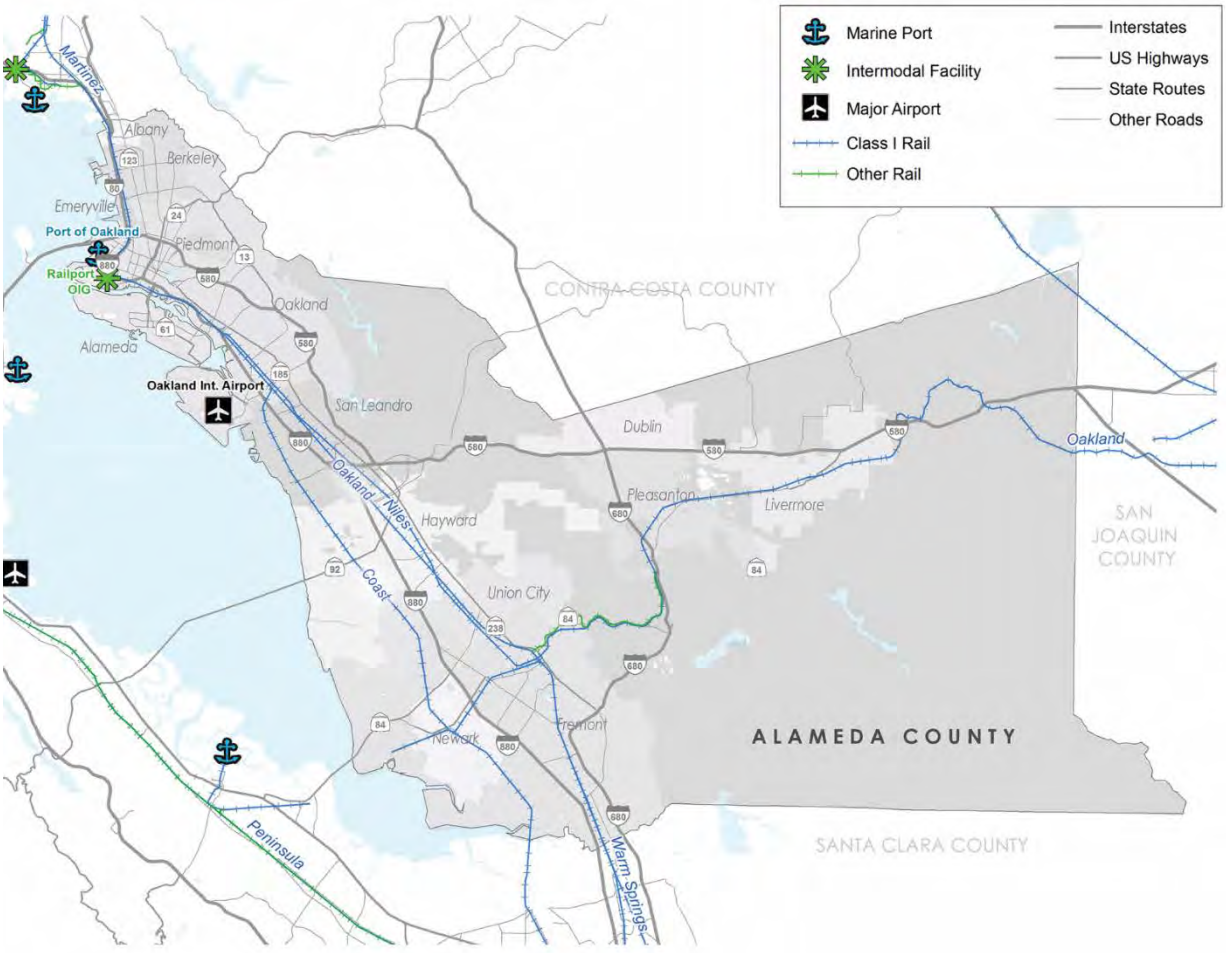
In summary, The Alameda County transit market shows strong potential for transit use that is significantly higher than actual use. Population and employment growth will only make this potential higher. The Transit Plan outlines a framework of potential improvements that allow transit to fulfill its promised potential. This approach is fundamental to meeting Alameda CTC and the region's economic and environmental goals.

B. Goods Movement

Introduction

Alameda County enjoys one of the most strategic trade locations in the world, and with its connections to national and international markets, the County serves as a natural hub for goods movement throughout the Bay Area, the surrounding Northern California mega-region, and many parts of the nation. Alameda County provides most of the critical goods movement infrastructure that the rest of the region relies upon to bring goods to and from international and national marketplaces; this includes the Port of Oakland (the Port) which is the 5th largest container port in the nation, Oakland International Airport, and rail and highway infrastructure.

Figure 6-4 Map of Alameda County's Multimodal Goods Movement Infrastructure



Economy and Employment

Goods movement is critical to the County's economy, with about one-third of its employment coming from goods movement-dependent industries; industries such as

manufacturing, transportation and warehousing, construction, and retail and wholesale trade. Jobs in the transportation, warehousing, and logistics industries provide critical middle-wage jobs with low educational barriers to entry and career advancement potential.

Supply Chain

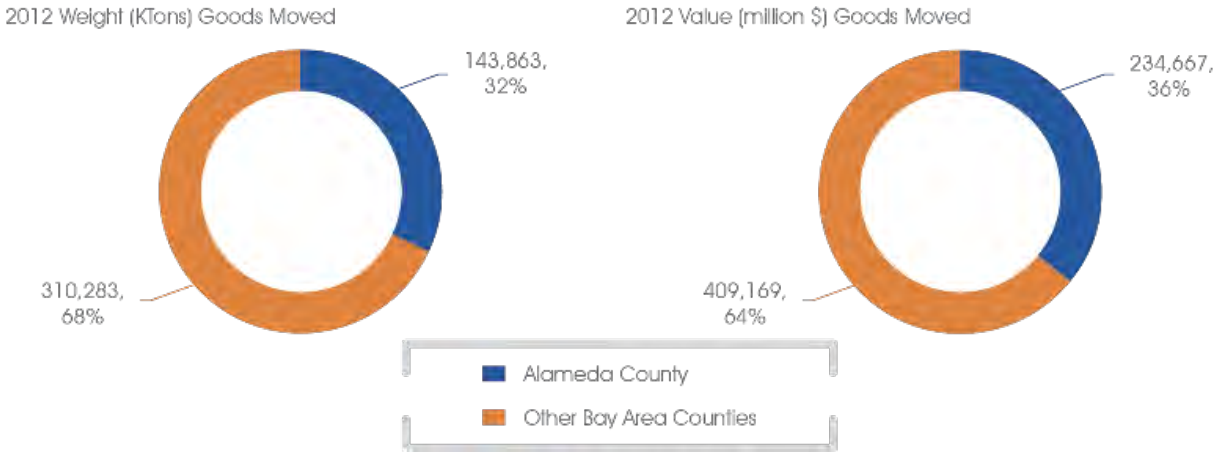
Goods movement in Alameda County includes diverse elements of the supply chain—everything from local trucks delivering groceries to area residents, to electronics components that serve as inputs to the County's and region's manufacturers, to California-produced wine, nuts, and cheeses that utilize the Port of Oakland as an agricultural export gateway.

Critical Infrastructure and Connections for Moving Goods

Thirty-two percent of all goods movement by weight (36% by value) in the nine-county Bay Area region has an origin or destination in Alameda County, or uses the County's international gateway infrastructure. An even higher percentage of goods use the County's major highways and rail lines, moving between the Bay Area and the rest of the U.S., supporting the region's growing consumer and business base. The Port of Oakland, its rail yard, and Oakland International Airport are situated centrally to all of the major rail and interstate networks that transport goods to and from the Bay Area, including Union Pacific Railroad (UP) Martinez, Niles, and Oakland rail subdivisions and nearly every interstate highway in the Bay area (except I-280). In short, Alameda County's transportation infrastructure provides critical connections for moving goods between the Bay Area and the rest of Northern California and the rest of the nation.

Figure 6-5 Port of Oakland Sphere of Influence

Figure 6-6 Alameda County Goods Movement in Context of Bay Area



Source: Cambridge Systematics, Inc.

Quality of Life

While goods movement is a significant part of the Alameda County and Bay Area economy, it is also an integral component of everyday life in each district and neighborhood. Residents and businesses depend on the smaller scale goods movement infrastructure: online orders are delivered to homes and local business

sites; and small- and medium-sized stores are supplied by mid-sized delivery trucks. Likewise, local communities are affected by the negative impacts to air quality, noise and vibration disturbances, light pollution, and impacts to safety, especially for pedestrians and cyclists.

The challenge for goods movement planning is to harness the economic engine of freight and related industries while keeping sight of its purpose for improving every day quality of life and maximizing the economic impact in a sustainable manner for our environment and our communities.

Successes

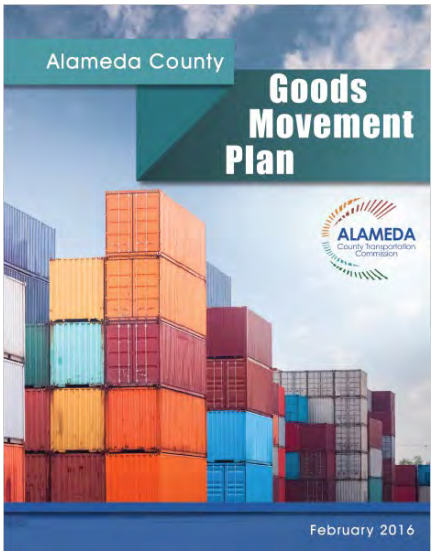
Such a balance can be found, as evidenced by recent successes.

Air Quality Improvements

Recent air quality improvements have been achieved through a partnership of the Port, Bay Area Air Quality Management District, and the California Air Resources Board. In 2005, diesel particulate matter (DPM) concentrations in West Oakland were almost three times higher than the average for the San Francisco Bay Area. DPM emissions were reduced 70% between 2005 and 2012, despite a 3% increase in container volumes. The Port is on track to exceed an 85% reduction target of DPM by 2020. Construction of shore power infrastructure, "no idling" signage along port roadways, new cleaner technology-based trucks and locomotives, and use of reduced sulfur fuel contributed to these gains.

Oakland Army Base Redevelopment

Phase I of the Oakland Army Base Redevelopment, currently under construction, successfully planned, designed, and gathered the necessary $500 million in funding for several improvements, including a new rail manifest and support rail yard, a new bulk marine terminal, 1 million square feet of new warehouse space, new roads and utility infrastructure, soil stabilization and environmental remediation, and a new recycling center.

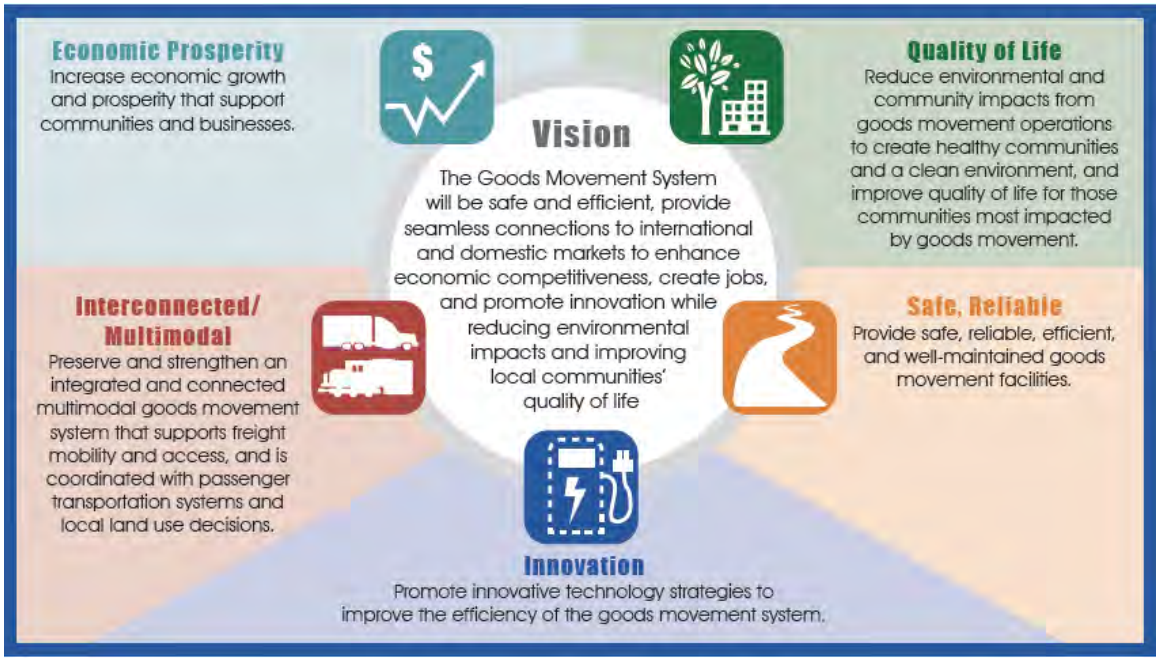


Countywide Goods Movement Plan

In 2016, Alameda CTC adopted its first ever Alameda County Goods Movement Plan which feeds into the 2016 CTP. The Goods Movement Plan is designed to take advantage of the economic opportunities provided by goods movement for both the County and all of Northern California while continuing to make progress in achieving quality of life goals. The vision and

goals for the plan are shown below, and its content is further described later in this chapter.

Figure 6-7 Goods Movement Vision and Goals



Source: Cambridge Systematics, Inc.

Trends and Challenges

Goods movement faces several challenges in moving forward into the future.

Port of Oakland Competitiveness, Growth, and Efficiency

The Port of Oakland is the fifth largest container port in the U.S. If it can address several critical operational issues and take advantage of the opportunity to provide new services to shippers associated with the redevelopment of the Oakland Army Base, it can improve its efficiency and achieve a higher competitive standing among other ports on the West Coast of North America. The Port of Oakland has sufficient marine terminal capacity to realize significant growth, and the economic benefits to the County and the nation of being able to service this growth are significant. These economic benefits will be enhanced through the development of modern logistics facilities at the Oakland Global Logistics Center (the Oakland Army Base redevelopment), which can be used to create new jobs through the provision of value-added logistics services. Bay Area international trade volumes are expected to grow from 66 million tons in 2012 to 159 million tons by 2040. The value of these goods is expected to grow from $156 billion to $455 billion in the same time frame.

The new era of bigger post-Panamax ships cause operational bottlenecks that need to be resolved. A large vessel offloads in one day the same amount that a terminal once typically handled over the course of two to three days. Operational issues result in truck queues outside the terminal gates, increasing the amount of time it takes trucks to pick up or drop off a load. Truck turn times from the entrance gate to exit gate are more than 60 minutes for up to 50% of the trucks. Outside of the gates, trucks now wait two to four hours. Whereas truckers were previously making three to four turns at the Port per day, they are now making two turns. At-grade railroad crossings in the Port further slowdown the turnabout of trucks. At Maritime Street both at-grade crossings (one near 7th Street and the other near Middle Harbor Road) can simultaneously be blocked by one train.

As part of the Oakland Global Logistics Center, now under construction, some of these issues are to be resolved. Pressure on truck operations will be reduced through expanded intermodal rail terminal capacity, increased nearby warehousing capacity for the process of transferring cargo from ships to other modes and vice versa, and expanded cold storage and agricultural product terminals, as well as a variety of truck services nearby.

Competing Demands and Congestion on Highway and Rail Corridors

Moving people and goods safely and efficiently is critical for our local economy and communities. Both highway and railroad corridors provide for shared use between passenger and goods movement. Most of the highway corridors in Alameda County experience high levels of peak-period congestion and poor reliability with particularly poor performance on segments of I-80, I-580, I-680, and I-880. While trucks generally try to avoid peak periods, the trips of trucks traveling on these corridors are long enough that it has become increasingly difficult to avoid the peak periods. On the roadway system, there are a number of locations along I-880 and I-580 that have particularly high levels of truck-involved crashes that may be related to operational deficiencies and interchange modernization needs in the corridors.

If traditional rail routing patterns are maintained, there will be insufficient capacity on the UP's Martinez Subdivision from Oakland to Richmond, the busiest rail segment in Northern California. This corridor has limited potential for capacity expansion. However, the rail route south of Oakland, through Niles Canyon and the Altamont Pass, could be expanded to meet future demand. Improvements in the southern rail route could help address highway congestion and emissions by diverting cargo from trucks to trains, while at the same time creating more capacity for commuter rail service expansion, which is a key component of this plan.

Conflicts for Goods Movement in Communities

A substantial amount of goods movement occurs on local streets and roads throughout Alameda County, and this creates challenges and conflicts as large

trucks need to move through local neighborhoods. Specific geographic issues include connectivity to I-580 from the industrial warehouse area in Pleasanton, access to the Fremont industrial area from Mission Boulevard, lack of connectivity between East County and other areas of the county, need for better connectivity to/from the I-880 West industrial areas, and growing amounts of trucks in neighborhoods and commercial areas as a result of e-commerce.

In recent years, there has been a movement throughout the country to develop Complete Streets plans to accommodate all modal users. However, at this time, most of the Complete Streets guidance and standards provide little information about how to accommodate goods movement. This is creating modal conflicts between goods movement and transit, bicycles, and pedestrians on a number of the County's arterial routes. Truck conflicts with other modes are also an issue on rural roads where farm-to-market truck traffic conflicts with growing commuter volumes and recreational cycling. The multimodal arterial plan attempts to resolve some of these conflicts by prioritizing different modes on different streets, when possible.

The movement towards urban development that is more compact and transit-accessible has also created land use conflicts along existing goods movement corridors in older industrial areas that are undergoing redevelopment. There also is a growing need for truck parking in and around the County's major freight hubs and warehouse centers.

Improving Air Quality and Reducing Health Impacts

Safe, clean, and community-supportive goods movement projects and programs are essential to the well-being of our local communities. Emissions from goods movement can create significant health risks, and exposure to noise and light also can adversely affect the health and well-being of residents. Particulate matter and nitrogen oxides are the two pollutants most associated with truck, rail, and ship pollution. Fortunately, in recent years, the risks attributable to these two pollutants have dropped significantly in the Bay Area, in large part due to emission regulations, focused efforts to control emissions by the Port of Oakland, and technological advancements. Due to current regulations, fine particulate matter emissions from on- and off-road motor vehicles are expected to decline significantly until 2020. However, despite tremendous strides in pollution reduction, communities in West Oakland, along with several others along the industrial corridors of Alameda County, suffer from health impacts due to Port operations and proximity to other goods movement activities and non-goods movement activities (e.g., auto traffic on freeways next to these communities that is not goods-movement related). Improving conditions for these most impacted communities is a core focal point of the Goods Movement Plan.

Needs and Opportunities

In pursuit of the vision of the Goods Movement Plan, Alameda CTC developed three main opportunity themes, each of which are crucially important to the success of this vision. Strategic projects, programs, and policies are combined into "opportunity categories," where the strategies are linked to produce even greater benefits than could be achieved by individual projects.

Figure 6-8 Opportunity Themes for Goods Movement in Alameda County

Source: Cambridge Systematics, Inc.

Opportunity Category #1: Sustainable Global Competitiveness

Building on the unique combination of assets around the Port of Oakland and Oakland International Airport, the redevelopment of the Oakland Army Base focuses investments to improve this complex as a world-class logistics hub. Improvements will support the types of logistics activity most likely to create middle-wage jobs for local residents. A critical element of the infrastructure improvements involves improved rail connections and multimodal operations, with potential to remove over a thousand trucks per day from the most congested freight highway corridors. Technology and operational strategies also are included to reduce impacts of goods movement activity on the health, safety, and quality of life in neighboring communities.

Opportunity Category #2: Smart Deliveries and Operations

Through maximum use of Intelligent Transportation Systems (ITS), connected vehicles, and other technology solutions, we can more efficiently use existing roadway capacity. Embracing new technologies and operating practices will lead to a more sustainable freight system, as well as innovative practices that can help manage local traffic and reduce conflicts. Taking advantage of the innovation economy and technology sectors in the Bay Area, the County can be a national leader by making them an integral provider of the systems needed. Additional efficiency gains on the existing system can be achieved through innovative logistics practices, incentives to

building owners to encourage off-peak deliveries, and extended gate hours at the region's ports.

Opportunity Category #3: Modernizing Infrastructure

Modernizing the backbone of the freight infrastructure is an opportunity for improvement at the heart of the goods movement plan. Strategies focus on modernizing the road network in industrial corridors, improving safe access to industrial corridors and facilities, reducing land use conflicts along freight corridors, and improving last-mile truck routes and rail connections to existing and emerging industries. Continued growth of e-commerce changes the landscape of retail and last-mile delivery needs, and the importance of pavement conditions and roadway alignments that support goods movement throughout cities, not just on the highways and the designated truck corridor arterials. Many busy retail districts are being redesigned according to Complete Streets guidelines, and there is an opportunity to contribute to this redesign process so that heavy trucks supplying stores and lighter delivery trucks fulfilling e-commerce orders to residences are both accommodated, while rights-of-way no longer necessary for the movement of goods can be returned to other uses.

Vision for the Future

Moving forward with the three opportunity categories will require multi-jurisdictional partnerships with participation by various levels of government and the private sector. This includes both transportation and non-transportation agencies, as well as businesses and community organizations. Alameda CTC initiated these partnerships by convening a Bay Area Goods Movement Collaborative which supported the development of the Goods Movement Plan; now, these partnerships need to be sustained and specific implementation roles codified. The categories require coordination of a wide range of funding sources. Projects to be completed at different times will still need to be coordinated so that the synergies reflected in the categories are fully realized. The plan recommends:

- Developing a formal institutional framework for coordinating implementation.
- Creating a focal point at the highest level possible for coordinating rail investments and negotiations with the private railroads.
- Creating a technology development collaborative to deal with the low emission program, introduce advanced logistics technologies, and develop public-private partnerships for pilot of demonstration technologies.

Figure 6-9 Goods Movement Vision for the Future

Source: Cambridge Systematics, Inc.

C. Roadways

Introduction

Highways and roadways are the backbone of the transportation system in Alameda County. They are a fundamental part of providing access to work, school, and other destinations for many modes, and for the distribution of goods throughout the county and beyond.

Alameda County's highway network consists of six interstate highways, three major bridges, and 10 state routes. The six interstate highways passing through Alameda County (I-80, I-238, I-580, I-680, I-880, and I-980) facilitate cross-country, inter- and intra-regional and local accessibility. These highways also support multiple transportation modes including private vehicles, bus transit, and goods movement. As the geographic center of the Bay Area, Alameda County carries the most pass-through trips in the region.[44]

Arterial roadways are the arteries of the transportation system and the highest order roadways that serve all major transportation modes (automobiles, public transit, bicyclists, pedestrians, and trucks). They have traditionally been designed to prioritize the rapid movement of cars and trucks carrying goods, but all modes depend on these critical countywide corridors. Not only are arterials important to transit operations, every transit ride also begins and ends with a walk, so these roads must likewise function well for pedestrians. In fact, the ease and safety of accessing transit is a key deciding factor in people's choice to make a trip on transit at all. In addition to providing pedestrian access to transit, the arterial system also provides pedestrian and bicycle access to commercial and employment destinations, and activities throughout the county.

Successes

Many jurisdictions, including Alameda County, have acknowledged that the traditional approach of building more capacity in the form of additional highway or roadway lanes to meet demand cannot fully address roadway needs. As such, local municipalities and freeway management agencies are exploring and piloting transportation demand management strategies to manage highway and roadway demand. Several examples are described here.

