Appendix B - Briefing Book

ALAMEDA CTC

Countywide Transportation Plan/ Transportation Expenditure Plan

Briefing Book

March 3, 2011

Submitted by the Nelson Nygaard Team

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CHAPTER 1. INTRODUCTION

The 2012 Countywide Transportation Plan (CWTP) and potential Transportation Expenditure Plan (TEP) are being developed at a time of substantial change in transportation policy at the federal, state and regional levels, as well as a time of great economic uncertainty. The challenges presented by new and untested regulatory frameworks including the implementation of SB 375 and AB 32, which are designed to promote sustainability and reduce carbon emissions from transportation sources; the impacts of a multimodal regional transportation plan building on MTC's goals of "economy, environment and equity;" and a funding framework that has yet to be resolved at the federal and state levels, creates a climate that is both challenging and opportune for reimagining mobility for the coming decades. While the environment is uncertain, it is clear that we are in the midst of a lasting and profound period of change and that continuing our investments on a "straight line" into the future is neither viable nor sustainable. This draft Briefing Book provides an initial framework for moving forward with development of the 2012 Alameda Countywide Transportation Plan and Transportation Expenditure Plan. It serves as an overview of existing transportation conditions in Alameda County and a brief look into the future to see what the coming decades hold for Alameda County.

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Countywide Transportation Plan and Transportation Expenditure Plan

The Countywide Transportation Plan (CWTP) is a long range policy document that guides future transportation investments, programs, policies and advocacy for all of Alameda County for the next 25 years. It includes all parts of the transportation system such as capital, operating and maintenance for freeways, buses, rail, ferries, and other modes. It is updated every four years; the last update was in 2008 and this Plan will be adopted in 2012. The projects and programs in this Countywide Plan will be included in the Regional Transportation Plan which programs money for state and federal funding. To get funding, a project or program must be included in the Countywide Plan. (The status of projects from the 2008 Countywide Plan is described briefly at the end of this Chapter and fully in Appendix A.)

Whereas the CWTP programs all types of funding and sets vision for the County, the Transportation Expenditure Plan (TEP) is a single source of funding. The TEP is the funding plan for Alameda County's half-cent transportation sales tax (currently Measure B). All the projects and programs that are funded by sales tax income are included in the TEP. This is a key source for transportation projects in Alameda County. It was originally approved by voters in 1986 and reauthorized in November 2000; the sales tax sunsets in 2022. Although we are only in the eighth year of a 20 year program, a reauthorization of the sales tax is being considered for a number of reasons. Projects and programs for this new expenditure plan would come from the Countywide Plan. (Measure B and the TEP reauthorization effort are further discussed in Chapter 11.)

Alameda County's residential population and employment are expected to grow significantly in the future. The population of Alameda County is projected to increase by almost 30% by 2035 (from 2005 baseline). This growth will generate significant additional travel: trips in the County are projected to grow by about 40% overall.[1] This update of the Countywide Transportation Plan must take in to account this growth and the many new challenges mentioned on the prior page.

However, these changes come at a time of significant funding limitations. While Alameda County is fortunate to have a dedicated transportation sales tax and a newly adopted vehicle registration fee for transportation, economic downturns like we are currently experiencing significantly impact the revenues from these taxes. The sales tax expenditure plan, which dictates how these funds will be spent, is divided between capital projects (approximately 40% of revenues) and on-going programs (approximately 60% of revenues) including programs that fund streets and roads maintenance, transit operations, specialized services for seniors and persons with disabilities, bicycle and pedestrian travel and transit oriented development (TOD) funds. The decline in revenues has had a significant impact on programmatic spending, while projects have been able to identify replacement funding through federal stimulus and other programs as well as capture the benefits of the highly competitive bidding environment caused by the economic downturn which has brought costs down. It is in part due to these factors that a renewal of the sales tax is being considered.

While it is unclear which investments will best meet our new regional goals and provide optimal mobility for those who live, work and visit Alameda County now and in the future, it is clear that managing and maintaining existing infrastructure combined with projects and programs that are focused on mobility and moving people and goods rather than simply accommodating single occupant autos will be important elements in both Plans as reflected in the project vision and goals, shown on the following page.

This briefing book is designed to provide a detailed introduction to transportation infrastructure, funding and policy in Alameda County. This information will be instrumental for all stakeholders who will be involved in the development of the Countywide Transportation Plan (CWTP) and Transportation Expenditure Plan (TEP), described below. While the Briefing Book is divided into sections that represent individual travel modes, it is important to realize that Alameda County is served by a rich multimodal network, and that the success of any one mode is entirely dependent on the success of the system as a whole.

The remainder of this introductory chapter serves as an Executive Summary for the Briefing Book. More detailed information on each topic can be found in subsequent chapters.

1 Alameda County travel demand model output representing 2005 and 2035 conditions. Projections are based on ABAG 2007 forecasts.

Alameda Countywide Transportation Plan Vision and Goals

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.

Goals:

Our vision recognizes the need to maintain and operate our existing transportation infrastructure and services while developing new investments that are targeted, effective, financially sound and supported by appropriate land uses. Mobility in Alameda County will be guided by transparent decision making and measureable performance indicators and will be supported by these goals:

Our transportation system will be:

- Multimodal
- Accessible , Affordable and Equitable for people of all ages, incomes, abilities and geographies
- Integrated with land use patterns and local decision making
- Connected across the county, within and across the network of streets, highways, transit, bicycle and pedestrian routes.
- Reliable and Efficient
- Cost Effective
- Well Maintained
- Safe
- Supportive of a Healthy and Clean Environment

ALAMEDA COUNTY: A DIVERSE PLACE

Alameda County extends from Bay Area's urban core to its rural periphery. It includes 14 cities and unincorporated communities. The residential population of the county is approximately 1.6 million and it is home to an estimated three quarters of a million jobs.[2] It is an extremely diverse county in terms of geography, development patterns, demographics, and, therefore transportation infrastructure and needs. There are large swathes of undeveloped land in the county, representing the East Bay Regional Parks and regional wilderness areas (such as the Ohlone and Sunol Regional Wilderness Areas and state recreation areas). These natural barriers continue to focus development in already populated areas. The rural areas, often unincorporated, also have very different transportation needs than the rest of the county.

Demographically, no single ethnic or racial group makes up more than half of the county population and for 43% of households, English is not the primary language spoken at home. These non-English speaking communities are heavily concentrated in a few areas, namely Oakland, Hayward and South County cities. The county also houses a broad range of ages and incomes. Median household income in the county ranges from less than $58,000 in Oakland to over $240,000 in nearby Piedmont.

Over a quarter of all jobs in Alameda County are located in Oakland, followed by Fremont, Berkeley, and Hayward as the next largest jobs centers. Together, these four cities accounted for 60% of jobs in Alameda County. There are some major employment centers, such as Hacienda Business Park and Lawrence Livermore Lab, in East County, as well.

The current demographic profile indicates an imbalance between jobs and available housing within the county, and between Alameda County and adjacent counties. While a "perfect" balance between jobs and housing is likely not an achievable goal, this "imbalance" does indicate that there is a need to consider housing affordability and types of housing in relation to expected employment growth in this planning process. Ensuring that a range of viable transportation options are available for those that commute within the county and between counties is important.

2 U.S. Census American Community Survey, 2006-2008 and ABAG Projections 2009.

Travel patterns vary greatly throughout the county. Overall, trips made just within Alameda County are more likely to be made by transit, walking, or bicycling than trips traveling to and from Alameda County from elsewhere in the region, reflecting a range of viable travel choices and the fact that non-auto modes are often more competitive for shorter trips. While most households in the county own at least one vehicle (87%), a significant share (13%) do not. Further, in households with less than one car per driver, a car in not available for all trips. This represents the second-largest share of zero-vehicle households in the Bay Area after San Francisco County (at 29%). While some households choose not to own a vehicle, others cannot afford to own a car and must rely solely on other transportation options.

Historically, Alameda County's planning efforts have been organized into four planning areas shown in Figure 1-1, each with distinct development patterns and travel characteristics. This map only shows geographic extent of the planning ares, not population. A map of population by city is shown in Chapter 2.

The following profiles each of these four planning areas and some of their key transportation issues.

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THE COUNTY PLANNING AREAS

The four planning areas are:

- **North County** encompassing Alameda, Albany, Berkeley, Emeryville, Oakland, and Piedmont;
- **Central County** encompassing the cities of Hayward and San Leandro and the unincorporated communities of Ashland, Castro Valley, Cherryland, Eden, Fairview, and San Lorenzo;
- **South County** encompassing the cities of Fremont, Newark, and Union City; and
- **East County** beyond the East Bay hills, including the cities of Dublin, Livermore, Pleasanton, and the unincorporated communities of Sunol and other smaller communities in the East Bay hills.

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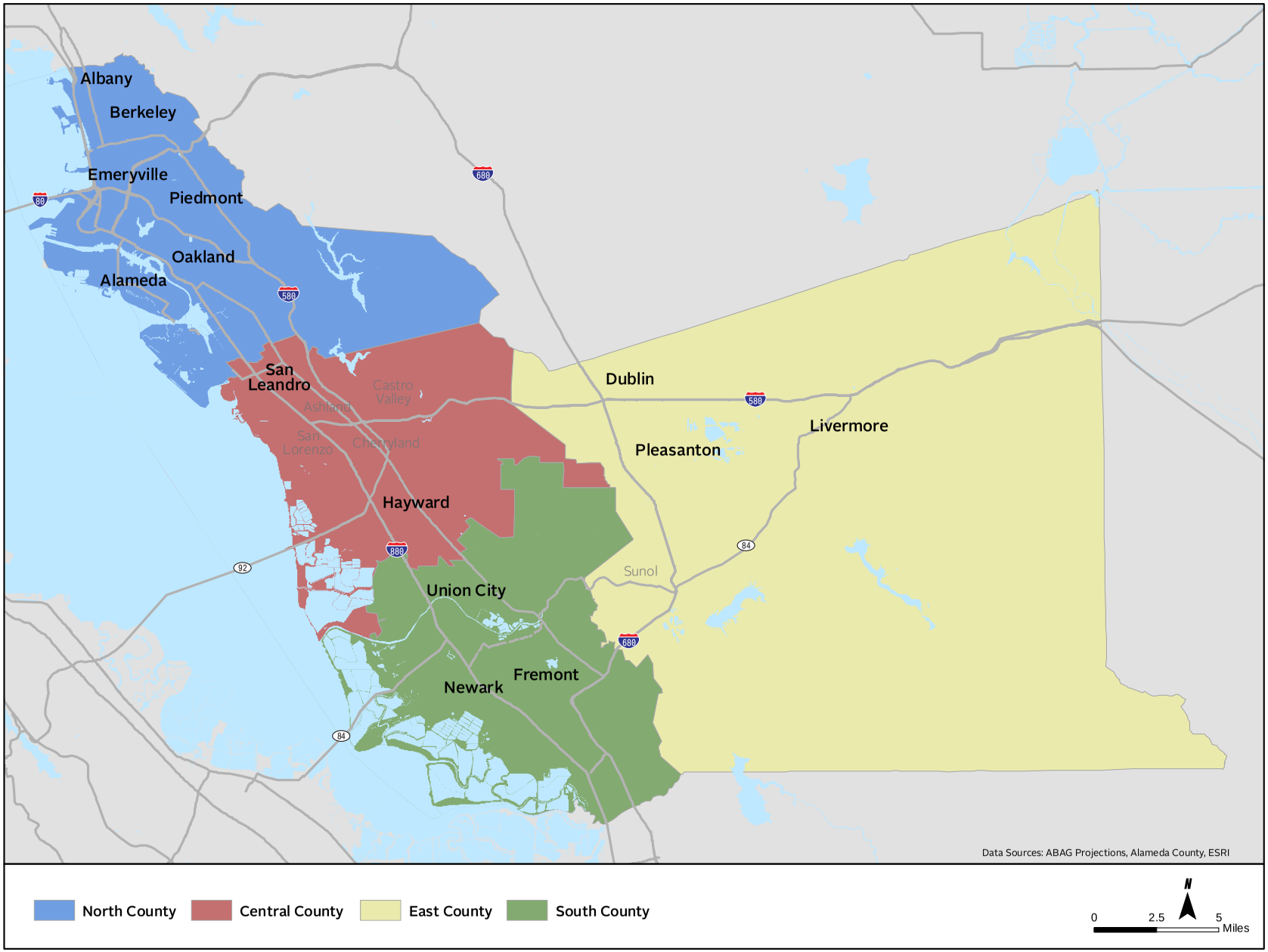
Figure 1-1 Alameda County Cities and Unincorporated Communities



North County (Figure 1-2)

North County includes the urban core of Alameda County—Oakland, Emeryville, and Berkeley—as well as the inner suburban areas of Alameda, Albany and Piedmont. It reflects the street and neighborhood patterns of pre-automobile urbanization in the late 19th and early 20th centuries and has much higher densities. With all five BART lines, Interstates 80, 880, 980, and 580, and State Routes 24 and 13 passing through it, the North County is a crossroads for the East Bay and between the East Bay and San Francisco. Residents throughout Alameda County use facilities located in North County to meet their daily transportation needs.

Oakland is by far the largest city in the county with almost 430,000 residents. North County also includes the two busiest employment and pedestrian hubs, Downtown Oakland and UC Berkeley. Over a quarter of all jobs in Alameda County are located in Oakland. UC Berkeley is also, of course, a major Bay Area educational hub and an employment center. Emeryville has also become a regional retail destination. Notably, Emeryville, though well served by freeways, is not very well served by transit. To supplement regional service provided by AC Transit, Emeryville uses local funds to provide a local shuttle system, the Emery-Go-Round.

North County's demographic profile and land use pattern are characterized by income and racial diversity, especially high in certain areas, and much higher population densities than the rest of the County.

Due in large part to the more urban character of North County, transit and nonmotorized modes – walking and biking – play a more important role in the transportation system than in other parts of the county. The share of transit, bicycle and walk trips are highest in North County and the largest shares of zero-vehicle households in the county are located in the downtown areas of Berkeley and Oakland. A few illustrations of this:

- The four busiest BART stops in the system, outside of San Francisco, are all located in North County (12th Street/Oakland City Center, Downtown Berkeley, 19th Street Oakland, and MacArthur stations).
- AC Transit's busiest corridors are also in the North County cities of Oakland, Berkeley, and Alameda,[3]
- More than half of all walking trips in the county take place in North County and three quarters of all bicycle trips, far above its population share, and
- North County has the highest percentage of people taking their trips on foot or by bike.

As both a cause and effect of this, North County has the most extensive transit network, and higher quality biking and pedestrian facilities than the rest of the county. A few examples:

- All BART lines run through Oakland in North County and there are over twice as many stops (11) than in any other part of the county,
- Four of the six Capitol Corridor stations in Alameda County are located in North County (Berkeley, Emeryville, Oakland-Jack London Square, Oakland-Coliseum),
- Berkeley has an extensive network of bicycle boulevards,
- Both Berkeley and Fruitvale have bikestations at their BART stations,
- There are excellent recreational and commute trail networks in North County such as the Ohlone Greenway and the Bay Trail.

Berkeley and Oakland while having some of the highest concentrations of pedestrian and bicycle collisions, have among the fewest collisions per trip. For example, North County has the highest *number* of pedestrian collisions, but among the fewest collisions per 1,000 pedestrian trips, demonstrating that the more walkers there are present, the safer they are, likely due to driver awareness and better facilities. These high levels of biking and walking also indicate a disproportionate need in this part of the county for pedestrian and bicycle infrastructure and facility maintenance to ensure the ongoing safety of this vulnerable portion of the population.

However, even in North County, the majority of commuters still drive, and the most congested segment of freeway in the Bay Area, the Eastshore segment of I-80 from SR-4 to the Bay Bridge, is located in North County. Many of these commuters are not making local commutes within North County, but are travelers from other parts of the Bay Area and beyond, travelling through North County on a daily basis.

North County is also home to major goods movement centers: the Port of Oakland which contains Oakland International Airport. A significant portion of the region's rail infrastructure also goes through North County. These facilities are both critical parts of Alameda County's transportation system and have costly needs to ensure ongoing economic success in the future.

3 Line 51 (now 51A and 51B) along College Avenue, Broadway, and Santa Clara Avenue between Berkeley and Alameda and Lines 1 and 1R which serve Telegraph Avenue, International Boulevard and East 14th Street through Berkeley, Oakland and San Leandro.

Figure 1-2 North County Transportation Network

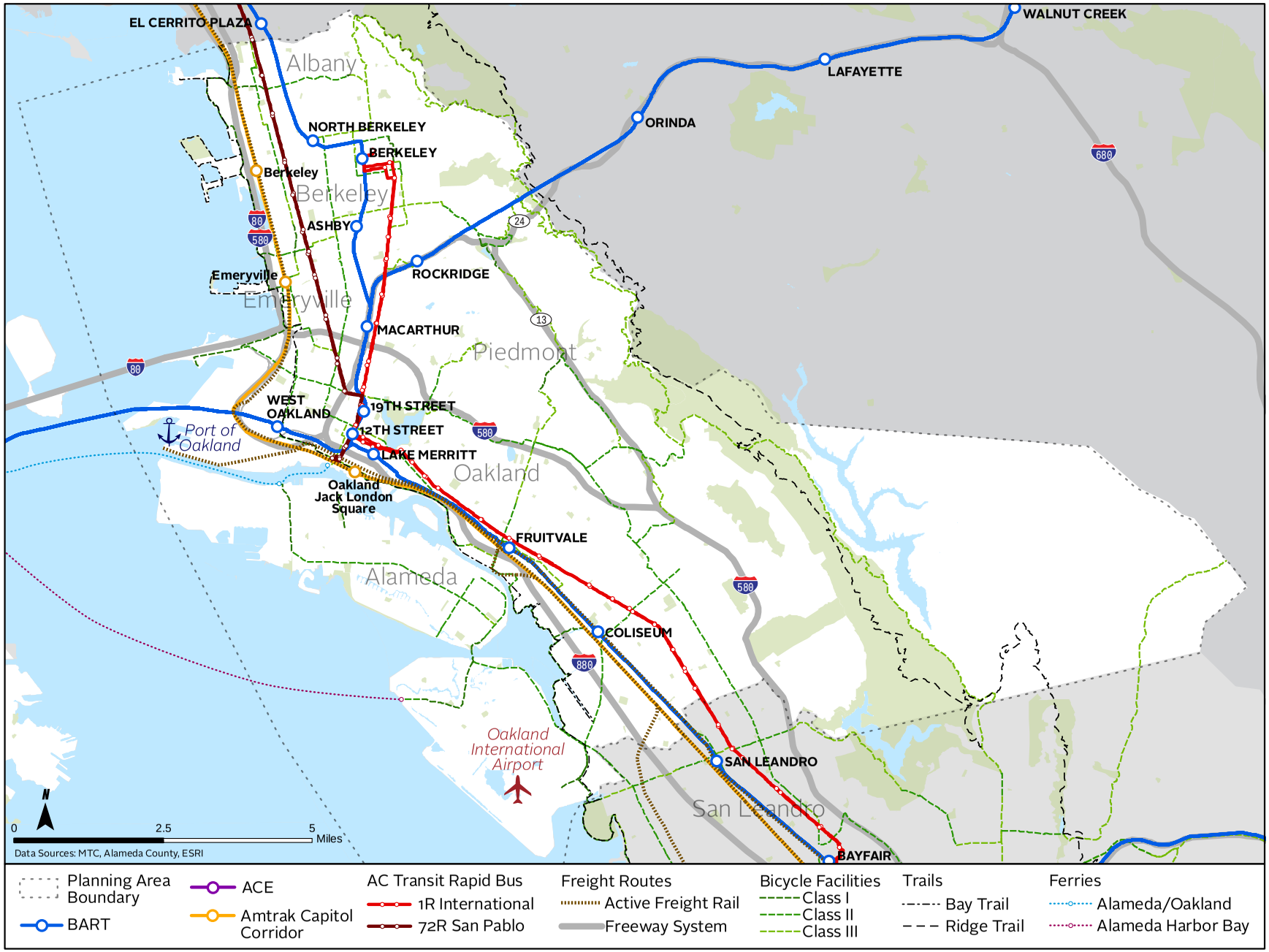


Image from Nelson\Nygaard

Central County (Figure 1-3)

Central County includes the older, inner-ring suburban communities of Hayward, San Leandro, Ashland, Cherryland, Castro Valley and San Lorenzo. Being older suburban areas, there are some relatively dense neighborhoods of single-family homes and historic downtowns, though much of Central County is suburban in nature since much of growth in these areas occurred since the 1940s. Hayward is the third largest city in the county with almost 150,000 residents and San Leandro fifth with 82,000 residents. Hayward is also home to Cal State East Bay, a university that is gradually shifting from a commuter school to one with more residential character. Hayward is relatively diverse with large areas of non-English speaking households.

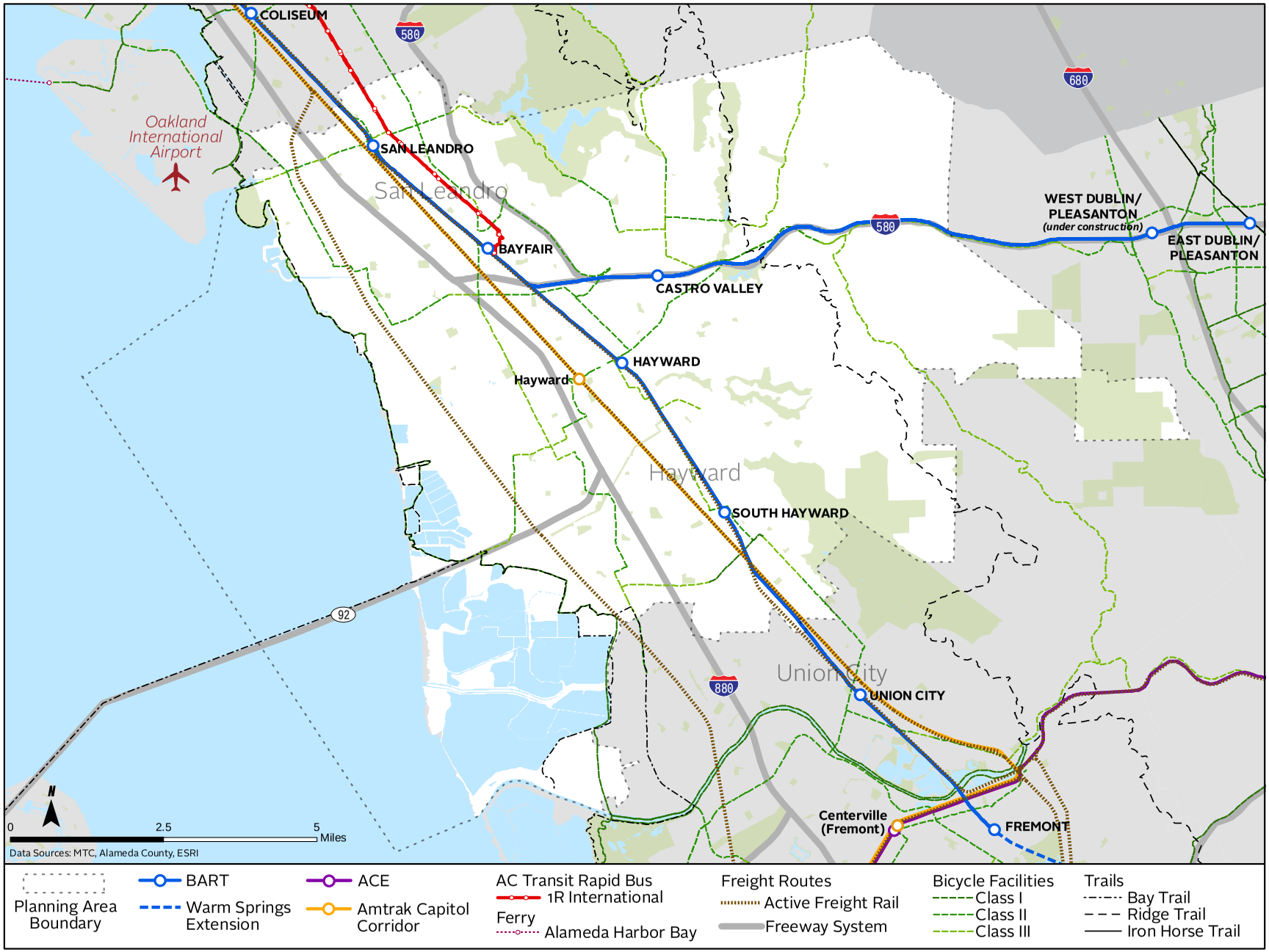
Like North County, Central County is also a crossroads for the central Bay Area, with Interstates 880, 580 and 238, as well as the San Mateo Bridge. Reflecting this, State Route 92 feeding onto the San Mateo Bridge is one of the most heavily congested locations in Alameda County today. Major freight rail routes also run through Central County.

Central County has the second highest number of BART stations in the county with five stations (San Leandro, Castro Valley, Bayfair, Hayward, and South Hayward). Hayward also has a Capitol Corridor stop and Hayward and San Leandro both have relatively good AC Transit coverage.

Similar to the rest of the county, biking, walking and transit account for approximately 15% of trips in Central County. San Leandro and Hayward have relatively high transit use on AC Transit, most notably the heavily used 1 and 1R lines end in San Leandro. Recreational and commute trails in Central County include segments of the Bay Trail and Ridge Trail and other trails in the Hayward and Oyster Bay Regional Shorelines. Central County also has relatively high levels of biking and walking collisions, similar to North County. Unfortunately, the rate of collisions here is higher than the rate of biking and walking activity, highlighting a need for investments in bicycle and pedestrian safety.

Currently, BART stations in the Central County serve many commuters with large park-and-ride lots. However, the future of these stations looks very different. Both downtown San Leandro and Hayward have BART stations that have recently been the focus of transit-oriented development (TOD) efforts. TODs are also planned at the South Hayward and Bay Fair BART stations.

Figure 1-3 Central County Transportation Network



South County (Figure 1-4)

South County includes the newer suburban communities of Fremont, Union City and Newark. Although there are pockets of higher densities, South County is less dense than both the North and Central County areas; most of the development in these ares occurred since World War II. Fremont is the second largest city in the county and Fremont has historically been a major employment center. However, a major employment site, the NUMMI auto manufacturing plant near the Warm Springs BART station, recently closed and is slated for redevelopment.