Express Lanes

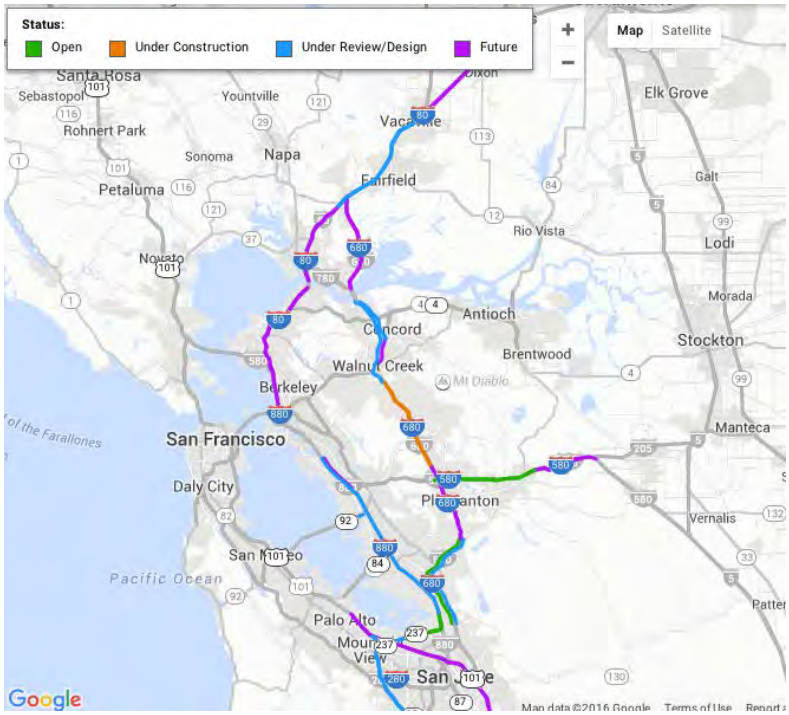
Alameda County and other regional partner agencies are currently developing and implementing infrastructure as part of the Bay Area Express Lanes Network. Thus far,

[44] Highways in Alameda County: Facts, Challenges and Opportunities (fact sheet), 2015.

express lane technology has been installed on two freeway segments in Alameda County — I-580 between Dublin and Livermore and I-680 southbound between Routes 84 and 237. Express lanes are highway lanes which solo drivers may choose to pay a toll to use for a more reliable and less congested trip. Express lanes remain free to use for carpool, vanpool, and other toll-exempt vehicles. Upon completion of the full Bay Area Express Lanes Network, the Bay Area will have 550 miles of express lanes.[45]

Installation of the Bay Area's Express Lane Network aims to be complete by 2035. MTC will eventually operate 270 miles of the 550-mile network, converting 150 miles of existing carpool lanes to express lanes and adding 120 miles of new lanes. Three additional freeway segments in Alameda County are slated for express lanes operated by Alameda CTC including I-680 northbound between Milpitas and Route 84, I-680 bidirectional between Route 84 and San Ramon, and I-580 between Livermore and Tracy. A segment of I-880 between Oakland and San Leandro will be operated by MTC.[46]

Figure 6-10 Express Lane Network



Source: bayareaexpresslanes.org.

[45] Bay Area Express Lanes, http://bayareaexpresslanes.org/.

[46] Metropolitan Transportation Commission, Bay Area Express Lanes, http://mtc.ca.gov/our-work/plans-projects/major-regional-projects/bay-area-express-lanes

I-80 SMART Corridor Project

The I-80 SMART Corridor Project, part of the I-80 Integrated Corridor Mobility Project, is one of the most comprehensive Intelligent Transportation Systems in the state. The project implements a network of integrated 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. Additional improvements include adaptive ramp metering on 44 on-ramps to reduce merging conflicts and manage traffic volumes on I-80.[47]

Real-time traffic information, such as variable speed signs and blocked lane signs, will allow drivers to make informed decisions in the event of an incident. These ramp meters and real-time message signs along the corridor will contribute to optimized roadway operations and improved safety, and will be integrated with, and managed from, the Caltrans Bay Area headquarters' Traffic Management Center in Oakland. Installation has been ongoing since 2012 and is projected to be operational in Spring 2016.

Image from Highways in Alameda County: Facts, Challenges and Opportunities (factsheet).

Targeted Highway Improvements

In Alameda County, like in many urban areas, highway expansion is largely infeasible due to the constrained built environment. However, strategic targeted highway improvement projects are critical to alleviate bottlenecks to maximize existing capacity and ensuring the safe operation of highway facilities and their interface with local streets.

Multimodal Arterials Plan

Alameda CTC has developed a Multimodal Arterial Plan (MAP), which will be adopted in Summer 2016, to accommodate continued growth in travel and achieve environmental goals by re-balancing these roads to safely and efficiently

[47] I-80 SMART Corridor Project webpage, alamedactc.org.

accommodate all users and encourage people to shift from driving to transit, walking, and bicycling while better connecting with the surrounding land use.

With guidance from Alameda County's 15 jurisdictions, major transit agencies, Caltrans, and non-agency stakeholders, the MAP identified the performance and needs of the county's arterials. The plan proposes continuous and connected networks for transit, biking, driving, and goods movement, plus a system of pedestrian emphasis areas. Adjacent land use was considered when identifying the modal priorities for each arterial. The result is a 500-mile Multimodal Arterial Network with a set of proposed improvements that, when constructed, aspires to provide a continuous, connected network for each mode throughout Alameda County.[48]

Plan Development Process

The Multimodal Arterial Plan development process was informed and guided by many meetings with stakeholders, including:

- The Alameda County Transportation Commission
- Alameda CTC's standing committees—Alameda County Technical Advisory Committee (ACTAC) and the Commission's Planning, Policy, and Legislation Committee (PPLC)

Image from Nelson\Nygaard

- Other local jurisdictions, transit agencies, and Caltrans
- The general public through workshops and meetings with stakeholders representing the views of various modes and transportation issues

To understand arterial roadway performance, and identify needs and proposed improvements, the MAP relied on massive amounts of data including cross-section measurements for over 600 miles of arterials. Acknowledging that analysis at this macro-scale is not as refined as the knowledge of local agency staff, wherever local agency staff disagreed with the MAP's technical recommendations, the local agency point of view superseded the technical analysis results. The MAP was developed in parallel with the Alameda Countywide Transit and Goods Movement Plans and used many of their findings as a basis for preliminary modal networks. The

[48] The exception is the walking "network," which is nodal in nature, not continuous.

bicycle and pedestrian networks used the most recent Alameda Countywide Pedestrian and Bicycle Plans, both adopted in 2012, as well as local agency plans.

Despite tremendous analysis and involvement of agencies and other stakeholders, the recommendations of the MAP should be viewed as preliminary, as they have not been vetted with community process that would be affected by the arterial proposals; nor have they been approved by the elected bodies of each jurisdiction. The MAP recommendations are intended to provide a framework for developing continuous and connected networks for each mode, but not as a programming document. The development of the Multimodal Arterial plan involved the following steps:

MAP Vision
Alameda County will have a network of efficient, safe and equitably accessible arterials that facilitate the multimodal movement of people and goods, and help create a strong economy, healthy environment, and vibrant communities, while maintaining local contexts.

1. Articulate plan vision/goals and performance measures/objectives
2. Establish ideal network for each mode
3. Identify the top two priority modes on each arterial roadway segment
4. Identify proposed improvements based on modal performances of each roadway segment
5. Develop Moving Forward plan

Land Use Considerations

In many cases, there is not sufficient right-of-way to implement improvements for the roadway segment to meet performance objectives for all of the modes for which that segment is a priority. To resolve this, the MAP process defined the top two priority modes on each arterial segment. This involved examining the adjacent land use context and determining the "associated modal priorities" for that land use. Transit is the priority mode on all Major Transit Corridors (as defined in the Countywide Transit Plan); the second priority depends on adjacent land use. For instance, in urban settings with high existing or desired volumes of people walking, pedestrians are the second priority mode. In urban settings with less pedestrian-orientation, where the arterial is on the bicycle network, bikes are the second priority mode (see Figure 6-11).

This land use evaluation process has two components:

- Land uses are divided into three broad categories - urban, suburban or rural, and industrial.

- Three tiers of importance were created for each of the five modes. For example, Major Transit Corridors are tier 1 for transit importance, cross-town routes are tier 2, and local routes are tier 3.

The result was a 15-step evaluation that established the top two modal priorities on each arterial segment (see Figure 6-9).

Figure 6-11 Land Use Categories and Associated Modal Priorities

Urban	Suburban or Rural	Industrial
1. Transit: Major Corridors	1. Transit: Major Corridors	1. Transit: Major Corridors
2. Pedestrian: Tier 1	2. Auto: Throughway	2. Goods Movement: Tier 2
3. Bicycle: Class I, enhanced Class II, enhanced Class III or Class IV	3. Goods Movement: Tier 2	3. Auto: Throughway
4. Auto: Throughway	4. Bicycle: Class I, enhanced Class II, enhanced Class III or Class IV	4. Bicycle: Class I, enhanced Class II, enhanced Class III or Class IV
5. Goods Movement: Tier 2	5. Pedestrian: Tier 1	5. Pedestrian: Tier 1
6. Transit: Crosstown Routes	6. Transit: Crosstown Routes	6. Transit: Crosstown Routes
7. Pedestrian: Tier 2	7. Auto: County Connector	7. Goods Movement: Tier 3
8. Bicycle: Class II	8. Goods Movement: Tier 3	8. Auto: County Connector
9. Auto: County Connector	9. Bicycle: Class II	9. Bicycle: Class II
10. Pedestrian: Tier 3	10. Pedestrian: Tier 2	10. Pedestrian: Tier 2
11. Bicycle Class III	11, Auto: Community Connector	11. Auto: Community Connector
12. Transit: Local Routes	12. Bicycle Class III	12. Bicycle Class III
13. Goods Movement: Tier 3	13. Pedestrian: Tier 3	13. Pedestrian: Tier 3
14. Auto: Community Connector	14. Transit: Local Routes	14. Transit: Local Routes
15. Auto: Neighborhood Connector	15.. Auto: Neighborhood Connector	15. Auto: Neighborhood Connector

Proposed Improvements

For each modal network, the proposed improvements that would result in optimal outcomes for that mode were identified. The team also conducted a network evaluation to identify gaps, continuity, and connectedness in modal networks, along with needed improvements. These gaps resulted from insufficient existing conditions for priority

Image from Nelson\Nygaard.

modes as well as the consequences of prioritizing segments for some modes but not others.

To acknowledge that travel behavior and technology are evolving, the MAP considered two other future scenarios:

- "Social and behavioral trends" scenario, which assumes lower vehicle miles travelled (VMT) per capita as a result of increasing acceptance and adoption of less auto-dependent and car-free lifestyles
- "Next generation vehicle" scenario, which assumes an effective increase in roadway capacity as a result of autonomous vehicles

In addition to the capital improvements identified in the previous set of steps, the Multimodal Arterial Plan also makes broad recommendations for non-capital programs as follows:

- **Intelligent Transportation Systems:** The MAP describes the potential effect of implementing interconnected and networked signal systems, changeable message signs, technology allowing vehicle-to-infrastructure communications, and other ITS technologies.
- **Transportation Demand Management (TDM) programs:** TDM measures such as incentives and disincentives can reduce single-occupant vehicle demand dramatically (as much as 30% for employment land uses).
- **Transportation Systems Management (TSM) Measures:** Intersection and signal improvements, data collection to monitor system performance, and event management strategies are examples of TSM measures that can enhance travel mobility and reliability.
- **Parking Management:** Management of on-street parking, the most attractive parking, and public off-street parking can reduce auto travel.

Image from Nelson\Nygaard.

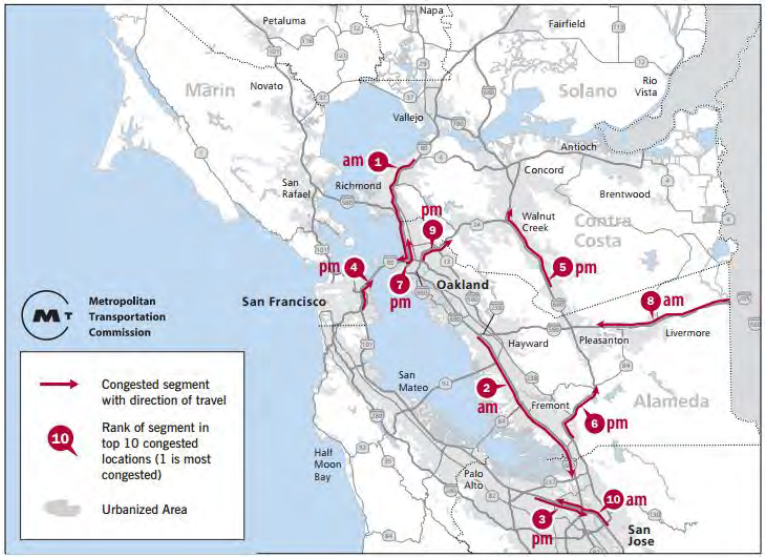
Challenges and Opportunities

Image from Nelson\Nygaard.

Congestion, safety, and low travel speeds, particularly during peak commute periods, continue to be challenges in Alameda County. While some jurisdictions address these challenges by expanding highway capacity through additional lanes, this strategy is largely not possible in Alameda County, nor is it consistent with the vision set forth in Plan Bay Area. As such, the existing highways and roadways in Alameda County will be expected to carry more people as population grows, and will require the use of more traffic management and technology solutions.

Congestion

Figure 6-12 Top Ten Congestion Corridors



Source: *MTC's Annual Top 10 Congested Corridors (2014); http://mtc.ca.gov/sites/default/files/Handout%20%20Poster%2012-15-2015%20(2).pdf.*

Regional economic and employment growth resulted in busier and more congested roadways in 2015. Freeway delay in Alameda County increased by 14% overall from 2014 to 2015. This includes a 12% increase in weekday delay and 31% on weekends.[49] Alameda County consistently has some of the most congested freeway segments in the region. In 2014, six of the 10 most congested corridors were located in Alameda County.[50] As growth continues, the need to stretch the capacity of the system through efficiency improvements and promotion of higher capacity modes (e.g., high-occupancy

[49] Alameda CTC Performance Report (2015)

[50] http://mtc.ca.gov/sites/default/files/Handout%20%20Poster%2012-15-2015%20(2).pdf

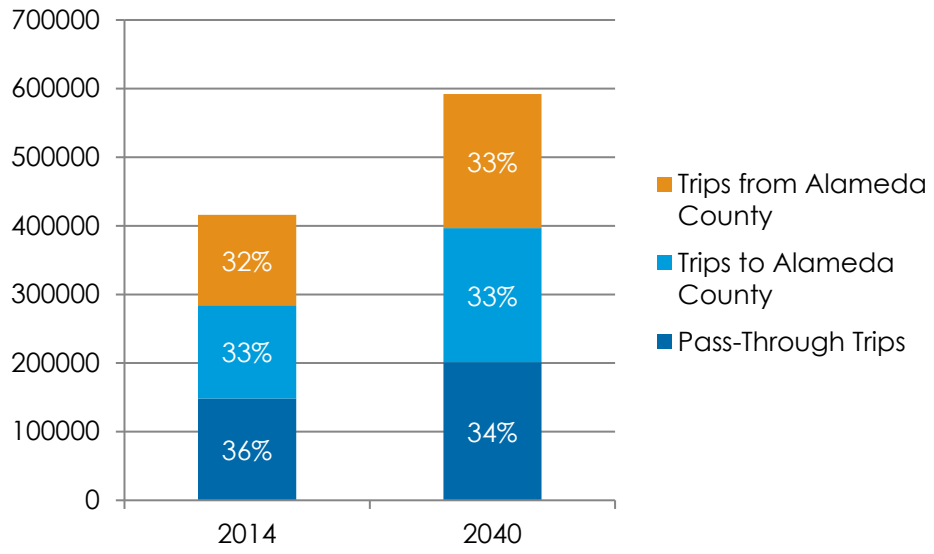
vehicles (HOV) and public transit) become ever more important to meeting rising demand.

Bridges

Today the three bridges serving Alameda County—Bay Bridge, San Mateo Bridge and Dumbarton Bridge - carry approximately 412,000 motor vehicle trips per day on average. Of the total trips, approximately 281,000 trips (69%) originate outside of Alameda County (including those with final destinations in Alameda County and pass-through trips) and use Alameda County highways and roadways.[51]

By 2040, these three bridges are projected to carry approximately 592,000 motor vehicle trips on an average day, an increase of 44% in traffic volume from 2014 (see Figure 6-10). Of these, 398,000 trips (67%) are projected to originate outside of Alameda County (including pass-through trips) and will travel long distances on Alameda County roadways to reach the bridges.

Figure 6-13 Trips To, From, and Through Alameda County



Vehicle Hours of Delay

Highway delay in Alameda County, defined as excess travel time as a result of speeds dropping below 35 miles per hour, has been increasing steadily in recent years. Between fiscal year 2013-14 and fiscal year 2014-15, freeway vehicle delay increased by 14% overall.[52]

[51] 2014 bridge volumes are from Caltrans traffic count book; trips to/from Alameda County were estimated based on Alameda CTC travel model's 2010 trip origin/destination estimation.

[52] Alameda CTC Performance Report (2015).

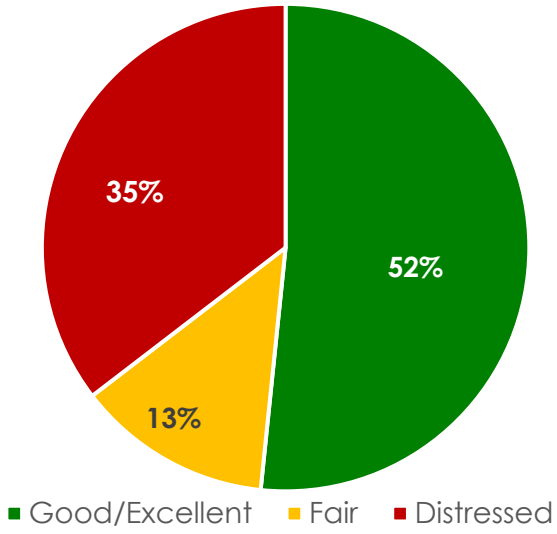
Average Travel Speeds

Average freeway speed in most time periods of the day have been declining over the past four years. From fiscal year 2011-12 to fiscal year 2014-15, weekday evening peak period speeds declined by nearly 7% on many key freeway segments in Alameda County. The most significant deterioration in travel speed was seen during the weekend midway period, indicating increasing rates of discretionary travel on weekends.[53]

Maintenance

In 2014, Caltrans found that 35% of state highway miles in Alameda County were distressed in terms of pavement condition (see Figure 6-11).[54] Insufficient roadway maintenance and the poor conditions which result increase delay, cause safety incidents, and contribute to wear and tear on personal vehicles, transit vehicles, and trucks. For public transit agencies, this additional wear and tear further increases the costs of operating transit in Alameda County.

Figure 6-14 Alameda County State Highway Lane Miles Pavement Condition



Source: Caltrans, Alameda CTC 2015 Performance Report.

Roadways and major arterials in Alameda County have similar challenges with respect to maintenance. The pavement condition index rating of local streets and roads in Alameda County has remained relatively constant in recent years as cities have been unable to fund pavement maintenance needs. Today, around 22% of

[53] Alameda CTC Performance Report (2015).

[54] Alameda CTC Performance Report (2015).

local streets and roads in Alameda County has a PCI rating of "poor" or "failed" and additional miles are "at risk."[55]

Safety

Roadway collisions involving injury and fatality declined steadily between 2002 and 2011, before increasing again in 2012. Roadway collisions resulted in 85 total fatalities in Alameda County in 2014. Alameda County seeks to return to a downward trajectory in terms of the number of fatalities and injuries on highways in future years. Targeted highway improvement projects aim to reduce unsafe intersections and turning movements.

Vision for the Future

The vision for the future of highways and roadways in Alameda County includes an emphasis on smart improvements that foster a better travel experience for all users, while maximizing the efficiency of the existing highway network. This includes installation of Intelligent Transportation Systems and express lanes, as well as the facilitation of movement for higher capacity modes including carpools and public transit. As described earlier in this chapter, planned improvements such as express lanes and the I-80 Smart Corridor Project use technology to maximize capacity and improve safety.

For roadways, the Multimodal Arterials Plan seeks to ensure the re-balancing of roads to safely and efficiently accommodate all users and encourage people to shift from driving to transit, walking, and bicycling while better connecting with the surrounding land use. If an agency wishes to advance a project proposed in the Multimodal Arterial Plan, a crucial first step will be to engage local residents and businesses in a discussion about redesign of the arterial. The MAP modal priorities and proposed improvements may seed this discussion, but should be viewed as technical inputs rather than recommendations.

[55] Alameda County Transportation Commission, *2014 Performance Report: State of the Transportation System in Alameda County.*

Funding

Locating and procuring funding for highway improvement programs and roadway maintenance, including regular state-of-good-repair maintenance, as well as installation of technology-based solutions such as high-occupancy toll (HOT) lanes, remains difficult in light of shrinking budgets for transportation projects at all levels. Alameda CTC will continue to advocate for new funding sources and options for highway improvements that improve safety and operational efficiency.

Collaboration and Coordination

Alameda County will continue to review and ensure that interface opportunities between highways and local streets continue to improve for the safety and efficient movement of all modes. Ensuring the full roadway network in Alameda County is safe and efficient requires significant coordination and partnership with multiple agencies at the state, region and city levels to design, fund, and operate projects.

Image from Nelson\Nygaard.

D. Bicycling

Bicycling offers transportation that is low-cost, healthy, and is non-polluting. Combined with transit, bicycling can provide first/last mile access that enhances the usefulness of buses and rail transit throughout Alameda County. Likely due to increasing environmental and health awareness, improving bicycling facilities, and shifting demographics, bicycling is on the rise in Alameda County, particularly for commuting.

The U.S. Census shows that the number of Alameda County residents who commute by bike has almost doubled since 2000 (approximately 8,400 compared to 16,700) and the rate of commuting by bike nearly doubled between 2000 and 2013, from 1.2% to 2%.[56]

Image from www.alamedactc.org.

Collisions involving bicyclists dropped from 2011to 2012, after having increased over the last decade. The rate of bicyclist collisions (i.e., collisions per cyclist) may also be declining, as journey-to-work data suggests that the number of collisions involving cyclists has grown more slowly than participation in cycling.[57]

Fourteen of Alameda County's 15 jurisdictions have adopted bicycle plans within the last five years, or are currently updating them. These plans represent opportunities for each community to develop consensus on a vision for the local bicycle network and supportive programs, including priorities for implementation. Alameda CTC first adopted a countywide bicycle plan in 2001, and updated the plan in 2006 and 2012.[58] The plan's vision is to inspire people of all ages and abilities to bicycle for everyday transportation, recreation, and health by creating an extensive network of safe, convenient bike facilities that connect to each other, to transit, and to other major destinations. To achieve this, Alameda CTC's goals are to focus on facilities that provide access to transit and major activity centers, including schools, and

56 2014 Performance Report, Alameda CTC, p.5.

57 Ibid.

58 See www.alamedactc.org/app_pages/view/5390 for links to the 2001, 2006 and 2012 versions of the Countywide Bicycle Plan.

improving bicycling conditions in "communities of concern" (see Chapter 7). Beyond investment in capital improvements, the agency prioritizes safety, education, encouragement and enforcement programs, and investment in countywide and local bicycle planning.

Successes

A number of recent and current Alameda CTC-sponsored initiatives are improving the practice of bicycle planning throughout the county.

Safe Routes to Schools

Alameda CTC funds the Alameda County Safe Routes to Schools (SR2S) Program, which includes educational programs, safety projects, the Alameda County SR2S website (alamedacountysr2s.org), and support for Walk and Roll to School Day. The agency is now launching a program to fund capital improvements identified through the program, which, since it began in 2006, has grown to over 160 schools countywide, serving more than 110,000 students.

Image from www.alamedactc.org.

Bike Safety Education

The Alameda County Bicycle Safety Education Program offers free classes throughout the county, helping 4,000 people a year learn safe bike-riding techniques. The program includes classroom and on-road instruction; classes for adults, teenagers, and children; classes in English, Spanish, and Cantonese; and classes for new adult cyclists.

Multimodal Arterial Plan

The Countywide Multimodal Arterial Plan, completed in spring 2016, lays out a 500-mile network of arterial roadways that, when improved as proposed, will provide continuous and connected transit, auto, truck, and bicycle networks (see Roadways modal strategy, Chapter 6). This plan builds on the Countywide Bicycle Plan by identifying on which arterials bikes are considered to be a priority mode and the facilities needed to serve them. The plan's emphasis is on building bicycle corridors throughout Alameda County using the facility types described in the preceding section where possible, so people of all ages feel safe and comfortable bicycling throughout Alameda County.

Major Trails

Alameda CTC is facilitating the development and completion of three major countywide trails in Alameda County:

- **Iron Horse Trail**: The Iron Horse Trail is a Class I (grade separated) pathway[59], constructed on an abandoned Southern Pacific Railroad right-of-way in eastern Alameda County and along the I-680 corridor in Contra Costa County. The trail will eventually be a continuous 53-mile-long walking and bicycling paved path through the two counties, including 26 miles between Dublin and Livermore. The Alameda County portion is nearly complete in Dublin, has a half-mile gap in south Pleasanton, and is mostly un-built through Livermore. Overcrossings of seven major arterials that intersect the trail in the three cities will also eventually help make it a safer and more inviting facility for trail-users of all ages and abilities.
- **East Bay Greenway**: The East Bay Greenway is an ambitious project to eventually create a 37-mile-long walking and biking trail from Albany to Fremont, roughly following the BART line and Union Pacific Railroad right-of-way.[60] First envisioned in 2008, the trail is modeled on the Ohlone Greenway in northern Alameda (and western Contra Costa) counties. Alameda CTC constructed the first segment of the East Bay Greenway in 2015 and has initiated environmental analysis and preliminary engineering for the 16-mile segment that will eventually connect seven BART stations from Lake Merritt to South Hayward, bringing access and recreational opportunities to residents of some of the lowest-income neighborhoods in the East Bay. Fremont is working to develop the southern section, which will eventually connect to Santa Clara County.
- **Bay Trail**: The San Francisco Bay Trail is a planned 500-mile walking and bicycling pathway around the entire San Francisco Bay. Through Alameda County, the planned 183-mile trail passes through the waterfronts of Albany, Berkeley, Emeryville, Alameda, Oakland, San Leandro, Hayward, Newark, Union City, and Fremont. There are currently significant gaps along the Oakland waterfront and in Alameda; the trail is almost completely un-built in southern Alameda County.

[59] The California Department of Transportation's Highway Design Guide (2015) describes Class I pathways as facilities with exclusive right-of-way and minimal cross traffic from motor vehicles. This type of pathways provides a complete, or near-complete, separation from vehicle traffic, including at crossings, from vehicular traffic.

[60] This alignment includes the existing Ohlone Greenway in Albany and Berkeley and the former Santa Fe right-of-way/West Street pathway in Berkeley.

Coordination

Three efforts sponsored by Alameda CTC are successfully improving coordination of bicycle planning at the countywide level:

- **Pedestrian/Bicycle Working Group**: Staff of local agencies meet quarterly for education and information-sharing about bicycle (and pedestrian) planning.
- **Association of Pedestrian and Bicycle Professionals (APBP) webinars**: The agency pays for and hosts free monthly webinars of the Association of Pedestrian and Bicycle Professionals.
- **Bicycle and Pedestrian Advisory Committee (BPAC):** The long-standing Countywide Bicycle/Pedestrian Advisory Committee now reviews all Alameda CTC-sponsored capital projects in the scoping, environmental and/or preliminary design phases to find ways for them to improve (and ensure they don't unintentionally hinder) walk and bike access.

Funding

Alameda CTC invests in bicycle infrastructure and programs throughout the county using a variety of funding sources:

- **Direct Local Distributions** (DLD): DLDs come from three local funding sources (Measure B, Measure BB, and the Vehicle Registration Fee) and pay for local transportation improvements. Fifteen percent of DLD local streets and roads funds must be used on bicycle and pedestrian investments.
- **State and federal grants:** Alameda CTC uses local funds (including Measures B and BB) to leverage state Active Transportation Program and federal Transportation Investment Generating Economic Recovery (TIGER) grants, making local money stretch farther and allowing the Commission to deliver transportation solutions earlier than if they had to rely on local funds.
- **Complete Streets:** Alameda County Measure BB has a Complete Streets requirement that helps support bicycle safety and access throughout the County. (See the following section for more information.)

Issues, Trends, and Challenges

Since the Countywide Bicycle Plan was updated, there has been a rapid evolution in the transportation field. Today, engineers and planners are shifting from a goal of facilitating the rapid flow of traffic to a broader emphasis on ensuring the safety and comfort of everyone using the road.

Complete Streets

Another initiative that supports safer roadways and continuous, comfortable networks for bicyclists is Complete Streets: designing roads for all users across a

broad range of modes and abilities, including pedestrians, public transit users, motorists, people with disabilities, seniors, children, and bicyclists of all skill levels. All of Alameda County's 15 jurisdictions have adopted Complete Streets policies, which commit them to considering accommodation for all modes and all users as a part of all projects and all phases. The Countywide Multimodal Arterial Plan development process has brought these agencies and others to the table to determine how to prioritize modes on a given roadway with limited width, a process necessary to overcome one of the biggest challenges to accommodating bicycles on the County's arterial roadway: insufficient width (see Multimodal Arterial Plan summary, later in this chapter). Many jurisdictions are now updating design guidelines and standards and reforming internal processes to ensure that all projects proactively consider opportunities to implement Complete Streets elements.

New Bicycle Facility Types

Jurisdictions throughout Alameda County have been implementing a wide range of bicycle facility types, including treatments to increase separation from and visibility by motor vehicles. Adding to traditional Class I (separate, off-street bicycle and pedestrian pathway), II (striped bicycle lane) and III (signed bicycle route), today's transportation planners have the following new facility types to choose from, all of which have been implemented in Alameda County:

A buffered bike lane in Washington, DC.

Image from Nelson\Nygaard.

- **Class II Enhanced ("buffered bike lanes"):** Traditional bike lanes plus a striped buffer between the lane and the motor vehicle travel lane
- **Class III Enhanced: ("bicycle boulevards")**: Low-speed, low-volume roadways, parallel to arterials that prioritize bicycle travel with features like traffic diverters that allow through bike travel, stop signs on intersecting streets, and distinctive signs and pavement legends
- **Class IV ("protected bike lanes"):** Traditional bike lanes separated from motor vehicle traffic with a vertical buffer, such as on-street parking, planters, flexible pylons or curb separation

Bay Area Bike Share

Image from Andrew Nash.

A new initiative to the East Bay, bike sharing, has the potential to dramatically increase the number of people who use bicycles throughout Alameda County. The program, launched in cities across the globe over the past decade, offers bikes for one-way rental from a network of stations. The expansion of this program from San Francisco and the Peninsula is bringing 850 bikes to Oakland, 400 to Berkeley and 100 to Emeryville in 2016-2017. By making bicycles easily accessible and removing concerns about theft, storage, and maintenance, the program is likely to bring many more people to bicycling and many more bikes to the streets.[61]

Interdisciplinary Safety-focused Planning

Vision Zero is a new interdisciplinary movement, originally from Sweden, which aims to reduce the number of fatal and serious injury collisions to zero through coalitions of transportation planners, street designers, schools, police, and public health professionals. Though bicyclists, as some of the most vulnerable road users, especially benefit from this concept, the goal applies to everyone: people in cars, on transit, on bikes, and on foot.

Needs

Image from Nelson\Nygaard.

As increasing numbers of people travel by bicycle; focusing on planning, funding, and delivering bike facilities remains important. This work includes on-road bike lanes, including the new enhanced varieties described above, as well as separate pathways.

Funding

Building a countywide bicycle network is a major undertaking; the 2012 Countywide Bicycle Plan estimated the cost at $943 million dollars and revenue at roughly one third of that, leaving a gap of $619 million. Despite new fund

[61] See https://bikeeastbay.org/campaigns/bikeshare for more information.

sources such as Measures B and BB, Vehicle Registration Fee (VRF), and the state Active Transportation Program, a broad gap remains. Using the considerable resources available for bicycle facilities most wisely will require better information about where they are most needed.

Reliable Data

Investing effectively in improving biking conditions requires identifying where improvements are most needed. Although the U.S. Census, California Household Travel Survey, and BART Station Profile Study together tell us how many people, on average, bicycle each day countywide, these data sources have significant limitations (available infrequently, only capture commute trips, etc.) and generally there is a dearth of reliable data on where people bike, when, and for what purposes. To augment this information, Alameda CTC performs an annual count program to capture bicycle use at locations throughout Alameda County, as well as gathers data from automatic bicycle count equipment. Alameda CTC plans to reformulate its count program to best realize the strengths of manual count data (which provides great spatial richness but is a short-term snapshot in time) and automatic counters (which provide data over time but for a more limited number of locations) in the coming years.

Vision for the Future

Through funding such as Measures B and BB, VRF, and the One Bay Area Grant, sponsorship of projects, like the county's major trails, and programs, like Safe Routes to Schools, Alameda CTC continues to implement the projects, programs, and plans called for in the Countywide Bicycle Plan. To help implement the plan's most important recommendations, the next plan update should prioritize proposed improvements using a data-driven process.

Image from Nelson\Nygaard.

Meanwhile, the Multimodal Arterial Plan provides detailed direction on making 500 miles of the county's most important arterials more accessible to and safer for biking. The next Countywide Bicycle Plan update should build on the arterial bicycle network identified in the MAP, including revising the countywide bike network as necessary to incorporate emerging types of bike facilities and, where possible, consider planning

facilities on parallel routes using the modal priority information from the MAP. Finally, the next Countywide Bicycle Plan update should focus on gap closures at high priority barrier locations.

E. Walking

Image from Nelson\Nygaard.

Walking is the foundation of the transportation system; every trip begins and ends on foot[62]. Walking is the second most common method of transportation in Alameda County after driving, and many people in Alameda County rely solely on this mode. Safety is an important concern for pedestrians, who are the most vulnerable roadway users.

Thirteen out of the county's 15 jurisdictions have adopted pedestrian plans within the last five years or are updating them now. These plans represent each community's consensus on the local pedestrian network and supportive programs, including priorities for implementation. Alameda CTC has adopted two countywide pedestrian plans: the original in 2006 and a 2012 update.[63] The vision set forth in the Alameda Countywide Pedestrian Plan is to inspire people of all ages and abilities to walk for everyday transportation, recreation, and health by creating safe, attractive, and accessible walking routes and districts. To achieve this, Alameda CTC's goals are to focus on facilities that provide access to transit and major activity centers, including schools, and improving walking conditions in "communities of concern" (see Chapter 7). Beyond investment in capital improvements, the agency prioritizes safety, education, encouragement and enforcement programs, and investment in countywide and local pedestrian planning.

[62] Walking is defined broadly here, to encompass travel on foot and with the assistance of wheelchairs, canes, walkers and other mobility devices. Walking includes local trips, integration with transit and walking for physical activity.

[63] See www.alamedactc.org/app_pages/view/5390 for links to the 2006 and 2012 versions of the Countywide Pedestrian Plan.

Successes

A number of recent and current Alameda CTC-sponsored initiatives are improving the practice of pedestrian planning throughout the county.

Safe Routes to Schools

Alameda CTC funds the Alameda County Safe Routes to Schools Program, which includes educational programs, safety projects, the Alameda County Safe Routes to Schools website (alamedacountysr2s.org), and support for Walk and Roll to School Day. The agency is now launching a program to fund capital improvements identified through the program, which, since it began in 2006, has grown to over 160 schools countywide, serving more than 110,000 students.

Image from Alameda CTC.

Major Trails

Alameda CTC is facilitating the development and completion of three major countywide trails in Alameda County:

- **Iron Horse Trail**: The Iron Horse Trail is a Class I (grade separated) pathway[64], constructed on an abandoned Southern Pacific Railroad right-of-way in eastern Alameda County and along the I-680 corridor in Contra Costa County. The trail will eventually be a continuous 53-mile-long walking and bicycling paved path through the two counties, including 26 miles between Dublin and Livermore. The Alameda County portion is nearly complete in Dublin, has a half-mile gap in south Pleasanton and is mostly un-built through Livermore.

Image from Alameda CTC.

[64] The California Department of Transportation's Highway Design Guide (2015) describes Class I pathways as facilities with exclusive right-of-way and minimal cross traffic from motor vehicles. This type of pathways provides a complete, or near-complete, separation from vehicle traffic, including at crossings, from vehicular traffic.

Overcrossings of seven major arterials that intersect the trail in the three cities will also eventually help make it a safer and more inviting facility for trail-users of all ages and abilities.

- **East Bay Greenway**: The East Bay Greenway is an ambitious project to eventually create a 37-mile-long walking and biking trail from Albany to Fremont, roughly following the BART line and Union Pacific Railroad right-of-way.[65] First envisioned in 2008, the trail is modeled on the Ohlone Greenway in northern Alameda (and western Contra Costa) counties. Alameda CTC constructed the first segment of the East Bay Greenway in 2015 and has initiated environmental analysis and preliminary engineering for the 16-mile segment that will eventually connect seven BART stations from Lake Merritt to South Hayward, bringing access and recreational opportunities to residents of some of the lowest-income neighborhoods in the East Bay. Fremont is working to develop the southern section, which will eventually connect to Santa Clara County.
- **Bay Trail**: The San Francisco Bay Trail is a planned 500-mile walking and bicycling pathway around the entire San Francisco Bay. Through Alameda County, the planned 183-mile trail passes through the waterfronts of Albany, Berkeley, Emeryville, Alameda, Oakland, San Leandro, Hayward, Newark, Union City and Fremont. There are currently significant gaps along the Oakland waterfront and in Alameda; the trail is almost completely un-built in southern Alameda County.

Multimodal Arterial Plan

The Multimodal Arterial Plan (MAP) lays out a 500-mile network of arterial roadways that, when improved as proposed, will provide continuous and connected transit, auto, truck and bicycle networks. The MAP prioritizes walking facilities in focused nodes located where higher volumes of pedestrians exist or are expected and/or locations where walking serves an important transportation function, such as transit, schools, central business districts, activity centers, inter-jurisdictional trails and access within "communities of concern" as defined in Alameda CTC's Community-Based Transportation Plans (see Roadways modal strategy, Chapter 6).

Funding

Alameda CTC invests in infrastructure and programs throughout the county that encourage and make walking safer using a variety of funding sources:

[65] This alignment includes the existing Ohlone Greenway in Albany and Berkeley and the former Santa Fe right-of-way/West Street pathway in Berkeley.

- **Direct Local Distributions** (DLD): DLDs come from three local funding sources (Measure B, Measure BB and the Vehicle Registration Fee) and pay for local transportation improvements. Fifteen percent of DLD local streets and roads funds must be used on pedestrian and bicycle investments.
- **State and federal grants:** Alameda CTC uses local funds (including Measures B and BB) to leverage state Active Transportation Program and federal TIGER grants, making local money stretch farther and allowing the Commission to deliver transportation solutions earlier than if they had to rely on local funds.
- **Complete streets:** Alameda County Measure BB has a Complete Streets requirement that helps support pedestrian safety and access throughout the County. (See the following section for more information.)

Coordination

Three efforts sponsored by Alameda CTC are aimed at improving coordination of countywide pedestrian planning:

Image from Nelson\Nygaard.

- **Pedestrian/ Bicycle Working Group**: Staff of local agencies meet quarterly for education and information-sharing about pedestrian (and bicycle) planning.
- **Association of Pedestrian and Bicycle Professionals (APBP) webinars**: The agency pays for and hosts free monthly webinars of the Association of Pedestrian and Bicycle Professionals.
- **Bicycle and Pedestrian Advisory Committee (BPAC):** The long-standing Countywide Bicycle/Pedestrian Advisory Committee now reviews all Alameda CTC-sponsored capital projects in the scoping, environmental and/or preliminary design phases to find ways for them to improve (and ensure they don't unintentionally hinder) walk and bike access.

Trends and Challenges

Since the Countywide Pedestrian Plan was updated, there has been a rapid evolution in the transportation field. Today, engineers and planners are shifting from a goal of facilitating the rapid flow of traffic to a broader emphasis on ensuring the safety and comfort of everyone using the road, including those on foot.

Images from Nelson\Nygaard.

Complete Streets

Another initiative that supports safer roadways and roadway crossings is Complete Streets: designing roads for all users across a broad range of modes and abilities, including pedestrians, bicyclists of all skill levels, public transit users, motorists, people with disabilities, seniors, and children. All of Alameda County's fifteen jurisdictions have adopted Complete Streets policies, which commit them to considering accommodation for all modes and all users as a part of all projects and all phases. The Countywide Multimodal Arterial Plan development process has brought these agencies and others to the table to determine how to prioritize modes on a given roadway with limited width (see Multimodal Arterial Plan summary, later in this chapter). Many jurisdictions are now updating design guidelines and standards and reforming internal processes to ensure that all projects proactively consider opportunities to implement Complete Streets elements.

Barriers

Even as Alameda County jurisdictions work to help people travel on foot, daunting physical barriers to walking remain, including freeways, railroad tracks, and creeks. A store may be just a few hundred feet from a residential neighborhood, for example, but if a freeway divides them, nearby neighbors will not be able to reach the shop on foot. Barriers like these often require staffing and financial resources that are beyond the capacity of local jurisdictions to overcome.

In addition, barriers to seniors, people with disabilities, and others as a result of poorly maintained facilities or their wholesale absence in some areas of the county can hinder access to basic services and public transit. Challenges like these require prioritization of walking at the local level and, often, maintenance funding beyond the capacity of local governments. As a result, many have shifted the burden of sidewalk maintenance to the adjacent property owner, which has not accelerated their repair.

Interdisciplinary Safety-Focused Planning

Vision Zero is a new interdisciplinary movement, originally from Sweden, which aims to reduce the number of fatal and serious injury collisions to zero through coalitions of transportation planners, street designers, schools, police, and public health professionals. Though pedestrians, as the most vulnerable road users, especially benefit from this concept, the goal applies to everyone: people in cars, on transit, on bikes and on foot.

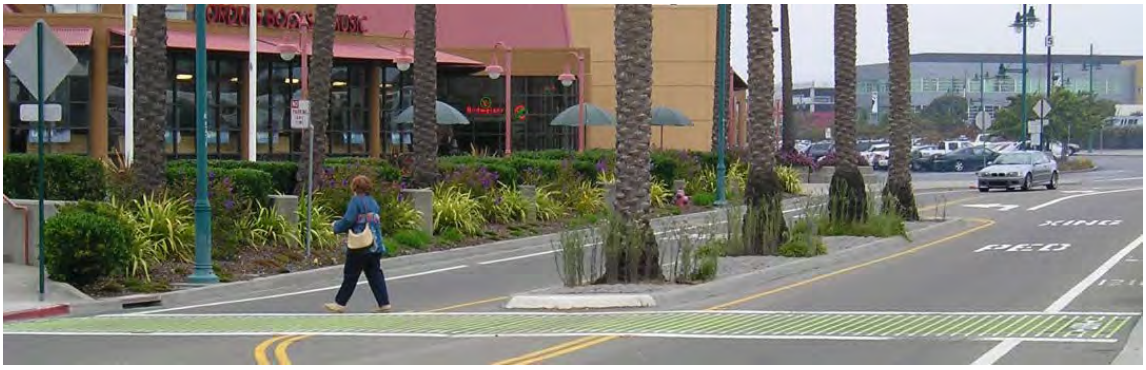


Image from Nelson\Nygaard.

Needs

Creating a truly walkable Alameda County will require more staffing and funding than even Measures B and BB can provide, as well as better information about where improvements will make the biggest differences to walking countywide.

Funding

The 2012 Countywide Pedestrian Plan identified a $1.9 billion gap between estimated costs and expected revenue for needed pedestrian projects, programs, and plans. Between funds from Measures B and BB, VRF, and the state Active Transportation Program, there will be considerably more funding available for projects that improve walking throughout the county, particularly inter-jurisdictional trails, like the Bay Trail, Iron Horse Trail, and East Bay Greenway; however, a substantial shortfall is projected to continue. Using the considerable resources available to improve walking most wisely will require better information about where pedestrian facilities are most needed.

Reliable Data

Investing effectively in improving walking conditions requires identifying where improvements are most needed. Although the U.S. Census, California Household Travel Survey, and BART Station Profile Study together tell us how many people, on average, walk each day countywide, these data sources have significant limitations (available infrequently, only capture commute trips, etc.) and generally there is a dearth of reliable data on where people walk, when, and for what purposes. To augment this information, Alameda CTC performs an annual count program to capture bicycle use at locations throughout Alameda County, as well as gathers data from automatic bicycle count equipment. Alameda CTC plans to reformulate its count program to best realize the strengths of manual count data (which provides great spatial richness but is a short-term snapshot in time) and automatic counters (which provide data over time but for a more limited number of locations) in the coming years.

Vision for the Future

Through funding such as Measures B and BB, VRF, and the One Bay Area Grant, sponsorship of projects, like the county's major trails, and programs, like Safe Routes to Schools, Alameda CTC continues to implement the projects, programs, and plans called for in the Countywide Pedestrian Plan. To help implement the plan's most important recommendations, the next update should prioritize them using a data-driven process.

Image from Nelson\Nygaard.

Meanwhile, the Multimodal Arterial Plan provides detailed information on making 500 miles of the county's most important arterials more accessible to and safer for walking. The next Countywide Pedestrian Plan update should build on the arterial pedestrian nodes identified in the MAP, by helping overcome barriers at the highest priority locations.

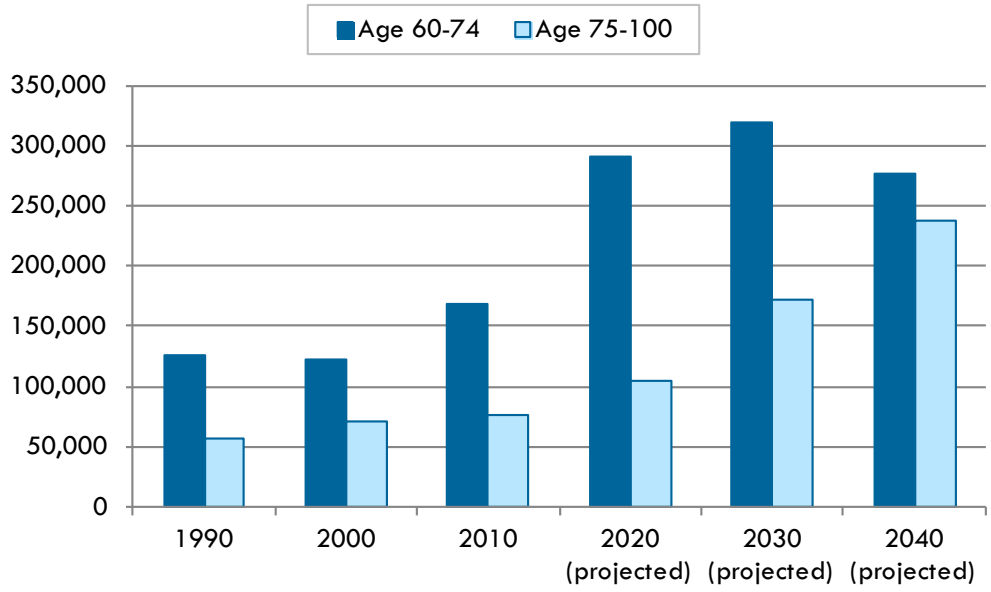
F. Mobility for Seniors and People with Disabilities

Introduction

Seniors and people with disabilities represent a significant and rapidly growing cohort of the Alameda County population whose mobility needs cannot always be met by traditional transportation modes, both public and private. Currently, approximately 12% of the population is over 65, and almost 10% of the population has disabilities. The number of Alameda County residents over 65 is expected to double by 2040, reaching over 500,000 residents. With the aid of sales tax funding and other resources, Alameda County provides a number of innovative services specifically targeted to assist seniors and people with disabilities with their transportation needs.