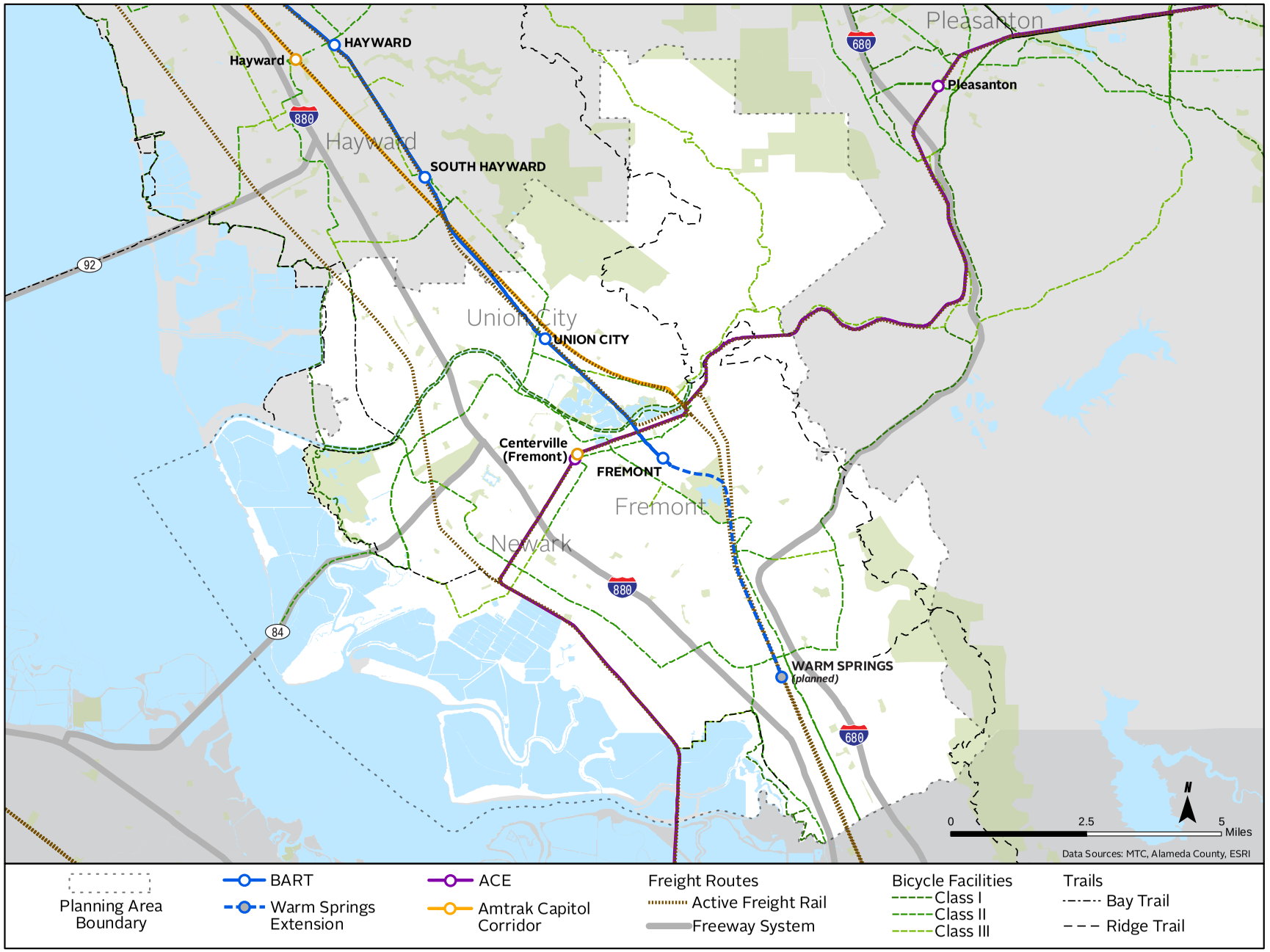
South County is the most racially diverse of the four planning areas. Both Union City and Fremont have large areas where English is not the primary language spoken at home.

In transportation terms, this area connects the rest of the county to Silicon Valley. Interstate 880 and, to the south, Interstate 680 are major arteries. Heavy congestion on I-880 is a major transportation issue for South County (tenth highest congestion location in the county). BART extends to South County with two stations, Union City and Fremont, with an extension to the Warm Springs District in southern Fremont under construction and an extension into Santa Clara County to follow. An intermediate station, at Irvington, will be added in the future, funded primarily with local funds. South County is also a connection point for the Altamont Commuter Express (ACE) and Amtrak Capitol Corridor, a key linkage for passengers as well as freight movements, as freight trains share the same trackways. Finally, multiple operators have partnered to provide Dumbarton Express bus service between Union City, Fremont and Newark in Alameda County and Palo Alto, Menlo Park and East Palo on the Peninsula. Santa Clara VTA's Route 181 express bus also operates between Fremont in Alameda County and Milpitas and San Jose in Santa Clara County. In addition to regional transit providers, South County has a local transit operator, Union City Transit (UCT), which offers both fixed-route bus service and paratransit service in Union City. South County recreational and commute trail resources include segments of the Bay Trail and Ridge Trail, the Alameda Creek Trail and others.

A major planned transit project in South County is Dumbarton Rail. The Dumbarton Rail project would connect the Union City BART Station to the Peninsula via a new rail bridge over San Francisco Bay just south of the Dumbarton Bridge. Union City has recently started construction on conversion of its BART station into a TOD and intermodal hub serving BART, Amtrak, the planned Dumbarton Rail, and possibly service in the Altamont corridor, which is planned to be upgraded from the existing ACE commuter rail higher speed service between the Central Valley and Silicon Valley.

Image from Nelson\Nygaard

Figure 1-4 South County Transportation Network



East County (Figure 1-5)

East County includes Dublin, Pleasanton and Livermore. The presence of the East Bay hills creates unique challenges for connecting East County to other parts of the County by limiting the number of available east-west routes. East County reflects the progression of post World War II urbanization with predominantly suburban settlement patterns reflecting auto-oriented approach to streets and land use patterns. This part of the county has the lowest population density, and highest concentration of protected agricultural land in the county. The cities have compact walkable areas, particularly in the historic downtowns of Pleasanton and Livermore. While East County is diverse compared to almost any other region in the Country, this part of Alameda County has the least variation in resident's income level and language.

East County is a major through route for "super-commuters" from the Central Valley through the Altamont Pass, commuting to the large number of jobs in East County and beyond, particularly to jobs in Silicon Valley. This results in large amounts of traffic on Interstate 580, the primary route for these commuters, and therefore, high levels of congestion. I-580 eastbound in the evening and westbound in the morning, the key link between the two sides of the county, have been ranked among the top three most congested locations in the Bay Area. The north south running Interstate 680, which connects East County with employment centers in Contra Costa County, also experiences very heavy traffic congestion as do the interchanges between these two interstates. The 580 corridor is also a critical goods movement corridor.

Urban growth boundaries, vital agricultural lands, and topography create challenges for developing new connections in East County. As a result, East County relies heavily on a few critical freeway connections and BART to connect to the rest of the county and the region. The Iron Horse Trail is a key recreational and commute resource in East County, running from Dublin north to Concord in Contra Costa County. When completed, the Iron Horse Regional Trail will extend from Livermore to Suisun Bay in Contra Costa County, a distance of 33 miles.[4]

East County has one BART station: the Dublin/Pleasanton BART station adjacent to the Hacienda Business Park. Although only served by one BART line, East County has high BART utilization: Dublin/Pleasanton is the fifth busiest BART stop in the system outside of San Francisco (the top four are in North County). An infill BART station is under construction in West Dublin/Pleasanton, and an extension to Livermore is proposed, but not funded, including connections to future Altamont semi-high speed rail service.

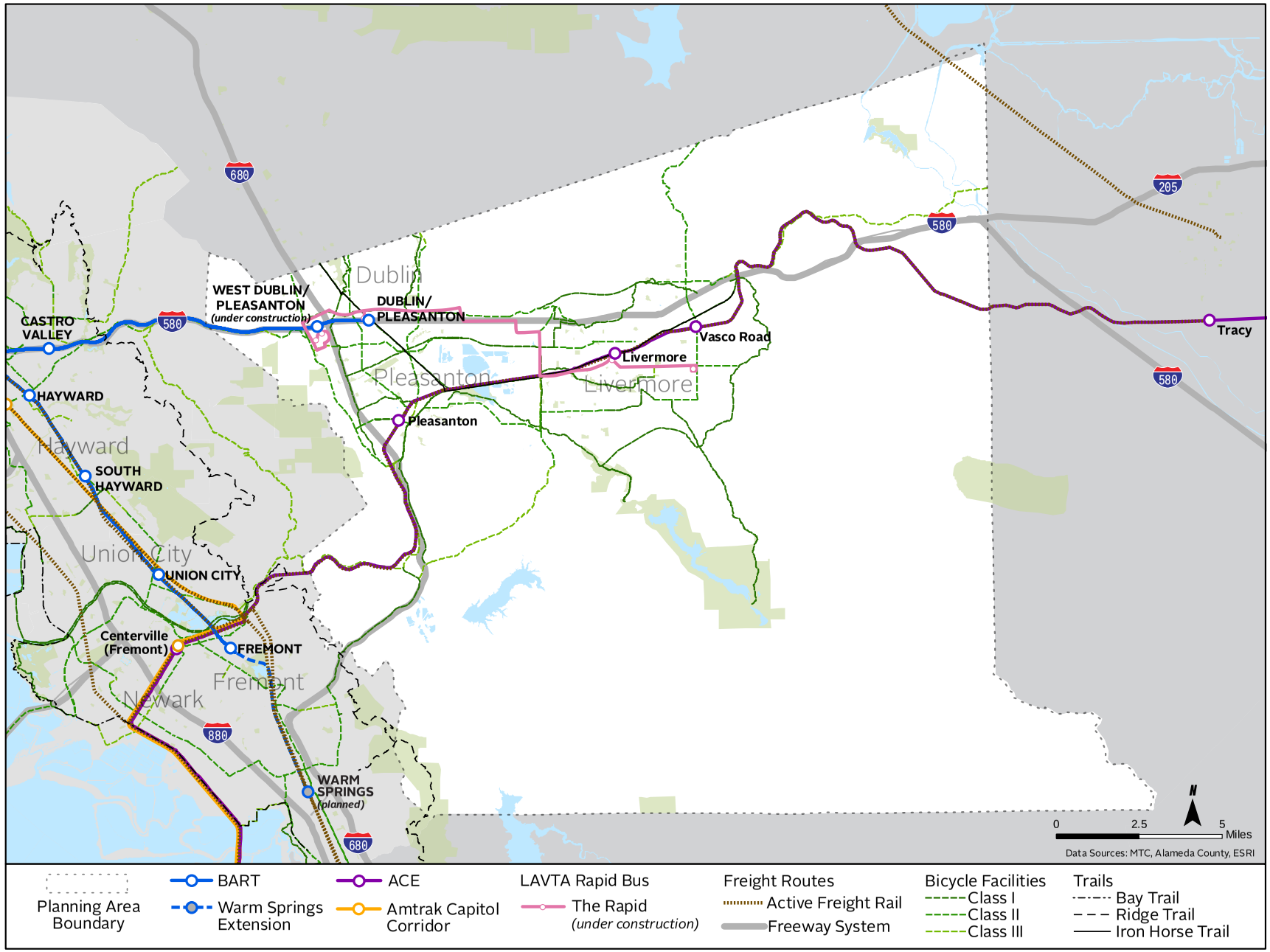
Altamont Commuter Express (ACE) trains pass through the area, stopping near Lawrence Livermore Labs and in downtown Livermore and Pleasanton. Finally, the Livermore Amador Valley Transit Authority/Wheels (LAVTA) offers fixed-route bus service, paratransit service, and shuttle services to major regional transit centers, the VA hospital, and "school tripper" services for the cities of Dublin, Pleasanton, and Livermore. This is the third highest ridership transit system in Alameda County (though it is far smaller than both AC Transit and BART, the top two).

Due to development patterns and scarcity of transit service, transit ridership, biking and walking in this part of the county are somewhat lower than other parts of the county, and most travel is done by car. Further, East County has the most collisions per 1,000 pedestrian trips. Key factors may include a combination of auto speeds and relatively infrequent pedestrian crossings; making drivers less aware and cautious at intersections.

Some of East County's BART stations have experienced some higher density development and more is planned for the future. However, currently, Dublin/Pleasanton BART serves primarily as a park-and-ride with large parking lots (some slated for development).

4 East Bay Regional Parks website: http://www.ebparks.org/parks/trails/iron_horse#trailmap. Accessed December 2010.

Figure 1-5 East County Transportation Network



LAND USE AND GREENHOUSE GAS EMISSIONS

This update of the Alameda Countywide Transportation Plan is taking place in a changed economic, regulatory, and social environment in which the concept of creating a more sustainable way of living through transportation and land use investments has become a primary concern. In order to meet legislative and countywide plan goals for sustainability, the Plan will take a closer look at coordinating transportation investments with the land use patterns of the county.

In California, there are three key legislative and regulatory factors have led to a new focus on linking transportation planning and investment decisions with existing and future land use patterns:

- Assembly Bill 32 - the *California Global Warming Solutions Act*
- California Senate Bill 375 - Redesigning Communities to Reduce Greenhouse Gases
- In the Bay Area, MTC's Resolution 3434 – Transit-Oriented Development (TOD) Policy for Regional Transit Expansion Projects.

AB 32's and SB 375's goals are to reduce greenhouse gas emissions through a set of regulatory and policy directives, while the MTC Resolution 3434 links the expenditure of regional capital funding for transit to the density of households that zoning allows around future mass transit systems in the Bay Area. These three important policies are further discussed in Chapter 3.

With these new mandates to reduce greenhouse gas (GHG) emissions it has become crucial for the counties and cities in California's urban regions to address the relationship between job locations and housing choices, as a means to reduce Vehicle Miles Traveled (VMT). The desired reduction cannot be achieved by transportation investments or technological improvements alone, but requires addressing the many diverse, underlying land use policies established by different communities. The issues of changing demographics such as aging of the Bay Area population; affordable housing within close proximity to jobs; availability of housing choices for the increasingly socially and economically diverse population of Alameda County; and urban development patterns that support and benefit from non-automobile modes of travel must be considered in parallel to making transportation investment decisions.

MODAL HIGHLIGHTS

Roadways, Transportation Systems Management (TSM), Transportation Demand Management (TDM) and Parking

Alameda County's roadways are the backbone of the transportation system, connecting the county with major Bay Area destinations. Interstates I-80, I-580, and I-680 link Alameda County to neighboring counties such as San Francisco, Solano, Contra Costa, and San Joaquin. Interstate I-880 connects Alameda County with San Mateo and Santa Clara and areas within the Silicon Valley Region. Alameda County roadway facilities also include key access points to the three Bay Area Toll Authority (BATA) bridges that link the East Bay Area with San Francisco and destinations within the southern Peninsula (see Figure 1-6).

Alameda County is home to some of the most heavily traveled freeways and arterials in the San Francisco Bay Area. Five of the top ten most congested Bay Area freeway corridors are located in Alameda County. For example, I-580 westbound in the morning and eastbound in the evening, and I-80 westbound in the morning have been ranked as the top three most congested locations in the Bay Area since 2005.

Although the maintenance of Alameda County's roadways has improved, the county still had a $3.7 billion funding shortfall for local streets, bridges, and roads in 2008. This represents about 20% of the entire short fall for the entire nine-county Bay Area Region.[5]

Without significant changes in policies and investments, vehicle miles travelled (VMT) is expected to continue to increase, and as a result, in the model future year of 2035, average travel speed on freeways and arterials is projected to decrease and average trip duration (average time spent in congestion) is projected to increase significantly. Without action, most facilities will be operating over capacity. This indicates a clear need to reduce VMT and use other innovative transportation systems and demand management (TSM and TDM) strategies to reduce congestion.

One strategy that is being applied with increasing frequency to congestion problems in the County is Transportation Systems Management (TSM). TSM measures draw on technology and other techniques to directly manage traffic flows. If deployed appropriately, TSM can provide a multitude of benefits, such as reduced congestion, improved traveler

5 Alameda CTC, 2008-2009 Performance Monitoring Report, page ES viii, www.accma.ca.gov

Figure 1-6 Freeways and Goods Movement Network

information, and improved safety; this translates into environmental benefits, such as reduced fuel consumption and improved air quality (reduced emissions). Major TSM programs in Alameda County include ramp metering on several segments of the freeway system and several signal coordination and phasing/timing optimization projects, including the East Bay Smart Corridors Program. The county also benefits from 511®/ATIS service available throughout the Bay Area. The success of many of the County's existing TSM strategies have prompted the development of new projects to expand TSM in the future.

Another tool that many cities in the County are increasingly using is Transportation Demand Management (TDM). TDM consists of programs and policies that seek to affect the travel choices people make—the mode, time and duration of trips. Changing the ways people travel has proven to be a quite effective way to manage congestion. TDM can include strategies such as incentives to use transit, to bike or to carpool, or providing alternatives such as carshare services that decrease the need for every individual to have a car. Effective parking management has been shown to be a particularly effective way to manage the congestion on busy downtown streets. In addition, the overall availability and price of parking affects the mode choices people make when deciding how to get places. One Countywide TDM program is the Alameda County Guaranteed Ride Home program. This program "guarantees" a ride home for all enrolled employees who commute by modes other than driving alone up to six times per year. This is a commuter benefit designed to encourage use of alternative modes by removing the uncertainty of not having your own car at work. It is available to all Alameda County employers and employees free of charge. Other existing parking and TDM programs in the County are profiled in Chapter 10.

Systems and demand management strategies are an important part of Alameda County's transportation system. There are already many examples of innovative management approaches that have been implemented in Alameda County, as profiled in this Briefing Book, and their importance will only grow in the future as new approaches to congestion management become ever more important.

Transit

Transit service in Alameda County includes multiple modes (rail, bus, ferry and shuttle) and is provided by a number of public and private operators, as shown in Figure 1-7. The two major operators in the county are BART and AC Transit, which account for the vast majority of transit usage in the county, comprising almost 95% of average weekday ridership. 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. Transit operators in Alameda County are listed below from largest to smallest (by total ridership). Figure 1-8 shows ridership numbers for the "major" transit operators in Alameda County.

- AC Transit
- BART (Bay Area Rapid Transit)
- Livermore Amador Valley Transit Authority/ Wheels (LAVTA)
- Capitol Corridor
- Altamont Commuter Express (ACE)
- Union City Transit (UCT)
- Ferry Services:
  - Alameda/Oakland Ferry Service (AOFS)
  - Alameda Harbor Bay Ferry (AHBF)
- Shuttles:
  - Emery Go-Round
  - "B" Line
  - AirBART
  - San Leandro LINKS
  - West Berkeley Shuttle
  - UC Berkeley Bear Transit
  - Lawrence Berkeley National Laboratory shuttle
  - Other institutional shuttles
  - Senior/Disabled Shuttles

Figure 1-7 Alameda County Transit Network

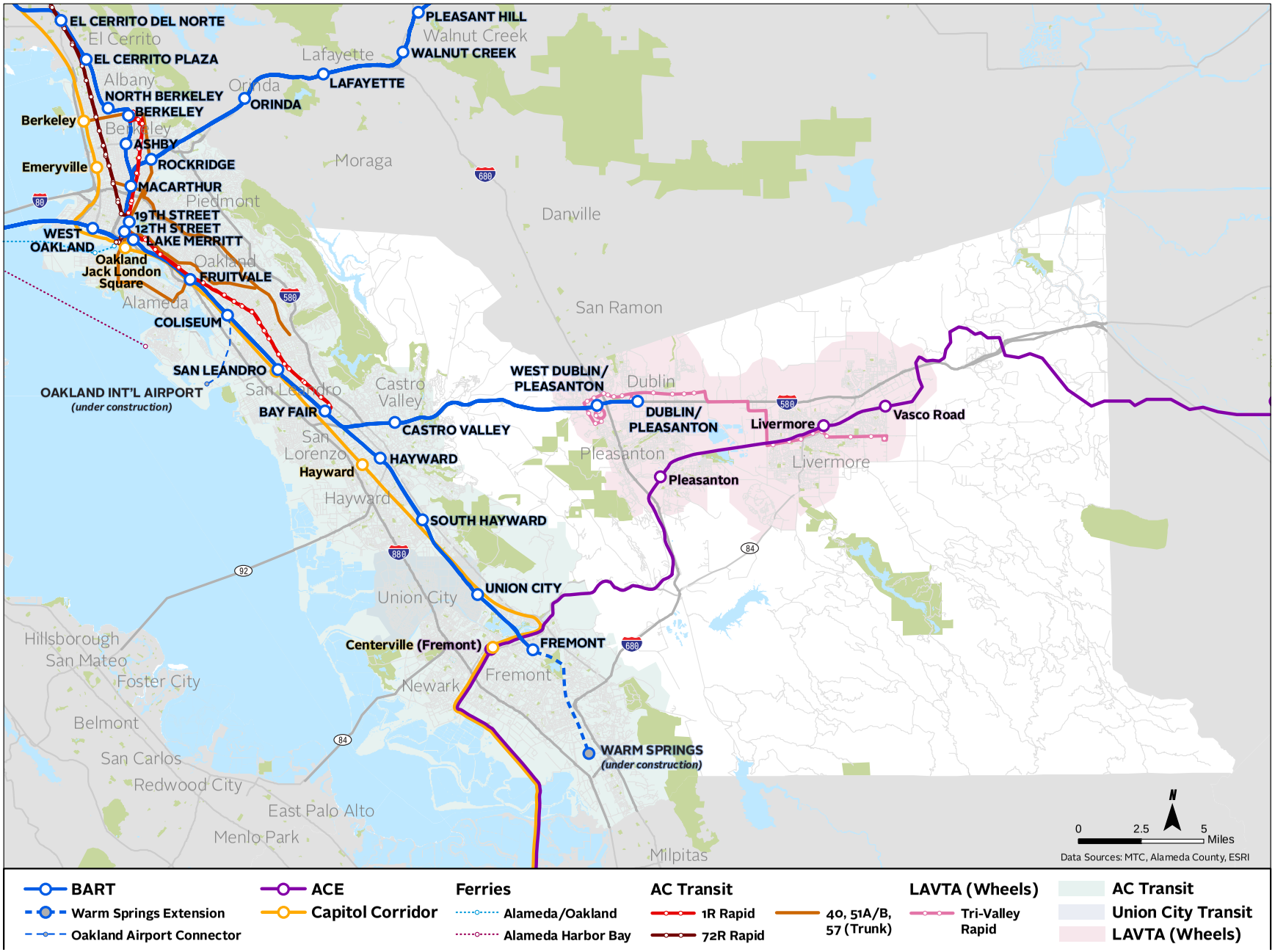
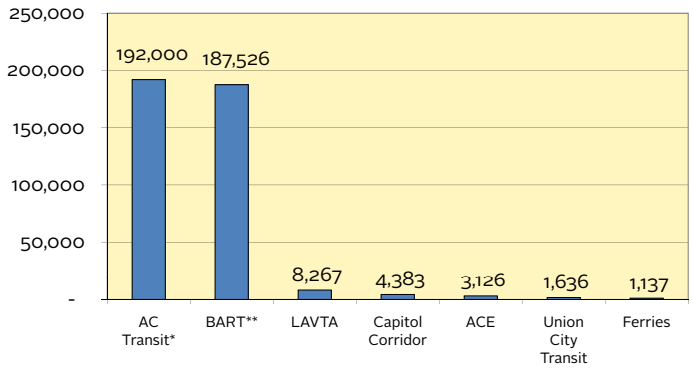


Figure 1-8 Average Weekday Ridership, by Alameda County Operator



* Estimated FY2008-09 daily boardings in Alameda County, based on calculation using service hours and population, from ACCMA 2005-2006 Performance Report
** January 2010 trips with one or both ends in Alameda County
All other data is FY2008-09 and systemwide

LEGEND:
ACE: *Altamont Commuter Express*
LAVTA: *Livermore Amador Valley Transit Authority*

Sources:
Metropolitan Transportation Commission (MTC): *Statistical Summary of Bay Area Transit Operators*, May 2010
Capitol Corridor Joint Powers Authority: *Capitol Corridor Business Plan Update – FY2010-11 – FY 2011-12*, March 22, 2010
BART: *Monthly Ridership Report, January 2010*

Though many differences exist between these operators, there are a number of common themes and challenges for Alameda County's transit system as a whole:

- **Increasing Demand:** As the population increases and grows older and development patterns change, the importance and growing need for high quality, accessible, efficient transit services in Alameda County also grows. Transit providers in Alameda County will face an escalating demand for their services in the future. Transit operators must acknowledge and plan for these trends in order to meet this demand in a sustainable manner that supports the region's larger goals for growth and climate change.
- **Financial Sustainability**: In direct conflict with the prior bullet, in recent years, BART, AC Transit, LAVTA and other county operators have cut service, raised fares, and/or reduced staff to sustain operation of current services. Further, all operators, especially BART, are facing significant challenges in identifying and securing funding for future capital expenditures. Meanwhile, traditional funding sources are declining. Short of dramatic changes in the funding outlook, for now, transit operators will continue to have to rely on service reductions, fare increases, and staff reductions to balance their budgets.
- **Balancing expansion with enhancement**: These financial challenges have arisen in part from a longer-term structural problem of reductions in state and federal funding, coupled with increasing wage and benefit costs (and to a lesser extent, fuel costs) which have resulted in declining cost-effectiveness. This indicates a need to increase ridership (which aligns with other goals of decreasing roadway congestion and auto mode share). However, this need is often met through service expansion. This must be balanced against sustaining and enhancing service for current riders.
- **Connectivity**: Many transit riders in Alameda County must use more than one transit system to meet their daily travel needs and are acutely aware of the fragmented, inefficient, and poorly coordinated nature of the regional system. Also, transit systems in Alameda County are often faced with the problem of "last mile" connections, which generally refers to the last mile gap between a transit station and a user's origin/destination. Improving connectivity is a key element of transit system need.
- **Cost Effective Solutions**: There are a number of funded and unfunded transit projects already on the books in Alameda County. Some of these carry large price tags and their role in the county's transportation planning needs must be carefully evaluated in light of the new planning paradigm of this Countywide Transportation Plan. Buses are currently the backbone of transit service in the county. While rail transit has proven to be very popular in Alameda County, there are limitations to the amount of expensive rail infrastructure that can be built. Quality bus service, including Bus Rapid Transit, and enhanced transit priority treatments to improve speed and reliability of bus travel are also important parts of a transit strategy for the county.

Paratransit

In Alameda County and throughout the U.S. the passage of the Americans with Disabilities Act (ADA) in 1990 resulted in a dramatic expansion of transportation options for people with disabilities. Under ADA, fixed-route transit providers are required to provide demand-responsive, origin to destination service for those individuals whose disabilities make it impossible for them to ride accessible fixed route transit. All public, fixed-route operators in Alameda County provide these services. However, by the law

of unintended consequences, the passage of ADA has often meant a scaling back of options for those who may have disabilities that do not meet the strict paratransit eligibility requirements of the ADA. As a result, many frail seniors who have relied on social service transportation have found themselves less mobile than before passage of the ADA.

In Alameda County, this gap has been acknowledged and at least partially addressed. In the past eight years, over $60 million of Measure B funding has been invested in transportation programs that serve the needs of people with disabilities and seniors in Alameda County. The allocation of 10.45% of Measure B funding for elderly and disabled transportation programs, the largest share of any of the County transportation sales tax measures in the Bay Area, reflects the value placed on accessible transportation by the voters of Alameda County.

Paratransit trips are provided by both East Bay Paratransit (the ADA mandated service), which provides the greatest number of trips, and City-based programs. It is also important to note that a significant number of people with disabilities rely on standard fixed-route transit rather than paratransit services.