The "Affordable Transit for Seniors and People with Disabilities" funding allocation in Measure BB is the highest percentage allocation of any sales tax in the Bay Area, reflecting the priority placed by County residents and decision-makers on serving these populations. Nevertheless, mobility gaps remain and can be expected to grow unless creative strategies continue to be developed to address these needs.

Figure 6-15 Aging Trends in Alameda County, 1990 – 2040



Successes

While mobility options in many Bay Area communities are limited to accessible fixed-route transit, paratransit programs, and taxis, Alameda County senior residents and those with disabilities have a broad array of modes to choose from. Some of these are described below.

Alameda CTC sponsors community events like this mobility workshop.

Image from Nelson\Nygaard.

ADA Paratransit

East Bay Paratransit provides service to residents primarily in the north, central, and southern parts of the county to meet both AC Transit and BART ADA requirements. Union City Paratransit serves locations throughout Union City, while WHEELS Dial-A-Ride serves the Livermore-Dublin-Pleasanton area. All services meet ADA paratransit requirements, which mimic fixed-route services in their area in terms of service span, geographic boundaries, and other criteria.[66]

City-Based Programs

Eleven cities in the County provide curb-to-curb or door-to-door service to seniors or people with disabilities aged 18 and older. In addition, some form of subsidized taxi program is available countywide. And many cities, sometimes in partnership with local community-based organizations, also provide travel training programs, volunteer driver programs, and/or shuttle services. Increasingly, cities are following nationwide trends by establishing a mobility management function that matches callers to the program that best fits their mobility needs and functional abilities. Mobility management efforts have been strongly supported by Alameda CTC as a way to ensure user-friendly service provision.

Specialized Same-Day Services

Two innovative programs provide a safety net for those who have more urgent needs than can be met by existing paratransit programs. The Hospital Discharge Transportation Service (HDTS) serves individuals who are discharged from the hospital without having pre-arranged transportation. This program, which is currently active in eight hospitals throughout the County, provides an inexpensive option to both hospitals and patients, and includes wheelchair accessible vehicles. The second

[66] For detailed information on ADA paratransit requirements, see http://www.fta.dot.gov/12876_3906.html.

program, the Wheelchair/Scooter Breakdown Transportation Service (WSBTS) provides free one-way rides home or to a repair facility to those who have been stranded due to a mechanical breakdown of their wheelchair or scooter. While both these programs are limited in scope, to the individuals who benefit from their services, they provide a critical service at a time when no other options are available. The potential expansion of these programs to serve a wider range of urgent same-day needs is being considered given the ongoing challenge of meeting same-day, accessible trip needs.

Trends and Challenges

While fixed-route bus and train service, paratransit services and programs, and the automobile will continue to serve most of this population's mobility needs, there are a number of recent and anticipated trends that present both challenges and opportunities for serving these needs more creatively and effectively. Some of the key considerations are:

Image from iStockphoto.

- Nationally and locally, the effects of the aging of the Baby Boomer generation can be seen. Operating costs and ridership continue to grow significantly for ADA paratransit programs. These federally mandated programs are more costly to provide on a per trip basis than fixed-route transit, and offer limited flexibility for travelers' needs.
- Paratransit programs both nationwide and in Alameda County are experiencing increased pressure to provide service to dialysis treatment clinics, which patients usually must visit three to four times per week. The number of patients on dialysis nationwide is steadily increasing, and only some of those patients are eligible for Medicare reimbursements for transportation. While these trips consume an increasing proportion of ADA paratransit trips, the lack of cost sharing arrangements with clinics is placing increased pressure on paratransit programs to serve the needs of other riders within constrained budgets.
- Ensuring reliable same-day service availability, especially for consumers who need wheelchair accessible vehicles, has been a long-standing problem that

will require ongoing attention. Unless required by local regulation, taxi companies tend to have limited availability of accessible, lift-equipped vehicles, and those that do often cannot dispatch them on a reliable, same-day basis due to cost and other operational constraints.

- Changes in the taxi industry are likely to significantly impact the way the senior and disability communities are served. Reductions in taxi driver availability and the shrinking of taxi company profits affects the ability to place greater requirements on taxi companies, such as the purchase of accessible vehicles and updated payment equipment.

Image from Alameda CTC.

- The rapid increase in transportation network companies (TNCs, such as Lyft and Uber) is creating both challenges and opportunities. These may have potential for serving first- and last-mile trips to fixed-route services to those older adults and people with disabilities who can ride transit, but who are unable to access bus stops and rail stations. ADA compliance issues, including the need to provide equivalent service for those needing accessible vehicles, assistance with stowing mobility devices, fare limits, as well as adequate driver screening and training, will need to be addressed to determine how TNCs may serve a role in meeting these communities' mobility needs.

Needs

- **Keep paratransit costs per trip under control.** The need to create more flexible mobility options on less expensive modes for seniors and people with disabilities will be a focus for Alameda County. Opportunities exist to both reduce costs per trip and provide a higher level of service to passengers by shifting some trips from ADA paratransit to other modes.

Image from Alameda CTC.

- **Ensure equitable service as new mobility options arise**. Alameda CTC is paying special attention to ensure that vulnerable populations are not left out of transportation innovations. Local trends in the on-demand transportation market are negatively affecting the availability of taxis, which

are a critical component of existing city-based paratransit programs. New incentive programs, partnerships, and/or regulatory frameworks will be needed to ensure ongoing availability of on-demand services for seniors and people with disabilities.

- **Same-Day Accessible Transportation.** Whereas subsidized taxi programs are now available countywide for people with disabilities, almost none of those programs can reliably provide same-day transportation for individuals who need to transport wheelchairs or other large mobility devices. This service gap has impacts on the county's ability to address dialysis transportation, non-emergency medical transportation, and paratransit mode shift strategies.
- **Dialysis Transportation.** New solutions for addressing the growing demand for dialysis transportation are needed to address the unique mobility needs of dialysis patients and to ensure that East Bay Paratransit, LAVTA WHEELS Paratransit, and Union City Paratransit (ADA paratransit providers) can continue to offer at least the minimum level of service required to all riders by federal law. Locally, solutions will require strong collaboration across public and private sectors, including Alameda CTC, local ADA providers and city-based programs, social workers, and dialysis clinics.

Image from Alameda CTC HDTS Summary Report 2012.

- **Non-Emergency Medical Transportation.** The county's two existing countywide same-day transportation programs—the Hospital Discharge Transportation Service and the Wheelchair/Scooter Breakdown Transportation Service—go above and beyond what many other counties in the nation provide. However, while providing same-day service is a unique benefit, limiting those trips by purpose reduces market demand and results in high costs per trip to the county. There is potential to reform these programs to increase levels of service to paratransit customers, increase incentives for private providers, and reduce costs per trip.
- **Potential Impacts of Countywide Transit Improvements on Paratransit** Recommendations from Alameda CTC's Countywide Transit Plan will both open up new opportunities for seniors and people with disabilities and create

some additional financial burdens on the ADA paratransit program. Recommendations for expanded, more efficient bus service on certain corridors will provide more options for the senior and disability communities. However, due to service hour expansions, some transit improvement recommendations will also require accompanying extensions of paratransit service, which will entail increased associated costs. Where necessary there may be a need to examine alternative, lower cost-per-trip models for providing required ADA paratransit service on enhanced bus routes.

Vision for the Future

As the population of people with disabilities and seniors grows, greater attention will need to be paid to creatively serving their mobility needs. Measures B and BB funding place Alameda County in a unique position to explore new options and customize existing programs in order to serve the greatest needs. Achieving greater integration between different transit modes, paratransit, taxis, on-demand services, and other community-based solutions will support freedom of movement for seniors and people with disabilities, and increase cost-efficiencies for public agencies serving the needs of these communities.

To achieve this vision, over the next one to two years, there is opportunity to:

- Establish a same-day accessible taxi incentive program to ensure the availability of on-demand transportation for individuals requiring a wheelchair-accessible vehicle
- Reform the HDTS and WSBTS programs and pilot a new same-day accessible transportation service
- Convene a subcommittee or task force of the Paratransit Technical Advisory Committee to develop solutions for dialysis transportation
- Conduct a countywide needs assessment to identify and determine other needs and solutions to serve seniors and people with disabilities in Alameda County.

G. Parking and Travel Demand Management

Introduction

Parking and travel demand management are critical and cost-effective strategies for managing congestion and making the most efficient use of the transportation system capacity in Alameda County.

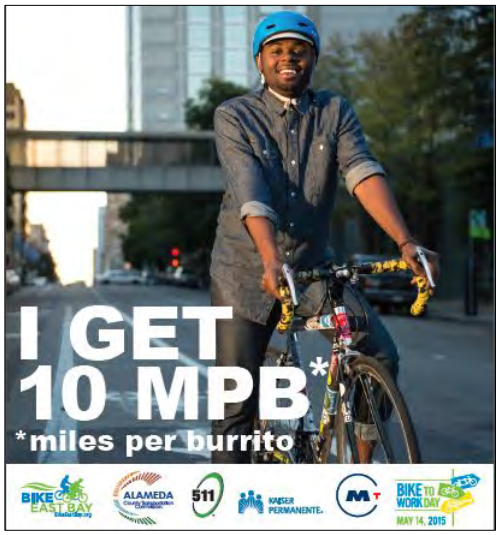


Image from http://www.alamedactc.org.

Successes

Alameda CTC has a long history of promoting and providing travel demand management in Alameda County. TDM is the strategic effort that improves transportation system efficiency and accommodates growing demand by increasing the number of trips people take using non-driving modes compared to single-occupancy vehicles. TDM strategies include promoting ridesharing, bicycling, walking, transit, parking management, and telecommuting.

TDM is a statutorily required component of the Congestion Management Program (CMP) under Section 65089 (b)(3) of the California Government Code. Alameda CTC has historically acted above and beyond this statutory requirement, providing a robust set of TDM programs and planning efforts supportive of TDM. These TDM activities are chronicled in the biannual CMP update as a "Travel Demand Management Element" chapter, which provides an inventory of the past TDM activities accomplished by regional partners, Alameda CTC, and local jurisdictions.

Image from http://www.alamedactc.org.

Trends and Challenges

Technological advances have brought travelers significantly closer to having access to real-time information about travel conditions and options. Key challenges remain in connecting travelers to these information sources and encouraging behavior change. Programs that incentivize, promote, and encourage use of non-drive-alone travel modes will continue to play a significant role in the transportation landscape.

Parking management and other policies will continue to be some of the most important ways to address drive-alone trips. To further efforts like goBerkeley and SFPark (see sidebar), Alameda CTC must continue to provide technical assistance and planning grants to jurisdictions interested in updating their parking management plans and policies. Because of the sensitivity to changes to parking management that often arises in the public discourse, technical assistance should include elements on process, messaging, and lessons learned by other jurisdictions. This will help to ensure that changes meet the needs of local business and residential districts while making the most of often-scarce parking resources.

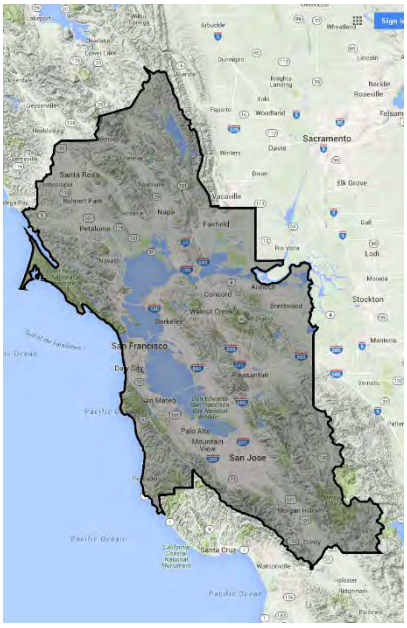
Case Studies: Real-time parking pricing and management programs in the region:

San Francisco's SFPark pilot showed how technology can be utilized to create a real-time variable pricing parking program. SFPark provides drivers real-time information on where parking is available and real-time parking prices. However, the cost of implementing and managing the system was very high.

The City of Berkeley has used elements of that approach to develop the goBerkeley program. This program established demand responsive value-pricing of parking in three business districts, "Premium" parking is located closest to business districts and priced higher than "Value" parking, which is located in off-street parking garages and on-street parking in lower demand neighborhoods nearby. As part of this program, the City authorized legislation allowing the transportation department to increase or decrease the price of parking without needing approval from City Council; allowing parking rates to be easily adjusted to meet demand. The pilot program resulted in increased utilization of "Value" parking, and made it easier to find parking. Seventy-eight percent of those surveyed found that parking was easier (an increase of 41% from before goBerkeley implementation).

The regional TDM landscape has a rich history of supporting alternative modes. This landscape is experiencing some shifting; the following summarizes the evolving efforts of our regional partners:

- **Spare the Air Resource Teams:** There are a total of nine teams in the Bay Area region, two of which are located in Alameda County and listed below. These groups are made up of public, private, and nonprofit stakeholders that work together to distribute promotional materials to advocate for reducing vehicle miles traveled in their communities.
  - **Southern Alameda County Spare the Air Resource Team:** Includes partnerships with 511 Regional Rideshare Program, a transit agency (AC Transit), area businesses (Kaiser Permanente, Fremont Chamber of Commerce), a nonprofit partner (TransForm), County Supervisor Scott Haggerty's Office, school districts (Fremont, Hayward, New Haven, and Newark Unified), and cities (Fremont, Hayward, Newark, and Union City).



The Bay Area Air Quality Management District includes Alameda County and the greater San Francisco Bay area.

Image from Google Maps.

  - **Tri-Valley Spare the Air Resource Team:** Includes public sector transportation agencies and programs (511 Regional Rideshare Program, 511 Contra Costa, Safe Routes to Schools, Altamont Corridor Express, Wheels/Livermore Amador Valley Transit Authority), area private sector partners (Bishop Ranch Transportation Center, Edenred USA/Commuter Check, Enterprise Rideshare, Getaround.com, Hacienda Business Park, RidePal, Roche Molecular, Safeway), nonprofit partners (TransForm), Offices of Supervisor Scott Haggerty and Supervisor Nate Miley, and area cities (Dublin, Livermore, Pleasanton, and San Ramon).
- **The Bay Area Commuter Benefit Program**, which requires employers with 50 or more full-time employees to register and offer commuter benefits to their employees. More than 60% of the Alameda County employers that registered for the program are offering commuter benefits for the first time as a result of the program. MTC and the Bay Area Air Quality Management District are leading the effort to ensure this program becomes permanent and has released an evaluation report[67].
- **The 511 Rideshare Program** supports travelers in the Bay Area by providing information and incentives for ridesharing. The Regional Ridematching System

[67] The Bay Area Commuter Benefit Program pilot evaluation report can be found on Bay Area Air Quality Management District's website at: http://www.baaqmd.gov/rules-and-compliance/commuter-benefits.

hosted on 511.org pairs riders in static carpools and vanpools, and promotes a select group of qualifying private sector carpool matching smartphone applications.

Marketing and Promotion

Informing commuters of transportation choices and options is an important part of TDM, including information about opportunities and results such as travel time reliability, and time and costs savings afforded by many commute alternatives.

Reliable Data

Funding TDM and parking management programs is much easier when the effectiveness can be shown in the numbers—monitoring the number of trips or drive time reduced given the cost of implementing the program is important for demonstrating the effectiveness of a given approach.

Developing a robust evaluation methodology can often be outside the realm of experience of local jurisdiction staff and where support is needed Alameda CTC could provide monitoring support for TDM programs. Alameda CTC could consider planning and technical assistance funding for supporting reliable and comparable data collection and evaluation.

Vision for the Future

Next Steps for Alameda CTC Strategic TDM Activities

Alameda CTC takes actions to encourage, supplement, and support local governments in their TDM efforts, allocates funds for multimodal transportation improvements, provides guidance and technical assistance to localities in developing their own TDM programs, and monitors compliance with the required program that's part of the TDM element in the CMP. Alameda CTC's planning efforts also consider TDM.

Strategic Planning Activities

- **Funding multimodal transportation infrastructure and services:** The 2012 Countywide Transportation Plan suggests 52% of project funds and 60 % of programmatic funds for transit and bicycle and pedestrian projects and programs. This 2016 Countywide Transportation Plan will similarly suggest improvements in multimodal infrastructure.
- **Planning for multimodal transportation infrastructure and services:** The 2012 Bicycle and Pedestrian Plan updates, and the 2016 modal plans (Transit Plan, Multimodal Arterials Plan, and Goods Movement Plan) outline strategies to increase transit, bicycle and pedestrian mode share.

Strategic Project and Program Activities

- **HOV/Express Lanes Operations:** Alameda CTC operates two express lanes on the I-680 and I-580 corridors. In addition to managing these lanes Alameda CTC and partners on the corridor have employed promotional programing, which will be discussed further as follows.
- **Guaranteed Ride Home Program (GRH):** The GRH program continues to provide an insurance policy to provide relief to pedestrians, cyclists, carpools/vanpools, and transit riders by way of reimbursement for unplanned trips, such as medical emergencies or unscheduled overtime.
- **Safe Routes to School (SR2S) Program:** The future for SR2S includes continuation of educational programs, safety projects, and support for Walk and Roll to School Day. The program will continue to support the Alameda County SR2S website (alamedacountysr2s.org), which provides information, as well as event postings and news reports to students, parents, and teachers.
- **Affordable Student Transit Pass Pilot Program:** This program will begin in 2016 to develop pilot school sites for providing affordable transit to middle and high school age youth.
- **Bike Safety Education:** Alameda CTC will continue engaging with Bike East Bay to provide free bicycle safety classes for people in Alameda County.

Technical Assistance

- **Technical support for new and existing transportation management associations (TMAs):** TMAs throughout the county are typically comprised of a "group of public and private agencies and firms joined to cooperatively develop transportation-enhancing programs in a given area."[68] Alameda CTC will continue to foster new TMAs and strengthen support for existing TMAs as part of the CMP.
- **Technical assistance:** Through the Sustainable Communities Technical Assistance Program, Alameda CTC supports multimodal planning efforts that focus on priority development areas to implement alternative transportation studies and projects.

[68] National Resource Center for Human Service Transportation Coordination, and Community Transportation Association. "Glossary of Transportation Terms." Accessed March 3, 2016. http://web1.ctaa.org/webmodules/webarticles/articlefiles/TransportationGlossary.pdf.

- **Commute Choices website:** Launched in 2015, this online platform inventories the full range of commute alternatives and is Alameda CTC's TDM clearinghouse. The opportunities for expansion of this tool include leveraging the existing tools available to commuters and providing a central landing place for Alameda County commuters.

Image from http://commutechoices.alamedactc.org/.

Promotional Programs

- **Walking and biking promotional programs:** Both the "I Walk!" and "I Bike" promotional campaigns have succeeded in prompting active transportation in Alameda County. Since 2008, Alameda CTC has supported the annual Bike to Work Day event.

Corridor-specific Promotional Programs:

- **I-580 and I-680 Express Lane Corridors:** Alameda CTC promotes rideshare opportunities on an ongoing basis within the express lanes it manages in Alameda County.
- **I-80 SMART Corridor:** Alameda CTC is partnering with various state and local agencies to provide real-time traffic information and corridor management along the I-80 corridor and parallel/connecting arterials to reduce congestion. The corridor is managed through adaptive ramp metering, real-time incident management reporting and rerouting. Variable speed signs and blocked lane signs assist drivers in making informed decisions in the event of an incident.

H. Technology and Innovation

Introduction

Image from actransit.org.

Transportation has been changing dramatically over the last few years, from new navigation services that provide real-time traffic conditions (such as Waze and Google Maps), new kinds of privately managed transportation services, to automated vehicles. For public transit, real-time arrival information has become the norm, while smartphone ticketing is now being used by a few transit agencies. Technologies that were once considered unattainable or unrealistic are now a reality. Alameda CTC will need to position the county to take advantage of these while ensuring that services are still available to those that may not have access to computers or smartphones.

Alameda CTC has also been working to improve transportation network operations through implementation of infrastructure (supply) and demand-based technologies. On freeways, permanent variable message signs provide users with information on delays and incidents. Other technology improvements include: signalization improvements, signal priority/preemption, ramp metering, Advanced Traveler Information Systems (ATIS), and incident detection and management. These technologies help reduce congestion and improve safety of existing infrastructure. Through the Travel Demand Management program, Alameda CTC is exploring options to partner with the private sector partners engaged in shared-mobility to expand travel choices in addition to its traditional Guaranteed Ride Home Program.

Successes

The following Alameda CTC projects show how technology and innovative solutions can help address the county's transportation problems.

East Bay SMART Corridors Program

Image from smartcorridors.com.

The East Bay SMART Corridors Program[69] is a collaboration between Alameda CTC, MTC, state highway agencies, AC Transit, and local jurisdictions to improve the functioning of key highway and arterial corridors, including the I-80/San Pablo Avenue Corridor, the I-880 Corridor (which includes the freeway and parallel arterials from Oakland to Union City), and the International Avenue/East 14th Street/Telegraph Avenue Corridor. Specific strategies include ramp metering, signal coordination, and pre-emption, allowing smoother flowing traffic and adjustments to signal timing for transit and emergency vehicles to provide faster services. Managing freeways and nearby arterials together allows greater flexibility to manage normal rush-hour congestion as well as specific traffic incidents. The I-80/San Pablo Avenue SMART corridor is discussed further below.

[69] Further information on the Alameda County SMART Corridors Program can be found at: http://www.alamedactc.org/files/managed/Document/17311/1407.000_SMARTCorridorsOM_factsheet_CMA9450.pdf.

I-80 SMART Corridor Project/Integrated Corridor Mobility Project (ICM)

With as many as 270,000 vehicles per day, the I-80 corridor in Alameda County is one of the busiest in the Bay Area. The I-80 SMART Corridor/Integrated Corridor Mobility project[70] manages traffic on I-80 between the Bay Bridge Toll Plaza and the Carquinez Bridge, including San Pablo Avenue and the portions of arterials connecting San Pablo Avenue and I-80. The project includes a network of integrated electronic signage and signals, such as variable message signs, blocked lane signs, ramp meters, and other elements to enhance safety and travel time reliability and reduce accidents and associated congestion.

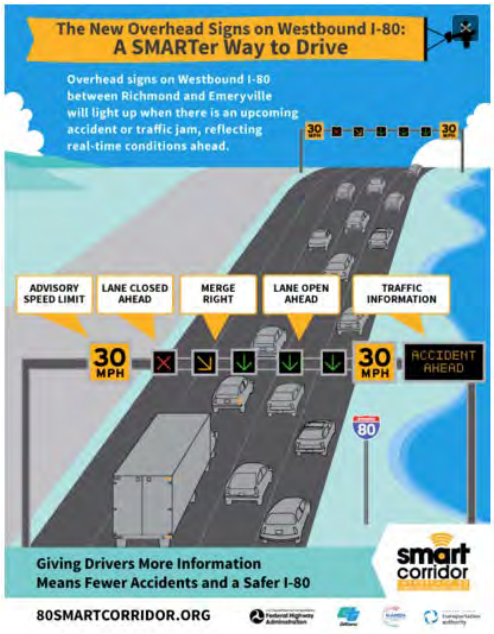


Image from smartcorridor.org.

Express Lanes

Alameda CTC pioneered the implementation of Express Lanes in the Bay Area region with the implementation of Northern California's first express lane on the southbound I-680 between SR 84 and SR 237 in 2010. Additionally, the first continuous access Express Lanes in the region were opened on I-580 in the Tri-Valley area of Alameda County in February 2016 between Dublin, Pleasanton, and Livermore. These express lanes are congestion relief strategies that make remaining capacity available to solo drivers that pay a toll while keeping it free to eligible users. Tolls vary depending on congestion levels, and can be paid using a standard FasTrak® transponder. Carpools, vanpools, and eligible clean air vehicles can use the lanes for free like a normal HOV lane by using a FasTrak Flex transponder. These lanes, which use varying tolls according to congestion levels ensure the most efficient use of scarce freeway capacity, prevent slow-downs, and improve enforcement capabilities and the ability for emergency vehicles to quickly access crash sites. MTC is developing a network of Express Lanes[71] throughout the

Image from bayareafastrak.org.

[70] Information about the I-80/San Pablo Avenue SMART Corridor can be found at http://www.alamedactc.org/app_pages/view/1700.

[71] Further information on all operating and planned Bay Area Express Lanes can be found at http://bayareaexpresslanes.org.

Bay Area that will convert 150 miles of existing HOV lanes to express lanes, and add 120 additional miles to this network. The ultimate vision will include 550 miles of express lanes.

East Bay Bus Rapid Transit

Bus Rapid Transit (BRT) is a cost-effective way to improve transit performance and increase ridership by giving transit its own dedicated lane and making other improvements to improve reliability, convenience, and attractiveness of the service. Construction will begin in 2016 on the East Bay's first BRT project by AC Transit, the East Bay Rapid Transit Project, which will be constructed between Downtown Oakland and San Leandro, with planned completion by the end of 2017.[72] The project will include elements such as transit signal priority and signal upgrades to improve bus travel times along this critical transit corridor. This is the first BRT project in the East Bay and could potentially serve as a model for future projects to improve the speed and reliability of transit service on major corridors and bus transit trunk lines.

Seattle's BRT expansion features real-time information at stops.

Image from Nelson\Nygaard.

[72] AC Transit East Bay BRT page: http://brt.actransit.org/.

Trends and Challenges

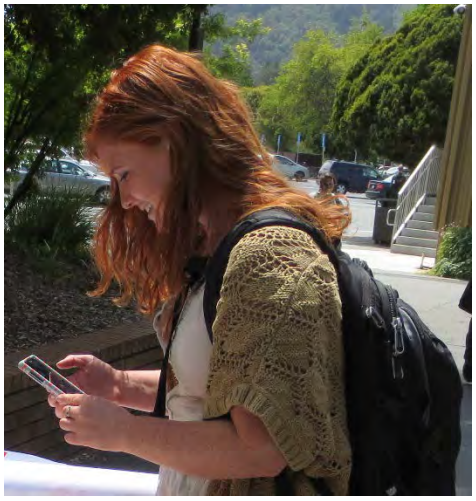


Image from Nelson\Nygaard.

Advancements in technology and the widespread use of smartphones are causing the biggest changes in transportation since the invention of the automobile. Policy makers are forced to contend with issues that have never before existed, but at the same time, these technologies have the potential to solve transportation puzzles that previously seemed intractable. It is critical that Alameda CTC consider these technologies, and their challenges and opportunities, in its long range planning activities. Alameda CTC has not made any policy decisions associated with these trends and recognizes that the regulatory environment is evolving to address safety, accessibility, affordability, and labor issues.

On-demand/Micro-Transit

Image from vta.org.

Flexible on-demand or micro transit is also being aided by technology. The Santa Clara Valley Transportation Authority (VTA) recently launched FLEX, their dynamic transit pilot program, which operates within a 3.25 square mile area in North San Jose and is slated for expansion. Users request rides and pay the fare via their smartphones and drivers are dispatched. The pilot is meant to reduce on- and off-vehicle travel time by providing stops closer to destinations and only stopping where and when rides have been requested. This could be an affordable option in Alameda County for low-density areas, mid-day or late-night services, or services that serve people with special mobility needs. AC Transit will also be testing a flex-service model in southern Alameda County in 2016.

Transportation Network Companies

Transportation Network Companies (such as Lyft and Uber) have become commonplace, providing new options for short-distance trips, first/last mile transit connections, and transportation for people with mobility challenges such as those with disabilities and the elderly. They are easily available in denser urban areas at all times of day or night but often lack availability outside of the urban core, and require use of a smartphone. Other companies such as Chariot, in San Francisco, operate more like transit, using vans on scheduled routes.

Carpool matching

Private carpool matching apps are also gaining traction, with the ability to flexibly match people into carpools on a per-trip basis. Many of the traditional barriers to carpooling can be overcome with these types of services. 511 Rideshare has developed a partnership program to promote these new technologies to expand carpooling. These new carpool apps provide the opportunity to directly provide incentives to those that are carpooling and confirming that the trip has been taken. They also have the potential to provide new data on areas where higher capacity transit could operate.

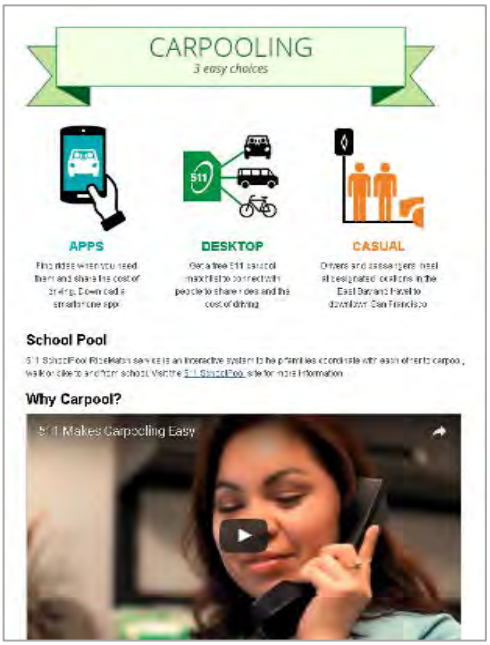


Image from 511.org.

Vehicle and Parking Sharing

While car-sharing has been available for over a decade, new technologies are enabling more sophisticated networks and different types of sharing beyond private car fleets, such as ZipCar and City Carshare. The Bay Area is already home to new vehicle types available for sharing including bike share (Bay Area Bike Share) and scooter share (Scoot), as well as different sharing models, such as private vehicle owners allowing others to user their vehicles when they don't need them as compared to a sharing company owning and maintaining its own fleet of vehicles. Point-to-point car sharing (such as Car2Go) exists elsewhere in the U.S. but is not available yet in the Bay Area due to complications involving parking policies. Carma Carpool and City Carshare have recently joined forces to develop a service that combines carpool matching, shared vehicles, and employer fleet vehicles to maximize usage of car seats, vehicles, and parking spaces. Peer-to-peer parking (where people can rent their driveway or other parking space when they aren't using it) will likely also be something we see in the future. New technology has also allowed improvements in secure bike parking, with card activated bike lockers and secure bike rooms now available at a number of BART stations. These technologies make it easier for people to own fewer cars and use alternative modes, knowing that a vehicle (of any type) is available when needed.

Goods Movement

Existing and emerging technologies are critical for the goods movement sector in several different ways. Through use of Intelligent Transportation Systems, connected

vehicles, and other technology solutions, existing roadway capacity can be more effectively used to move goods efficiently within and through Alameda County. Technology and operational strategies are also key to reducing impacts of goods movement activity on the health, safety, and quality of life in neighborhoods, as trucks move through these communities. Alameda CTC is creating a technology development collaborative to deal with the low emission program, introduce advanced logistics technologies, and develop public-private partnerships for pilot of demonstration technologies (see Goods Movement modal strategy for further information).

Data Availability

Transportation is by definition a mobile activity. The development and expansion of services that use mobile platforms such as smartphone apps and wearable technology in their operations can provide improved information on where people are going to and coming from, and how they are getting there. Where transportation data was once entirely within the purview of public agencies, now much of this data is being collected by the private sector. Working collaboratively with the owners of this data may allow new insights into where improvements may be needed and whether efforts have led to positive outcomes. Some apps already provide real-time feedback to users such as navigation apps that provide detours around incidents or congestion, and can provide opportunities for incentivizing use of sustainable modes to those that are using them. While these data sources provide expanded opportunities, they may have varied coverage across demographic groups and geographies, and should not be a sole source of information. Working with "big data" also comes with its challenges, such as partnerships with private sector data owners, new types of data sets, as well as the sheer volume of data that also requires new analysis tools and expertise.

Automation

Automated vehicles and connected vehicles, including vehicle to vehicle (V2V) and vehicle to infrastructure (V2I) technologies, have the potential to change the face of transportation as we know it. It is likely that in the future, fewer people will own cars, more people will regularly ride with strangers, fewer parking spaces will be needed, and the efficiency and safety of the overall system may be improved. While it is difficult to know what the true impacts will be, flexibility can be built into long range plans now so that planners and decision-makers can more quickly respond. As changing technology evolves, Alameda CTC's role could provide technical assistance and trainings on the subject to ensure that jurisdictions plan for potential

impacts, as well as develop supportive policies in anticipation of these technologies, while ensuring that public needs are addressed.

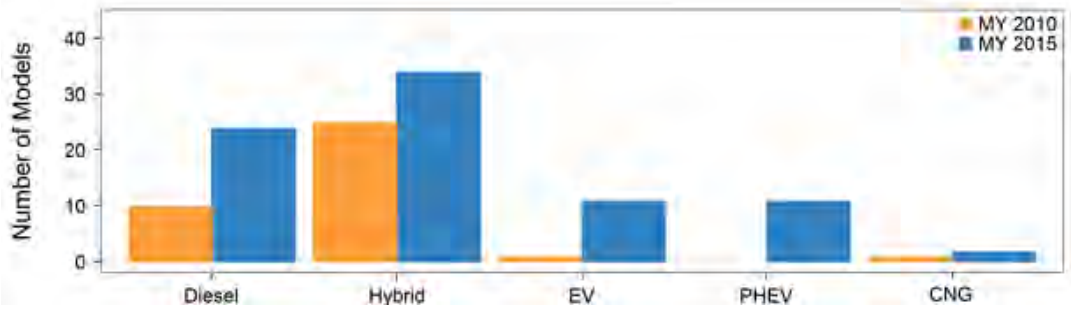
Vehicle Technology

Increased fuel efficiency, alternative fuel vehicles, and vehicle technology innovations have changed the fundamental assumptions about the environmental impacts of driving. The number of vehicle models using alternative fuels and increased fuel efficiency has increased dramatically in the last several years (see Figure 6-13, below). This is good news for transportation impacts and air quality in Alameda County. Supporting the use of these vehicles includes expanding supporting infrastructure such as EV charging stations in public parking areas.

Electric vehicle recharging stations like this one in Salem, Oregon, support the expansion of electric vehicle usage.

Image from Nelson\Nygaard.

Figure 6-16 Use of Alternative Fuels by Modal Year (MY)[73]



[73] The EPA provides information on alternative vehicle technologies, fuels, and fuel efficiency at www3.epa.gov/otaq/fetrends.htm. MY: Model Year; EV: Electric Vehicle; PHEV: Plug-in Hybrid Electric Vehicle; CNG: Compressed Natural Gas Vehicle.

Needs

Knowledge Sharing

The rate of technological advance means that government agencies are often struggling to keep up. A forum for local agencies to learn about and share, discuss, and identify the impacts and opportunities for new technologies is critical to positioning Alameda County as a transportation leader.

Data

Technology operates on data, and transportation data has historically been the arena of government. Newly available "big data" could provide a wealth of information to improve planning and funding activities across Alameda CTC's many roles. With an increase in available data, it will be important to develop a team focused on working with this data, including aggregation and analysis. This will allow planners and other staff to focus on how to apply insights from the data rather than keep up with the newest data sources, formats, and analysis methods.

Vision for the Future

Technology and innovation in the transportation arena are taking place at an incredible rate. New transportation options are solving problems previously considered intractable. Government agencies are working to identify their role in this new landscape. Alameda CTC can take the lead by looking for ways to use, promote, and assist in the uptake of technologies that help meet shared goals, while at the same time working to ensure that all communities benefit from them. It will be important to identify areas that will also impact government staffing and revenue early.

Image from Flickr user Thomas Hawk.

- **Develop collaborative relationships** with technology companies that will help Alameda County meet shared transportation goals such as reduced emissions and congestion, and increased use of sustainable modes.
- **Improve data collection and analysis methodologies** by taking advantage of newly available data sources that can provide more detailed information about transportation choices, routes, needs, and the outcomes of planning, service improvement, and promotional efforts.
- **Develop guidance and partnerships with local and regional jurisdictions** and hold webinars and other training sessions on new technology, its impacts to transportation planning, policy implications, and how local jurisdictions can respond. Topics can include vehicle technology and communications and potential impacts to local transportation, staff, and budgets; infrastructure requirements; and data collection and analysis. Develop partnerships across agencies and jurisdictions to address data and policy issues.
- **Work with local jurisdictions and transit agencies** to identify ways that new technologies can improve transit service to traditionally underserved populations such as low-density areas, elderly, and people with disabilities.

- **Continue to develop innovative connected corridors** that can improve safety and reduce congestion, and expand implementation of congestion pricing based on real-time conditions. Support policies and projects for vehicle to vehicle (V2V) and vehicle to infrastructure (V2I) communications.
- **Support pilot programs** that can test technological solutions that can support Alameda CTC's transportation vision and goals.
- **Identify ways that technology can be used** to further advance planning processes, such as providing public information and soliciting input to and from those most interested and affected by specific projects.

7 Equity Strategy

Introduction

Ensuring that our transportation system serves everyone is a fundamental goal of Alameda CTC, and ensuring people of all backgrounds have access to the Bay Area's vibrant economy will only strengthen the county's and region's abilities to compete in the global economic system. This equity strategy and the analysis that undergirds it aim to position Alameda CTC to inform partners and to address existing transportation equity issues through the agency's planning efforts and funding programs. The equity strategy will be a component of future CTP updates to ensure this work is sustained over time.

Alameda County is one of the most diverse counties in California, with large populations from a variety of racial and ethnic backgrounds. The richness of this diversity, and the benefits it brings to our communities, underscores the need for equitable, accessible, and affordable transportation options. Alameda County is also home to many individuals for whom it may be more difficult to navigate the transportation system due to language barriers, economic hardship, mobility challenges, or simply by circumstance of age. Nearly 20% of the county's population has limited proficiency with English, and language limitations can create barriers to accessing information about mobility options. More than a third of the county's households earn less than $50,000 per year,[74] making it a challenge for many to afford daily transportation costs. Alameda County communities also include many young people and a rapidly increasing population of elderly individuals. Both of these groups also face a unique set of mobility and transportation challenges.

Transportation is, of course, typically a means to an end rather than the end goal—it is the way we travel from home to work, school, shopping, and leisure by a variety of different routes and modes. As such, transportation improvements are influenced by a variety of different factors: land use and transportation policy decisions; local, state, and federal funding availability; and, of course, system performance. While the equity analysis examines the ways the existing transportation system meets the needs of Alameda County travelers today and addresses goals for the future, our transportation system is also shaped by historical investment policies and ongoing challenges. This equity analysis reveals no substantial inequities in the investment of Alameda CTC's local funding. Improving our transportation system with limited funds presents ongoing challenges that affect each mode and each community differently, particularly given historical policies.

[74] Defined as "low-income" for this analysis, as the closest approximation of 200% of the federal poverty line for a family of four. Source: Alameda County travel demand model.

Alameda CTC is committed to addressing the complex nature of these challenges with our partners, and the equity strategy represents a key step in doing so. The analysis detailed in this chapter looks at how members of the populations described herein are distributed geographically and compares that to the ways in which the performance of the transportation system and the system's negative impacts vary across the county. It also considers the results of community outreach efforts, through which members of these communities identified priorities for the transportation system, including:

- Ensuring safe travel for all modes, particularly pedestrians and bicyclists
- Implementing solutions to manage traffic congestion
- Enhancing the county's bicycle network and creating more opportunities to store bikes securely
- Increasing bus service and improving bus travel time and reliability
- Addressing transportation needs specific to aging populations
- Improving access to/from BART stations for pedestrians
- Making public transit more affordable and accessible for students
- Improving intersection design for all travelers
- Ensuring easy connections between transit operators and routes

The equity strategy responds to these issues and represents an effort to begin developing ways to narrow and, ultimately, address transportation disparities over the life of the Countywide Transportation Plan. Specifically, the equity strategy seeks to:

- **Illustrate whether countywide transportation inequities exist in communities with concentrations of the equity factors identified.** This illustration will be presented both in terms of the equity of "inputs," or transportation investments, and in terms of the equity of the "outputs" in terms of levels of transportation performance.
- **Educate local jurisdictions on transportation equity issues identified** by providing mapping analysis on all disadvantage factors analyzed. This geographic analysis expands the focus beyond the MTC-identified Communities of Concern and the Community-Based Transportation Plan (CBTP) communities, recognizing that there are more people in Alameda County that might be included in the equity analysis factors than located only in these defined areas.
- **Ensure future programming is supportive of the needs identified in the equity analysis**; while the CTP is not a programming document, and is not directly linked to funding, it can be used as a framework for understanding equity disparities.

It is important to remember that many of the equity issues highlighted in this chapter are about more than just transportation, and some factors contributing to these

conditions are beyond the control of Alameda CTC and this Countywide Transportation Plan. Alameda CTC is committed to addressing disparities through the levers of influence available to the agency. However, eliminating disparities will require effort from a range of public and private actors and institutions, supported by policies at every level of government that address the underlying causes of these issues.

Relationship to Community-Based Transportation Plans and Lifeline Transportation Program

This equity strategy functions as an integrated Alameda County Community-Based Transportation Plan update. The Lifeline Transportation Program provides an important source of funding for investments and services that meet the transportation needs of economically disadvantaged populations throughout the region. To be eligible for the grant program, projects must address a need identified through a CBTP or "other substantive local planning effort involving focused outreach to low-income populations."[75] This analysis looks at more than just economic disadvantages, also considering things like race-, age-, language-, and mobility-related factors that might also create disadvantages. Still, the analysis below aims, in part, to identify which communities meet Lifeline's eligibility criteria while expanding the range of communities considered for program funding beyond those identified during previous CBTP development efforts.

To date, the county's CBTPs have focused on five communities in North and Central Alameda County. This effort builds off that work by acknowledging that those communities have ongoing needs while also calling attention to other neighborhoods with less concentrated but still notable disadvantaged communities in other parts of the County. It broadens the more traditional approach by looking at transportation needs and performance gaps across the county, not just in CBTP communities. This more holistic approach opens up a wider range of potential strategies and solutions to meet identified needs and gaps.

Equity Analysis

Background

It has only recently become more common for countywide or regional long-term planning studies to directly factor the ways in which disadvantaged populations experience the transportation system into decisions about long-term improvements or the ongoing administration of transportation programs. MTC has been a pioneer in considering these types of populations in its long-range planning efforts, completing equity analyses as part of its two most recent Regional Transportation Plans (RTPs). MTC recently recommended that each of the nine Bay Area counties also complete

[75] http://mtc.ca.gov/sites/default/files/LTP4_guidelines.pdf, page 18.

equity analyses as part of their next countywide transportation planning efforts, as defined in MTC's CTP guidelines.

Past equity analyses have taken a variety of forms, but they typically attempt to estimate how transportation spending accrues to different population groups and whether the transportation system's performance is generally worse for those groups, based on the geographic areas in which they are concentrated. Alameda CTC's approach is grounded in research on best practices and lessons learned from past efforts and uses a combination of spatial and statistical analysis tools to understand nuances across populations, communities, and geography.

Methodology

The analysis included racial, Limited English Proficiency (LEP), and low-income populations consistent with Federal Title VI analyses, as well as a small number of additional groups deemed to be potentially disadvantaged, including zero-car households, young people who are old enough to travel independently, and seniors. A limited number of metrics were selected on which transportation system performance would be measured based on how effectively they represent one's overall experience with the transportation system, how well they reflect the goals of the Alameda CTC Countywide Transportation Plan, and data availability. To examine the distribution of positive and negative impacts across these groups multiple test methods were explored, in order to determine which would be most robust. Testing multiple approaches led to the most inclusive methodology that could be applied with the data available to the team—incorporating groups that were adversely affected whether

Assessing Correlations between Demographics and Performance—a primer on the methodology

The equity analysis used a series of statistical tests to determine whether areas with higher concentrations of a demographic group were correlated with worse outcomes on performance. Two of the statistical tests (difference of means and chi-squared) compared the performance of Census tracts with a substantial concentration of each demographic group to all other tracts, while one of the tests (regression) looked continuously at whether increasing concentrations of a given demographic group was correlated with worse performance on a given metric. If *any* of the three statistical tests revealed a negative disparity or a trend toward worse performance, it was deemed an equity issue.

Using just one of these tests could leave the analysis vulnerable to missing some disparities. Relying on two tests that compare transportation conditions in a group of tracts with high concentrations of a given demographic group to those with low concentrations of the group might have missed patterns that would be revealed if the thresholds defining high versus low concentrations were set differently. Likewise, if the analysis relied entirely on regression, it might have missed some disparities that could be masked by correlations between the demographic variables (i.e. if two demographic groups tend to live in the same areas or if certain demographic variables overlap significantly) or the effects of unevenly distributed data (i.e. if performance is particularly good or bad in fewer tracts, that could skew regression results).

they were members of multiple groups of one group, or were affected by one factor or many factors.

Demographic Groups

Traditionally, disadvantaged populations have been considered in an aggregated way, with a focus on areas with populations with multiple or *overlapping* concentrations of people from those disadvantaged or vulnerable backgrounds. While this approach has strengths and has enabled the identification of communities with the most extreme concentrations of disadvantaged populations, it also has limitations, obscuring challenges specific communities face and excluding people from vulnerable demographic groups who happen to live in areas with lower concentrations of such populations.

The adopted approach for the CTP sought to mitigate these limitations by analyzing transportation performance for each population individually across various factors, in order to examine whether any specific group experiences disproportionately poor transportation conditions. In other words, the approach tried to identify groups for which, no matter where members of the group live, the transportation system tends to perform worse than it does for people in the general population.

This analysis focused on the historically underserved demographic groups shown in Figure 7-1. Groups were included based on the Federal Transit Administration's Title VI guidance, U.S. Census Bureau categories and thresholds, and/or inclusion in Plan Bay Area.[76]

[76] The analysis also initially considered women a vulnerable demographic group, given historic disadvantages, but did not find major differences in women's population share across neighborhoods, nor notably worse transportation performance for the group on most metrics.

Figure 7-1 Groups Included in Equity Analysis

Equity Factors	Demographic Groups	Reference for Inclusion
Racial/Ethnic	American Indian and Alaska Native Asian[77] Black or African American Hispanic or Latino Native Hawaiian or Other Pacific Islander[78]	FTA Title VI Guidance (Circular 4702.1B)
Income/Affordability	Up to 200% of federal poverty line ($50,000/household as estimate)[79]	U.S. Census Bureau Poverty Thresholds
Age	Mobile Youth (10-19 years)[80] Senior (>75 years)[81]	Youth: U.S Census and California DMV Senior: Plan Bay Area equity category
Language Skills	Limited English Proficiency[82]	Plan Bay Area
Mobility	Zero-Car Households	Plan Bay Area

Performance Metrics

The analysis looked at transportation system "inputs," i.e., how transportation dollars are spent, and "outcomes," i.e., the accessibility, quality, and usability of the transportation system that result from investment patterns of the transportation system in Alameda County, and how equitably they are distributed today.

[77] Includes, per FTA Circular 4702.1B: "People having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent, including, for example, Cambodia, China, India, Japan, Korea, Malaysa, Pakistan, the Philippine Islands, Thailand, and Vietnam."

[78] Includes, per FTA Circular 4702.1B: "People having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands."

[79] Given the structure of Census data, this is the closest possible approximation of 200% of poverty for a family of four. The poverty line for a family of two adults and two related children was $24,008, according to the most recent thresholds released in 2014. The 200% federal poverty line metric was chosen to maintain consistency with federal funding guidelines using this threshold to identify low-income people. (http://www.census.gov/hhes/www/poverty/data/threshld/thresh14.xls and http://factfinder.census.gov/bkmk/table/1.0/en/ACS/13_5YR/S1901/0500000US06001).

[80] The selected census age groups represent the age range at which minors are generally independently mobile but lack an automobile. DMV license data was used to confirm that this bracket should include people in their late teens – this cohort gets drivers licenses at much lower rates than other age brackets.

[81] Per Plan Bay Area, 75 represents advanced enough age that mobility might start to be limited for a significant portion of this cohort.

[82] Per FTA Circular 4702.1B: "Includes people who reported to the U.S. census that they speak English less than very well, not well, or not at all."