Given the projected surge in elderly population, key needs in the arena of paratransit and senior transportation are:

- Enhanced fixed route and paratransit services
- Safe pedestrian environments
- Connectivity
- Information dissemination
- Affordability

Pedestrian and Bicycle Facilities

Nearly every trip by any mode begins and ends as a walking trip. In Alameda County, as in the Bay Area as a whole, the percentage of trips made primarily on foot is second only to auto, with pedestrian trips representing over 11% of total trips. Bicyclists and pedestrians are an increasingly important part of our transportation system. However, they are also the most vulnerable users of the transportation system. For this reason, pedestrians (and also bicyclists) make up a disproportionate percentage of traffic fatalities and injuries. Over the past nine years, pedestrians represented 24% of all traffic fatalities in Alameda County; more than twice the county's walk mode share (11%).

The importance of biking and walking facilities is anticipated to increase with projected demographic trends and policy mandates that will increase the amount of urban land uses that are more conducive to short biking and walking trips. However, today there are many physical barriers and connectivity gaps that prevent Alameda County residents from bicycling and walking. Automobile and rail infrastructure, highways, railroads, and interchanges create a majority of the physical barriers in the existing network throughout Alameda County. Key gaps include missing segments along multi-jurisdictional paths and trails and on-street bike paths, as well as sidewalk gaps, non-pedestrian-actuated traffic signals and other on-street bicycle infrastructure. While bikeways are the central element of a bicycle network, there are several kinds of support facilities—namely bicycle parking, showers and lockers, and signage—that increase the utility of the bicycle network and promote the viability of bicycling as a transportation mode.

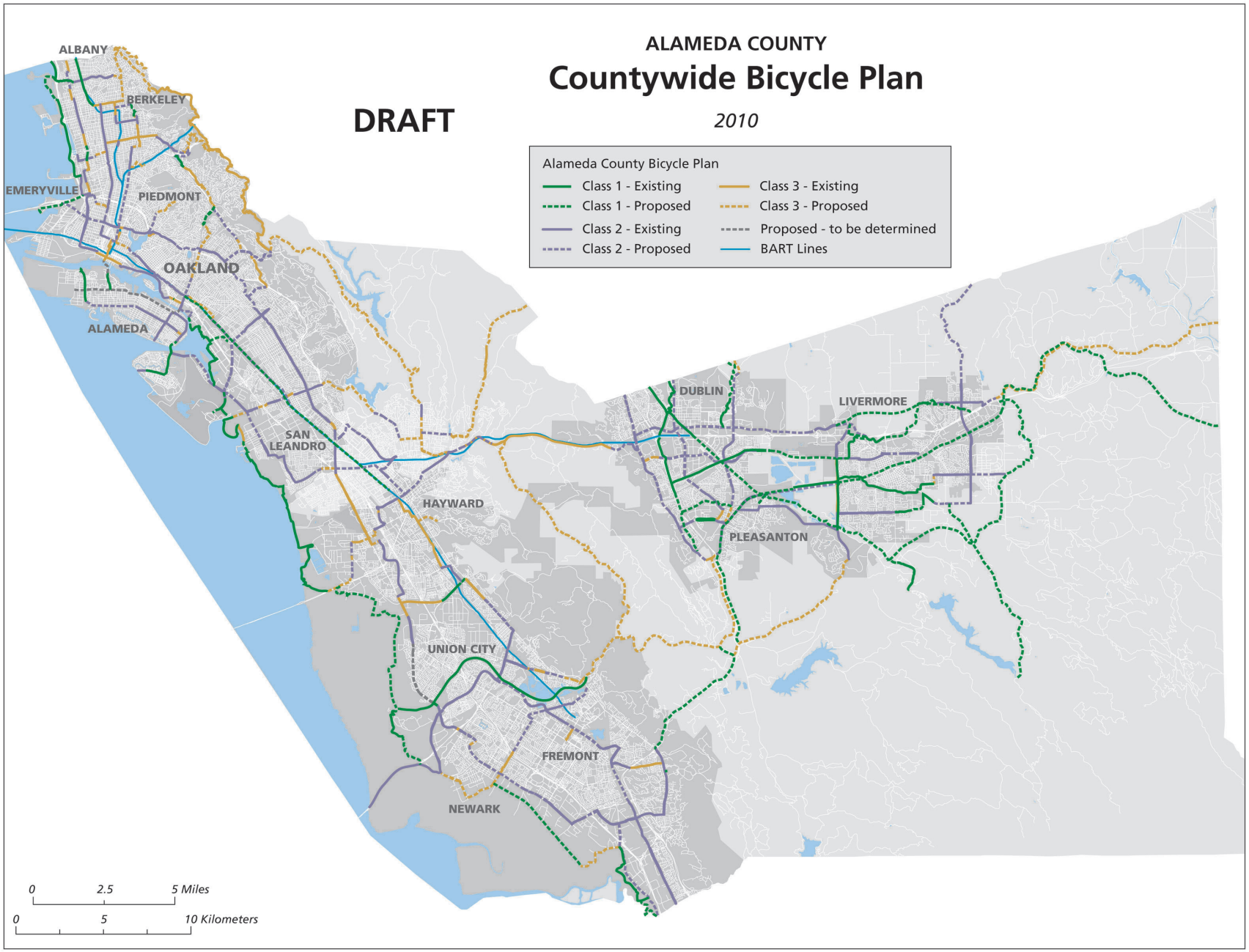
Throughout the county, lack of funding is a major barrier to making pedestrian and bicycle improvements. Priority Development Areas (PDAs), slated to accommodate up to half of the Bay Area's projected housing growth in compact, more dense infill development, are good candidates for channeling future investments in pedestrian and bicycling infrastructure.

Goods Movement

With the region's largest port, an international airport, numerous rail and trucking resources, Alameda County is a critical hub for goods movement nationwide. Efficient goods movement enhances the region's competitiveness and reduces the costs of goods and services in Alameda County and the Bay Area. It facilitates both domestic and international trade by providing access to markets for local manufacturing, and providing connections to major consumer goods suppliers. International trade is the fastest growing component of local and regional goods movements. The four primary components of the goods movement system are:

- Air: Oakland International Airport
- Water: Port of Oakland
- Land:
  - Trucking
  - Rail

Figure 1-9 Countywide Bicycle Plan



The major gateways in Alameda County are the Port of Oakland and Oakland International Airport. Port of Oakland is a world-class international cargo transportation and distribution hub and the third busiest port in the West coast. Oakland Airport is one of the three major airports in the San Francisco Bay Area, and out of the 197 daily departures, almost 30% (57) are cargo flights. Major cargo carriers include FedEx, UPS, Ameriflight, and WestAir. Trucking moves most freight traffic, while rail provides transportation for long-haul bulk movements and provides important transportation links to the Port of Oakland. Long-haul freight travel from Oakland goes as far as the central United States.

Development trends and regional growth forecasts indicate increased demand for goods movement services contrasted with a reduction in affordable, close-in location options for goods movement related land uses, such as truck parking. A large share of the central Bay Area industrial land supply is at risk of transitioning to higher value new uses (office, residential, commercial). Recurrent congestion significantly affects the cost of goods movement, and thus the cost of goods. This increased demand also means increased competition between freight needs and passenger needs on existing infrastructure, and worsening issues with at-grade rail crossings where freight conflicts with passenger car and truck traffic. Expanded and improved rail infrastructure and other major projects will be necessary to meet increased rail traffic demand, and Port and Airport infrastructure. These major projects are typically very costly.

Emissions are also a major issue. Although a number of steps have been taken to control emissions from this sector, it will only become more necessary in the future. Although ports and airports are not part of the sustainability requirements under SB 375, their impacts on greenhouse gas emissions and local air quality are still important to Alameda County.

FUTURE TRENDS

Alameda County's residential population and employment are expected to grow significantly in the future. The population of Alameda County is projected to increase by almost 30% by 2035 (from 2005 baseline).[6] Relative to rest of Bay Area, Alameda County is expected to grow more than most other counties. These new residents and employees will generate significant additional travel—about 1.5 million new automobile trips; 210,000 transit trips; 60,000 bicycle trips, and 140,000 new walking trips by 2035[7] according to the Alameda County travel demand model. This represents a growth in trips of about 40% overall. This additional travel will place a strain on the transportation system, particularly during times of peak demand. Understanding where these future travelers will travel is critical to ensuring that investment in the transportation system can accommodate future demand.

Future population projections done by the Association of Bay Area Governments (ABAG) show a trend towards an increasing proportion of the county's residents choosing to live and work in dense urban areas.[8] In comparison, the existing land use policies amongst the different communities in the county reflect a varied approach and desire for dense development, infill and transit-oriented development.

Major growth is also expected in freight and air traffic, including a 70% growth in truck volumes (2005-2035) in the areas currently generating the greatest volume of truck traffic; an approximately 40% increase in container volumes into the port of Oakland through (2002-2020); a 42 increase in air passenger volumes to Oakland Airport by 2035, and significant growth in rail traffic.

As the Baby Boom generation ages (those Americans born between 1946 and 1964), the population of senior citizens in Alameda County is projected to swell. The portion of the population over the age of 65 is projected to grow at a faster rate than any other age bracket as shown in Figure 1-10. In Alameda County, the share of the population that is 65 years and older is projected to increase from 10% in 2010 up to 21% by 2035. That represents a 167% increase, substantially higher than the 30% increase projected in the overall population.

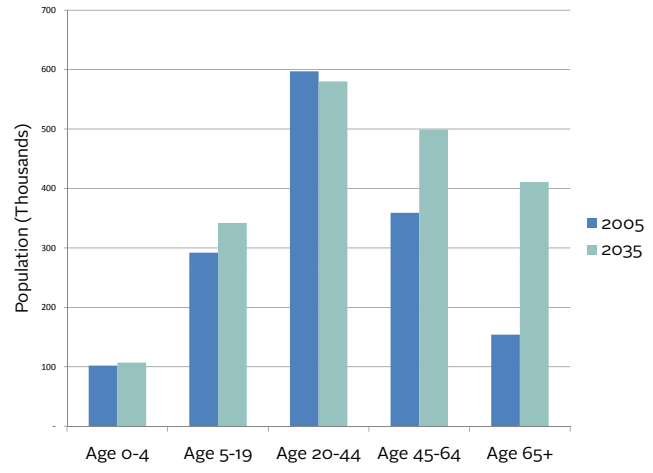
Seniors and persons with disabilities are a sector of the population some of whom have unique mobility needs requiring specially designed transportation services, described fully in the "Accessibility Programs" Chapter. As this demographic shift occurs, the needs of this sector of the population, and the services and infrastructure to meet those needs, will become an increasingly prevalent part of our transportation planning.

6 ABAG Socioeconomic Projections for the Bay Area, 2007.

7 Alameda County travel demand model output representing 2005 and 2035 conditions. Projections are based on ABAG 2007 forecasts.

8 ABAG's recent projections are "policy based" in response to new legislative mandates and regional planning efforts.

Figure 1-10 Alameda County's Aging Population



STATUS OF PROJECTS FROM THE 2008 COUNTYWIDE TRANSPORTATION PLAN AND 2002 TRANSPORTATION EXPENDITURE PLAN

The many projects from the 2008 Countywide Transportation and 2002 Transportation Expenditure Plan are at various stages of completion. Some have been completed, others have broken ground and are currently under construction, and others are still in some stage of planning. Of those that have not broken ground, not all funding has necessarily been identified to bring these projects to completion.

A sampling of projects from the last Countywide Transportation Plan and their current status is below.

Roadways

Constructed:

- I-680 Express Lane
- I-580 Eastbound HOV Lane
- I-238 Widening
- I-880 Corridor Improvements
- I-580 Intelligent Transportation System (ITS)
- I-580 Redwood Road Interchange Improvements

Under Construction

- BART Oakland Airport Connector —Groundbreaking October 2010
- BART extension to Warm Springs —Groundbreaking September 2009
- Lewelling/East Lewelling Boulevard Widening —Groundbreaking January 2010

Transit Improvements and Transit Oriented Development (TOD)

Constructed:

- ACE Rail—new Livermore parking garage, tie replacement/grade crossing improvements between Niles and Santa Clara; installation of bike racks at stations; signal upgrades
- AC Transit Ardenwood Express Bus Park-and-Ride in Fremont
- Transit Oriented Development:
  - o Transportation access improvements at Fruitvale Transit Village
  - o Ashby/Ed Roberts Campus
  - o Union City Intermodal Station

Under construction:

- LAVTA Bus Rapid Transit
- West Dublin BART Station

Bicycle Improvements

- San Francisco Bay Trail San Leandro Slough Bridge
- Bicycle Safety Education Classes
- Aquatic Park Bicycle Access Improvements
- Downtown Berkeley Bike Station

Transportation Programs

- New shuttles for seniors and people with disabilities in Albany, Emeryville, Hayward, Livermore and Pleasanton
- Safe Routes to Schools Alameda County Partnership
- Guaranteed Ride Home Program
- Senior and Disabled Travel Training

A full list of all projects from the last Countywide Transportation Plan is included in Appendix A. The status for many of these projects is listed, the rest are currently being updated by project sponsors.

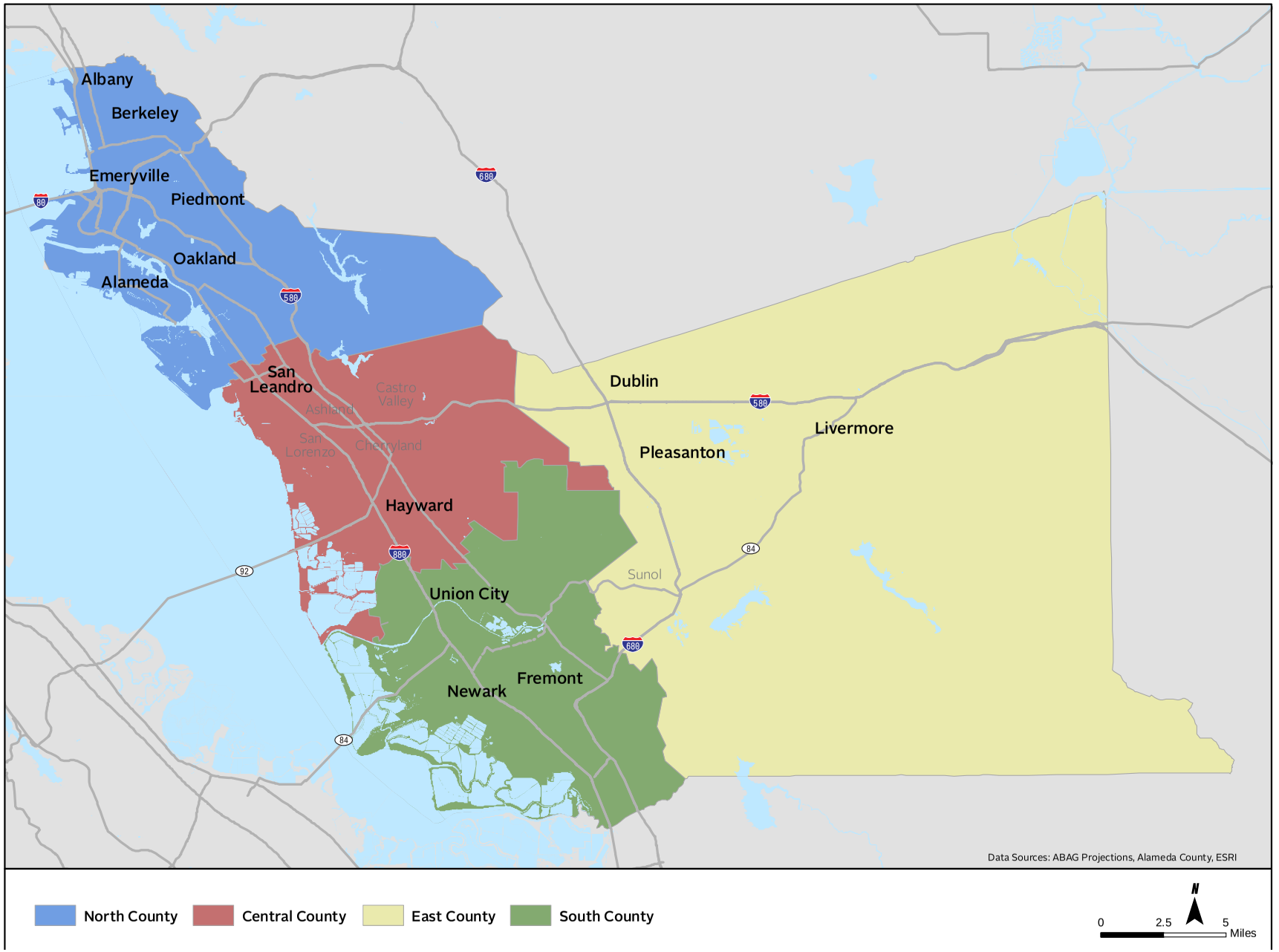
CHAPTER 2. POPULATION, DEMOGRAPHICS AND TRAVEL DEMAND

Alameda County includes 14 cities and a number of unincorporated communities (shown in Figure 2-1). The residential population of the county is approximately 1.6 million and the county is home to an estimated three quarters of a million jobs.[1] The county is commonly divided into four planning areas:

- **North County** encompassing Alameda, Albany, Berkeley, Emeryville, Oakland, and Piedmont
- **Central County** encompassing the cities of Hayward and San Leandro and the unincorporated communities of Ashland, Castro Valley, Cherryland, Eden, Fairview, and San Lorenzo
- **South County** encompassing the cities of Fremont, Newark, and Union City
- **East County** beyond the East Bay hills, including the cities of Dublin, Livermore, Pleasanton, and the unincorporated community of Sunol and other smaller communities in the East Bay hills

1 U.S. Census American Community Survey, 2006-2008 and ABAG Projections 2009.

Figure 2-1 Alameda County Population and Density



POPULATION AND DEMOGRAPHICS

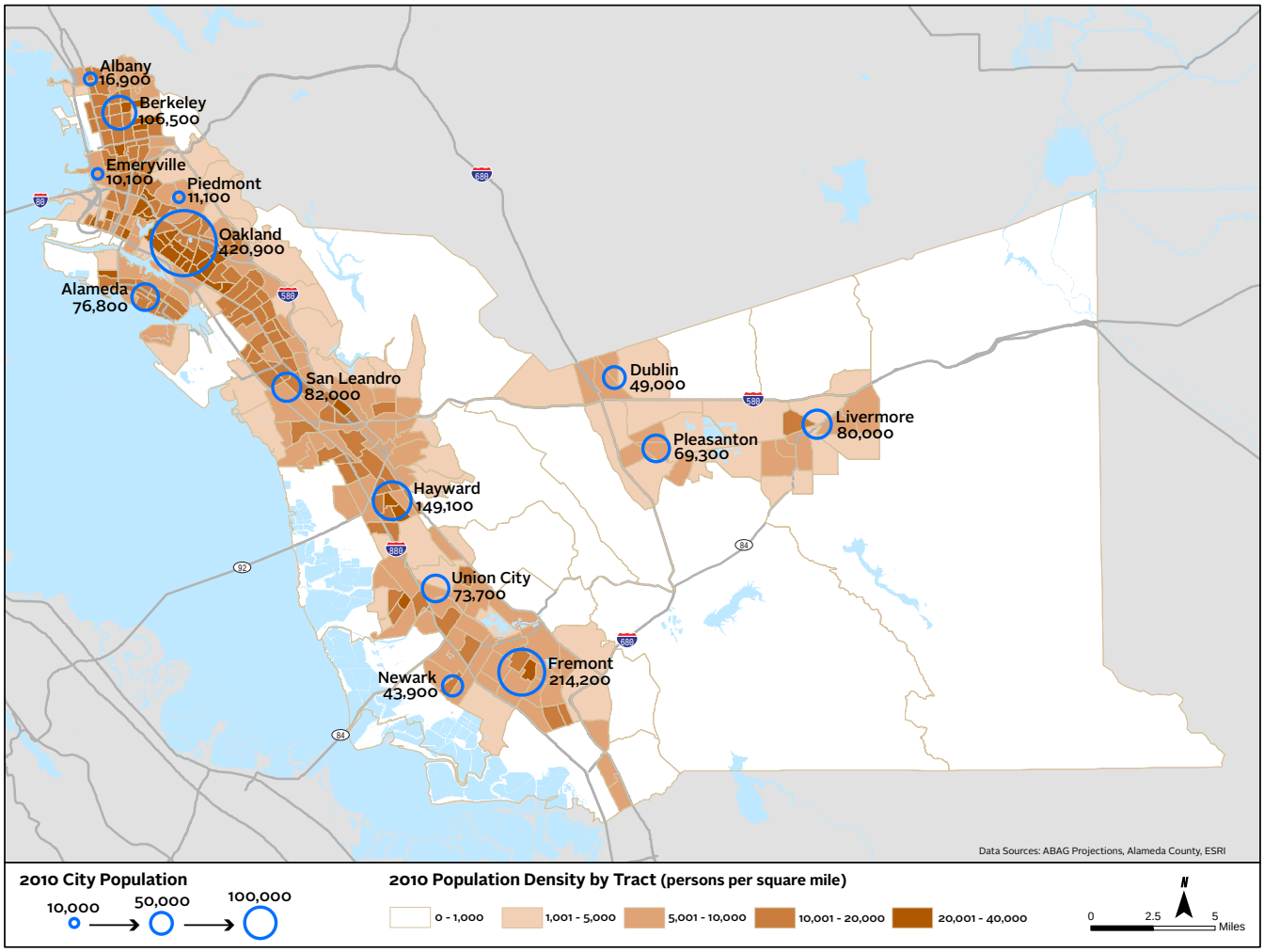
Existing Conditions

The cities in Alameda County range from 10,000 to over 400,000 residents. Oakland and Fremont are the most populous cities in Alameda County, Emeryville and Albany have the smallest populations. Population density varies substantially throughout the county with the urban North County being most dense, Central County encompassing a range of densities, and the more suburban South County and East County being the least dense. There are also large swathes of undeveloped land, representing the East Bay Regional Parks, regional wilderness areas (such as the Ohlone and Sunol Regional Wilderness Areas, and state recreation areas). These natural barriers help to focus development in already populated areas.

As shown in the map below, in almost every city there is at least a small pocket of higher density, compact development representing a historic downtown and the adjacent older residential neighborhoods. The relative populations of the 14 cities and the concentration of population throughout the County are shown in Figure 2-2.

The built form, density and land use characteristics of Alameda County are described in more detail in the following chapter "Land Use and Greenhouse Gas Emissions."

Figure 2-2 Alameda County Population and Density



Demographics

By almost any definition, Alameda County is an extremely diverse county. The paragraphs below summarize key demographic statistics. This information is drawn primarily from the American Community Survey, 2006-2008, ABAG and MTC projections, and Census data where more current information is not available.

Race

Alameda County is racially diverse and has become even more so in recent years. As shown in Figure 2-3, no single ethnic or racial group makes up more than half of the population. In 2000, Whites were the biggest ethnic group at 41% of the population, with Asians, Latinos, and Blacks comprising 20%, 19%, and 14% of the population, respectively. By 2009, the racial distribution of population shifted considerably. As of 2009, the proportion of White residents of Alameda County had decreased to represent roughly 37% of the population, while the share of Latinos and Blacks increased by approximately 7% and 9%, respectively. At the same time, the percent share of Asians decreased by 7% from 2000 to 2009.

Income

Household income in Alameda County is distributed relatively evenly across income levels. As shown in Figure 2-4, almost one third of households, 30%, earn less than $35,000 per year. Another 22% earn more than $100,000 per year and the remainder, nearly half of households, earn between $35,000 and $100,000.

Median household income has fallen slightly over the course of the past decade. In 2000, median household income was $72,301 (adjusted to 2008 dollars). By 2008, mean household income had declined to $70,079, a decrease of roughly 3%.

The highest concentrations of low income residents in the county are in the western portions of the county, concentrated in Oakland and Berkeley. As is expected, these two cities also have the lowest median household income in the county as shown in Figure 2-5.