The equity analysis used five areas of transportation performance that could be readily analyzed based on available data. The performance areas and the specific metrics are shown in Figure 7-2.

Figure 7-2 Equity Performance Metrics

Topic Area	Metric	Source
Motorized Accessibility	Job Accessibility[83] via Transit (45 minutes) vs. Auto (30 minutes)	Alameda CTC Travel-Demand Model and U.S. Census Bureau Longitudinal Employer-Household Dynamics (LODES) Data
Motorized Accessibility	Difference in Peak and Off-Peak Job Accessibility Ratios	Alameda CTC Travel-Demand Model and U.S. Census Bureau Longitudinal Employer-Household Dynamics (LODES) Data
Bicycle and Pedestrian Safety	Pedestrian and Bicycle-Involved Collisions	Caltrans Statewide Integrated Traffic Records System (SWITRS)
Bicycle Comfort	Average Level of Traffic Stress on Nearby Arterials	Alameda CTC Arterial Plan
Air Quality	Diesel Particulate Matter (PM)	CalEnviroScreen 2.0
Air Quality	Asthma ER Visit Rate	CalEnviroScreen 2.0
Pavement Condition	Share of Roadway Miles Deemed "At Risk" or Worse	MTC StreetSaver

Findings

As noted above, the equity analysis examines the ways the existing transportation system meets the needs of Alameda County travelers today, recognizing that these results are from historical investment policies outside of Alameda CTC's decision-making control. This equity analysis reveals no substantial inequities in the investment of Alameda CTC's local funding.

Figure 7-3 summarizes the outcomes of the equity analysis. Cells in the matrix with a diamond indicate that at least one of the statistical tests identified a disparity or trend toward worse performance for the particular demographic group on the

[83] Job accessibility is defined as the number of jobs in specific categories that residents of a given tract can reach within the specified travel time for each mode. Jobs included in this analysis included jobs in low-wage and mid-range industries, based on MTC Prosperity Plan Jobs Housing Report categorizations: Retail trade, administrative support, waste management, remediation, arts, entertainment, recreation, accommodation and food services, other services (not public administration), construction, manufacturing, wholesale trade, transportation and warehousing, real estate, rental, leasing, educational services, health care/social assistance, and public administration.

particular performance metric. Areas with higher concentrations of African American/Black residents showed disparities or negative trends on each of the metrics, more than any other demographic group. Other groups seeing poorer performance across most of the metrics include low-income households, individuals with limited English language proficiency, and households without private cars.

The difference in the reach of transit, relative to automobiles, between peak and off-peak periods might be particularly important for low-income and zero-car households, which are more likely to depend on transit for their economic well-being. People with low incomes may also disproportionately hold jobs with arrival and departure hours that do not fall in traditional peak periods, making the difference between peak and off-peak service particularly challenging for them.

Several metrics showed equity issues for a majority of the demographic groups. These included air quality (rates of emergency room visits related to asthma), as well as access to comfortable bicycle facilities. These results align with anecdotal information, background research associated with transportation inequities, and the following data from the surveys conducted as part of this effort. Many individuals in the targeted populations tend to be concentrated in areas with wider streets, more traffic, and proximity to air pollution sources, including goods movement facilities and regional freeways.

Figure 7-3 Equity Findings

	African Am./ Black	Am. Indian/ Alaska Native	Asian Am.	Hispanic /Latino	Pacific Islander/ Hawaii Native	200% of Poverty	Mobile Youth (10-19)	Seniors (75+)	Limited English	Zero-Car HHs	Total
Air Quality (Asthma Hospital Visit Rates)	♦	♦		♦	♦	♦	♦		♦	♦	**8**
Air Quality (Diesel Emissions)	♦					♦			♦	♦	**4**
Bike and Ped Safety (Collisions)	♦	♦	♦			♦				♦	**5**
Bike Comfort (Level of Traffic Stress)	♦		♦	♦	♦		♦	♦	♦		**7**
Job Accessibility (Transit compared to Auto)	♦		♦	♦			♦	♦			**5**
Job Accessibility (Peak vs. off-peak transit accessibility)	♦					♦			♦	♦	**4**
Pavement Quality ("At Risk" or Worse)	♦			♦		♦			♦	♦	**5**
Total	**7**	**2**	**3**	**4**	**2**	**5**	**3**	**2**	**5**	**5**	

The equity analysis used the ratio of jobs in certain categories accessible by transit to the number of jobs accessible by auto. This functions as a measure of the availability of a variety of good travel options. It is important to note, however, that transit accessibility was much lower than auto accessibility across the county, even in the areas with the best transit service. This condition is by nature a potential transportation equity issue, given that low-income households are less able to afford the expenses related to private automobiles than higher-income households. In other words, job access is an issue for disadvantaged communities countywide because of the disparities in access between transit and private automobiles.

The equity analysis highlights the countywide trends as a way of understanding the biggest performance issues and gaps, but the results do not mean that the issues highlighted here manifest identically in every community. Moving from analysis to response requires looking at results on a more fine-grained level, community-by-community. The equity strategy, detailed later in this chapter, lays out a path forward on this important next step.

Analysis of Inputs: Funding

The team also looked at key *inputs* that help the transportation system evolve over time—Alameda CTC's major funding programs. This analysis was intended to take a snapshot of how the largest proportion of funding (local direct distribution funds to cities, the County, and transit operators) is distributed in Alameda County; however, it does not take into all transportation funding sources allocated to projects and programs in Alameda County, such as regional, state, and federal sources, nor does it take into account many capital projects because of the regional network nature of those investments. This portion of the analysis involved analyzing how equitably formula funds are distributed across the demographic groups included in the analysis. The team looked at how Vehicle Registration Fee and Measure B/BB funding has been distributed, on average, over the last four fiscal years among various cities and programs. To conduct the analysis, the team also used the demographic makeup of the user-bases of recipients of direct local distribution funds (e.g., populations of cities and ridership of transit agencies) and survey data for transit and paratransit.

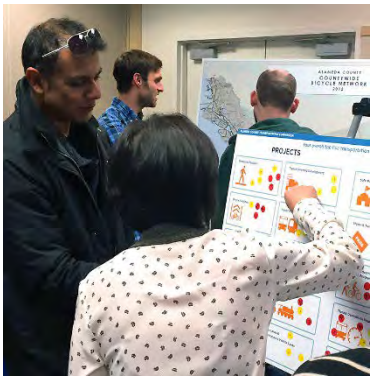
This analysis of "inputs" did not highlight any significant inequities in Alameda CTC investments. However, there are major limitations to this analysis, including a lack of consistently available data for all jurisdictions and programs in the county that could allow for a granular analysis of investment benefit by population group. The analysis also excluded fund sources over which Alameda CTC has less direct control, including both state and federal grant and formula funding programs that make up a significant share of total transportation-related spending in the county.

Outreach Findings

Community Outreach

To supplement the quantitative analysis, the CTP team conducted targeted outreach to the individuals in the economic, linguistic, racial, mobility, and age groups identified as a disadvantage factor. The 2016 Countywide Transportation Plan process included an extensive, successful outreach campaign that spanned the entire life of the project. Information regarding updates and events was frequently distributed via email communications, and through local media, and over 30 different materials, including stakeholder letters, reports, and e-newsletters, were produced and distributed throughout the process. There were also over 60 focus group activities held including meetings with individuals, stakeholders, and ad hoc committees, as well as business, community, and advocacy organizations. Most importantly, community members were brought together to help shape the project at over 80 public meetings and events that were held throughout the life of the project. In total, the 2016 Countywide Transportation Plan made hundreds of thousands of connections with stakeholders and community members through nearly 250 distinct outreach activities.

More recently, the team partnered with AC Transit to hold four open houses and conducted hundreds of intercept surveys in communities across the county. These activities are described here, and the results are summarized later in this chapter.



Transportation Open Houses

Alameda CTC held four transportation open house workshops in early 2016, one in each planning area (Dublin, Oakland, Hayward, and Fremont). Participants were asked to give input on the future of transportation and their investment priorities. Attendees were invited to view and comment on the contents of poster boards and maps and to ask questions of transportation planners. Participants ranked their priorities on an activity board and expressed additional thoughts, preferences, and priorities on comment cards (results are summarized below).

Figure 7-4 2016 Open House Participation

Open House Location	Number of Attendees	Comment Cards Received
Dublin	40	27
Oakland	41	12
Hayward	54	22
Fremont	57	5
Total	**192**	**66**

Intercept Surveys

The team also conducted a series of intercept surveys in March 2016 to encourage and ensure participation by individuals in the economic, linguistic, racial, mobility, and age groups identified as an equity factor in the analysis. The intercept survey effort aimed to understand the transportation patterns and priorities of a diverse set of county population groups, as well as "ground-truth" assumptions and findings of the equity analysis to ensure it matched the experience of economically-disadvantaged residents in Alameda County.

Intercept surveys were conducted in six parts of Alameda County in an effort to ensure participation by diverse segments of the population. Survey locations were selected based on CBTP communities and equity analysis findings; survey locations were:

- East Oakland
- West Oakland
- Central Alameda County
- South and West Berkeley
- City of Alameda
- Livermore

The intercept survey effort included a total of 300 interviews. Surveys were conducted in English, Spanish, and Chinese to allow participants to converse in their native language or the language they are most comfortable speaking.

Findings

Outreach conducted through intercept surveys and workshops gleaned insight into the current gaps in transportation service and the priorities for improvements of low income communities and communities of color in Alameda County.

Common themes, priorities, and ideas shared by participants at the open houses included:

- Ensure safe travel for all modes, but particularly pedestrians and bicyclists
- Implement solutions to traffic congestion
- Install additional bike lanes and bike racks
- Increase bus frequency and reduce number of stops to improve travel time
- Address transportation needs specific to aging populations
- Improve access to/from BART stations for pedestrians
- Make public transit more affordable and accessible for students
- Improve intersection design for all modes
- Ensure easy connections between transit operators and routes

On the intercept surveys, respondents cited the following issues most frequently as transportation challenges:

- Poor pavement quality
- The expense and convenience of transit services
- Bicycle and pedestrian safety

Respondents also identified the following areas as top priorities:

- Improving pavement conditions
- Making transit service more affordable and increasing transit coverage
- Improving walking and biking conditions by fixing sidewalks, slowing traffic, adding bike lanes and other facilities, and creating more safe crossing opportunities

Equity Strategy

Alameda CTC recognizes that there is a lot of work to do to ensure that the county's transportation system functions equitably. The agency will pursue a multi-pronged strategy over the coming years to address the issues identified in this analysis, with the support of its partner agencies in transportation, land use, and economic development, as well as county policymakers.

This effort starts with the development of a database that will attempt to bring the countywide results to a local scale. The database will catalogue, at the tract level, where high concentrations of a given population and poor performance on one of the metrics included in this analysis overlap. The database can help prepare the county and local jurisdictions to address the issues by pinpointing areas in which certain improvements might be most effective in addressing equity issues. The database can also help inform the selection of projects.

Identifying other ways in which this analysis can inform Alameda CTC activities will be an ongoing effort. Examples of other programs that could be targeted to address equity issues include:

- Safe Routes to Schools Program
- Affordable Student Transit Pass Program
- Goods Movement community impact reduction program
- Bike and pedestrian program funding
- Community development funds
- Technology and Innovation
- Direct Local Distribution funds
- Lifeline Transportation Program

Chapter 10 (Moving Forward) discusses other potential next steps for addressing issues raised through this analysis.

Conclusion

This is the first equity strategy developed by Alameda CTC. There is more work to be done to develop meaningful and effective responses to the findings of the equity analysis. This analysis has served not only to broaden the population groups that might be included in future analyses, it has also revealed ways that we might collect or monitor changes in performance and impacts across the County. Follow on activities will also help to develop new ways to address existing and historic concerns in transportation access or performance, through the development of targeted, neighborhood-based studies and plans.

Equity will be an ongoing focus of Alameda CTC moving forward (see Chapter 10), with partners in the transportation sector and our counterparts in other sectors.

8 Projects, Programs, and Performance

Introduction

Vision

Alameda County will be served by a premier transportation system that supports a vibrant and livable Alameda County through a connected and integrated multimodal transportation system promoting sustainability, access, transit operations, public health, and economic opportunities.

One of the primary purposes of the Countywide Transportation Plan is to identify the transportation projects and programs that are needed to maintain and enhance the county's transportation system and make progress towards the vision and goals articulated in Chapter 2. The CTP does not program funding to specific projects, rather, it is a long-range planning document that catalogs all the funding needs in Alameda County and the projects that are moving through the pipeline in the context of the multimodal needs of all users in Alameda County. In addition to providing a framework for transportation improvements, the CTP is developed, in part, to inform the 2017 update of the Regional Transportation Plan, Plan Bay Area 2040 (PBA 2040), regarding long-term transportation improvements for Alameda County.

This chapter describes the projects and programs included in the CTP, the process used to identify these improvements, and the expected benefits that can be derived from implementation of these projects in the form of performance results. It also describes the vision of what the future holds as Alameda CTC moves towards a more strategic, collaborative planning model and the benefits that are anticipated to accrue from this work.

Integrated Implementation

In order to more strategically pursue the vision and goals, Alameda CTC and its partners have begun to think differently about the transportation system. Rather than considering a list of discrete projects one-by-one in isolation, Alameda CTC approaches the implementation of projects, programs, and policies in concert. Often, linking several projects together can produce even greater benefits than can be achieved by any individual projects or programs alone. These "categories" or "packages" can also include technologies, operational strategies, and planning practices to ensure that benefits are fully realized. This integrated approach not only provides a unified and effective way to move projects and programs forward, it can also help to communicate the county's needs to the public and key decision makers, both within and outside of Alameda County in a more coherent and compelling way.

Opportunity Themes

To set the stage for CTP projects and programs and the vision scenario which outlines plans beyond this CTP, it is useful to take a step back to consider the overarching themes which define our transportation system. Beyond the adopted vision and goals, which encompass a broad range of aspirations for Alameda County's transportation system, it is also useful to simplify, down to the most basic level, the purpose the county's transportation system serves - to move people and goods in support of building strong communities. Improvements can be seen as falling under one of two overarching themes: a) Community: transportation infrastructure and services that move people throughout local neighborhoods on a fine-grained network of local streets and roads, and b) Regional: larger-scale transportation infrastructure that moves large quantities of people and goods between cities and to/from Alameda County. These two opportunity themes are described as follows.

What are projects and programs?
The CTP categorizes improvements into two primary categories:

a) *Projects*, which are discrete capital improvements with a defined scope and cost, such as extending a rail line or improving an interchange, and

b) *Programs*, which are pots of funding dedicated to a specific purpose, e.g., road maintenance or operating transit service. A significant amount of investment in the transportation network occurs through funding programs. Programmatic funding is used for operations and maintenance activities, as well as groups of projects such as bicycle improvements. Funding for programs is allocated over time via competitive grants or "passed through" (direct local distributions) to different agencies by formula (e.g., based on population or road miles in each jurisdiction). Allocations to specific projects within a programmatic category are made at a later time, either through Alameda CTC's local jurisdictional or transit operator's fund allocation processes, e.g., Alameda CTC's Comprehensive Investment Plan (scheduled for summer 2016).

Beyond these two core themes, we must also recognize that we find ourselves in a significant, and somewhat disruptive, transition period for transportation with new technologies and approaches rapidly changing the nature of mobility in vast, and often unexpected, ways. Change will continue to happen not only in terms of the availability of a broader array of modal choices, but the availability of new tools to understand more accurately and at a finer-grained level how changes will impact the system (e.g., utilizing "big data" and innovative partnerships with the tech sector). This salient current theme of innovation and change is also described as follows.

Multimodal Transportation for Local Communities

Communities throughout Alameda County are affected by the transportation system in many ways, through the accessibility and mobility it provides, and secondary impacts it creates. At the local community level, quality is paramount. Alameda CTC and its partners can profoundly impact people's quality of life through

neighborhood connectivity and safety investments, as well as provision of high quality services and educational programs.

Most of these types of improvements occur on local streets and roads (or arterials where they serve a local transportation function) e.g., bicycle lanes, crosswalks, street repaving, or adding pedestrian refuge islands. To truly achieve the promise of making streets safer for all users in Alameda County will require far more than construction of bike lanes and sidewalks; however, it will require fundamentally changing the way street projects are designed from concept through implementation, which entails adjustments to policies, design standards, and implementation practices at every level of government. A key theme of planning in coming years will be to fully integrate Complete Streets policies into daily practices of the transportation departments of the county and its individual cities.

Services are another key part of high quality community-serving transportation, including local fixed-route transit, shuttles, paratransit, and other services designed to provide safer and better access to schools, workplaces, senior centers, hospitals, and other social service destinations. Continuing to improve the quality and effectiveness of these types of services and their ability to reach their target populations is critical in coming years.

Finally, coordinating transportation with land use planning, e.g., through TOD projects, is also fundamental to ensuring that the transportation system integrates seamlessly into people's daily lives. These efforts have begun, but there is much more work to be done.

Community-scale improvements are largely captured in programs, such as:

- New Bicycle and Pedestrian Facilities (expansion)
- Multimodal Streetscape (system management)
- Minor Transit (system management)
- Land Use (system management)
- Rehabilitation (preservation)
- Routine Operation and Maintenance (operations)
- Travel Demand Management (system management)
- Safety and Security (system management)

Efficient and Safe Regional Movement of People and Goods

Alameda County's infrastructure is integral to ensuring that goods and people can move easily throughout the region. At this scale, efficiency is paramount. The ability to move large quantities of people and goods efficiently undergirds the health of the regional economy, particularly given Alameda County's central locality and its transportation infrastructure.

This regional-scale system is comprised primarily of highways, arterial roadways, passenger rail, and freight rail. Investments in intelligent transportation systems and other technology solutions to incentivize efficient use of existing infrastructure and roadway capacity are also fundamental to this theme.

Projects and programs that fall into this category encompass major infrastructure improvements such as building out the region's express lane network, implementation of high-capacity and high-performance transit services, and other freeway and arterial improvements focused on efficiency. Many goods movement projects fall into this category, aimed at better, safer, and more efficient transport of goods within, through, and outside Alameda County, e.g., improving the interrelationship between passenger and freight rail in order to reduce operational impacts each has on the other. These types of projects enhance the competitiveness of the Port of Oakland and Oakland International Airport, two of the region's major economic generators.

Examples of projects in this category include:

- East Bay BRT Project – This project repurposes one of AC Transit's busiest corridors from a rapid service to bus rapid transit with dedicated bus lanes.
- 7th Street Grade Separation Project – This project separates rail facilities from one of the primary access roads to the Port for trucks.

Some programs also relate to this theme, including:

- Management Systems (system management)
- Intersections (system management)
- Minor Highway (system management)
- Minor Freight (system management)

Embracing and Adapting to Innovation

Change in transportation traditionally occurs slowly due to the time required for major infrastructure projects, and the challenges associated with people's daily behavioral patterns. However, in recent years, advancements in technology have begun to converge in the transportation sector. These emerging technologies and services are disrupting the transportation status quo in cities and counties throughout the world. Examples of these innovations include new ways of using existing transportation modes such as ride hailing (transportation network companies), shared mobility options like bike sharing and car sharing, and on-demand or micro-transit. It also includes innovations that are functionally new modes such as self-driving cars. It further includes innovations that will profoundly impact the effects that transportation system has on communities, e.g., emissions of ground-level pollutants, and the environment (e.g., carbon dioxide emissions), such as electric vehicles and fuel economy standards. See the Technology and Innovation modal strategy in

Chapter 6 for more information on these types of projects. Finally, innovations will need to address sustainability and resiliency of the transportation system.

CTP Projects and Programs

For this update, MTC requested that each congestion management agency in the Bay Area coordinate project submittals from its county and define a "financially constrained" list of projects and programs that fits within the allocated "discretionary budget" for the county and a vision list of additional projects that would require additional funding.

Financially Constrained List

Development of the CTP began with a "call-for-projects" application process held in June-July 2015 to collect projects, programs, and plans to be considered for the 2016 CTP and PBA 2040. In response to the call, Alameda CTC received 332 applications for a total project cost of $26.2 billion and a funding request of $21.3 billion.

In October 2015, Alameda CTC submitted this list of projects and programs to MTC to inform Alameda County's portion of transportation funding in PBA 2040 (shown in Appendix B). This list identified a total of $9.47 billion as the funding need for Alameda County. Based upon funding estimates developed for the local sales tax funding, the identified funding need of $9.47 billion for the Alameda County projects and programs is met with the estimated local funding ($6.82 billion of local discretionary funds from Measures B and BB and the Vehicle Registration Fee) plus the $2.65 billion county share of federal and state funding, which is Alameda County's share allocated by MTC for PBA 2040 (see Figure 8-1). The list of projects and programs that was adopted by the Commission in October 2015 was carried forward into the evaluation process with no changes; this is the financially constrained list of projects for the 2016 CTP.

Figure 8-1 CTP Discretionary Funding Breakdown

Project category	Alameda County's share of regional funding	% of regional discretionary budget	Local funding	Total funding allocation
Programmatic projects	$1.14M	43%	$3.28M	**$4.42M**
Local/ Countywide projects	$1.51M	57%	$0.715M	**$2.23M**
Regional	n/a	n/a	$2.82M	**$2.82M**
Total	**$2.65M**	**100%**	**$6.82M**	**$9.47M**

Implementation of the modal plans is not captured in these costs and funding allocations. Actual funding needs will become clearer over time as modal plan recommendations advance through project development. As a result, significant

additional funding will be required to fully implement the projects, programs, plans, and vision defined here, and a mix of funding sources to meet the full range of multimodal needs.

Per guidance from MTC, submitted applications were sorted into four categories:

- **Projects**
  - ***Regional***: Projects that are regionally significant, defined as serving more than a single county.
  - ***Committed***: To qualify as a committed project, projects must either a) be 100% locally funded, or b) include a full funding plan[84] and environmental clearance by September 30, 2015.
  - ***Local/Countywide***: All remaining projects are considered local or countywide.
- **Programmatic improvements**: MTC requested that CMAs bundle projects, programs, and plans into programmatic categories where possible; these groups of similar types are included under a single listing in Plan Bay Area 2040.[85] Per MTC's guidance, projects were grouped into 14 programmatic categories, which are:
  - New Bicycle and Pedestrian Facilities (expansion)
  - Management Systems (system management)
  - Safety and Security (system management)
  - Travel Demand Management (system management)
  - Intersections (system management)
  - Multimodal Streetscape (system management)
  - Minor Highway (system management)
  - Minor Transit (system management)
  - Minor Freight (system management)
  - Land Use (system management)
  - Planning (system management)
  - Emission Reduction (system management)
  - Rehabilitation (preservation)
  - Routine Operation and Maintenance (operations)

These lists of projects, programs, and plans are shown in Appendix B.

[84] Full funding plan can include local and discretionary funds.

[85] Capital projects and programs that are not capacity increasing and exempt from air quality conformity requirements and/or categorically except from CEQA or documented categorical exemption from NEPA,

Benefits and Performance of the CTP

A key issue to consider when developing the CTP is how the identified projects and programs "perform." In other words, how they help the county progress towards its transportation vision and goals. To answer this question and facilitate an evaluation of the projects and programs in the CTP, in January 2016 the Commission adopted performance measures based on the CTP Vision and Goals, as described in Chapter 2.

Background

With the 2012 CTP update, Alameda CTC launched a new paradigm of transformative transportation planning initiatives that are performance-driven and take an integrated, system-wide, multimodal approach. This new paradigm affects all areas of how transportation planning is done in the county, and sets a framework for future investment considerations as described in the next section. A change of this magnitude takes time to fully integrate into policies and daily practices of how transportation funding is allocated and how projects are planned and implemented.

Since 2012, an enormous amount of strategic smart growth and multimodal planning integrating Complete Streets concepts has been done at the countywide level, by cities, and by other agencies. Initial analysis indicates that these changes should have big impacts on the efficiency, sustainability, equity, and effectiveness of the transportation system. However, this planning work is largely not yet reflected in the projects that were submitted to the CTP and therefore cannot be modeled in the performance evaluation. The CTP project submissions were much the same as in 2012; many of the new projects submitted that are different from 2012 submissions are programmatic and therefore are either more difficult or not able to be analyzed in the travel demand model, as discussed further as follows. The 2016 CTP illustrates that some progress occurred in the last four years, and represents a large step towards the vision taken by Alameda CTC, local jurisdictions, and transit agencies.

Context

The results were generated through the Alameda County travel demand model and other off-model processes, and were developed for two model scenarios:

- Current Baseline (2015)
- Financially Constrained/CTP Projects (2040) – Committed projects and CTP projects

Committed Projects were identified based on MTC's Resolution 4182 for the Plan Bay Area 2040 that defines committed projects as projects that have a certified Environmental Impact Report or Record of Decision for Environmental Impact Statement before September 30, 2015, and a full funding plan.

Some key context that is critical to understand for interpreting the evaluation results:

- **Major growth is projected**: The 2040 results include the growth projections from Plan Bay Area which anticipates nearly half a million new residents (470,000) in Alameda County and over a quarter of a million (286,000) new jobs. This growth means a significant increase in demand and a lot more people using the transportation infrastructure—so a result of no change or minor changes from 2015 to 2040 on indicators like travel time and reliability for auto and transit trips mean that efficiency in projects and programs that are planned can have a big effect.
- **Transportation system is mature**: Alameda County's transportation system is largely built out; the projects that are being proposed represent a fraction of the built value of the existing system and this poses limitations in the magnitude of impact that any capital project can have.
- **Travel demand model does not measure programmatic improvements**: The countywide travel demand model, which is used for the performance measurement, focuses on modeling capital projects, and is limited in how it can account for programmatic improvements (e.g., countywide bicycle plan and pedestrian plan implementation). Programmatic improvements by their nature are not defined as specific capital projects, and therefore, cannot be modeled. Once specific projects are defined from programmatic improvements, they can be modeled. However a large percentage of Measure B and BB is programs, and these programs are anticipated to make large changes in how the transportation system functions. So, the model is limited in how it can capture the impacts of a large portion of the improvements. Further, the model does not capture regular fluctuations in the economy or fuel prices, both of which are known to have major impacts on travel behavior.
- **Modal plans and other innovative work will be captured in future updates**: Development of countywide modal plans (Goods Movement Plan, Multimodal Arterial Plan, and Transit Plan) were a major outcome of the 2012 CTP. Alameda CTC and its partners have done significant and innovative work in the past three years to develop these plans; however, project development work still needs to be completed to submit projects for funding. Therefore these projects are not reflected in these results. Other partner agencies have also been doing innovative planning work, such as the AC Transit Major Corridors Study, interagency corridor-planning work, and Complete Streets planning and implementation at cities throughout Alameda County. Most of this work is also not reflected in these results, but will be captured in future CTP updates.

Performance Results for the 2016 CTP

Most evaluation results are trending in the right direction between existing (2015) and 2040 with implementation of CTP projects and programs, including:

- **More people are projected to bike, walk, and take transit.** Non-auto mode share increases 4% (to 23%) for all trips reflecting significant increases in transit service and bike facilities.
  - Bus ridership increases 72%.
  - Transit efficiency increases (46 to 52 passengers/hour).
- **Network connectivity for non-auto modes projected to improve.**
  - The number of miles of bicycle facilities is projected to increase by up to 43%.
  - The amount of higher frequency transit service is projected to nearly double.
- **Safety is expected to improve** based on vehicle miles travelled per capita going down.
- **Access to jobs improves, especially for transit riders.**
  - Access to jobs increases 7% by auto and 49% by transit reflecting significant increases in transit service, significant job growth, and more compact job growth with good access to transit facilities.
- **Access improves significantly for transit-dependent populations.** A higher number of low-income households are expected to have access to higher frequency transit service in the future.
- **Vehicle miles traveled and emissions (CO_2 and PM 2.5) trend downward on a per capita basis**. The evaluation shows significant impacts from fuel efficiency and fuel economy standards in lowering greenhouse gas emissions.

The evaluation showed mixed results for other metrics including system efficiency and maintenance:

- **Congested roadways are projected to increase, but this results in minor increases in travel time on average.** This is primarily due to major projected growth in population (30%) and employment (36%) in Alameda County. The planned CTP improvements and efficient future land use patterns moderate the impacts of this projected growth on the county transportation system.
  - 7% increase in congestion is projected overall.
    - ~80% of congested lane miles are on freeways.
    - ~20% of congested lane miles are on arterials.
  - Auto travel time is projected to increase by an average of 2 minutes in the peak and 1 minute in the off-peak.

  - Transit travel time is projected to increase by on average of 2 minutes in the peak and d*ecrease* by an average of 1 minute in the off-peak.
- **Significant maintenance needs are projected** and many communities show **funding shortfalls** to maintain a basic state of good repair on their roadways.

Full results of the CTP evaluation process are shown in Appendix C. It is important to emphasize that this system-level performance analysis is not a substitute for the detailed project level analyses which will be required as each project goes through its development phases. Projects will be required to conduct appropriate environmental and equity analyses prior to implementation. The level and type of analysis required will be determined by the size of the project and the type of funding it receives.

Vision

The three countywide modal plans—Goods Movement Plan, Transit Plan and Multimodal Arterial Plan—envision a new way of conceptualizing and addressing the multimodal transportation system problems which is more integrated and holistic and goes beyond transportation capital projects included in the 2016 CTP update. The Commission adopted the Goods Movement Plan in February 2016 and the other two plans are scheduled to be adopted in spring/summer of 2016. Much of the change that is envisioned is going to come about through programmatic improvements that are focused on maximizing the efficiency and effectiveness of our existing multimodal infrastructure and shifting travel behavior to different modes and times of day while supporting economic development. Examples include advanced and integrated corridor management, allocating capacity to high capacity transit services, implementation of Complete Streets, new rail strategies for passenger and freight rail, and ultimately ensuring countywide complete and connected network for all modes.

The Goods Movement Plan, which the Commission adopted in February 2016, is a good illustration of this new approach. The recommendations are presented in the form of opportunity themes which contain projects, programs, and policies that are implemented in concert to maximize synergies and co-benefits. The plan contains targeted capital improvements that are complemented by programs and policies aimed at changing behavior and incentivizing efficient use of the system. Plans like this represent the progressive future that is envisioned for Alameda County's transportation system. Summarized as follows are highlights of the adopted/potential strategies from the modal plans and some initial projected outcomes of these plans that illustrate the potential for more fundamental shifts in how the system performs.

Goods Movement Plan

The Alameda County Goods Movement Plan outlines a long-range strategy for how to move goods effectively within, to, from, and through Alameda County by roads,

rail, air, and water. It developed short- and long-term strategies and project lists to support goods movement in Alameda County. The adopted plan, if implemented as described in the opportunity packages, indicated these outcomes:

- Elimination of 21 million truck vehicle miles traveled per year.
- Annual savings to shippers from reduced trucking costs of approximately $59.2 million.
- Elimination of more than 1,280 truck trips per day on I-580 and I-880. Assuming that each truck is the equivalent to 2.5 passenger cars (PCE), the reduction in PCE from this strategy would be approximately 3,200 per day.
- Creation of middle-wage jobs from transloading (the process of transferring cargo from one form of transportation to another) and associated value-added activities.

Countywide Transit Plan

The Countywide Transit Plan's vision is to create an efficient and effective transit network that enhances the economy and the environment and improves quality of life. The Transit Plan identified 14 corridors as potential transit focus corridors across the county to provide or invest for a comprehensive transit improvement. While the Transit Plan draft network recommendations focus on where investments are needed to create fast, frequent transit service in the future, the Plan also considers how different types of transit service or transit tiers work together to create a complete transit network that serves different travel needs. Initial assessment of the draft improvement recommendations for the Plan period of 2040 support these outcomes:

- Doubling of daily passenger trips
- Over 40% increase of households within half mile of transit stops
- Over 50% increase in number of jobs located within half mile of transit stops

Countywide Multimodal Arterial Plan:

The Countywide Multimodal Arterial Plan's vision is to develop a network of efficient, safe, and accessible arterials that facilitate the multimodal movement of people and goods, and help create a strong economy, healthy environment, and vibrant communities, considering local context. This Plan coordinates with and supports the outcome of the Countywide Goods Movement and Transit Plans. In this context, this Plan ensures a connected and continuous network for all modes across the county. It identified over 500 miles of major arterials as a core Arterial Network for the county and proposed initial multimodal improvements.

- Transit Network improvements primarily focused on the AC Transit and LAVTA major corridors. About 38 miles of dedicated transit lane and 52 miles of Rapid Bus improvements are proposed that will support the transit outcomes as described in the Transit Plan.

- About half of the Arterial Network (250 miles) was identified as having high bicycle priority. About 121 miles of Class 4 protected bicycle lanes are proposed; advancing connections to transit, improving safety, and increasing non-motorized share of transportation.
- For pedestrian improvements, about 50 miles of either new sidewalk or widening of existing sidewalks are proposed along with nearly 150 miles of crosswalk enhancements. These improvements focus on high-pedestrian emphasis areas (downtowns and large commercial districts) and around BART station areas to increase safety and improve access to transit and activity centers.
- An Advanced Intelligent Transportation System, including a connected vehicles option, has been identified for nearly 150 miles, which will support goods movement and transit improvements described previously, and improve travel efficiency and reliability.
- Accommodation of truck traffic proposed on top tier arterial goods movement routes, supporting innovative goods movement delivery identified in the Goods Movement Plans.

Conclusion

This future vision will require embracing new perspectives, models, and tools, and embarking on new ways of working together with existing and new stakeholders, e.g., new technology-based private transportation sector stakeholders. Key steps for advancing partnerships and moving modal plan initiatives forward are outlined in Chapter 10.

9 Funding

Introduction

Image from Nelson\Nygaard.

Funding remains one of the most significant challenges in bringing Alameda County's goals and transportation vision to fruition. Given the significant growth anticipated for the county, and the breadth of the future vision described in Chapter 8, including transformative projects and programs outlined in the modal plans, significant additional funding will be needed. Leveraging local and regional funding to attract contributions from state and federal funding sources will be crucial in delivering on Alameda County's vision and goals for the future transportation network.

This chapter offers a basic overview of the framework and context for funding transportation in Alameda County, it summarizes the existing state of transportation funding both in Alameda County and throughout the nation, and highlights key issues for consideration and discussion as Alameda County makes its transportation funding decisions in the future.

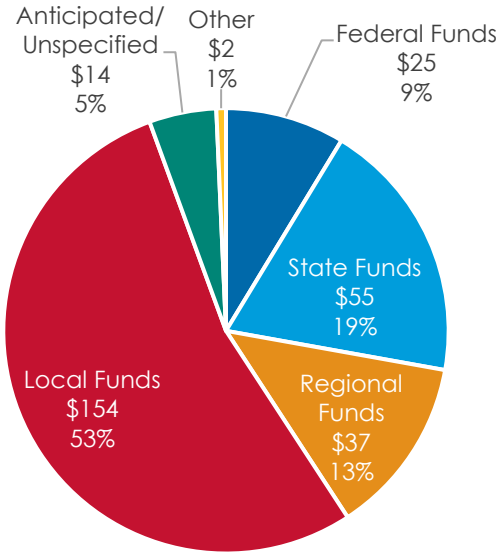
Overview of Transportation Funding in Alameda County

Consistent with the county's transportation needs, Alameda County makes use of a variety of sources to fund its transportation system. Funding is necessary to implement new projects, operate existing and new facilities, and to maintain the existing transportation system. Each new project or program requires numerous planning processes, studies, and usually many sources of funding in order to be successful. Almost every transportation project—from a freeway interchange to a bicycle lane to paratransit service—uses funding from multiple sources to build a complete funding package through planning, design, construction, and ongoing maintenance and operations.

Transportation dollars in Alameda County and throughout the nation come primarily from federal, state, regional, and local sources. However, in recent years there has been a dramatic shift towards a funding system that is much more reliant on sources of local funding. This shift is primarily the result of declining investment at the federal and state levels.

As of October 2015, Plan Bay Area 2040 funding projections show "outside sources" (state and federal sources) accounting for only about one-third of the Bay Area's projected transportation revenues beginning in FY 2016-17. As shown in Figure 9-1, approximately $191 billion in transportation funding over the next 23 years will come from local and regional sources, as opposed to approximately $80 billion from the federal and state levels. This is consistent with the trend of reduced contributions from federal sources, representing a 26% reduction in federal funding since the 2012 Countywide Transportation Plan.

Figure 9-1 Projected 28-Year Regional Revenues (Billions of dollars)



Source: Association of Bay Area Governments, *Plan Bay Area 2040 Draft Revenue Forecast*, October 2, 2015, http://abag.ca.gov/abag/events/agendas/o100915a-Item%2005C,%20PBA%202040%20Draft%20Revenue%20Forecast.pdf.

It appears that the shift to local and regional funding is a permanent one. The systemic budget challenges at the state level and the ongoing federal debate over spending and revenue will likely not be resolved any time soon for reliable and growing funding sources. Moving forward, Alameda County will have to continue to rely on local and regional funding mechanisms as a means to finance its current and future transportation system.

Federal

In 2015, the U.S. Congress passed and the President signed the Fixing America's Surface Transportation (FAST) Act, a five-year authorization of federal transportation funding programs. This was preceded by a three-year transportation funding bill called MAP-21 (Moving Ahead for Progress in the 21st Century Act) signed into law in 2012. Prior to this, a multi-year bill at the federal level had been absent since 2009 when the Safe, Accountable, Flexible, Efficient Transportation Equity Act—A Legacy for Users (SAFETEA-LU) expired. Short-term extensions of the SAFETEA-LU bill had filled the gaps since 2009, but the amount and the longevity of funding was limited. The FAST Act authorizes $305 billion for federal surface transportation programs, including $226 billion for highway programs, $61 billion for transit programs, and $10 billion for passenger rail over five years.[86]

One major source of uncertainty in the discussion of the future of transportation funding is what role the federal government will play. Despite passage of the FAST Act, the long-term strategy for funding transportation projects remains a critical point of discussion at the federal level. The federal gas tax has been used to fund transportation projects since the 1930s. However, since its last increase in 1993, it has not been indexed to inflation, resulting in a loss of buying power. Coupled with an increase in the number of hybrid and electric vehicles on the road and increasing fuel efficiency, gas tax revenues have not kept up with demand and are declining. Despite vigorous debate in the U.S. Congress about other sources of revenues, increasing the gas tax, or indexing the gas tax to inflation, the FAST Act passed instead with $70 billion in transfers from General Funds fully "paid for" or offset by unrelated savings.

[86] https://www.transportation.gov/fastact/.

State

Similar to the federal funding structure, much of California's transportation dollars come from taxes and fees. Prior to changes in 2010, the state collected a sales tax and excise tax on gasoline and diesel fuels, as well as truck weight fees. In 2010, measures AB 6 and AB 9, better known as the "gas tax swap" changed the funding mechanism in California. Changes included elimination of the statewide sales tax on gasoline and an increase in the statewide gasoline excise tax, as well as a 1.75% increase in the sales tax on diesel fuel and a reduction in the excise tax on diesel.

Statewide bonds have also contributed to funding transportation, most recently with the passage of 2008's Proposition 1A to provide $9.95 billion to fund California High-Speed Rail and Proposition 1B in 2006 to provide $19.925 billion for a variety of transportation projects.

In 2014/15, funding from California's Greenhouse Gas Reduction Fund—funded by the cap-and-trade program—began to be used to fund projects designed to reduce carbon emissions in the state. Funding is generated through the sale and trade of permits to exceed the pollution cap of certain industries. Beneficiaries of cap-and-trade funding so far include the California High-Speed Rail project, as well as other transit services and affordable housing projects throughout the state.[87]

California is also exploring a vehicles miles traveled-based road charging model. Under this model, a fee would be levied on drivers based on how many miles they drive, not how much gasoline they purchase. A pilot study of this model will launch in California in summer 2016 with 5,000 volunteer driver participants.[88]

[87] http://www.arb.ca.gov/cc/capandtrade/auctionproceeds/ggrfprogrampage.htm.

[88] *Exploring a Road Charge for California – One Mile at a Time* factsheet, http://www.dot.ca.gov/road_charge/documents/road_charge_fact_sheet_011216.pdf.

Regional and Local

With the reduction in transportation funding coming from the federal level in recent decades, regional and local funding has become critically important for transportation projects in Alameda County and throughout the Bay Area. Regional and local funding sources now comprise a significant share of the resources available for funding transportation projects. They include taxes, fees, tolls, and fares from local transit agencies. For example, Bay Area voters have passed multiple bridge toll increases with the understanding that the revenue is used to fund road and other transportation improvement projects, referred to as Regional Measure 1 and Regional Measure 2. Local entities like Alameda County must increasingly rely on funding sources that are generated locally.

Alameda County

Alameda County has a long history as a strong "self-help" county where voters have agreed to tax themselves in order to raise funds for critical transportation projects. Sales taxes earmarked for transportation are very powerful and present significant opportunities to fund and advance transportation projects locally. Tax-based measures require both development of a detailed expenditure plan and strong public support, i.e., approval by 2/3 of voters. The local transportation sales tax has become one of the most stable and reliable funding sources for transportation in Alameda County.

Alameda County has passed three sales tax measures for transportation. The first was Measure B in 1986 which funded projects and programs throughout the county. The second, also known as Measure B, extended the existing ½-cent sales tax, and was approved by over 81% of voters in 2000. Measure B funds a multitude of transportation projects including highway, local roads, transit expansion, transit operations, paratransit, and bicycle/pedestrian facilities.

In November 2014, Alameda County voters approved a supplementary transportation sales tax, Measure BB, by over 70%. Measure BB authorized a one-cent sales tax in Alameda County, augmenting and extending the ½-cent tax passed in 2000 to 2045. It is estimated to generate over $8 billion for transportation projects and programs in the county and is projected to generate $20 billion in economic activity

in the region. The measure will expand BART, bus, and commuter rail in the county; keep fares affordable; provide traffic relief; improve air quality; and create thousands of jobs in Alameda County, among other benefits.

Alameda County voters also passed Measure F in November 2010, which increased annual vehicle registration fees by $10 to fund road, transit, non-motorized, and transportation technology projects and programs. The funds generated by these local sources are critical to advancing and executing the vision outlined in this Countywide Transportation Plan.

Funding Sources and Revenue for Alameda County

This section provides an overview of funding sources that could be used for projects and programs identified in this Countywide Transportation Plan by a variety of agencies. This includes a summary of the most common funding mechanisms at various levels of government. These sources are administered by various agencies in Alameda County.

Federal

- **Federal Highway Administration programs** are generally administered by State Departments of Transportation and Metropolitan Planning Organizations, with recommendations on funding for projects from congestion management agencies for some fund sources. The largest programs include the National Highway Performance Program, the Surface Transportation Block Grant Program, the Congestion Mitigation and Air Quality Improvement Program, and the Highway Safety Improvement Program. The FAST Act includes a new National Highway Freight Program as well as set asides for bicycle and pedestrian projects and recreational trails within the Surface Transportation Block Grant Program.
- **Federal Transit Administration programs** provide a source of funding for transit agencies across the county. The largest programs include the Urbanized Area Formula program, the State of Good Repair Formula Program, and Capital Investment Grants—also called New Starts and Small Starts. The FAST Act increased funding for the Bus and Bus Facilities program, including new discretionary grants and an emphasis on low or no emission bus deployment.
- **Grant programs**, such as the TIGER Discretionary Grant Program and the Fostering Advancements in Shipping and Transportation for the Long-term

Achievement of National Efficiencies (FASTLANE) Grant Program are administered by the United States Department of Transportation.

- **Federal financing** is available through the Transportation Infrastructure Finance and Innovation Act (TIFIA) program and the Railroad Rehabilitation and Improvement Financing (RRIF) program. The TIFIA Program provides federal credit assistance to eligible surface transportation projects, including highway, transit, intercity passenger rail, and some types of freight rail, intermodal freight transfer facilities, and ports. The RRIF program provides direct loans and loan guarantees to finance development of railroad infrastructure.

State, Regional, and Local

A wide variety of funding mechanisms exist at the state, regional, and local levels, which are listed below. Additional discussion of these sources is include in the overview section and new funding opportunities are described at the end of this chapter.

State

- State Highway Account
- State Transit Assistance
- State Transportation Improvement Program/Regional Transportation Improvement Program
- State Transportation Development Act (TDA)
- TDA, Article 3 (Bike/Pedestrian projects)
- State Proposition 1B
- Caltrans Local Assistance Programs, including Safe Routes to School
- Caltrans Planning Grants Program
- Highway Users Tax Account (gas tax subvention)
- Greenhouse Gas Reduction Fund (cap and trade)

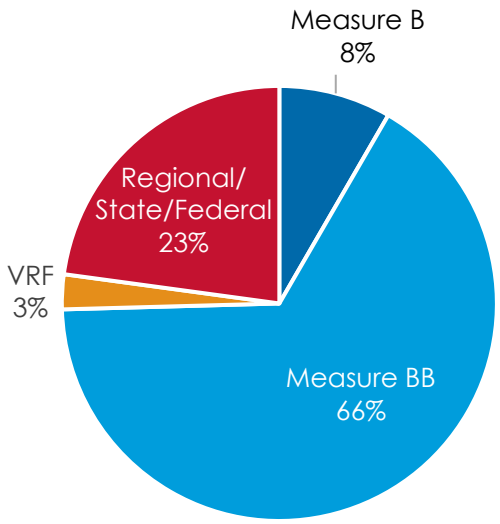
Regional and Local

- Gas tax subventions
- Seismic bridge tolls
- Regional Measure 2 bridge tolls
- Transportation Fund for Clean Air (TFCA) – vehicle registration fees
- Measure B – local sales tax measure
- Measure BB – local sales tax measure
- Measure F – Vehicle Registration Fee

- AB 1107 half-cent sales tax for transit (BART and AC Transit)
- Bicycle Facility Program – funded through TFCA monies
- Regional Bicycle and Pedestrian Program
- HOT lanes or Express Lanes
- Property taxes
- Various impact and development fees

Revenue Projections for Alameda County

Figure 9-2 Funding Breakdown FY 15/16-FY 39/40



Due to passage of Measure BB, the funding picture in Alameda County has changed dramatically since the 2012 Countywide Transportation Plan. Figure 9-3 shows the draft discretionary budget for Alameda County through 2040. It includes estimates for the major state and federal funding sources as well as estimates for regional and local funding sources. As shown, local funding is a major share (about 77%) of the total funds estimated to be available for the county's transportation needs, and Measure BB represents a significant portion of that source in coming decades. The subtotal of regional/state/federal funding is identified as part of the Plan Bay Area 2040 draft budget.

Figure 9-3 Alameda County 25-Year Projected Funds (FY 15/16 – FY 39/40)

Year	Funds	Percentage
Measure B	$969 M	8%
Measure BB	$7,680 M	66%
VRF	$300 M	3%
Subtotal Alameda County Local	**$8,948 M**	**77%**
Subtotal Regional/State/Federal (*MTC Discretionary Budget*)	**$2,650 M**	**23%**
Grand Total	$11,598 M	

Note: Local funding projection as of March 2016, assumes a 2% growth rate.

Funding Challenges and Opportunities

Despite recent wins, including the five-year FAST Act at the federal level and the passage of Measure BB in Alameda County, funding will continue to be an area that will require ongoing attention. The Bay Area is growing, placing increasing demand on the region's transportation system, and Alameda County with its central regional location will be the most impacted by the region's growth more than any other county in the region.

Core transportation infrastructure that we have depended on for decades is in need of major repair and rehabilitation, and competition for funding at all levels is expected to continue to become more and more intense, with more entities vying for a narrowing pot of money. It remains true that for the transformative transportation solutions included in this Countywide Transportation Plan, significant new funding is needed.