Figure 2-4 Distribution of Household Income (2008)

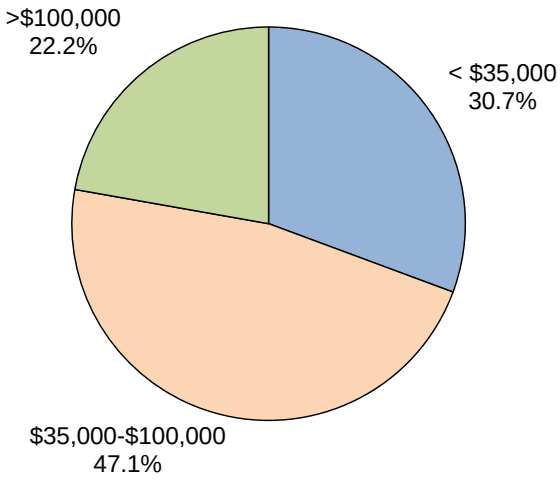
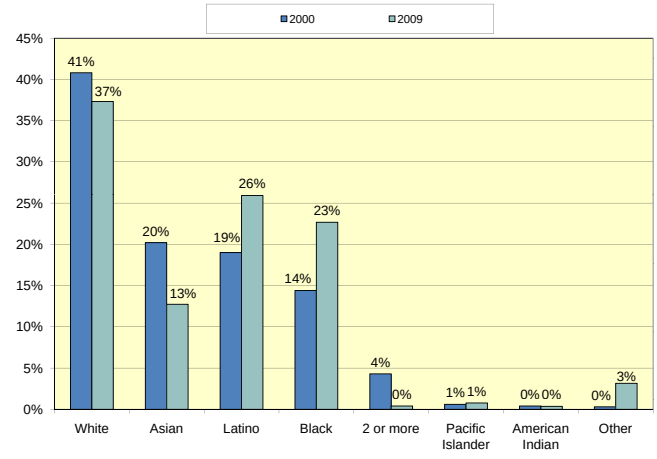


Figure 2-3 Increasing Racial Diversity Over Time (2000 and 2009)

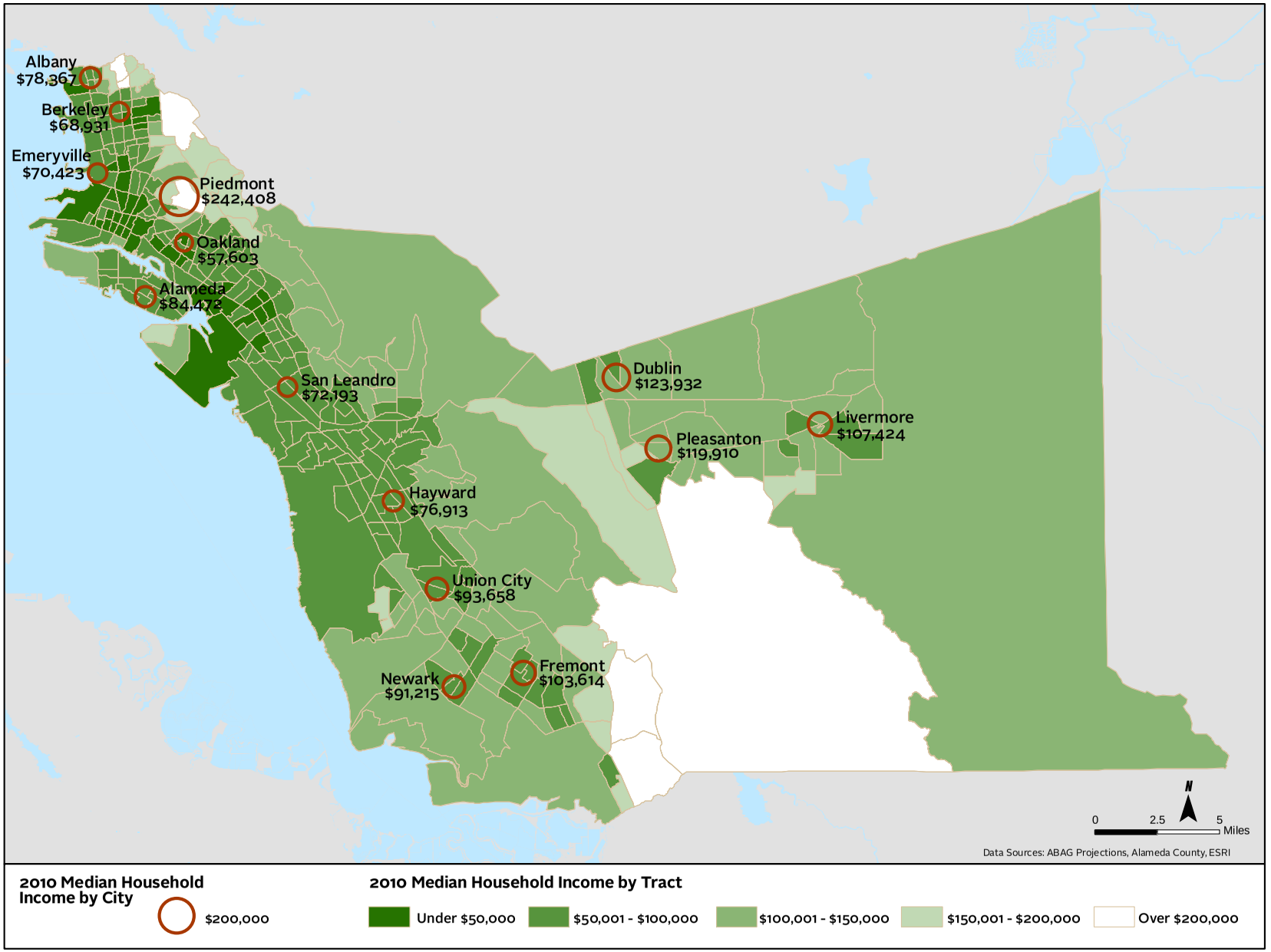


Source: U.S. Census 2000, American Community Survey 2009

Income Bracket	Portion of Households
Less than $10,000	8%
$10,000 to $14,999	4%
$15,000 to $24,999	9%
$25,000 to $34,999	10%
$35,000 to $49,999	14%
$50,000 to $74,999	20%
$75,000 to $99,999	14%
$100,000 to $149,999	14%
$150,000 to $199,999	8%
$200,000 or more	4%

Source: American Community Survey 2008

Figure 2-5 Distribution of Households by Income

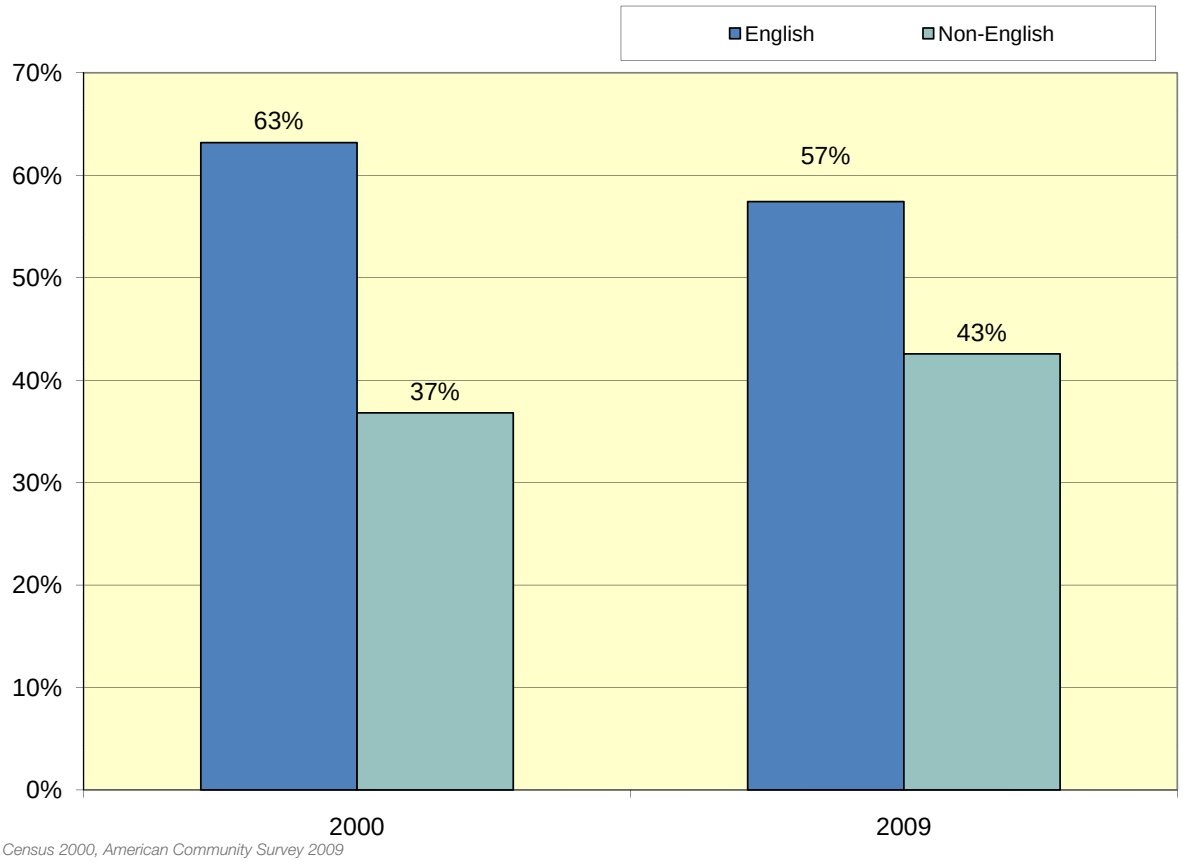


Language Spoken at Home

The diversity of Alameda County is also reflected in the fact that a large portion of households in Alameda County do not speak English as their primary language at home. Further, the portion of primary English-speaking households has declined over time. In 2009, English does remain the primary language spoken at home for the majority of households, 57%. However, in 2000, English was the primary language spoken at home in 63% of households, representing a percent share decline of 6%. The largest non-English share of households was Spanish speaking at 17%, and households speaking Asian languages comprise roughly 13%.

As shown in Figure 2-7, there are very high concentrations of households where English is not the primary language spoken at home in the western portions of the county. In large parts of Union City, Fremont, Hayward, and Oakland, English is not the primary household language for over 50% of households. This has implications for doing outreach for the Countywide Plan and ensuring that all users' needs are taken into account as future transportation facilities are planned.

Figure 2-6 English vs. Non-English Speaking Households (2000 and 2009)



Source: U.S. Census 2000, American Community Survey 2009

Figure 2-7 Household Distribution by Language Spoken at Home

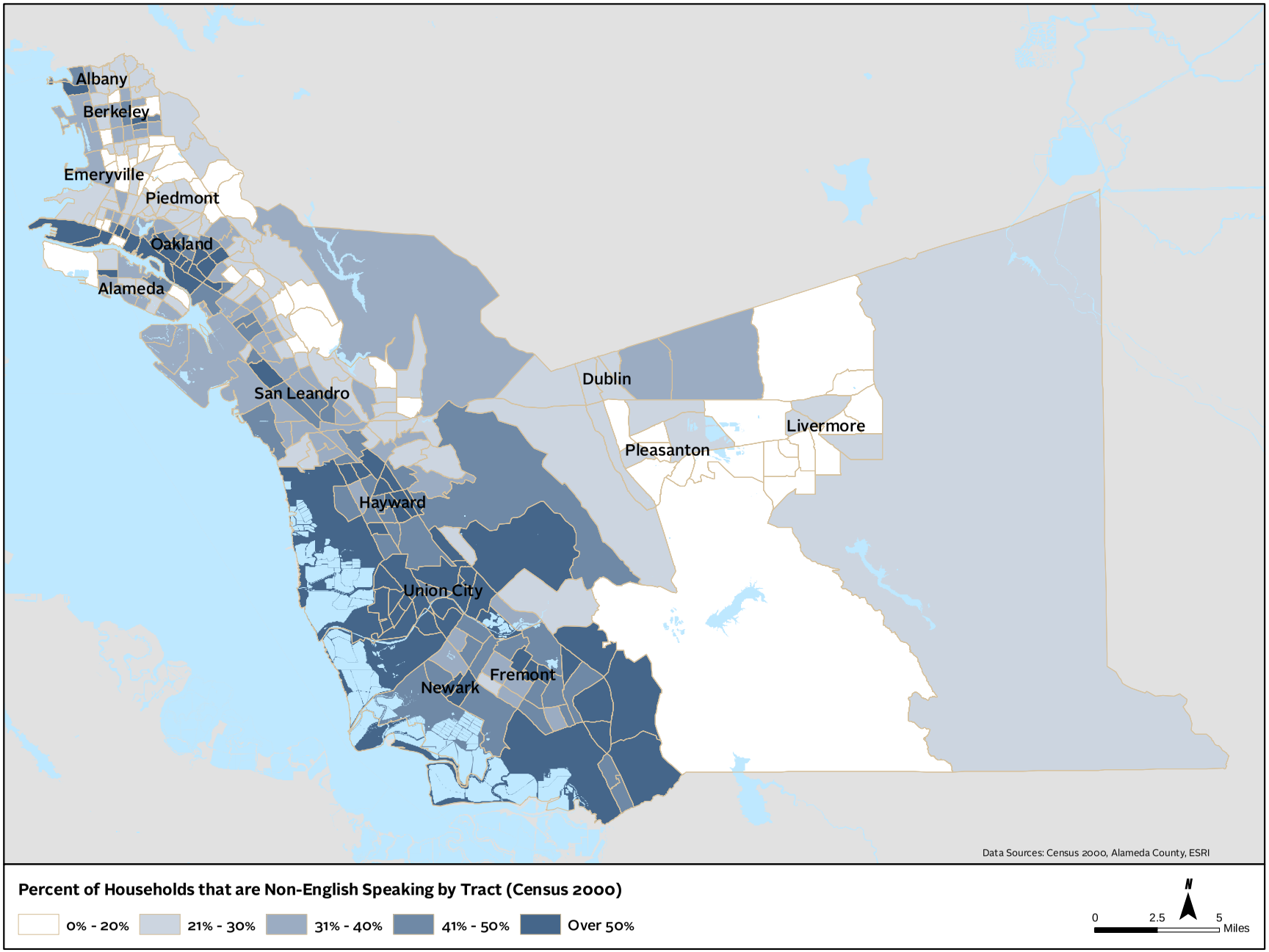
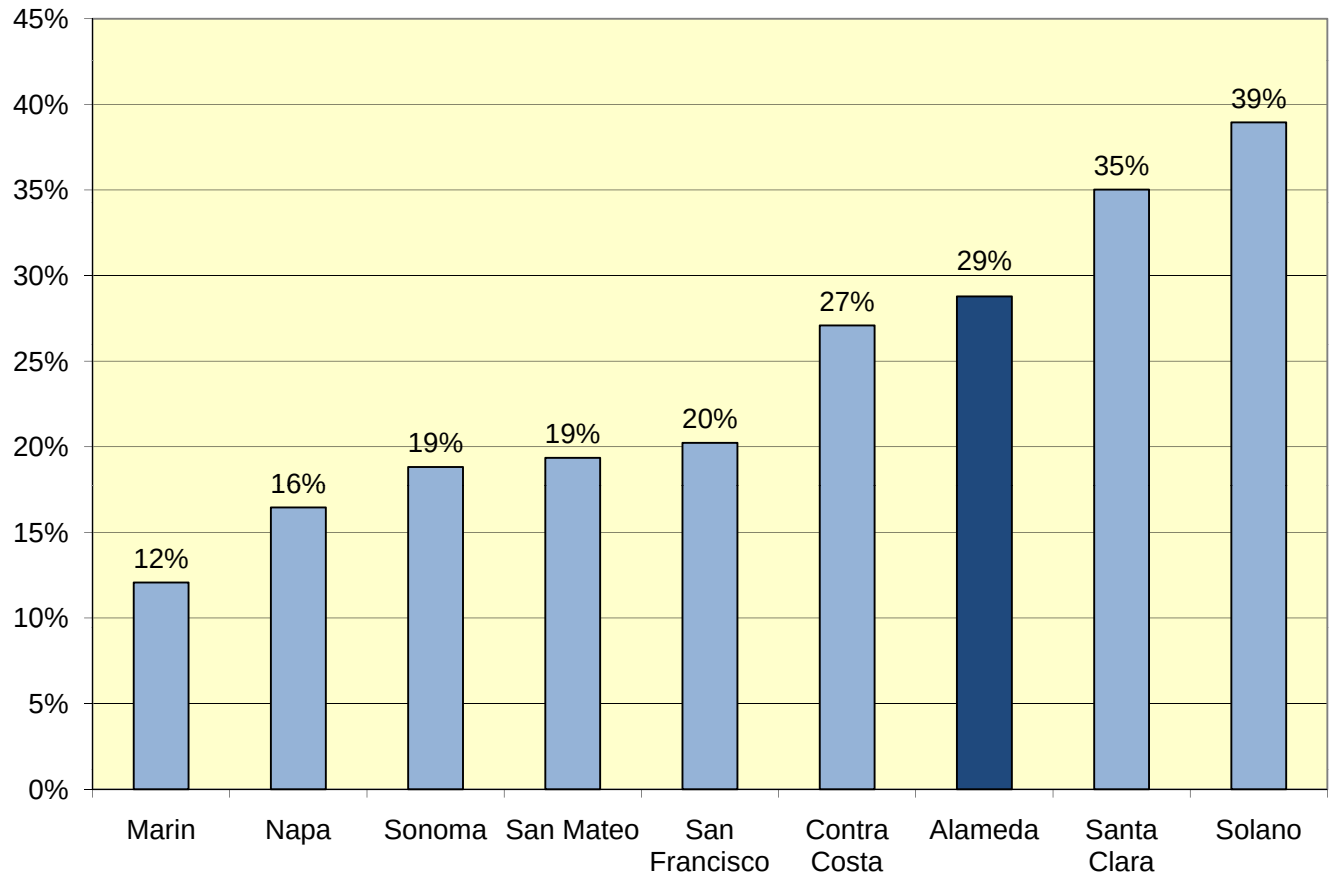


Figure 2-8 Population Growth 2005-2035



Source: ABAG socioeconomic projections for the Bay Area, 2007.

Future Conditions

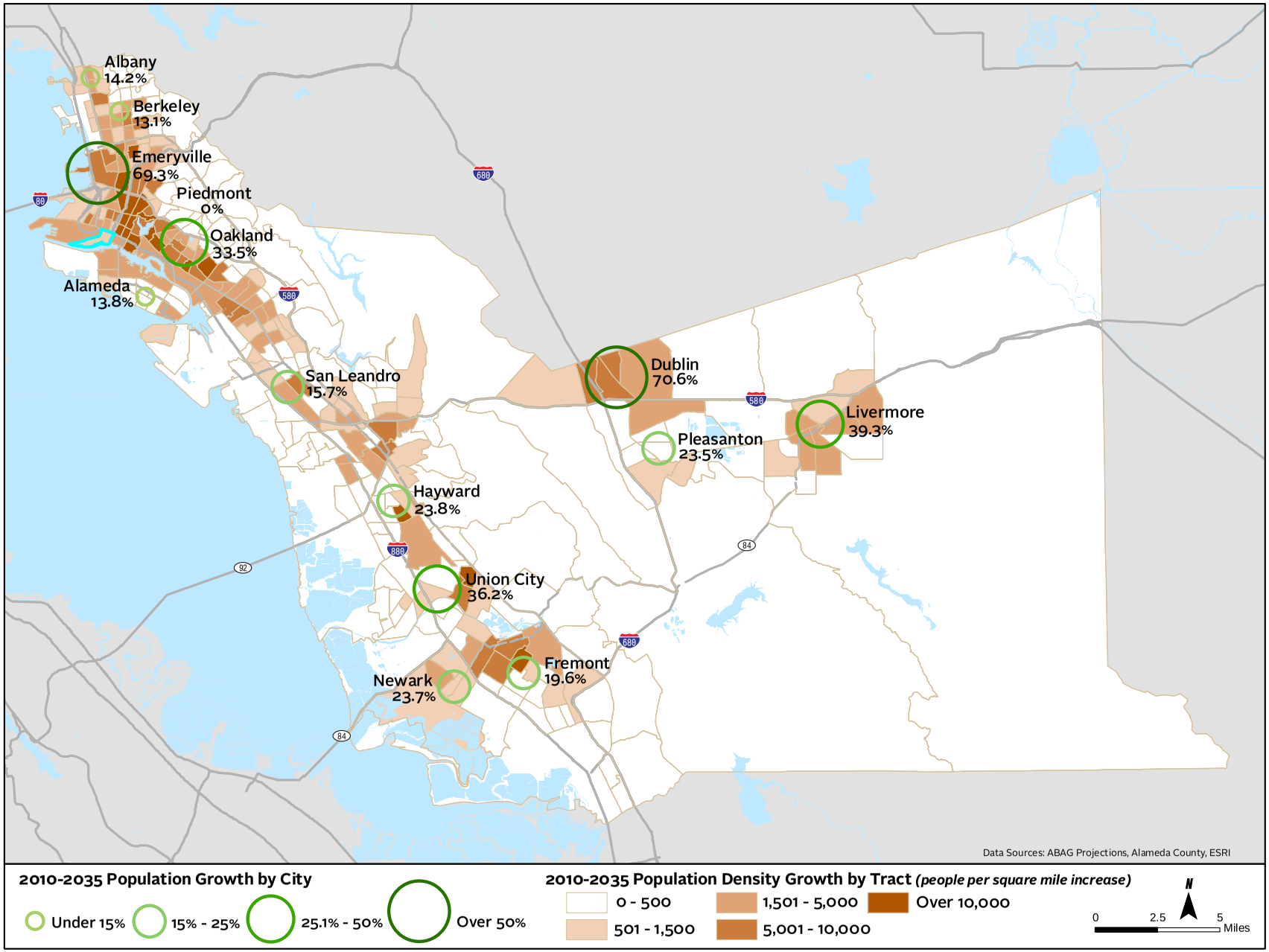
By 2035, MTC and ABAG estimate that the Bay Area will be home to 9 million people, a 27% increase from 2005. With more people and even more jobs, transportation infrastructure will face significant pressures.

Population Growth

The population of Alameda County is projected to increase by almost 30% by 2035 (from 2005 baseline). Relative to the rest of the Bay Area, Alameda County is expected to grow more than most other counties; only Santa Clara and Solano Counties are expected to grow more, as shown in Figure 2-8.

Population growth within Alameda County is not projected to be evenly distributed as shown in Figure 2-9.

Figure 2-9 Alameda County Population Growth and Density Growth



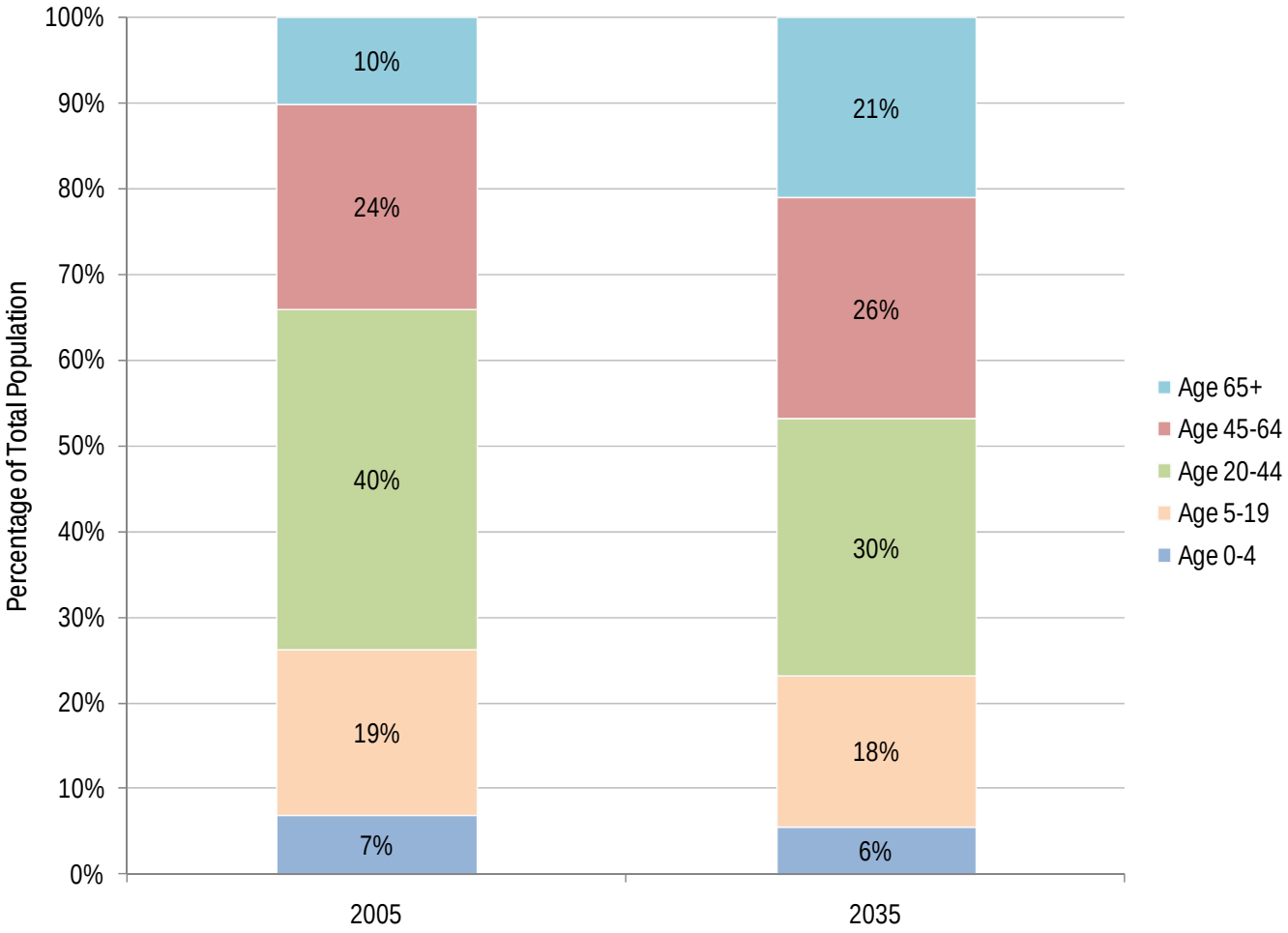
A Growing Senior Population

As the Baby Boom generation ages (those Americans born between 1946 and 1964), the population of senior citizens in Alameda County is projected to swell. The portion of the population over the age of 65 is projected to grow at a faster rate than any other age bracket. In Alameda County the share of the population that is 65 years and older is projected to increase from 10% in 2010 up to 21% by 2035, as shown in Figure 2-10 below. That represents a 167% increase, substantially higher than the 30% increase projected in the overall population.

Seniors and people with disabilities are a sector of the population that has unique mobility needs requiring specially designed transportation services, described fully in the "Accessibility Programs" chapter. As this demographic shift occurs, the needs of this sector of the population and the services and infrastructure to meet those needs will become an increasingly prevalent part of our transportation planning.

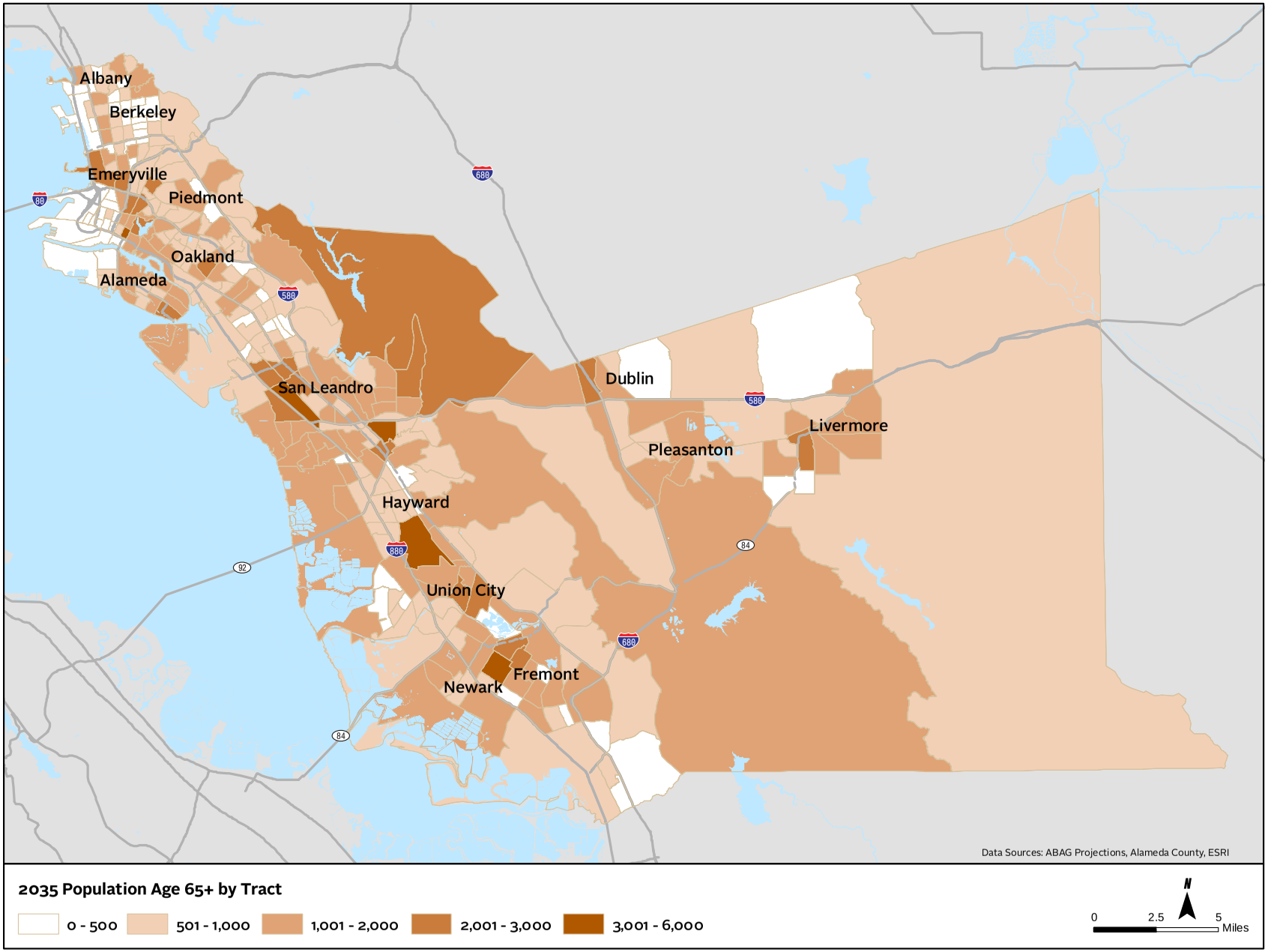
It is projected that just under half of seniors in 2035 are expected to choose to live in dense urban areas in order to be close to amenities, services and public transportation. As shown in the map in Figure 2-11, the senior population will be concentrated in places like downtown Oakland, Emeryville, San Leandro, Hayward and Fremont.

Figure 2-10 Alameda County's Aging Population



Source: ABAG socioeconomic projections for the Bay Area, 2007.

Figure 2-11 2035 Alameda County Population 65 Years and Older



ALAMEDA COUNTY EMPLOYMENT

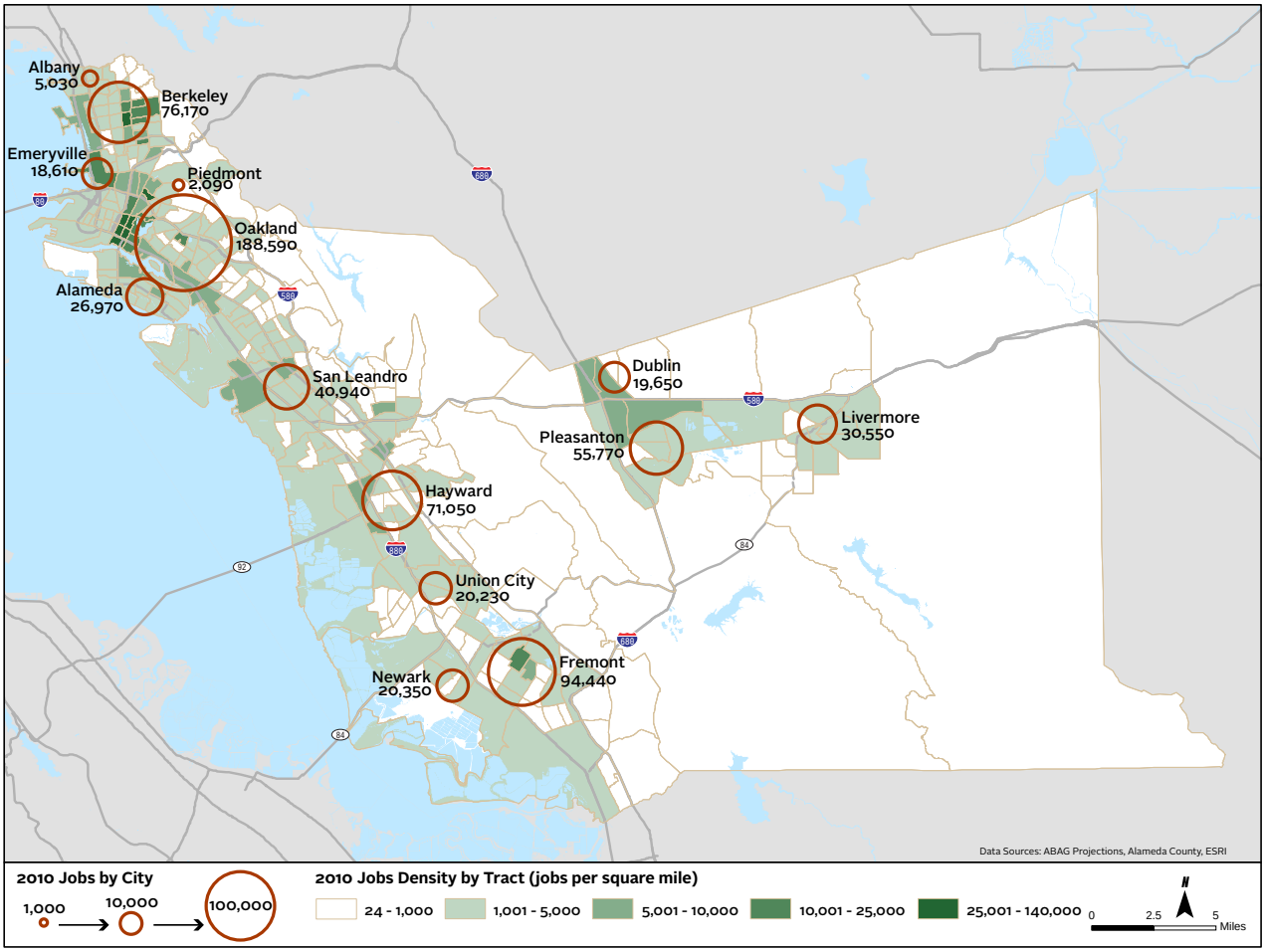
Existing Conditions

The number of jobs and employment opportunities vary throughout Alameda County. However, there are four cities in which employment is most heavily concentrated. According to data from ABAG, over a quarter of all jobs in Alameda County are located in Oakland, by far the highest share. Oakland is followed by Fremont, Berkeley, and Hayward as the next largest jobs centers, each with between 10% and 13% of the county's job base. Together, these four cities accounted for 60% of jobs in Alameda County as of 2010. (It should be noted that the NUMMI auto manufacturing plant in Fremont has closed recently which is not included in this data.) The concentration of jobs throughout Alameda County is shown in Figures 2-12 and 2-14 below.

Future Conditions

Overall employment is projected to increase by 46% in Alameda County from 2010 to 2035 based on 2007 ABAG projections. As shown in Figure 2-13, suburban job centers are expected to experience the highest job growth. For example, the largest projected increase will be in Dublin, which is expected to experience a 117% increase in employment. By contrast, job growth in Oakland and Berkeley is projected to be 49% and 13%, respectively, which is much more modest. Based on the 2007 ABAG projections, no city in Alameda County is projected to see job losses by 2035. However, ABAG 2007 projections are not the most recent, they do not reflect the changes anticipated due to SB 375 (discussed in Chapter 3) nor do they reflect the economic downturn. ABAG's projections are currently being revised; these new projections are likely to show slower rates of employment growth.

Figure 2-12 Alameda County Jobs and Job Density 2010



Employment Concentration

As shown in Figure 2-14, it is projected that employment will become slightly more evenly dispersed within Alameda County by 2035, with some jobs moving from the urban core to suburban job centers. For example, although Oakland's share of employment is expected to increase slightly, the other primary job centers (Fremont, Berkeley, and Hayward) are projected to have a decline in their share of employment. Berkeley is projected to experience the largest decline in job share of 2.4%, while Dublin will experience an increase of 1.3% in job share, the largest increase. However, the four cities will still remain the leading job centers as they are today, comprising 58% of total jobs in 2035. These figures are also based on 2007 ABAG projections.

Jobs to Residents Ratio

Another metric of employment and its relationship to county residents is the number of jobs per resident, shown in Figure 2-15. As of 2000, Alameda County had roughly one job for every two residents. Many cities in the county mirror this ratio at less than one job per resident. Emeryville is a notable exception with almost 3 jobs per resident. Piedmont has the lowest job to resident ratio at only one job per five residents (0.19).

Figure 2-14 Share of Alameda County Employment by City 2010 and 2035

	Share of Jobs (2010)	Share of Jobs (2035)	Change
Oakland	26%	27%	0.7%
Fremont	13%	14%	0.3%
Berkeley	11%	8%	-2.4%
Hayward	10%	9%	-0.6%
Pleasanton	8%	8%	-0.3%
Unincorporated	6%	5%	-0.6%
San Leandro	6%	6%	-0.2%
Livermore	4%	5%	1.0%
Alameda	4%	4%	0.3%
Newark	3%	2%	-0.5%
Union City	3%	4%	1.1%
Dublin	3%	4%	1.3%
Emeryville	3%	3%	0.1%
Albany	1%	1%	-0.2%
Piedmont	0%	0%	-0.1%

Source: ABAG

Figure 2-13 Projected Employment Growth, by City (2010 to 2035)

	Percent Employment Growth
Dublin	117%
Union City	103%
Livermore	81%
Alameda	58%
Emeryville	51%
Oakland	49%
Fremont	49%
Alameda County	46%
San Leandro	41%
Pleasanton	40%
Hayward	37%
Unincorporated	31%
Newark	22%
Berkeley	13%
Albany	11%
Piedmont	2%

Source: ABAG

Figure 2-15 Jobs per Residents, by City (2000 and 2035)

	Jobs per Resident (2000)	Projected Jobs per Resident (2035)
Emeryville	1.84	1.64
Pleasanton	0.80	0.91
Berkeley	0.72	0.72
San Leandro	0.50	0.61
Hayward	0.48	0.53
Newark	0.46	0.46
Alameda County	0.46	0.53
Oakland	0.45	0.50
Fremont	0.44	0.55
Dublin	0.40	0.51
Livermore	0.38	0.50
Alameda	0.35	0.49
Albany	0.30	0.29
Unincorporated	0.29	0.31
Union City	0.27	0.41
Piedmont	0.19	0.19

Source: ABAG

By 2035, the ratio of jobs to resident in Alameda County is projected to remain nearly the same. Again, Emeryville is a notable exception. As the City of Emeryville continues to encourage construction of residential units in the coming decades, their job to resident ratio will fall to approximately 3 jobs for every 2 residents, as would be expected. Union City and Alameda are the only other exceptions, as both are expected to gain jobs at a faster rate than population.

TRAVEL DEMAND IN ALAMEDA COUNTY

Existing and Future Conditions

Travel Mode

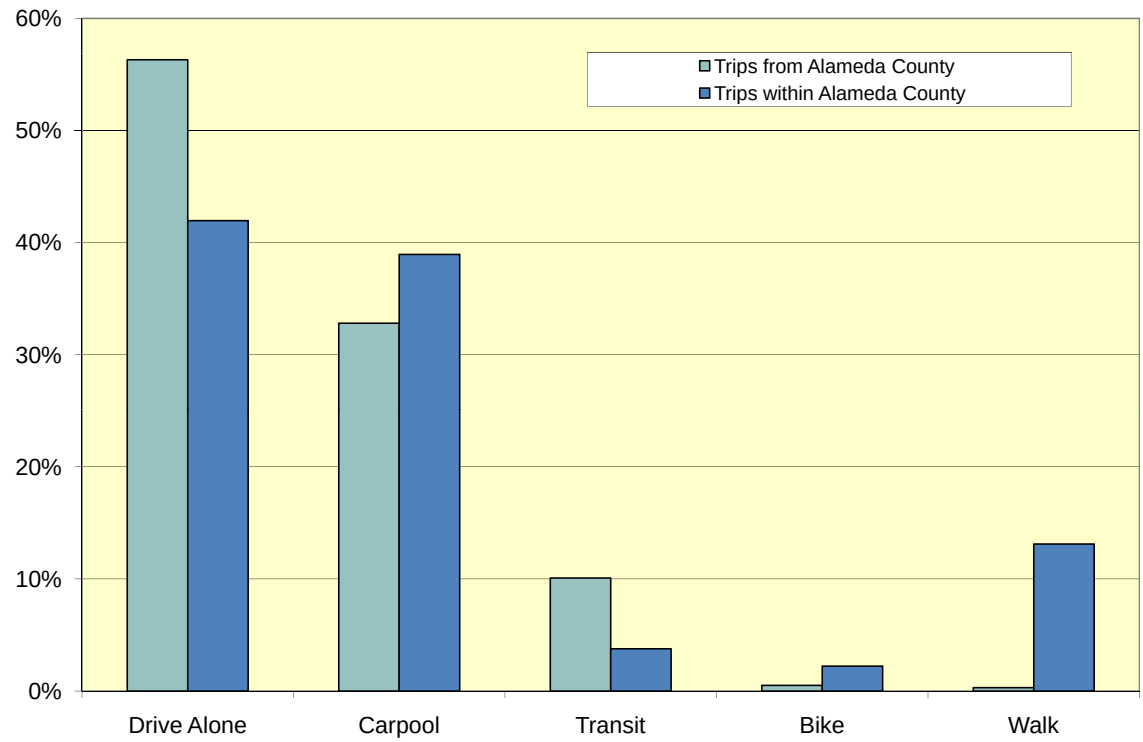
Alameda County residents and workers have many ways of getting around. Most (83%) of all trips to, from, or within the County are made by automobile, but almost half of all daily driving trips are made in carpools (defined as vehicles with more than one occupant). Another 17% are made by transit, bicycling, or walking. These percentages are similar to Bay Area regional averages.

Looking at trips made just within Alameda County, they are more likely to have a higher transit, walking, or bicycling mode share than trips traveling to and from Alameda County. Figure 2-16 compares mode shares (percent of trips made by a given mode of travel) for current trips made within Alameda County to those made to or from the County. This reflects the fact that many communities within Alameda County are characterized by compact, mixed-use development that supports a range of travel choices. As shown in Figure 2-18, the share of transit, bicycle and walk trips are highest in higher-density cities located in the northern part of the county (Berkeley, Oakland, Albany, and Alameda).

Recent demographic projections show that some future (2035) increase in the share of trips made by transit, walking, or bicycling is expected in Alameda County[1] due to the expectation that future land use policies, such as those covered in the Land Use Chapter of this Briefing Book, will encourage infill development in cities that support a range of alternative travel choices. Additionally, real estate trends are indicating that due to the aging of the population and decreasing average household size, residents by 2035

1 ABAG 2007 Projections.

Figure 2-16 Share of Current (2005) Daily Trips by Mode of Travel



Source: Alameda County travel demand model output representing 2005 conditions.

are more likely to want to live in smaller homes closer to urban centers and transportation options.[2] Travel behavior may also be affected by increasing levels of congestion predicted for the future (see discussion below) and the quality of available transportation infrastructure.

Future projections indicate the mode share changes are expected to impact work-related trips. Figure 2-17 compares current and future mode shares for work-related trips to, from, and within Alameda County. The share of work trips made by single-occupancy vehicles is expected to decline from 69% to 64%, while the transit and bicycle mode shares are expected to grow by 3 and 1 percentage points, respectively. The future may also see a greater share of people working at home. According to data from the American Community Survey, about five percent of Alameda County residents currently work at home, and this number has been trending upward over time.

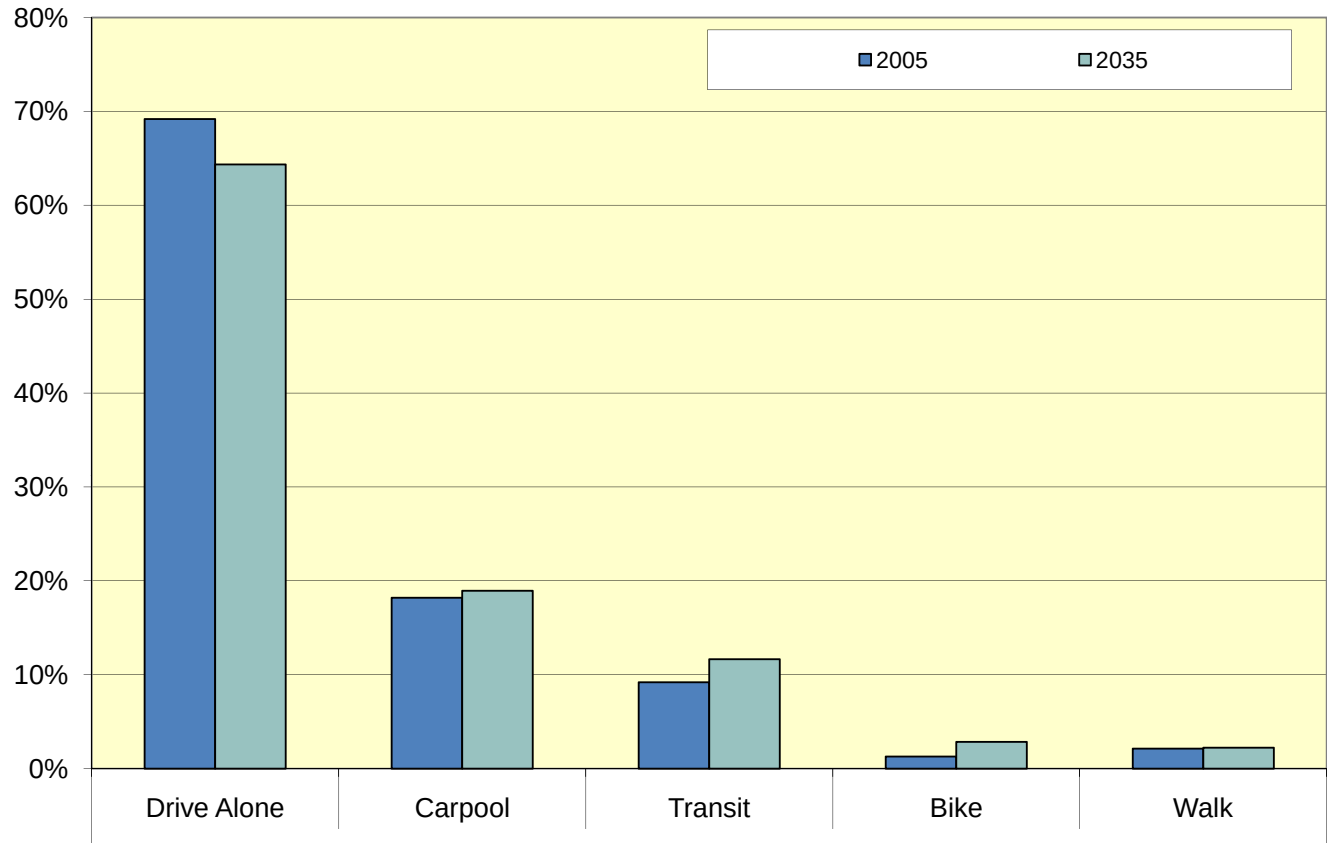
These trends are projected to occur in the absence of major transportation investments within Alameda County—additional transportation investments will also affect mode choice.

Vehicle Ownership

Alameda County residents are diverse in the area of vehicle ownership. While most households in the county own at least one vehicle (87%), a significant share (13%) have no vehicle. This represents the second-largest share of zero-vehicle households in the Bay Area counties after San Francisco, in which 29% of households have no vehicle. As shown in Figure 2-19, the largest shares of zero-vehicle households in the county are located in the downtown areas of Berkeley and Oakland. The overall share of zero vehicle households in the county is expected to grow slightly in the future, from 13% in 2005 to about 16% in 2035.

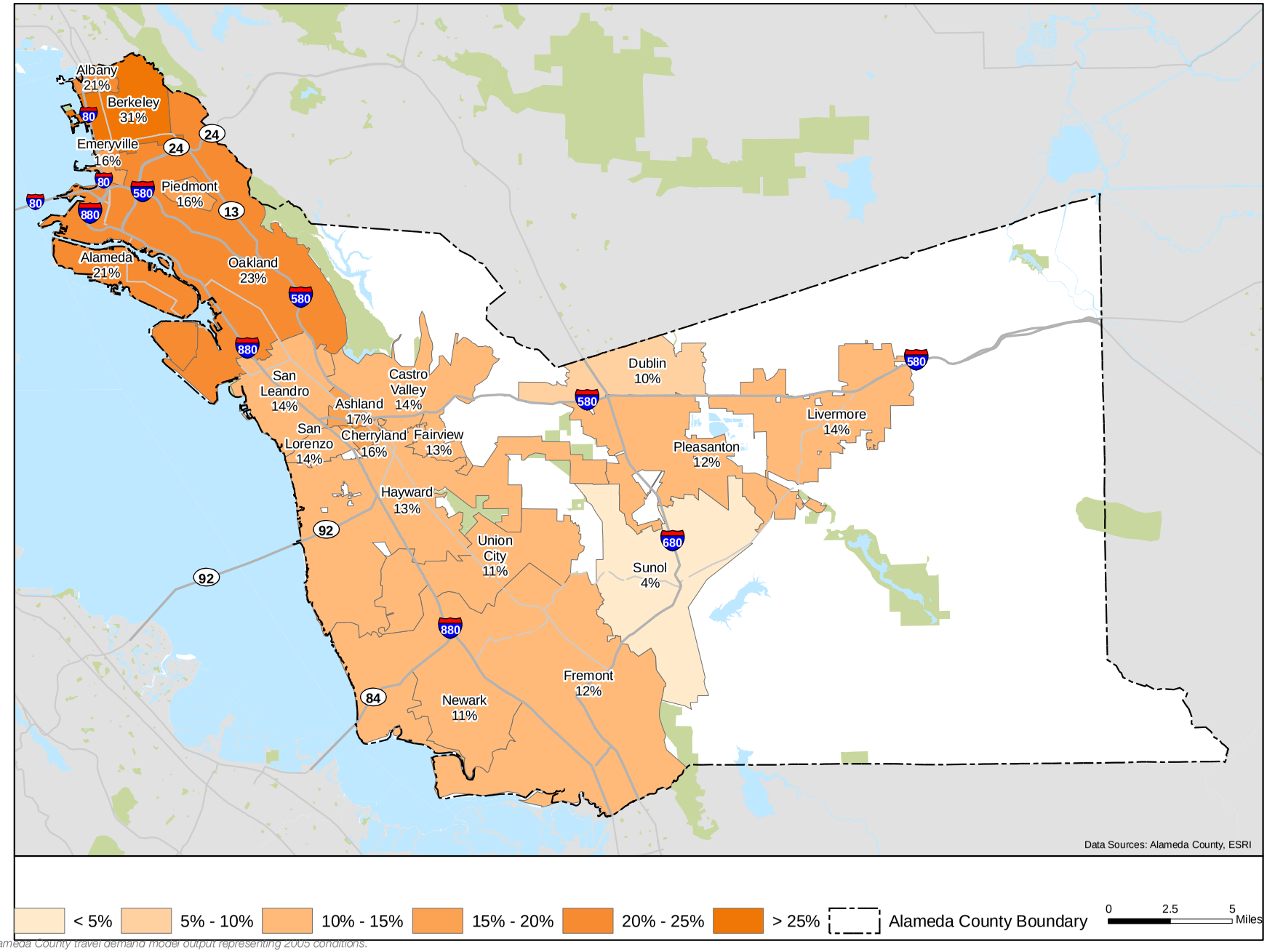
2 Source: Center for Transit Oriented Development, 2004. Hidden in Plain Sight: Capturing the Demand for Housing Near Transit.

Figure 2-17 Work Trip Mode Share, 2005 and 2035



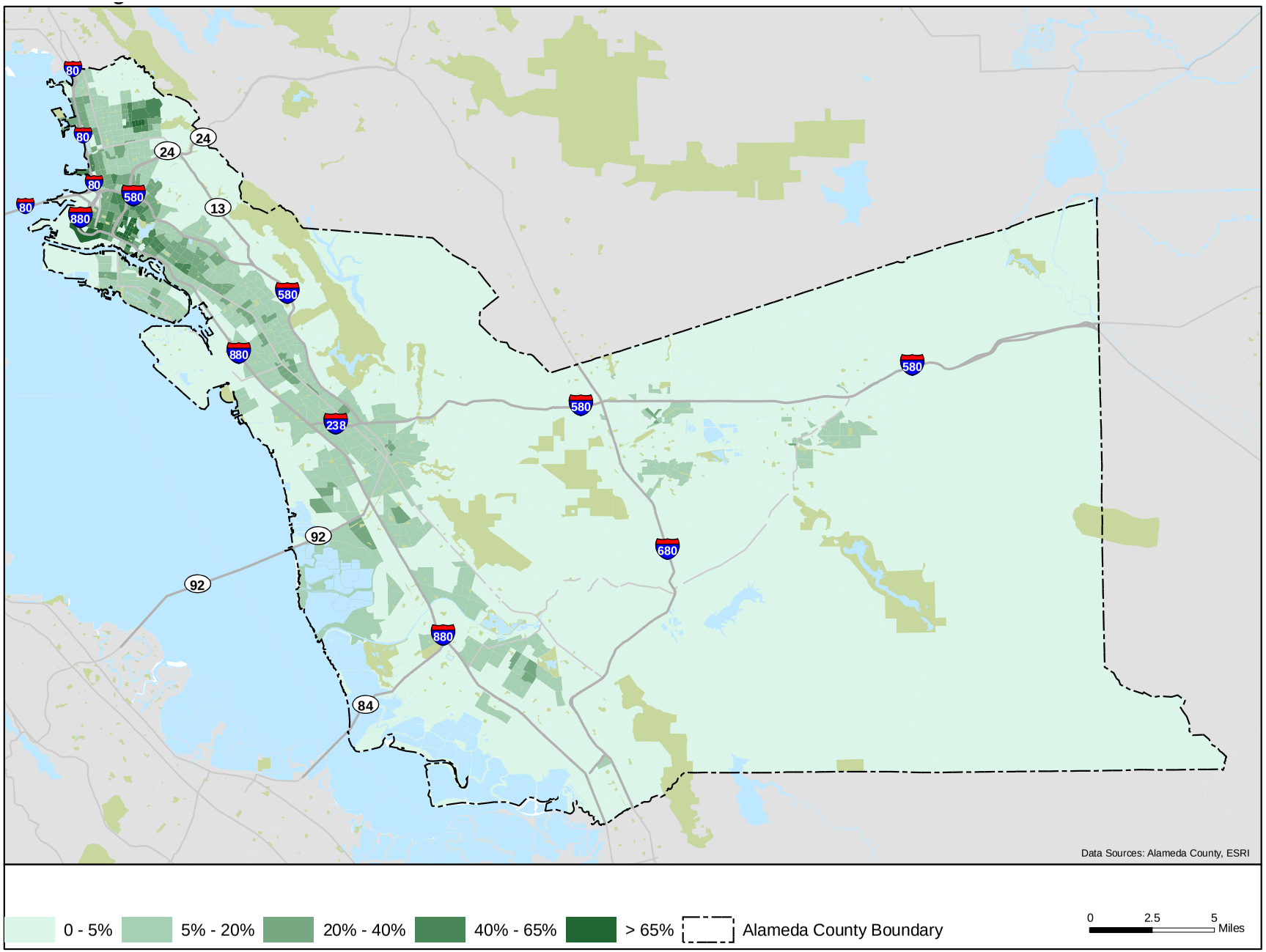
Source: Alameda County travel demand model output representing 2005 and 2035 conditions. Projections are based on ABAG 2007 forecasts.

Figure 2-18 Percentage of Current (2005) Trips Made by Bicycling, Walking, and Transit



Source: Alameda County travel demand model output representing 2005 conditions.

Figure 2-19 Percent of Households with Zero Vehicles, 2005



Source: Alameda County travel demand model output representing 2005 and 2035 conditions. Projections are based on ABAG 2007 forecasts.