Demands Are Increasing on an Aging System

The Bay Area is growing rapidly, and this growth is projected to continue in years to come. Meanwhile, much of the Bay Area's transportation system was built 40-60 years ago and is in need of major reinvestment. BART is an illustrative example. As the spine of the Bay Area's public transit network, BART transports 400,000 to 500,000 people around the region every day, making it a foundation of the region's economy and mobility. Ridership is at all all-time high and projected to continue to rise while the 40+ year-old system is in dire need of reinvestment. Service delays are on the rise, as aging equipment cannot keep up with ever-increasing ridership.

BART and WETA, which operates ferry service on the San Francisco Bay, both have fleets consisting of vehicles that are at or beyond the typical useful life of such types of vehicles. BART is in the process of acquiring new vehicles but are currently

providing service with the oldest train cars of any other major heavy rail service in the U.S. For its part, AC Transit unveiled a shipment of new buses in 2014.[89]

Identifying sufficient funding to meet maintenance and rehabilitation needs while also recognizing that growing demands will require new and expanded mobility choices, including extensions of existing transit systems, presents a difficult balancing act. Asking the public to support major funding allocations just to keep the existing system running is a more challenging ask than funding for new infrastructure. Further, if funding is identified, staging the reinvestment in the existing system in such a way to minimize disruption to daily transportation will be critical.

Importance of Leveraging Additional Funds

Robust local funding sources cannot simply be viewed as new sources to fund projects. It remains critically important that Alameda CTC, the region, and all the county's municipalities leverage local and regional transportation dollars to attract and match funding from other sources at the state and federal level. As an example, Measure B resulted in $4.1 billion in total transportation funding by leveraging $2.6 billion of federal, state, regional, and other local funding sources thanks to $1.5 billion in contributions from Measure B.[90]

Leveraging funding will continue to be a critical part of the transportation funding strategy in Alameda County as a way to maximize transportation funding and in order to meet the requirements of certain grants. Many federal grants, among other sources, require that a portion of project funding come from or be matched by local dollars. Leveraging remains a critical component of delivering the $8 billion Measure BB package.

Fluctuating Revenue Sources

Local sales tax-based funding sources are volatile and dependent on consumer spending and a strong economy at all levels. Revenue from Measure B, for example, was negatively impacted by economic challenges since the early 2000s. As Alameda County's funding relies more and more heavily on these sources, these fluctuations could affect transportation system funding.

Ballot Measure Uncertainty

It is important to note that local and regional funding sources require two-third voter approval. Bay Area voters have historically been willing to support measures for transportation, such as sales taxes, bridge tolls, and vehicle fees, as was most recently evident with the passage of Measure BB in Alameda County. However,

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[89] Alameda County Transportation Commission, *2014 Performance Report: State of the Transportation System in Alameda County.*

[90] Alameda CTC Commission Retreat brochure, July 17, 2015.

there is no guarantee that this will be the case with future ballot measures. Several of Alameda CTC's partner agencies are considering ballot measures in 2016 to fund infrastructure needs; voters' willingness has the potential to reach a limit as more and more demands are put on local funding options. This represents another layer of uncertainty for longer-term transportation funding in Alameda County.

Constraints on the Use of funding

A significant challenge beyond planning transportation projects and identifying funding sources is developing a package of funding which is compliant to the specific ways each dollar can be spent. These constraints are often described as matching funding needs with the "color of money" available. It is common for funding sources to place limitations on the type of projects which can be funded with the money or the portion of the project cycle when it can be spent. For example, federal transit funding is generally available only for capital expansions, not ongoing operations. State funding is generally limited to capital needs, though maintenance is included as an acceptable use. It is less common to find funding for transit operations, for example, so transit agencies tend to rely heavily on local taxes to fund operations. In recognition of this fact, a significant share of Measure BB is dedicated to supporting transit operations.

New and Innovative Funding Opportunities

In the decline or absence of traditional funding mechanisms, new and innovative opportunities for transportation project funding are emerging. While none of these opportunities alone will solve all funding challenges, they may provide assistance in augmenting the resources already available through traditional funding mechanisms. Alameda County can begin developing a strategy for pursuing these sources through collaboration with partner agencies throughout the region as necessary. A list of opportunities for new funding sources, though not exhaustive, is described in more detail in the rest of this section. It should be noted that many of the following opportunities are likely to face resistance or require cooperation with the public, private interests, elected officials, and/or partner agency officials.

Taxes and Tolls

Bay Area Gas Tax

The introduction of an additional regional tax on gasoline could significantly augment the current revenue collected at the state level. Per 1997 state legislation, MTC has the authority to impose a tax of up to 10 cents per gallon on gasoline sold in the Bay Area. Alameda County would be expected to receive a significant portion of this revenue, as 95% of revenue must be "returned to source."

Key considerations include:

- Political viability

- Two-thirds voter approval and detailed expenditure plan required
- Significant coordination required between local, regional, and state governments
- Revenue tied to purchase of fuel, which is likely to continue declining with increasing popularity of fuel-efficient vehicles

Additional Bridge Toll Increases

Bridge tolls on bridges throughout the Bay Area have been increasing steadily in recent years thanks to voter-approved Regional Measures 1 and 2. There is potential to raise tolls additionally.

Key considerations include:

- Political viability, especially given recent suite of increases
- Legislative and/or voter approval required
- Revenue source is dependent on bridge traffic
- Potential for Alameda County to receive larger share since significant portion of traffic on the Bay Crossing bridges travel on and impact Alameda County roads.

User Fees

Vehicle Miles Traveled Fee

As opposed to the existing gas taxes, VMT fees have the benefit of tying financial obligations of drivers more directly to the impact of driving on the transportation network. A VMT fee is also regarded as a more stable source of revenue than the gas tax as it would not be tied to the type or amount of fuel a vehicle uses. Finally, a VMT fee aligns well with the region's larger goals of reducing driving and encouraging use of alternative modes.

California will explore the potential for a VMT-based driving fee as part of a pilot study occurring with 5,000 volunteer drivers in the summer of 2016. Results of the pilot will be made available by summer 2017.[91]

Key considerations include:

- Requires legislation and strong champions at local, regional, and state levels
- Political viability
- Start-up technology costs and development of processes and fee collection system
- Perceived and real concerns about privacy from stakeholders

[91] *Exploring a Road Charge for California – One Mile at a Time* factsheet, http://www.dot.ca.gov/road_charge/documents/road_charge_fact_sheet_011216.pdf.

- Would not be a quick solution to the region's funding challenges

High-Occupancy Toll (HOT/Express) Lanes

HOT lanes allow non-carpool vehicles to pay and drive in the carpool lane when there is available capacity for a fee that varies according to demand (dynamic pricing). Carpool vehicles continue to drive for free or reduced price. Two corridors of Express Lanes are currently operating on freeways in Alameda County, including I-580 in the Tri-Valley on both eastbound and westbound directions and on southbound I-680 over the Sunol Grade. Express Lanes are an attractive option because they provide a new revenue source and enable the pricing of travel behavior to reduce congestion.

Key considerations include:

- Political viability, including public appetite for additional fees
- Revenue is based on traffic levels
- Expenditure plans regarding use of excess funds

Congestion Pricing

Congestion pricing involves charging a motorist a fee to drive in congested areas or corridors. Revenue from congestion charges are typically used to fund public transit and other non-motorized travel improvements with the ultimate goal of the reducing vehicle trips and reducing congestion. Congestion pricing has been successfully implemented in multiple cities in Europe and a congestion pricing scheme was studied for San Francisco in the early 2010s. Congestion pricing is an attractive mechanism because it can be used to support larger goals around mobility, accessibility and sustainability.

Key considerations include:

- Political viability, including public acceptance for additional fees
- Congestion pricing works best in dense, urban areas with strong public transit and alternative options to driving; it may not be appropriate for all parts of Alameda County
- Revenue is volatile as it is based on traffic levels
- Start-up technology costs and development of processes and fee collection system

Strategic Parking Management

Parking management strategies can have the dual benefit of easing the ability of drivers to find and pay for parking, while also providing an additional revenue source. Parking fees can be re-invested in the surrounding area through creation of a "parking benefit district" or PBD which can be used to fund streetscape or transportation improvements.

Key considerations include:

- Public acceptance for changes to traditional parking management
- Parking policy is made at local, municipality level
- Capital and operations costs of parking technology

Public-Private Partnerships

Public-private partnerships (PPP) have become more popular in recent years both as a means of filling funding gaps and achieving buy-in to new transportation investments. PPP arrangements may include financing assistance, direct contributions to capital or operating expenses of projects, and/or project sponsorships. The ideal PPP offers a benefit to both the public and private party. Examples include a private company building, operating and collecting revenue from a toll road, or a private company sponsorship of a bike share system for brand visibility.

Key considerations include:

- Locating parties interested in forming such partnerships
- Public acceptance for such arrangements
- Long-term viability can be uncertain

Impact Fees

Bay Area entities have long believed and set precedents to ensure that private parties, such as residential or commercial development companies, who benefit from public investments in transportation should contribute to those investments. In Alameda County this occurs in the form of developer impact fees. Existing impact fees include the Alameda County Cumulative Traffic Impact Mitigation Fee and the Tri-Valley Transportation Development Fee.

In April 2016, the Oakland City Council approved the introduction of development impact fees on those building housing or commercial property in Oakland. This will take effect in September 2016.

Key considerations include:

- Overcoming public or private industry resistance to additional fees
- Proposition 26, approved in 2010, requires a two-thirds voter approval rate to pass such measures
- The connections between fees and projects usually require additional studies
- Revenue is volatile depending on economic conditions
- Fees often apply only to new development, which may limit revenue to more "built out" areas
- Fees are usually intended only for capital projects

- Fees are typically established at a local jurisdiction level; regional or country consensus will be difficult

Summary of New Funding Opportunities

While a number of possible new revenue sources are available for further evaluation, it is clear that there are several common barriers to their implementation that would have to be overcome.

- **Action would be required at the local, district, regional, state, or federal level**: Alameda County itself would be unable to implement many new funding measures on its own. Some measures, such as market-based pricing of parking, might have to be implemented at the local level, and some, such as sponsorships for transit infrastructure or services, might have to be implemented at the district level. Measures such as a mileage fee would require legislation at the state level and would likely have to be implemented statewide (although under current law, the region may implement its own gas tax).
- **Resistance from private parties**: Private entities would likely be unwilling to contribute funding in the absence of a clear benefit or mandate. Experience from other areas does suggest, however, that they will do so if value can be demonstrated—that is, if businesses or property owners can be convinced that they will see returns on their investments.
- **Resistance from voters and/or elected officials**: Some proposed revenue sources may prove highly controversial, including those with broad impacts (such as taxes on the general public or user fees for motorists), those that would price a resource that has previously been heavily subsidized (such as new tolls), and those that would affect interest groups able to exert influence on policy discussions. Even measures that require direct voter approval or that would be voluntary in nature, such as sponsorships, could prove controversial.

Conclusion

The transportation funding challenges faced by Alameda County are not unique; other large counties in California face similar issues. Alameda County continues to advocate for funding at the regional, state, and federal levels, as well as explore the benefits of developing partnerships with other counties and jurisdictions throughout the state to demonstrate needs, share best practices, and advocate for funding. Ongoing coordination and partnership will allow for exerting influence and targeting advocacy efforts effectively to yield results.

10 Moving Forward

The CTP sets a direction for Alameda County's transportation system. To accomplish what is described herein and continue the evolution towards a more sustainable, equitable, and effective transportation system will take time, careful creation and consideration of projects and programs, policy changes, and strong investment strategies. Moving the CTP forward will include identification of transportation funding, coordination with land use policy changes, new ways of funding and implementing projects, new partnerships, and ongoing performance monitoring across the system. In some cases, additional studies or legislative advocacy will be necessary to realize the vision described in this plan.

In the course of preparing this CTP, and developing the modal plans, several key opportunity themes emerged. Primary among them is a desire to ensure that implementation proceeds in an integrated manner, such that Alameda CTC continues to advance efforts to pursue the implementation of projects, programs, and policies in a concerted way. This approach will enable synergies that can produce outcomes that are greater than the sum of their parts. In addition to pursuing more integrated implementation, other themes include the recognition that projects, programs, and policies affect many goals encapsulated in this plan at both a community level and a regional level. Rather than solely considering projects in one sphere or another, this CTP enables Alameda County to reaffirm its approach to multimodal improvements that enhance the travel experience for those moving goods and people across the county and region, as well as the quality of life for communities and neighborhoods in Alameda County.

The way forward is described herein in terms of short- and long-term measures to deliver project and programs across the system. This CTP includes ways to progress the endeavors envisioned in our modal plans, in our CIP, and within this document in order to see real improvement in our communities, in multimodal mobility, in goods movement, and in technology and innovation. Part of these steps include measures that will continue to strengthen our collaborations with other sectors within the county and collaboration with partners throughout the region.

Advancement of Projects and Programs

Projects and programs included in this plan are eligible to receive local, regional, and federal funding. In all cases, additional steps are required before construction or implementation can occur, including securing full funding, acquiring right-way and getting final project permits, final design, conducting environmental review, and Title VI or other equity analysis where required. The schedule for beginning construction on specific capital projects depends on funding availability, project readiness, and many other factors. The 2016 CTP is a policy document that provides a list of needs for projects and programs and identifies funding sources; however, it is

not an explicit project approval document that directs a specific course of action on a project. As such, the CTP does not propose project "approvals" and is therefore, according to state statutes and case law, not subject to CEQA. As required by state law and other regulatory requirements, all projects included in the CTP will undergo independent project development according to all applicable environmental and regulatory approval processes.

The CTP is updated every 4-5 years, to ensure that we have a strong blueprint for the future and to reflect changes in the countywide and regional network, policy direction, and applicable regulations. The following outlines steps Alameda CTC can take to advance projects and programs in this plan and prepare the next batch of projects for the future, beginning with the years until the next update of the CTP.

Short term (1-2 years):

- Implement Capital Improvement Plan (CIP) 1.5 which supports project development and funds projects/programs that are most ready for implementation/construction, as independently approved by Alameda CTC
- Conduct CIP 2.0 in summer 2016 to identify the next round of projects ready for implementation
- Utilize the robust countywide GIS database that was created as part of the Multimodal Arterial Plan to strategically target funds to projects that support multimodal improvements and complete streets to advance an integrated and connected network of multimodal transportation systems in Alameda County that support Alameda CTC's vision and goals (this database incorporates all the modal plan work and the CTP projects and programs); ensure integration of the equity findings into the countywide GIS database
- Implement high-priority projects sponsored by Alameda CTC and identified in the CPDP (Capital Projects Delivery Program described in Chapter 1) as independently approved by the Commission, including working on and identifying new corridor-specific planning efforts to identify and develop projects that support multimodal transportation solutions
- Develop strategic implementation plans for projects and programs that identify priorities, funding needs, funding opportunities and implementation strategies
- Work with MTC and project sponsors to shape projects to increase their ability to attract regional and federal funds; actively seek opportunities to leverage local funds with regional, state, and federal funds
- Work with project sponsors to ensure that they complete all appropriate project development and equity analyses, including addressing and assessing project benefits and impacts on minority and low income

communities, as required; use of the CTP equity analysis GIS mapping can assist local jurisdictions with this effort

- Define and implement next steps to move modal plan recommendations forward, including those in the Goods Movement, Transit, Multimodal Arterial and Bicycle and Pedestrian Plans
- Key steps on program implementation include:
  - Define and implement remaining programs in the 2014 Transportation Expenditure Plan (Measure BB)
  - Implement Affordable Student Transit Pass pilot programs
  - Expand Safe Routes to Schools program beyond education to incorporate capital infrastructure projects in collaboration with stakeholders (e.g., safety and access projects)
  - Evolve the paratransit program to respond to new demands and an evolving transportation landscape, including conducting a countywide needs assessment to identify and determine high-priority needs and solutions to serve seniors and people with disabilities in Alameda County and increasing same-day accessible trip availability
  - Continue to take actions to encourage, supplement, and support local governments in their TDM efforts, through funding multimodal transportation improvements and providing guidance and technical assistance to localities in developing their own TDM programs

Longer term (3-5 years):

- Complete implementation of CIP 2.0 and conduct future CIPs to continue moving projects through the concept, planning, design, review, and construction process
- Continue project development and delivery as approved by voters and as identified through strategic implementation plans
- Move forward with modal plan recommendations
- Move from pilot to permanent Student Transit Pass program by effectively leveraging funds
- Advance paratransit programs that support a suite of services for seniors and people with disabilities over a spectrum of ages and abilities
- Update the CTP to incorporate new projects and programs to inform the regional transportation plan and establish a future transportation framework for Alameda CTC

Planning and Studies

The strategies necessary to achieve the vision for the future articulated in the CTP will continue to evolve over time. Regular updates of the CTP will be necessary to respond to changing demographics and transportation needs, fluctuations in funding availability, and new technologies. Major uncertainties include the success of local, regional, and federal efforts to generate and secure additional transportation funds and the rapid evolution of technology sector as it affects transportation.

Future planning will also include taking the next steps towards implementation of the modal plan recommendations to get projects ready for future rounds of funding. Ongoing planning and project development efforts can help to better position the county for future iterations of the RTP and CTP and ensure that appropriate projects are adequately defined so as to be ready for submission in future plan development processes. Key steps include:

Short term (1-2 years):

- Conduct project development on high-priority projects recommended in the countywide modal plans; advance projects that further the vision of a continuous, connected network for each mode in Alameda County
- Conduct a series of comprehensive corridor studies that carry the improvements recommended as part of the Multimodal Arterial Plan and other modal plans through conceptual design; engage local residents and businesses in a community-driven design process that uses the MAP modal priorities and proposed improvements to inform the discussion
- Orient future planning and project implementation towards addressing equity disparities identified in the equity analysis
  - Educate cities and other DLD recipients on how to integrate equity analysis findings into the planning and implementation of projects and programs, e.g., cities could consider programming DLD funds to the neighborhoods and/or transportation performance areas in which countywide equity trends show up most significantly on the local level
- Conduct additional detailed planning studies to refine and establish how to advance modal plan strategies, such as the rail strategy that was initiated as part of the Goods Movement Plan
- Implement complete streets policies through Alameda CTC's grant programs and the DLD Local Streets and Roads program (i.e., the Central County Complete Streets implementation project, currently underway, is intended to serve as a model for the rest of the county when completed)
- Develop new ways of integrating projects with programs and policies to maximize benefits

Longer term (3-5 years):

- Incorporate comprehensive updates to the modal plans, equity strategy, and CBTPs into future updates of the CTP
- Further evolve the equity strategy in future updates
- Fully integrate Complete Streets policies into daily practices of jurisdictions

Collaborations and Partnerships

Moving forward, partnerships will be more important than ever before. The future vision outlined in Chapter 8 will require embracing new perspectives, models, and tools, and embarking on new ways of working together with different and new stakeholders, particularly the new technology based private transportation sector stakeholders. Key steps for advancing partnerships and moving modal plan initiatives forward include:

Short term (1-2 years):

- Continue meetings of the Goods Movement Collaborative and begin regular meetings of the Commission's Goods Movement Committee to shift the focus to implementation:
  - Develop a formal institutional framework for coordinating implementation
  - Create a focal point at the highest level possible for coordinating rail (freight and passenger) improvements and negotiations with the private railroads
  - Create a technology development collaborative to address low emissions program, introduce advanced logistics technologies, and develop public-private and public-public partnerships for pilot of demonstration technologies
  - Further define and implement programs identified in the Goods Movement Plan
- Begin regular meetings of the Commission's Transit Committee to advance recommendations of the Transit Plan
- Partner with Alameda County's transit agencies to advance Transit Plan recommendations and address other transit needs in the county; convene partners to improve integration of transit service delivery to support Transit Plan recommendations (Public Transit modal strategy, Chapter 6)
- Develop new and strengthened partnerships with non-traditional partners such as private sector technology companies to pilot new ways of integrating technological innovations into the transportation system
  - Develop collaborative relationships with technology companies and other transportation agencies to better understand the implications of new technologies, develop pilot projects to test new technological solutions, and

develop improved data collection and analysis methodologies based on newly available data sources

- Work with local jurisdictions and transit agencies to identify ways that new technologies can improve transportation efficiencies for all modes.
- Work with local jurisdictions and transit agencies to identify ways that new technologies can improve transit service to traditionally underserved populations such as low-density areas, elderly, and people with disabilities

Longer term (3-5 years):

- Use partnership structures to strategize, plan, and advocate for policies, projects, and programs that support the CTP vision
- Use established partnerships to actively leverage funds to deliver transportation solutions in Alameda County

Land Use Coordination

This CTP and Plan Bay Area seek to strengthen transportation and land use linkages by focusing on development that brings together mobility choices, housing, and jobs. Measure BB includes dedicated funding for infrastructure development that supports existing or proposed land use in and around transit hubs, which provides initial financing to support specific TOD and PDA developments throughout Alameda County, as well as activities that better link transit, housing, and employment.

The following are intended to support local jurisdictions and regional governments in implementing land use plans that can be efficiently and effectively served by all modes.

Short term (1-2 years):

- Partner with cities to implement CEQA/LOS reform, e.g., provide technical assistance to cities to come into compliance with SB 743
- Collaborate with local jurisdictions (planning, public works, economic development) to better coordinate land use/transportation planning
- Continue to monitor development activity and "readiness" throughout the county in the *Priority Development Area Growth and Investment Strategy* and use this as a basis to support integrated transportation and land use planning
  - Update the PDA Action Plan on a regular basis
- Provide funding, technical, and policy support to local jurisdictions to support infrastructure in designated PDAs and TODs

Longer term (3-5 years):

- Continue to develop new modeling and evaluation tools that adequately assess the interactions between land use and transportation improvements
- Monitor the effectiveness of this plan using the adopted performance measures and the assumptions regarding land use as the plan develops; some performance measures may require further refinement over time as tools are developed

Funding

With Measure BB, approved by voters in 2014, Alameda County is in a much better place with regards to funding than it was during the 2012 CTP update. However, to bring the future vision articulated in Chapter 8 to fruition will require significant additional funding. Leveraging local and regional funding to attract contributions from state and federal funding sources will be crucial in delivering on Alameda County's vision and goals for the future transportation network. Specific steps include:

Short term (1-2 years):

- Leverage existing local and regional funds to attract additional funding from outside sources
  - Work with transit operators to identify and support stable revenue sources to address transit capital and operating needs
  - Work with local and regional agencies to secure new funds to make up the shortfalls in other transportation improvements identified in the plan such as road maintenance
- Continue to advocate for a federal transportation policies and programs that support the values expressed in this plan, including increased funding for transit, pedestrian, and bicycle infrastructure, operations and maintenance, as well as stability of funding
- Develop strategic plan that identifies funding needs on projects and programs and strategies to close funding gaps

Longer term (3-5 years):

- Support new funding sources in collaboration with local jurisdictions, transit operators, regional and state agencies, and private sector partners and/or peer agencies and develop and/or influence expenditure plans as necessary

Ongoing Monitoring and Performance-based Planning

Performance-based planning does not stop with publication of the CTP document. Alameda CTC will continue to monitor the county's transportation performance in

coming years and in preparation for the next CTP. Ongoing performance monitoring helps Alameda CTC measure the impact of investments on transportation performance over time, ensures progress is being made towards CTP goals, and reveals emerging trends and future needs.

Alameda CTC already publishes an annual performance report containing a variety of multimodal transportation performance measures consistent with CTP goals. Alameda CTC has also been developing more robust performance measures for direct local distribution funds, this work is ongoing. Specific actions include:

Short term (1-2 years):

- Conduct ongoing performance monitoring to determine the degree to which investments are moving the County towards the adopted vision and goals

Longer term (3-5 years):

- Continue to update the existing travel demand model and continue to develop new tools that provide additional clarity about attainment of performance goals
- Continue to work with MTC, ABAG, and local planning departments to refine land use assumptions in the travel demand model and continue to refine the SCS land use
- Continue to address new data sources and methodologies to understand travel behavior and identify methods for incorporating into future model updates and CTP development