Current and Future Travel Patterns

As described previously, Alameda County's residential population and employment are expected to grow significantly in the future. These new residents and employees will generate significant additional travel—about 1.5 million new automobile trips daily; 210,000 transit trips; 60,000 bicycle trips, and 140,000 new walking trips by 2035.[3] This is equivalent to overall growth in trips of about 40% from 2005. Figure 2-20 illustrates the expected growth in daily trips made to, from, and within the county from 2005 to 2035.

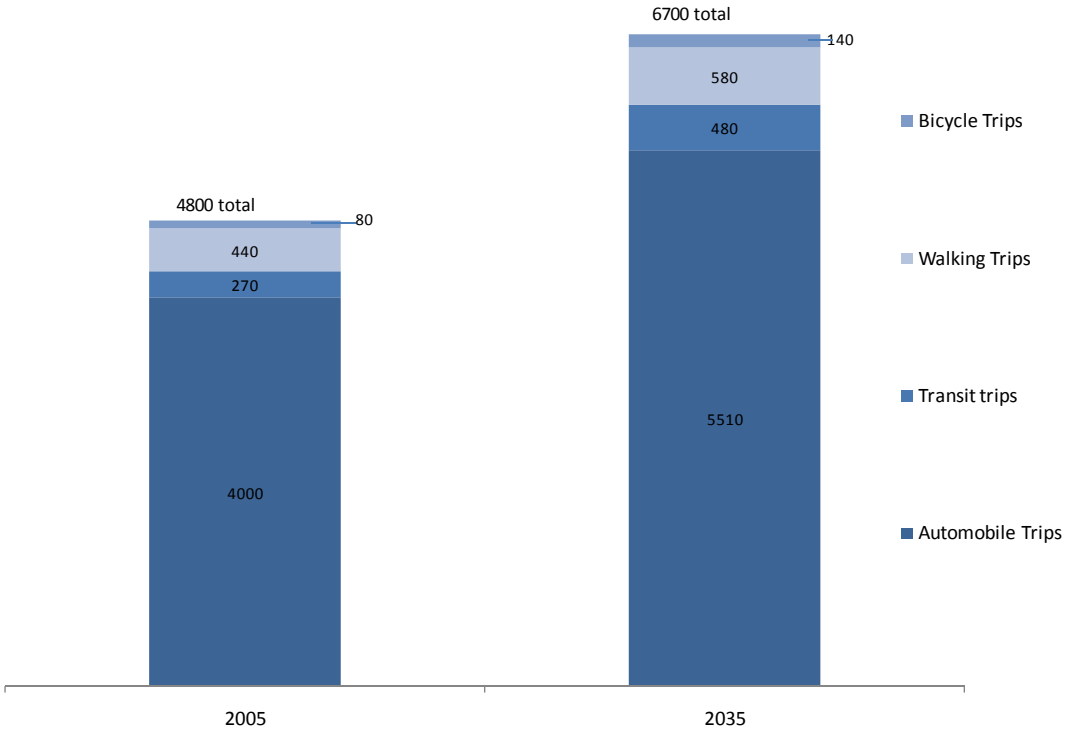
Major growth is also expected in freight and air traffic, including a 70% growth in truck volumes (2005-2035) in the areas currently generating the greatest volume of truck traffic; an approximately 40% increase in container volumes into the port of Oakland (2002-2020); a 42% increase in air passenger volumes to Oakland Airport by 2035; and significant growth in rail traffic (See the Goods Movement Section of this document for detail and sources).

This additional travel will place a strain on the transportation system, particularly during times of peak demand. Understanding where these future travelers are expected to travel will be critical to ensuring investment in the transportation system can accommodate future demand. Figure 2-21 provides an overall picture of current and future travel flows to and from Alameda County for work-trips occurring during peak periods of travel (morning and afternoon commute periods). The flow of work trips going to or coming from Alameda County are represented by directional arrows of peak period (morning and afternoon) travel in 2005 and 2035.

The directional arrows indicate that the greatest volume of peak period travel occurs within the county itself and that most (70%) of the expected future growth in peak period work trips will occur within the county. About another 20% of the growth will be between Alameda and San Francisco and Alameda and Santa Clara Counties, and the remaining 10% will be to San Mateo, Solano, Marin, and San Joaquin Counties." It should be noted that the model used for these trip predictions produces less accurate results for trips to and from San Joaquin and other outlying counties. The Roadways section of this document provides additional detail on the projected location of congestion and future bottlenecks in 2035.

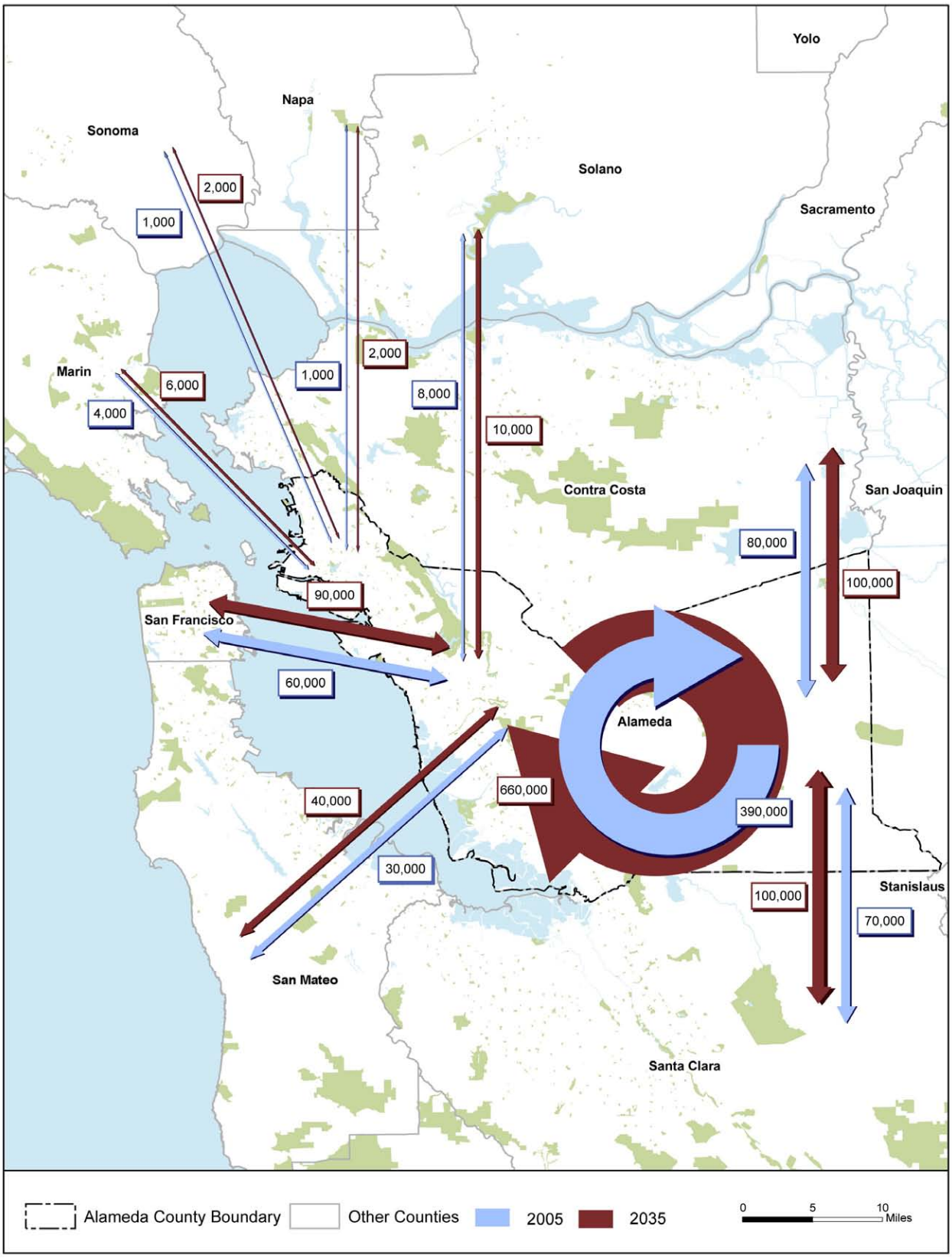
3 Alameda County travel demand model output representing 2005 and 2035 conditions. Projections are based on ABAG 2007 forecasts.

Figure 2-20 Overall Growth in Daily Trips, 2005 to 2035 (000's)



Source: Alameda County travel demand model output representing 2005 and 2035 conditions. Projections are based on ABAG 2007 forecasts. Values represent thousands of trips.

Figure 2-21 County-to-County Peak Period Home Based Work Trips, 2005 and 2035



Source: Alameda County travel demand model output representing 2005 and 2035 conditions. Projections are based on ABAG 2007 forecasts.

CHAPTER 3. LAND USE AND GREENHOUSE GAS EMISSIONS

This update of the Alameda Countywide Transportation Plan is taking place in a changed economic, regulatory, and social environment in which the concept of creating a more sustainable way of living through transportation and land use investments has become a primary concern. In order to meet legislative and countywide plan goals for sustainability, the Plan will take a closer look at coordinating transportation investments with the land use patterns of the county.

The vision statement in MTC's Change in Motion; Transportation 2035 Plan for the San Francisco Bay Area summarizes this approach well in calling for the Bay Area to be:

"..transformed by a growth pattern that creates complete communities with ready, safe and close access to jobs, shopping and services that are connected by a family of reliable and cost-effective transit services; our transportation investments and travel behaviors are driven by the need to reduce our impact on the earth's natural habitats; and, where all Bay Area residents enjoy a higher quality of life."[1]

1 Change in Motion; Transportation 2035 Plan for the San Francisco Bay Area. Publication. Oakland, CA: Metropolitan Transportation Commission, 2009. 11.

Image from William Wagner

This vision cannot be attained by focusing on transportation investment and management decisions alone. With new mandates to reduce greenhouse gas (GHG) emissions as established under new California Global Warming Solutions Act (AB 32), it has become crucial for the counties and cities in California's urban regions to consider how transportation affects our land use patterns, air quality and climate. Alameda County's Countywide Transportation Plan will have to address the relationship between job locations and housing choices, to address the many diverse, underlying land use policies established by different communities, and to work to reduce Vehicle Miles Traveled (VMT). The issues of changing demographics such as aging of the population, the need for affordable housing in close proximity to jobs, availability of housing choices for an increasingly socially and economically diverse population, and urban development patterns that support and benefit from non-automobile modes of travel, must also be considered. Research has shown that it will take an aggressive and comprehensive approach to reach GHG emission reduction goals – see Transportation, Land Use, and GHG Emissions sidebar.

The Countywide Plan provides Alameda County communities the opportunity to take a leadership role in the implementation of this new planning paradigm and to coordinate with broader regional efforts.

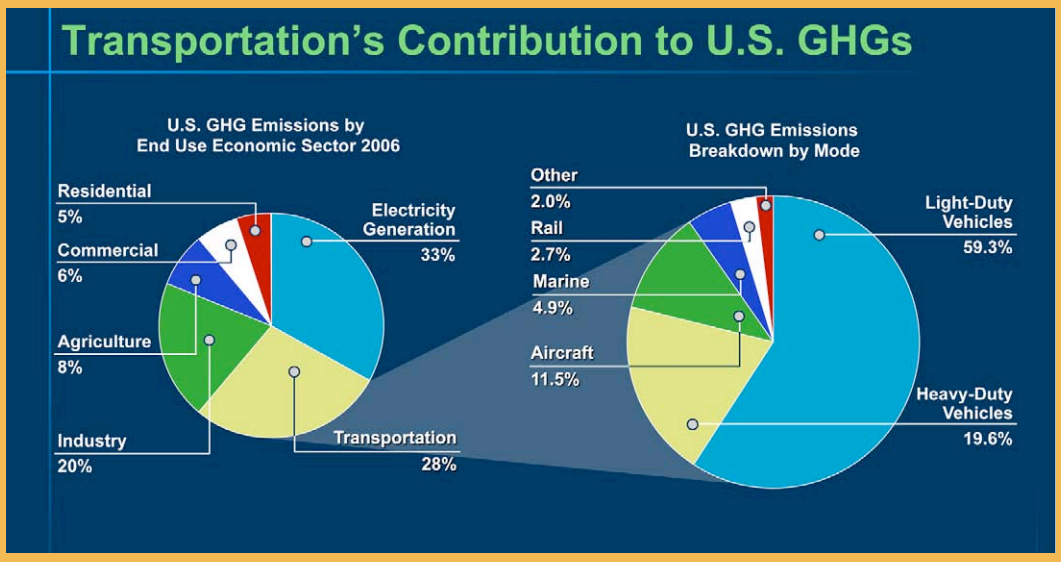
Regional Context

MTC's *Change in Motion Plan* anchors itself on the "three-E" principles of sustainability—a prosperous and competitive economy, a healthy and safe environment, and equity, wherein all Bay Area residents share in the benefits of a connected regional transportation system.[2] These principles are indicative of the interdependency of the multiple sectors of a regional economy.

2 Ibid. 13.

Transportation, Land Use, and GHG Emissions

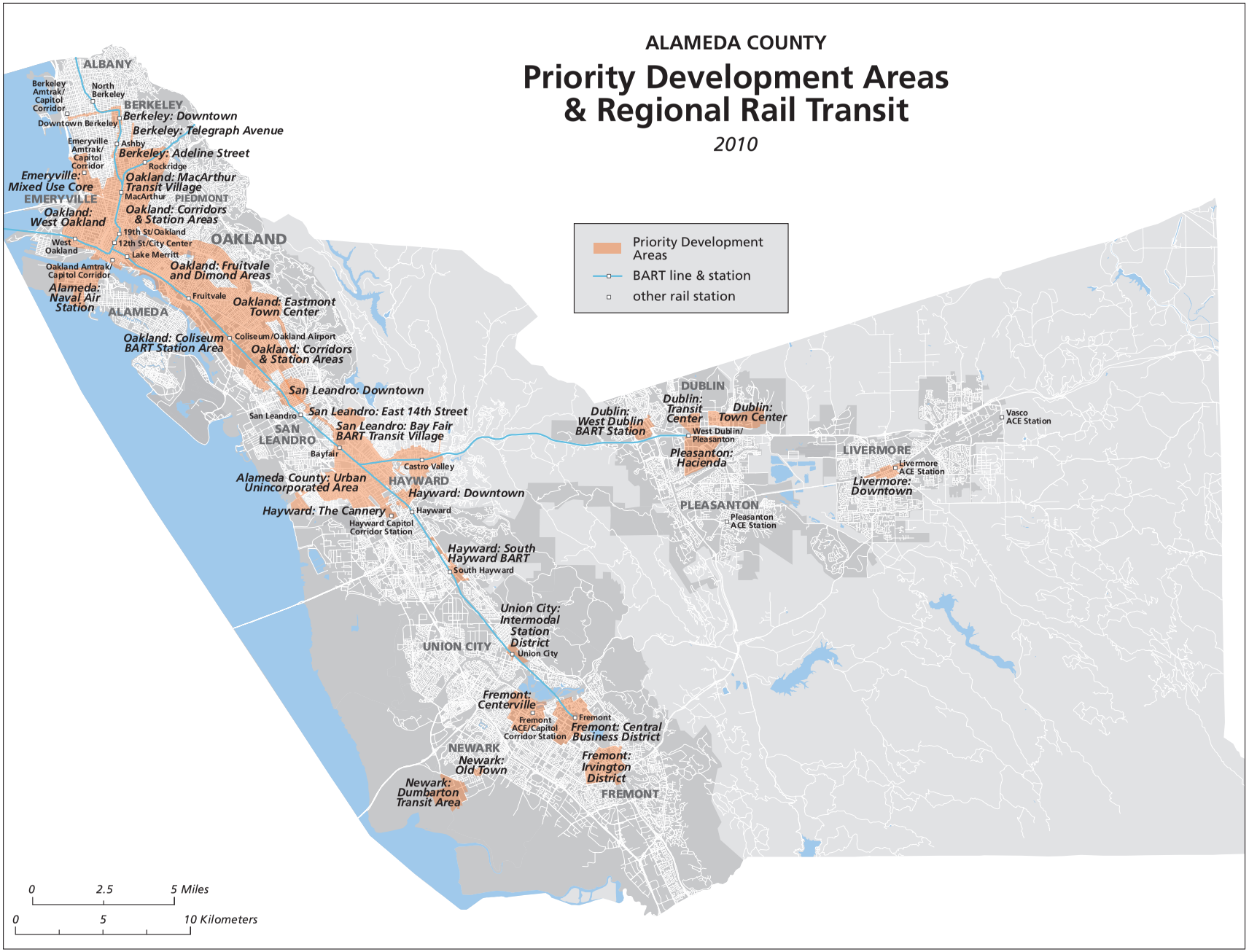
Two of the most comprehensive studies done to date on the interrelationships between transportation, land use, and GHG emissions reductions are Moving Cooler[1] and Growing Cooler[2]. These studies document analysis of the application of a range of market and policy changes that can support reductions in GHG emissions. These studies indicate that a broad range of technological improvements and tergeted transportation and land use investments are necessary to stem the growth in emissions.



1 Moving Cooler: An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions; Urban Land Institute, 2009.

2 Growing Cooler: The Evidence on Urban Development and Climate Change; Ewing, Bartholomew, Winkelman, Walters, and Chen, Urban Land Institute; September 2007.

Figure 3-1 Alameda County Priority Development Areas and Regional Rail Transit



In keeping with the focus on the relationship of land use and transportation in reducing GHG emissions, Senate Bill 375 sets regional targets for GHG reductions and outlines a host of requirements. Regional Transportation Plans (RTPs) must now include a Sustainable Communities Strategy (SCS) which will address the creation of land use patterns to reduce GHG emissions.

With sustainability as a cornerstone of future transportation planning in the Bay Area, regional agencies are working together with local jurisdictions to develop a strategy that promotes a more compact land use pattern for the Bay Area to address the causes and effects of urban sprawl. The strategy, called FOCUS, is a voluntary, incentive-based program which allows local governments to identify infill sites near transit as Priority Development Areas (PDA). PDA's would receive targeted incentives from all four regional agencies for existing and future projects. These PDA sites are the primary future urban infill areas in Bay Area communities. Local governments estimate PDAs could accommodate up to 56% of the projected growth by 2035.[3] The effort has resulted in the identification of 120 PDAs by different local agencies, of which 37 are in Alameda County, as shown in Figure 3-1. Similarly, local agencies have also identified Priority Conservation Areas (PCA) to maintain regionally significant open spaces.

The coordination of transportation investments to provide non-Single-Occupant Vehicle options to residents and workers within PDAs will provide benefits for both future and existing residents and workers. The travel behavior of existing residents and workers will also need to change in order to reap the full benefits of this strategy.[4]

These PDAs provide important opportunities for addressing the relationship between jobs and housing in Alameda County and surrounding counties. The Regional Housing Needs Allocation (RHNA) has a primary goal of creating new housing that meets the needs of households with jobs in the county. New infill housing can do more than address the goals established by RHNA, it can also meet the real economic and social needs of households and thereby improve economic viability and increase sustainable transportation and lifestyle choices for Alameda County households. There is also the need to recognize the potential for negatively affecting the affordability of housing within PDAs which could price lower income residents out of these areas which would otherwise be a very beneficial location for them, given the lower costs of transportation in PDAs that should be one of the results of SCS implementation. Policies and programs that support the construction of new affordable housing and the maintenance of existing affordable housing need to be implemented, and monitored to encourage implementation. The Bay Area RTP/SCS process has established goals and performance measures to focus on the issues of providing adequate housing, and this will provide one opportunity to monitor these issues. But achieving these goals still relies on implementation at the local market and entitlement level. In addition to affordable housing and related access to transit, there is also the challenge of provide access to health and services for households that are transit-dependent. A set of studies describing health access issues, providing case studies of health facility location decisions, a review of existing policies and recommendations for new policies at the federal, state, and local levels has been undertaken through MTC's Better Access, Better Services Report. The policy recommendations that relate to the TCP and the TEP should be considered as the study moves forward. Additional information is available through MTC's website—http://www.mtc.ca.gov/planning/smart_growth/services/.

Given these legislative mandates and planning agency incentives, as well as the economic and social needs of the future, the Countywide Transportation Plan needs to leverage the ability of combined investment in transportation systems and land use changes to reduce GHG emissions, through strategies such as encouraging mixed-use development.

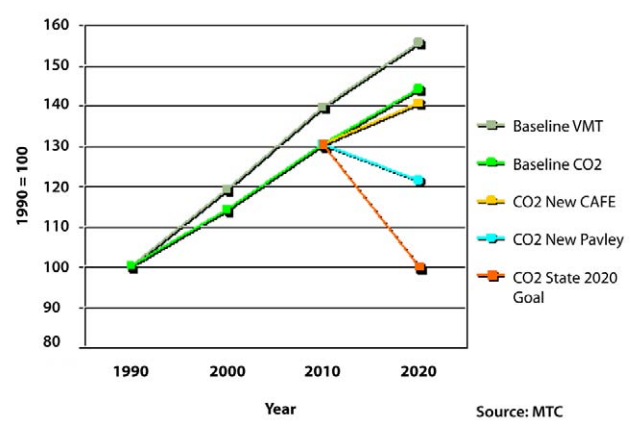
LEGISLATIVE CONTEXT

In California, three key legislative and regulatory changes have led to a new focus on linking transportation planning and investment decisions with existing and future land use patterns. They are Assembly Bill 32-the California *Global Warming Solutions Act;* California Senate Bill 375-*Redesigning Communities to Reduce Greenhouse Gas;* and, in the Bay Area, MTC's Resolution 3434—*Transit-Oriented Development (TOD) Policy for Regional Transit Expansion Projects*. AB 32's and SB 375's goals are to reduce greenhouse gas emission through a set of regulatory and policy directives, while the MTC Resolution 3434 links the expenditure of regional capital funding for transit to the density of households allowed around future mass transit systems in the Bay Area.

3 Change in Motion; Transportation 2035 Plan for the San Francisco Bay Area. Publication. Oakland, CA: Metropolitan Transportation Commission, 2009. 14.

4 Estimates of the current jobs and housing within PDAs is not readily available at this point, but as the land use scenarios for the CTP and the SCS process are developed this data can be reported.

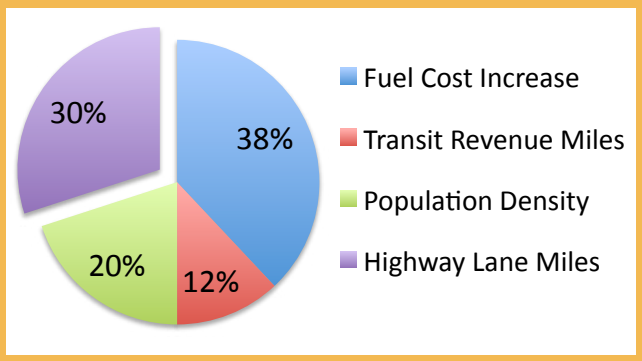
Challenges: Beyond Emissions Standards



Analysis of the ability of vehicular emissions technological improvements indicates that the 2020 California goals for GHG emissions reductions cannot be met through these changes alone. They must be accompanied by land use and transportation systems improvements in order for the state, the Bay Region, and Alameda County to move towards the state's goals.

Source: Regional Joint Policy Committee, Climate Protection Program Slide Show, August 2007.

Effect on VMT Growth Rate Under Low-Carbon Scenario (2030)



The more aggressive of the scenarios assessed in Growing Cooler includes an approach that focuses new development around transit service investments. Nearly 2/3 of the reduction in VMT growth rate can be attributed to the coordination of transportation investments with land use.

Source: Community Design + Architecture, based on data from Growing Cooler.

AB 32 and SB 375

AB 32 mandates a reduction of greenhouse gases to 1990 levels by the year 2020 through a series of emission reductions measures. It outlines the key sectors responsible for greenhouse gas production and establishes targets for each to attain. Of these, land use has been identified as one of the sectors which has to develop strategies to reduce vehicle miles traveled (VMT) and thereby reduce GHG production from vehicles. Significant efforts are necessary to reduce VMT to meet the state's emission reduction goals. California must begin reversing the current 2% annual growth rate of vehicle miles traveled. Research shows that increasing a community's density and its accessibility to job centers are the two most significant factors for reducing vehicle miles traveled.[5]

As land use and transportation planning are the domain of regional and local agencies, the State plans to utilize key leverage points such as the California Environmental Quality Act, housing elements and current and future bond funding, among others to assist local governments in reducing energy use and GHG emissions that result from combined land use and transportation planning choices. In addition, the state can provide local governments with tools and technical assistance to help meet GHG emission goals through land use planning and infrastructure investment. See sidebar on Sources of GHG Emissions and the Potential for Land Use Related Reductions in GHG.

SB 375 focuses on guiding regions within the state to achieve desired reductions in VMT to reduce GHG emissions. It requires the California Air Resources Board to provide GHG emissions targets for automobiles and light trucks for all regions of the state that have a Metropolitan Planning Organization, such as MTC in the Bay Area. Each organization must then adopt a sustainable communities strategy (SCS) designed to achieve its assigned targets, or describe an alternate strategy that would achieve the targets. Once those plans and strategies are in place, SB 375 will also relax CEQA requirements for certain projects that implement the region's sustainable communities strategy, which are discussed below. ABAG has begun developing a sustainable communities

5 "California Energy Commission & Land-Use Planning." California Energy Commission Home Page. Web. 29 Nov. 2010. <http://www.energy.ca.gov/landuse/index.html>.

strategy for the Bay Area that MTC will use as part of their current Regional Transportation Plan update, planned to be completed in 2013. The Countywide Transportation Plan provides an opportunity to identify impacts and benefits in coordinating with the ABAG/MTC's SCS/RTP efforts, and consider focusing transportation planning and funding resources on such opportunities.

SB 375 also calls for traffic models to account for the relationships between land use and transportation. The legislation states under Section 1(d) that changes in land use and transportation policy, based upon established modeling methodology, will provide significant assistance to California's goals to implement the federal and state Clean Air Acts and to reduce its dependence on petroleum; and in Section 1(g) states that "... models and analytical techniques used for making transportation infrastructure decisions... should be able to assess effects of policy choices, such as residential development patterns (and) the walkability of communities..."[6] Regional Transportation Plans (RTP) have to assess the relationship between vehicle miles traveled and regional jobs/housing balances, proximity between complementary land uses, proximity to transit, and development density. The SCS planning in conjunction with the RTPs would also address development patterns that, combined with the transportation network and policies, reduce automobile emission to achieve regional targets. SB 375 also requires that Regional Housing Needs Allocations (RHNAs) strive to achieve a balance between jobs and housing within each region. The allocation of housing shares between cities and county will be determined through the SCS planning process.

SB 375 also impacts CEQA requirements for new developments, particularly if they are associated with transit systems and improvements. Currently, CEQA guidelines often make development harder. The bill allows EIR exemptions for transit priority projects, which are defined as a mixed-use project meeting specified land use ratios and residential densities, which are located within one-half mile of a major transit stop or high-quality transit corridor identified in a Regional Transportation Plan (RTP). The bill also allows that certain projects, that are consistent with the goals of the SCS, not be required to address certain auto related impacts in their CEQA analysis.[7]

MTC Resolution 3434 Transit Oriented Development (TOD) Policy

The MTC Resolution 3434 TOD policy addresses multiple goals: improving the cost effectiveness of regional investments in new transit expansions, easing the Bay Area's chronic housing shortage, creating vibrant new communities, and helping preserve regional open space.[8] The policy's goal is to create development patterns that are more supportive of transit by providing incentives for transportation agencies, local jurisdictions, and members of the public and the private sector to work together. The policy's objectives are to establish transit corridor-level thresholds to quantify appropriate minimum levels of development around transit stations along new corridors. The thresholds at present only quantify desired number of residential units, as MTC has not developed a viable measure for employment thresholds. The policy's objectives also include developing local station area plans that address future land use changes, station access needs, circulation improvements, pedestrian-friendly design, and other key features in a transit-oriented development. Finally, the policy seeks to facilitate corridor working groups that bring together Congestion Management Agencies (CMAs), such as Alameda CTC, with city and county planning staff, transit agencies, and other key stakeholders to define expectations, timelines, roles and responsibilities for key stages of the transit project development processes.

The TOD policy only applies to physical transit extensions that are eligible to be funded by Resolution 3434 monies. For Alameda County these transit extensions are: the BART Fremont to Warm Springs and Warm Springs to San Jose projects, the BART Oakland Airport Connector, AC Transit Oakland/San Leandro Bus Rapid Transit Phase 1, Dumbarton Rail, BART Tri-Valley Rail Extension, Altamont Commuter Express (ACE) service expansion, AC Transit Enhanced Bus-Hesperian/Foothill/MacArthur corridors, and Expanded Ferry Service to Berkeley, Alameda/Oakland/Harbor Bay and other improvements. The policy applies to any physical transit extension project with regional discretionary funds, regardless of the level of funding. Resolution 3434 investments that only entail level of service (LOS) improvements or other enhancements without physically extending the system are not subject to the

6 Legislative Counsel Digest. Senate Bill No.375, Chapter 728, page 85. Web 22 Dec. 2010<http://www.leginfo.ca.gov/pub/07-08/bill/sen/sb_0351-0400/sb_375_bill_20080930_chaptered.pdf>

7 Droettboom, Ted, Regional Planning Director. "Policies for the Bay Area's Implementation of Senate Bill 375" Joint Policy Committee Memo. January 23, 2009. http://www.mtc.ca.gov/planning/climate/Policies_for_SB_375.pdf

8 "MTC Resolution 3434 Transit-oriented Development (TOD) Policy For Regional Transit Expansion Projects." Metropolitan Transportation Commission. Web. 29 Nov. 2010. <http://www.mtc.ca.gov/planning/smart_growth/tod/TOD_policy.pdf>.

TOD policy requirements.[9] The funds may be utilized for environmental and design related work, or right-of-way acquisition if they are essential to meeting the requirements of the policy, however, funds cannot be programmed or allocated for construction until the requirements of the policy have been satisfied[10].

Each transit extension project funded by Resolution 3434 must plan for a minimum number of households along the corridor within a half-mile of all stations, through a combination of existing and planned uses. Existing corridors that do not meet the thresholds receive the highest priority for the MTC's Station Area Planning Grants. In order to be counted towards the threshold, planned land uses must be adopted through general plans, and appropriate zoning ordinances to implement the general plan policies must also be in place. Threshold reduction incentives are given if new below-market housing is included in the planned developments.

If meeting the minimum corridor thresholds requires the development of new station area plans, MTC will assist in the funding of those plans. The MTC policy outlines that the Station Areas Plans should incorporate mixed-use developments, including new housing, neighborhood serving retail, employment, and amenities to serve the local community.

While this policy affects a subset of planned transit projects in Alameda County, it is possible that the policy could serve as a model for the allocation of transportation funding to meet the broader goals of the SCS process and other transportation funding streams from the state in order to encourage meeting the GHG reduction goals for AB 32.

Air District Guidelines

In addition to the policies listed above, the Bay Area Air Quality Management District (BAAQMD) has updated its CEQA air quality guidelines intended to assist lead agencies in evaluating air quality impacts of projects and plans proposed in the San Francisco Bay Area Air Basin (SFBAAB). The Air District guidelines recommend procedures for evaluating air quality impacts during the environmental review process triggered by CEQA requirements. The guidelines identify thresholds of significance for GHGs by which new plans and projects can be screened, and describe methods for assessing and mitigating impacts.[11]

The Air District approved new thresholds of significance for toxic air contaminants and fine particulate matter in June 2010. These thresholds set very strict, low limits for acceptable exposure to air contaminants for residents and other users of a new development. For example, a project within 1,000 feet of a freeway would not meet the guidelines, which eliminates many of the potential PDA building locations in Alameda County.[12]

Since the adoption of these new guidelines, significant concerns have been raised by stakeholders regarding the potential impact of these new guidelines on the development of infill and affordable housing, and potential conflict with the regional and statewide efforts to encourage more compact development in already urbanized areas.

Regional agencies are currently in consultation over resolution of the conflict, seeking to find a way to protect the health of all residents while still moving forward with the region's development goals.

9 Ibid.
10 Ibid.

11 Bay Area Air Quality Management Environmental Quality Act-Air Quality Guidelines. Web 22 Dec. 2010 http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Updated-CEQA-Guidelines.aspx
12 "CEQA Thresholds of Significance and Community Risk Reduction Plans." Center for Creative Land Recycling, September 2010.

EXISTING CONDITIONS

Existing and future demographics including population and employment density were described in Chapter 2. The following information provides additional data related to population, transportation and land use linkages.

Land Use and Built Environment Character of Alameda County's Diverse Communities

Geographic location and historic settlement patterns have created the current urban, suburban or rural character of the communities in Alameda County. North County is the more urban portion of the county, reflecting street patterns and neighborhood layouts of pre-automobile urbanization. These areas have seen numerous changes with the conversion of old industrial uses along the Bay to a mix of residential, office and retail uses and densification of older single family neighborhoods with multifamily infill on larger lots. The downtowns of Oakland and Berkeley (and the adjacent UC Berkeley campus) remain major employment centers, and both cities are working to encourage compact, mixed-use infill development in these areas.

Central and South County show the southward progression of post World War II urbanization centered around early small town settlements and industrialization of lands along the Bay. The majority of the growth in these communities has occurred since the 1940s and, therefore, the predominant urban settlement patterns reflect an auto-oriented approach to streets and land use patterns. They also reflect the changing economic landscape with large retail malls, and larger industrial parcels focusing on statewide and regional economic activity connected by a network of freeways.

East County is in some ways similar to South County with settlement patterns being primarily suburban in nature with older city centers and smaller rural settlements that are more walkable and less auto-oriented. However, major growth has been a result of a combination of rapid economic growth in the Bay Area and the high housing costs in the communities adjacent to the Bay which has pushed growth over the hills.

Given that much of the East Bay hills and large parts of East County are preserved as open space, there are limited access routes for these communities to the Bay. They rely heavily on a few key freeway connections and BART to connect to the employment centers around the Bay Area, although they also have some major employment centers of their own, such as Hacienda Business Park and Lawrence Livermore National Laboratory. The predominant street and development patterns in East County reflect the heavy dependence on the automobile as a primary mode of commute.

Figure 3-2 San Francisco Bay Area Density Categories (MTC)

Density Group Density	Range (Max Density)
Rural	< 500 persons/jobs per square mile
Rural-Suburban	500 to 1000 persons/jobs per square mile
Suburban – Dispersed	1,000 to 6,000 persons/jobs per square mile
Suburban – Dense	6,000 to 10,000 persons/jobs per square mile
Urban	10,000 to 20,000 persons/jobs per square mile
Urban Core	> 20,000 persons/jobs per square mile

Source: Metropolitan Transportation Commission

Population and Employment Density

MTC has developed a density profile for Bay Area counties that categorizes different areas according to their population and employment density. The categories range from Rural (less than 500 persons or jobs per square mile) to Urban Core (greater than 20,000 persons or jobs per square mile);[13] the categories are shown in Figure 3-2.

This method of profiling density provides a useful snapshot of where residents are currently living, and provides insight into where future residents will likely choose to live. The data has been projected by five year increments from 2005 through 2035 as shown in Figure 3-3 for Alameda County.

Residential Density Profile

At present, the Association of Bay Area Governments (ABAG) estimates that approximately 46% of County residents reside in more dense, urbanized areas (Urban Core/Urban), and approximately 49% of residents live in dense suburban and dispersed suburban areas of the county. Between 2005 and 2010 approximately 3% of the total population has shifted from suburban to urban residents. The vast proportion of growth has been within urban areas while the number of households and the population in suburban areas of the county has declined. ABAG demographers expect this trend to accelerate as we move towards 2035 as shown in Figure 3-3 and 3-4. They project nearly a 14% population shift from suburban and rural areas to urban areas.

13 "Transportation 2035: Change in Motion, Technical Data Summary Report." Metropolitan Transportation Commission. Web. 29 Nov. 2010. http://www.mtc.ca.gov/planning/2035_plan/tech_data_summary_report.pdf.

Employment Density Profile

Currently, the employment concentration is greater in suburban areas of the county with 57% of jobs located in dispersed or dense suburban contexts, while urban areas have only 37% of the total jobs. However, since 2005, the trend is also shifting to more jobs being located in the urban areas of the county; over 50% of employment is expected to be located in urban areas of the county by 2035 as shown in Figure 3-6.

It is interesting to note that over 46% of residents and 37% of jobs are concentrated in urban areas which comprise only 7% of the total land area as shown in Figures 3-5, 3-6, 3-7 and 3-8.

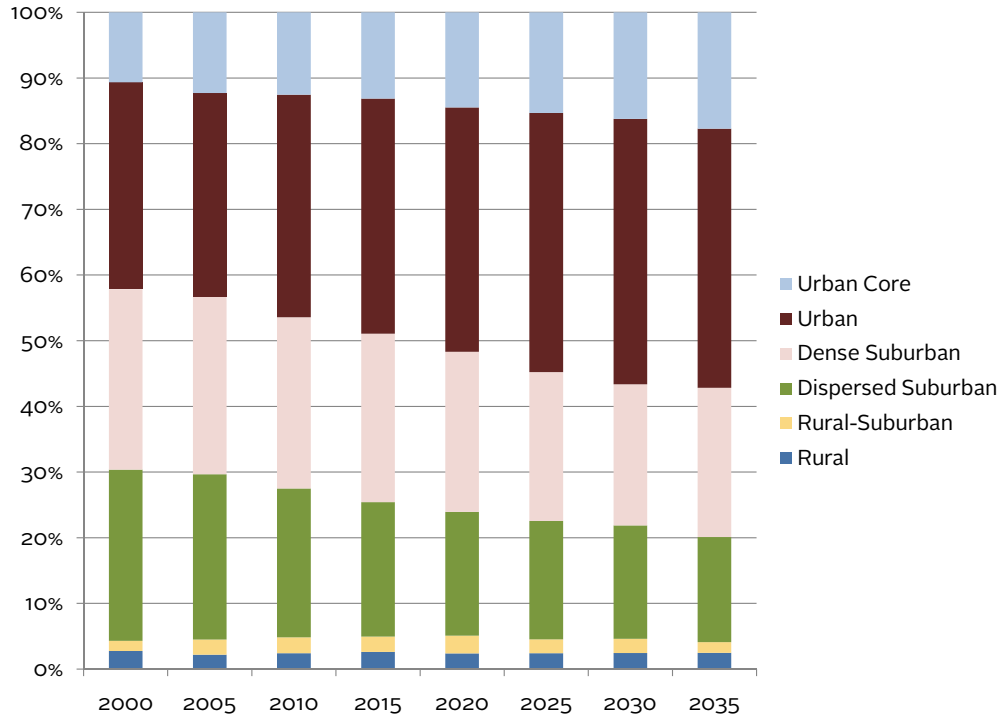
Jobs-Housing Balance

The current demographic profile indicates an imbalance between jobs and available housing within the county. Over 30,000 commuters commute into Alameda County from adjacent counties for work. While a *perfect* balance between jobs and housing may not be a realistic target, this degree of "imbalance" indicates that there is an acute need to consider the affordability of housing and the types of housing available in relation to expected employment growth. This imbalance also highlights the need to consider appropriate and sustainable transportation options for those that commute between Alameda County and adjacent counties for work.

Current Land Use Policies in Alameda County

The ABAG projections show a trend in policies towards an increasing proportion of the county's residents choosing to live and work in dense urban areas. In comparison, the existing land use policies amongst the different communities in the county reflect a varied approach and desire for dense development, infill and transit-oriented development. A few cities and communities are in the process of updating their General Plan documents to accommodate denser and infill development. These updates seek to align trends, climate change goals, sustainability goals, goals for levels of intensity and mix of uses, market demand, and community desires for neighborhood character. The following is a brief outline of existing policies for communities in Alameda County categorized by planning area.

Figure 3-3 Alameda County Population Density Distribution 2005-2035



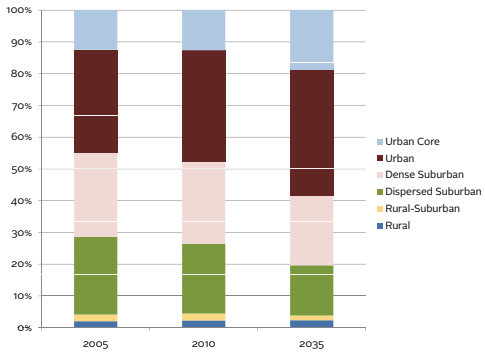
Source for all above is: Data from ABAG Projections 2007, summarized from MTC Master Zonal Databases.

Figure 3-4 San Francisco Bay Area Population Trends

County	2006	2035	% Change, 2006 to 2035
Alameda	1,518,520	1,938,600	27.7%
Contra Costa	1,031,106	1,300,600	26.1%
Marin	253,763	283,100	11.6%
Napa	134,822	155,700	15.5%
San Francisco	798,379	956,800	19.8%
San Mateo	725,712	861,600	18.7%
Santa Clara	1,783,895	2,380,398	33.4%
Solano	428,320	585,800	36.8%
Sonoma	484,862	568,900	17.3%
Bay Area	7,159,379	9,031,498	26.1%

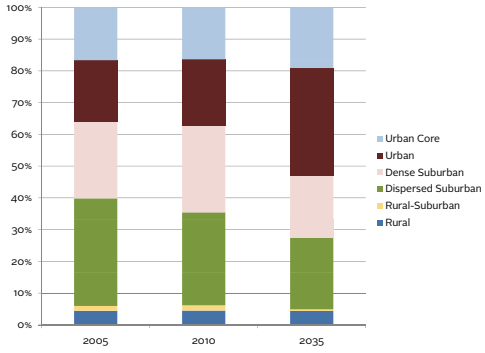
Source: Socio-Economic Forecasts by Bay Area County, ABAG Projections 2007 and ABAG 2035

Figure 3-5 Alameda County Household Density Distribution 2005-2035



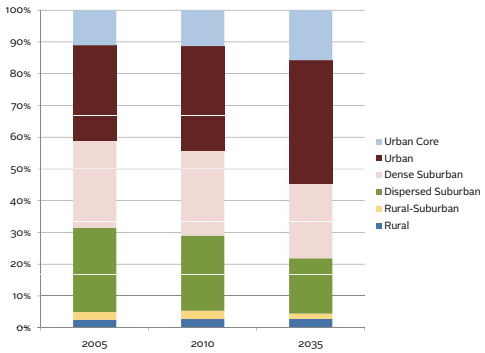
Source for all above is: Data from ABAG Projections 2007, summarized from MTC Master Zonal Databases.

Figure 3-6 Share of Employment by Place Type 2005-2035



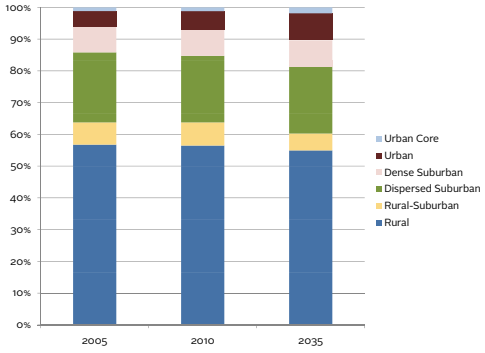
Source for all above is: Data from ABAG Projections 2007, summarized from MTC Master Zonal Databases.

Figure 3-7 Share of Employed Residents by Place Type, 2005-2035



Source for all above is: Data from ABAG Projections 2007, summarized from MTC Master Zonal Databases.

Figure 3-8 Alameda County Land Area Distribution 2005-2035



Source for all above is: Data from ABAG Projections 2007, summarized from MTC Master Zonal Databases.

North County

The existing General Plans of the cities of Albany, Berkeley, Oakland and Emeryville reflect the need for redevelopment and revitalization in order to maintain their economic vitality as well as to provide public amenities for their growing population and employment. With these cities being built out, their approach to redevelopment and revitalization includes improving mobility for their residents by enhancing accessibility to public/mass transit in order to maximize available land for more economic, social and recreational uses, rather than for parking and wider roads. The cities' General Plan documents show a strong vision towards a more mixed, transit-oriented and pedestrian friendly vision for their communities.

Working with transit agencies, these cities have amended and updated their land use policies to intensify uses along main transit corridors; allow for greater mix of employment and housing; reduce parking requirements; and improved pedestrian and bike access. Developments along corridors such as San Pablo Avenue, and University Avenue in Berkeley, revitalization in downtown Oakland and around Fruitvale and Oakland Coliseum, and multi-family housing in older industrial areas of Emeryville are examples of improved jobs-housing balance, accessibility to transit, new economic activity, and creating vibrant and sustainable neighborhoods. The November 2010 voter approval of Berkeley's Downtown Plan is an indication of residents' recognition of the need to increase housing and employment opportunities within downtowns in order to support vitality of downtowns and broader sustainability goals. While the cities of Piedmont and Albany consist of residential neighborhoods that are predominantly single family detached, their general plans encourage mixed-use developments along commercial streets. Piedmont also allows for additional units on existing single family lots that would help accommodate future growth.

The land use polices of the City of Alameda reflect a different focus compared with the other northern area cities. With the city being an island with only five road connections to Oakland, concerns by residents about intensification of housing leading to higher traffic volumes clogging the five connections led to Measure A in 1973 halting multi-family home construction, which ultimately led to height density/intensity standards in the City's General Plan. However, due to state mandated affordable housing requirements, the city allows for higher density housing beyond what its General Plan and underlying zoning calls for, if the development includes 20% or more affordable housing units. The opening up of industrial and former US Navy lands on the island has allowed for new development on the island where the city has allowed for mixed-use development.[14] The longer term future of areas that have not yet been revitalized remains in question.

Central and South County

The cities and unincorporated communities in Central and South County are also in a varied state with their land use policy programs. The county is at present working on its General Plan document that will cover the communities of Castro Valley, Ashland, Cherryland, Fairview, Eden and San Lorenzo. The cities of San Leandro, Hayward, and Union City, adopted their General Plans in 2002, while the city of Fremont updated sections of its General Plan in 2007 and they are all in process developing a new one to replace the existing General Plan.

The cities of San Leandro and Hayward consider themselves 'built-out', in terms of land area, with predominantly single family residential taking the largest share of the land areas. The unincorporated communities between and adjacent to the two cities (Castro Valley, San Lorenzo, Eden, Ashland, and Cherryland) are similarly built out. The two cities acknowledge that going forward they have to look towards infill and revitalization opportunities within their communities in order to address their future economic, social and environmental well being. Both these cities have developed several specific plans, and other land use and transportation planning studies, focusing on intensifying and revitalizing main corridors, downtowns, and BART stations areas that will encourage infill development, bringing in greater mix of uses and housing choices within these cities. They have actively looked to converting older auto-oriented retail activities, such as auto dealerships and strip retail, into mixed-use development, higher density residential, particularly on the main thoroughfares running through their cities. Both of these cities have large industrial areas in proximity to the Nimitz Freeway and towards the Bay which have been warehousing and distribution centers. Almost all the land within these employment zones are developed.

The cities of Fremont, Newark, and Union City still have some undeveloped areas that can accommodate new developments in the future. These cities

14 City of Alameda, Northern Waterfront General Plan Amendment, January 2006.

predominantly have a large share of single family homes with relatively little infill opportunities within their existing neighborhoods. These neighborhoods are heavily auto dependent, with the exception of some older parts of Fremont. However, both the cities of Fremont and Union City have developed community plans for older neighborhoods and station area plans around BART that call for infill and higher density mixed uses. For example, the area around the Union City BART station has already begun to see redevelopment utilizing the existing station area surface parking and surrounding lots. The City of Fremont has several community plans, such as the Niles, Irvington and the Central Business District Plan, that call for intensification and mixing of uses, making the neighborhoods and centers more accessible and pedestrian friendly. These plans call for the update of underlying General Plan and Zoning regulation to be changed in order to fulfill the desired change. These cities have significant industrial areas that have yet to be developed, along the Nimitz Freeway, which provides future opportunities to grow large scale manufacturing within the county. The City of Newark has developed specific plans for vacant areas that allow for a mix of densities. The city also has been working with developers to build a TOD project around the planned Dumbarton rail station.

East County

The eastern part of the county consists of the cities of Livermore, Dublin and Pleasanton in the Li-vermore-Amador Valley area that are surrounded by farmland and open space, as well as several small unincorporated communities in the East Bay hills and the Sunol Valley. The cities of Livermore and Pleasanton have established downtowns and older neighborhoods, that developed around old railway stations along the railroad connection through Altamont Pass. The General Plans for Livermore and Pleasanton were completed in 2005 while the City of Dublin updated its 1985 plan in 2010 with a Community Design and Sustainability Element.

In order to preserve the surrounding farmlands and opens spaces these cities have adopted different growth control measures to restrict their develop-ment within identified urban boundaries. The cities of Livermore and Pleasanton have established Urban Growth Boundaries and have developed policies to hold these boundaries. While the City of Pleasanton has an annual limit for new residences, the City of Livermore has in place a Transfer Development Credit (TDC) Ordinance that allows for developers to build above the General Plan designated densities within the city's Urban Growth Boundary if they purchase TDCs from the designated preserved areas beyond the growth boundary. The City of Dublin also restricts growth with an elevation cap of 770 feet around its Eastern Extended Planning Area.

These limits on growth beyond the identified urban boundaries focus future growth along Interstate 580 and the existing and planned Station Areas in the future. The City of Pleasanton is relatively close to its 29,000 residential units limit and does not foresee much new residential development, however, it still has significant capacity for employment growth. The cities of Livermore and Dublin also have plans in place to encourage infill and redevelopment, which also are focused around the old downtown areas and the BART (existing and planned) station areas.

The Eastern subareas also are home to smaller unincorporated communities in the East Bay hills such as Sunol, and hamlets along Highway 84 and Palomares Road. These communities are surrounded by preserved open spaces, and are in narrow valleys which limit the potential for future growth.

In short, the cities and communities in Alameda County have a varied urban pattern that is a result of geographical and historical factors, as well as broader community goals for their economy and com-munity character. The cities in the north reflect a denser street network and a maturity with years of redevelopment and revitalization that have created a more urban character. The cities in Central County reflect the majority of their urban growth occurring since the 1940s and they are actively planning for revitalization and intensification along their main corridors and downtowns. The southern most cities still have new growth opportunities, particularly for new industrial growth and mixed use development within these industrial areas. The cities in the east are cognizant of their potential impacts on the sur-rounding open spaces and have worked to limit their growth with Urban Growth Boundaries and policies to encourage intensification around transit stations and their downtowns within their boundaries in the future. They have also been focused on the economic development potential, both job and retail, for their communities, and preserving existing residential neighborhood character.

FUTURE CONDITIONS

The future growth projected by the MTC *Change in Motion Plan* will have to be accommodated through proactive planning. The jurisdictions within Alameda County will have to focus on adopting land use policies that will not only manage a healthy jobs and housing balance, but will also need to effectively reduce the number of private automobile trips to achieve the GHG reduction goals set by the state. Several efforts being envisioned and planned today will be the stepping stones to address the coming future of Alameda County. The identification of the PDAs, as well as Climate Action Plans being developed by communities within the county, are the first steps towards changing the land use policy frameworks to get more compact growth in the future.

Transportation Affordability

The MTC *Change in Motion Plan* recognizes that land use is critically important for the affordability of transportation. Total transportation costs for all households will be lower for those closer to the urban core than for those in areas with lower densities and more dispersed land use patterns. By living close to jobs and essential services, households can significantly reduce their annual transportation costs, demonstrating the economic benefits of more compact growth patterns.[15] Households will increasingly consider the combined costs of housing and transportation when making decisions about where to live and work.

Priority Development Areas

FOCUS Priority Development Areas (PDAs) serve as a mechanism to gain local government buy-in to pursue focused growth near transit nodes in their communities. Through FOCUS, funding support via incentives such as capital infrastructure funds, planning grants and technical assistance will be provided to these communities because they will bear the lion's share of the region's future growth. In the *Change in Motion Plan*, MTC put forth plans to double the size of its Transportation for Livable Communities program, to $2.2 billion over the next 25 years, in order to advance focused growth ob-jectives and support PDAs.[16]

In Alameda County, 37 PDAs have been identified by local jurisdictions through the FOCUS planning process. These areas have been identified as infill opportunities by local communities, and many of them already have appropriate planning policies in place. Several of the PDAs are also transit oriented development opportunities and are being served by major transit or by planned transit with some Resolution 3434 funding.

Community Climate Action Plans

Several communities in Alameda County have responded to the AB32 and SB375 mandate by undertaking climate action plans, many of which are currently under development or are in draft stages. These climate action plans outline how each community plans to reduce their GHG emissions, which include changes in land use and transportation to reduce VMT. These plans list several opportunities for reducing VMT, ranging from identifying more PDAs within their communities; accelerating the implementation of pedestrian and bicycle infrastructure improvements; intensifying existing neighborhood centers with more mixed-use to provide greater pedestrian access to services for the surrounding low density neighborhoods; and revising parking standards.

With the development of climate action plans and identification of PDAs, communities are committing themselves to sustainability through more compact development and a fixed set of goals, which will be reflected in their future land use and transportation policies and plans. These changes are being reflected in the General Plan updates underway in the County and several cities. Many of these communities will look towards the Alameda CTC for assistance in achieving these goals. The Countywide Transportation plan and the Expenditure Plan could provide an effective tool towards not only assisting communities in their local goals, but could create opportunities for coordinating with MTC in planning and funding Smart Growth projects within the County, help attain jobs and housing balance within the County, and transforming communities towards a more sustainable future.

15 Change in Motion; Transportation 2035 Plan for the San Francisco Bay Area. Publication. Oakland, CA: Metropolitan Transportation Commission, 2009. 24.

16 Change in Motion; Transportation 2035 Plan for the San Francisco Bay Area. Publication. Oakland, CA: Metropolitan Transportation Commission, 2009. 70.

BEST PRACTICES

The identification of PDAs and the commitment to cooperation amongst regional agencies and local jurisdictions to channel resources to these areas provides an opportunity for the Countywide Transportation Plan (CWTP) and Transportation Expenditure Plan (TEP) to collaborate with local communities to improve their communities with focused investments. The following are a few successful examples of infill and transit-oriented development from different parts of the country. These projects provide examples of varied intensities that would best reflect the different urban characters of Alameda County communities.

Pedestrian-oriented Suburban Retrofit, Lakewood, Colorado

After a mid-20th Century enclosed shopping mall started to deteriorate, the City of Lakewood, Colorado, engaged in a public-private partnership with Continuum Partners to transform the mall and its surrounding asphalt parking lots into Belmar, a vibrant new city center.

Built in the 1960s, the former Villa Italia mall was a regional draw for shopping in the Denver suburbs, with 800,000 square feet of indoor space and more than 70 retailers. However, in the late 1990s, tenants began vacating and the mall entered into a downward decline as social and retail trends changed and competition increased. The city became concerned that the mall's demise could negatively impact adjacent areas and continue eroding its tax base. Voters approved authorization of the use of urban renewal to revitalize the property in 1997, and in 1998, the city approached Continuum about redeveloping the site. The city and the developer worked together to obtain rezoning of the land use and infrastructure financing.

Renamed Belmar after the historic country estate where the site is located, the 104-acre former superblock has been remolded into a 22-block downtown for Lakewood. The newly carved urban form, with a more fine-grained block structure, establishes the foundation for a more walkable, compact neighborhood. The development balances a mix of uses, including more than 80 shops and restaurants; 250,000 square feet of office space; more than 1,300 homes, including live-work units, townhouses, and apartments; and a network of open space that includes a 1.1-acre plaza and a 2.1-acre urban square park. The streetscape is framed by buildings that include ground-level windows and doors on all sides, while parks and plazas are celebrated design features of Belmar. The design and diversity of uses all contribute to a pedestrian-friendly environment.

Figure 3-9 CO-Lakewood-Belmar

Photo used with permission from William Wagner.

Throughout the redevelopment and design process, the city ensured citizen input and involvement through an appointed citizens advisory committee, as well as outreach to neighborhood groups, civic groups and neighboring homeowner associations.

Applicability to Alameda County

BART Station Areas, areas with conglomerations of declining strip commercial developments, or underutilized industrial areas in communities throughout Alameda County would be suitable for such a project by utilizing a Local Improvement District (LID) mechanism to partially fund capital and maintenance costs for physical improvements to support the revitalization of or creation of new mixed use neighborhoods or mixed use employment districts.

Downtown Oakland could also be a good potential application of this best practice. The newly implemented "B" free shuttle service along Broadway through downtown Oakland and the potential future Broadway streetcar currently being considered could be great opportunities for public-private partnerships and to spur neighborhood revitalization.

Sources:

"Awards for Excellence: 2006 Winner: Belmar, Lakewood, Colorado." Urban Land Institute, 2006. Web. 23 Nov. 2010. <http://www.uli.org/AwardsAndCompetitions/AwardsForExcellenceProgram/2006/Belmar.aspx>.

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"Belmar Historical Backgrounder." Belmar, Colorado. Continuum Partners. Web. 23 Nov. 2010. <http://www.belmarcolorado.com/images/press/Belmar_historical_09.pdf>.

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Transforming an Auto-oriented Mall into a Transit-oriented Neighborhood Mountain View, California

An 18-acre infill project on the site of a small former auto-oriented shopping mall, The Crossings is a vibrant example of a mixed-use neighborhood served and supported by a variety of transit options. The development is largely the result of effective transit-oriented land use planning and public education.

Developed in the mid-1990s by TPG Development, The Crossings is oriented toward the San Antonio Avenue Caltrain commuter rail station in Mountain View, California, 30 miles south of San Francisco in Silicon Valley. This Caltrain station serves as a multimodal transit hub, with connections to bus service, shuttle service, secure bicycle parking, and a park-and-ride lot.

Within the development site, narrow streets, on-street parking, curb bulb-outs, and street trees create a traffic-calming and pedestrian-friendly environment. Some streets are defined as private roads and owned by the neighborhood association. A mix of retail shops, homes, a daycare center, pocket parks, and an orientation toward transit connections also contribute to promoting a safe and walkable community.

There is also a diversity of housing options at The Crossings, from single-family bungalows to town-houses and condominium apartments. At an average housing density of 30 units per net acre, this high density residential community provides for relatively affordable housing costs compared with the greater Silicon Valley real estate market. Citizens had initially asked for low density residential housing with open space, but the public outreach helped build support for higher densities near the transit station.

Infill projects like The Crossings, along with other land use and transit-supportive strategies, can help to reduce vehicular traffic and establish a better connected, more walkable city.

Applicability to Alameda County

Several opportunities like these exist in proximity to BART and ACE station in the southern and eastern parts of the county, as well as on sections of arterial corridors that connect through cities and communities along the Bay, such as San Pablo Avenue (State route 123), International Boulevard (State Route 185) and Mission Boulevard (State Route 238).

Sources:

"Smart Growth Illustrated: The Crossings, Mountain View, California." US Environmental Protection Agency. Web. 23 Nov. 2010. <http://www.epa.gov/smartgrowth/case/crossing.htm>.

"Case Studies." San Francisco Bay Area Vision Project. FOCUS: a Development and Conservation Strategy for the San Francisco Bay Area. Web. 23 Nov. 2010. <http://www.bayareavision.org/corridors/ecr/ecr-casestudies.htm>.

Figure 3-10 Mountain View, CA

Smart Growth in a Variety of Scales

In order for Alameda County's communities to maximize the potential for land use to support the goals of SB375 and the Sustainable Communities Strategy implementation of infill projects will likely need to be achieved across a broad scale in terms of project size and intensities of development. Information that is available about example infill projects typically focuses at the higher end of scale and intensity of development as these types of projects provide the "most bang for the buck" in terms of moving towards the range of smart growth goals. But their very size and level of intensity make them inappropriate for many locations as well as often making them more controversial in the eyes of existing residents of neighborhoods and districts that are identified through public policy for infill development.

There are many projects throughout Alameda County that can be looked at as case studies to learn from—both in terms of examples to follow and those to learn from in terms of their mistakes and shortcomings.

The New Californian, in Berkeley, and by San Pablo Heights in Oakland, are interesting case studies of medium scale and intensity infill projects in Alameda County. The New Californian is a 148-unit mixed use development, at approximately 242 units per acre located on a major arterial, University Avenue, close to Berkeley's downtown. It combines both affordable and market rate housing, a Trader Joe's grocery store and space for a potential neighborhood café. This infill project was designed to help Berkeley reach its GHG reduction goals both in terms of site selection and building design. The development is in proximity of major transit lines, bicycle routes, and a short walking distance from UC Berkeley and other major employers. The building design incorporates on-site car sharing and energy efficient design and construction. Previously, the site was a strip-mall that contained an auto supply store and other retail and service uses. The project was controversial in Berkeley because of the Trader Joe's, as a chain store, and the scale of the development and its potential to impact adjacent residential areas. The project does change in terms of scale and architectural design at its northwest corner where it is closest to adjacent residences

The New Californian 5-story mixed use building at the corner of University Avenue and Martin Luther King Boulevard in Berkeley with a Trader Joe's with an entry at the corner

Source: CD+A

The New Californian fronting along Berkeley Way transitioning from a 5-story mixed use building at the intersection with Martin Luther King Boulevard to a 3-story residential over parking podium building adjacent to the existing residential neighborhood.
Source: CD+A

San Pablo Heights is another strategy of a medium scaled infill project that was developed on the major transit corridor of San Pablo Avenue with AC Transit's 72R Rapid Bus service. San Pablo Heights is a 23-unit market rate condominium development, at about 92 units per acre, which was built on a long-standing vacant site. The four-story mixed-use building is designed around an inner courtyard and ringed by two levels of townhouses. The project won the 2006 East Bay American Institute of Architects Exceptional Residential award for its innovative community building design and architecture. San Pablo Heights is located in the Broadway/MacArthur/San Pablo Redevelopment Area and contains an eclectic mix of residential and commercial neighborhoods. The project was not as controversial during its entitlement process as the New Californian for a variety of reasons, including the existing mixed use character extending from San Pablo Avenue into the surrounding neighborhood, and the smaller extent of commercial use. But its architectural design elicits a range of reaction from the public since its construction.

As mentioned above, there are many additional examples of infill development at similar scales to the New Californian and San Pablo Heights that Alameda County communities can learn from that are located throughout the Bay Area. There are fewer examples of smaller-scale infill developments that are appropriate for the less dense communities in the county, such as Albany, lower intensity neighborhoods in Berkeley, Oakland, and to the south in Hayward and Fremont, as well as in the eastern areas of the county.

For these reasons, we can look outside the Bay Area to learn from other communities where developers and architects have found opportunities for smaller-scale mixed use infill development. In Boulder,

The San Pablo Heights mixed use infill project in Oakland is a very urban scaled building that fits within the surrounding context.
Source: CD+A

A courtyard provides circulation and a gathering place off of Pearl Street between the two mixed use buildings and steps up the hill to serve as a shared open space for the townhomes.
Source: CD+A

The shared residential open space between the townhomes with a view into the historic neighborhood.
Source: CD+A

Colorado an 18,200 square-foot former gas station at Eighth and Pearl Streets was rezoned from commercial to mixed use, and when the development was completed in 1999, it included retail, a bakery/cafe, second story offices and 5 residential townhouses. The development is at about 12 units per acre.

The Eighth and Pearl project is one of the earliest built projects in Boulder's Business Main Street zoning district, part of a larger city effort that was developed to allow people to live, work, shop and play within the same neighborhood, thereby reducing traffic demand and encouraging a more compact and walkable community. The rezoning of the area also allowed for a higher density and relaxed parking requirements.

Designed by Wolff Lyon Architects, now located on the second floor of the development, the building face meets the sidewalk edge, and 28 parking spaces are tucked underground, yielding a more pedestrian-friendly environment in the public right-of-way. The design of the development also provides a transition from the commercial character of Pearl Street to residential uses and the historic development patterns of the Mapleton Hill district. The scale of this development, 3-stories at the main street and 2-stories back towards the historic neighborhood and the care in the design of its architectural character to "fit" with the character of the retail district and historic neighborhood exemplify the care needed to achieve successful infill development. But at the same time, there are nearby infill projects with different adjacent uses that have a more modern aesthetic to their design.

These project serves as examples of successfully integrating infill development on a variety of scales. Whatever the size of the development, the advantages still promotes a more compact and pedestrian-supportive land use, into the fabric of the surrounding neighborhood. It is also becoming increasingly clear, that a more ubiquitous approach to achieving mixed use infill development wherever it is feasible will be necessary to achieve the GHG reduction targets that have been set for the state and the region.

Applicability to Alameda County

Projects of these scales would be ideal for infill sites in a variety of locations. These could be part of a revitalization of older arterial corridors, intensification of neighborhood centers in suburban residential areas, and as infill with existing smaller downtowns of cities in the southern and eastern sub areas of

A 2 to 3 story retail and office building fronts onto the corner of Pearl Street and 8th with residential townhomes behind provide a scale and articulation of design that complements the adjacent historic neighborhood.
Source: CD+A

Alameda County. As well as in the older, 1920's and later, single family neighborhoods that are found throughout Alameda County.

Sources:

"Boulder's Mixed-Use Zoning Districts." City of Boulder Home Page. Web. 24 Nov. 2010. <http://www.bouldercolorado.gov/index.php?option=com_content&task=view&id=1491&Itemid=507#BMSX>.

"Eighth and Pearl." Wolff Lyon Architects. Web. 24 Nov. 2010. <http://www.wlarch.com/projects/eighth.html>.

"Smart Growth Illustrated: Eighth & Pearl, Boulder, Colorado | Smart Growth | US EPA." US Environmental Protection Agency. Web. 24 Nov. 2010. <http://www.epa.gov/smartgrowth/case/eightp.htm>.

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<www.wbayp.com>

"MODEL HOME: San Pablo Heights, Condos Designed for Community". San Francisco Chronicle. Published : 12/10/2006. Web. Feb.2011.

*<http://articles.sfgate.com/2006-12-10/real-estate/17323316_1_building-type-area-residents?>

South Lake Union Streetcar- Seattle, Washington

Completed in 2007, the 1.3 mile South Lake Union Streetcar line in Seattle connects the city's central business district with a regenerated urban neighborhood on what was formerly under-utilized light industrial land. The South Lake Union area is a new biosciences hub that also includes housing, restaurants, retail, and the headquarters of Amazon.com and the Bill & Melinda Gates Foundation.

Construction of the streetcar line was largely influenced by the neighborhood's landowners, led by billionaire real estate investor and Microsoft co-founder Paul Allen, who sought greater densities and a more urban district, for which the streetcar line became an important infrastructure component. Historically, the area did not have a strong transit connection. The landowners taxed themselves to fund half of the total capital costs of $50.5 million through a Local Improvement District (LID). The remaining costs were paid for through property tax surpluses, and state and federal funding sources.

During the streetcar line's planning and since its construction, the South Lake Union area has experienced significant investments and a transformation in land use. Road and streetscape improvements accompanied the streetcar implementation to create a more successful multimodal environment that promotes walking and bicycling, as well as green infrastructure to improve ecological services.

The streetcar not only provides utilitarian infrastructure and transit mobility, it is also viewed as an attraction in the area, drawing companies to locate to South Lake Union rather than other parts of the city. Allen's real estate company, Vulcan, is the major landowner in the area and has been deliberate in de-emphasizing national retailers and encouraging tenants who are compatible with the evolving culture of the neighborhood.

The success of the South Lake Union streetcar has resulted in the city adopting a concept for streetcar expansion to connect Seattle's other established urban neighborhoods.

Applicability to Alameda County

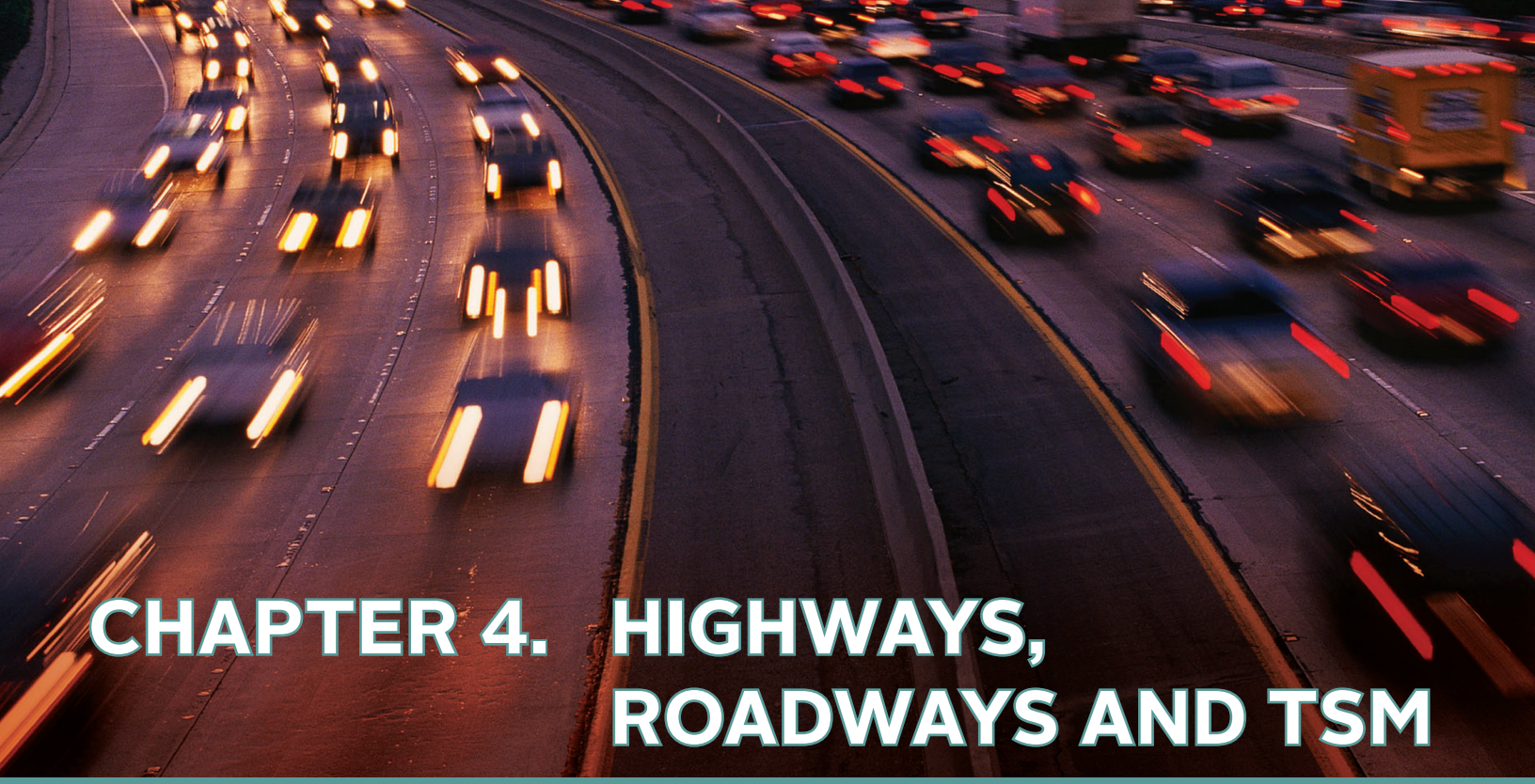
BART Station Areas, areas with conglomerations of declining strip commercial developments, or underutilized industrial areas in the county would be suitable for such a project by utilizing LID mechanism to partially fund the creation of new neighborhoods or revitalizing older employment districts.

Downtown Oakland could also be a good potential application of this best practice. The newly implemented "B" free shuttle service along Broadway through downtown Oakland and the potential future Broadway streetcar currently being considered could be great opportunities for public-private partnerships and to spur neighborhood revitalization.

Sources:

TCRP Synthesis 86: Relationships Between Streetcars and the Built Environment. Transit Cooperative Research Program, 2010. Web. 24 Nov. 2010. <http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_syn_86.pdf>.

"Value Capture And Tax-Increment Financing Options For Streetcar Construction." ReconnectingAmerica.org. Center for Transit-Oriented Development. Web. 24 Nov. 2010. <http://www.reconnectingamerica.org/public/reports/1044>.



CHAPTER 4. HIGHWAYS, ROADWAYS AND TSM

Alameda County's roadways are the backbone of the transportation system, connecting the county with major Bay Area destinations. While we often associate roads with auto trips, our roads are essential for carrying all kinds of trips and all modes of travel including freight, auto, transit, bike and pedestrian trips. Interstates 80, 580, and 680 link Alameda County to San Francisco, Solano, Contra Costa, and San Joaquin. I-880 connects Alameda County with San Mateo and Santa Clara and areas within the Silicon Valley Region. Alameda County roadway facilities also include key access points to the three Bay Area Toll Authority (BATA) bridges that link the East Bay Area with San Francisco and destinations within the southern Peninsula as well as freeways internal to Alameda County (I-980, SR-24, I-238) and a comprehensive system of arterials and local streets.

Image from ACTIA

HIGHWAYS AND ROADWAYS

Existing Conditions

The Alameda County Transportation Commission monitors the condition of county roadways in two regularly published reports: the *Level of Service Monitoring Report* describes the level of congestion on county freeways and arterials and the *Performance Report* discusses the state of the county's transportation system as a whole. The following sections summarize existing roadway conditions contained in the performance report, or from other sources, as indicated.

Duration and Level of Congestion

Alameda County is home to some of the most heavily traveled freeways and arterials in the San Francisco Bay Area. Five of the top ten most congested Bay Area freeway corridors are located in Alameda County. For example, the I-80 westbound corridor, since the 1990s and the I-580 eastbound and westbound corridors, since 2005, have been ranked as the top three most congested locations in the Bay Area.

Figure 4-1 and Figure 4-2 show the top 10 most congested corridors within Alameda County. According to 2009 data, I-80 remains one of the most congested corridors in the county with four segments making the top 10 congested locations list. Vehicle hours of delay on I-80 segments make up almost half of the total vehicle delay for the 10 congested corridors featured on the list

Level of Service

Level of service is a measure of the degree of roadway congestion. It is measured on a grade scale from A-F, where A represents free-flow conditions and F represents the most congested conditions. Free flowing LOS A is an indication that infrastructure is underutilized and may not represent a good investment. On the other hand, consistent LOS F suggests travelers are experiencing delay and the system is in danger of breaking down.

Alameda County experienced its highest instances of segments with LOS F rating in 2000. The large number of congested roadway segments that year may be associated with the high demand for all transportation facilities during the dot-com boom in the early 2000s. After 2000, the number of severely congested roadway segments has decreased in direct correlation to the two recessions that occurred around years 2001 and beginning in 2007.

A number of recent highway and arterial roadway improvements have been implemented to help address demand and congestion. These projects can significantly alter the roadway's system performance as identified in the Alameda County Transportation Commission 2008 Performance Report results presented in the following section. Since the 2008 Countywide Transportation Plan (CWTP), the following major roadway construction projects have begun or have been completed:

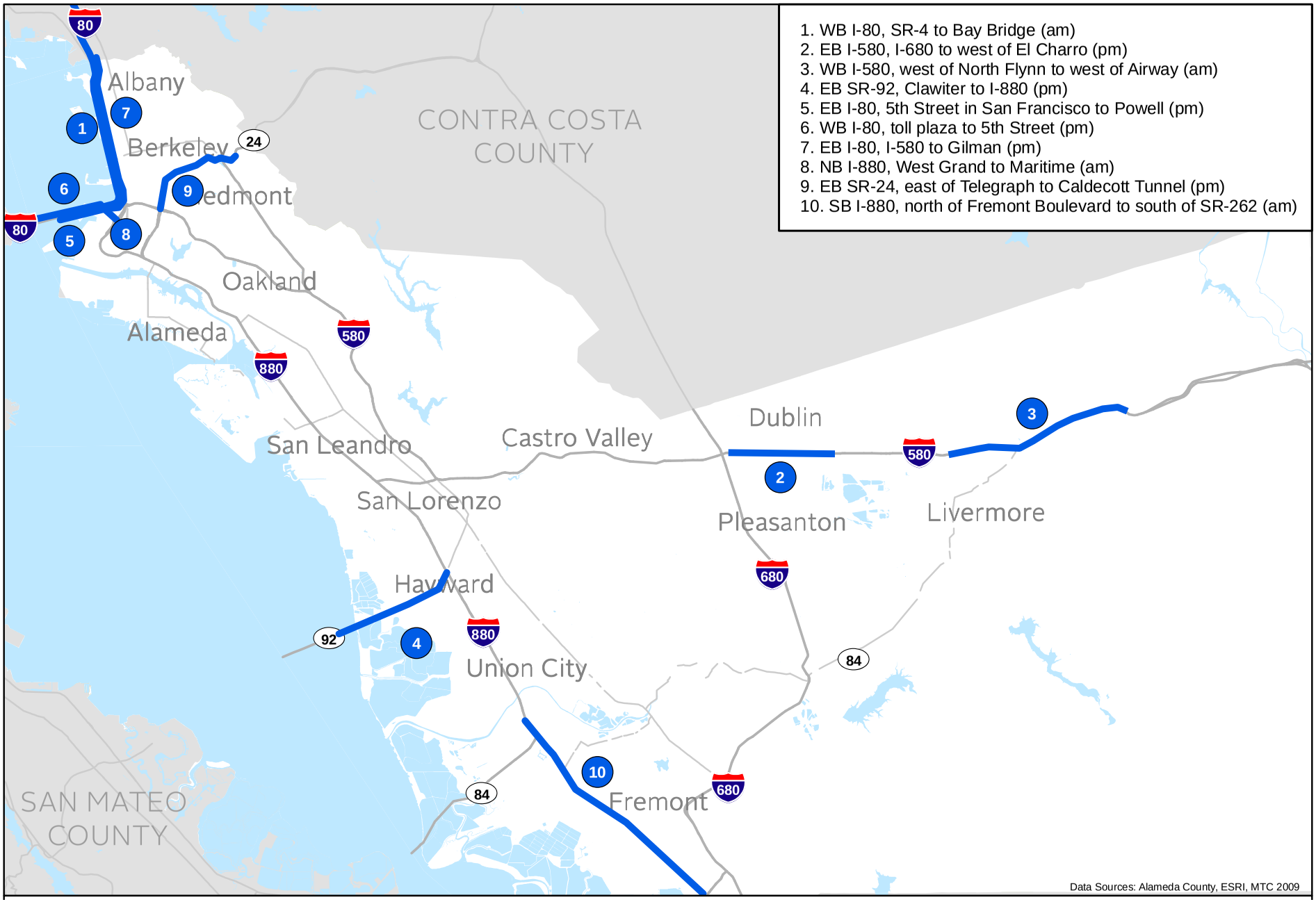
- Several seismic and retrofit projects on Bay Area bridges and roadway facilities including the San Francisco – Oakland Bay Bridge Construction;
- SR-24 – Caldecott Tunnel Expansion;
- I-880/High Street Retrofit;
- I-880/SR92 Interchange Reconstruction;
- I-580 EB and WB HOV/HOT Lane;
- I-680 SB Express Lanes;
- I-580 Isabel Interchange improvements; and
- Completion of I-238 widening and completion of SR 262/I-880 interchange improvements.

Figure 4-1 Top 10 Congested Corridors in Alameda County 2009

2009 Rank	Freeway Corridor Location	2009 Vehicle Hours of Delay (VHD)	2008 Rank	2007 Rank	2006 Rank	2005 Rank
1	WB I-80	12,230	1	1	1	1
	SR-4 to Bay Bridge (am)					
2	EB I-580	6,720	2	2	2	2
	I-680 to West of El Charro (pm)					
3	WB I-580	5,320	3	3	3	3
	West of North Flynn to west of Airway (am)					
4	EB SR-92	3,880	5	4	4	4
	Clawiter to I-880 (pm)					
5	EB I-80	3,030	4	6	5	5
	5th Street in San Francisco to Powell (pm)					
6	WB I-80	2,760	6	8	6	6
	Bay Bridge Toll Plaza to 5th Street (pm)					
7	EB I-80	2,470	9	13	7	9
	I-580 to Gilman St (pm)					
8	NB I-880	2,440	13	18	8	10
	West Grand to Maritime (am)					
9	EB SR-24	1,890	8	10	9	8
	East of Telegraph to Caldecott Tunnel (pm)					
10	SB I-880	1,920	NA	9	10	13
	North of Fremont Blvd to south of SR-262 (am)					

Source: MTC, 2009 and Alameda CTC LOS Monitoring Report 2010

Figure 4-2 Top 10 Congested Freeway Corridors in Alameda County 2009



Source: MTC,2009, Alameda County, ESRI

Figure 4-3 shows the LOS F segments reported in the *2010 LOS Monitoring Study.* As for congested arterials, the following roadways experienced high vehicle hours of delay and performed at a LOS F for year 2010:

- Hesperian Boulevard in parts of San Leandro, Hayward, and unincorporated parts of the county for both AM and PM peak periods;
- SR-84 EB from Pleasanton-Sunol Road to Vallecitos Lane during the PM peak period;
- SR-84 WB in parts of Fremont during the AM peak period;
- Portions of San Pablo Avenue in Berkeley during the PM peak period; and
- SR 185 (14th) between 46th and 42nd for both AM and PM peak period.

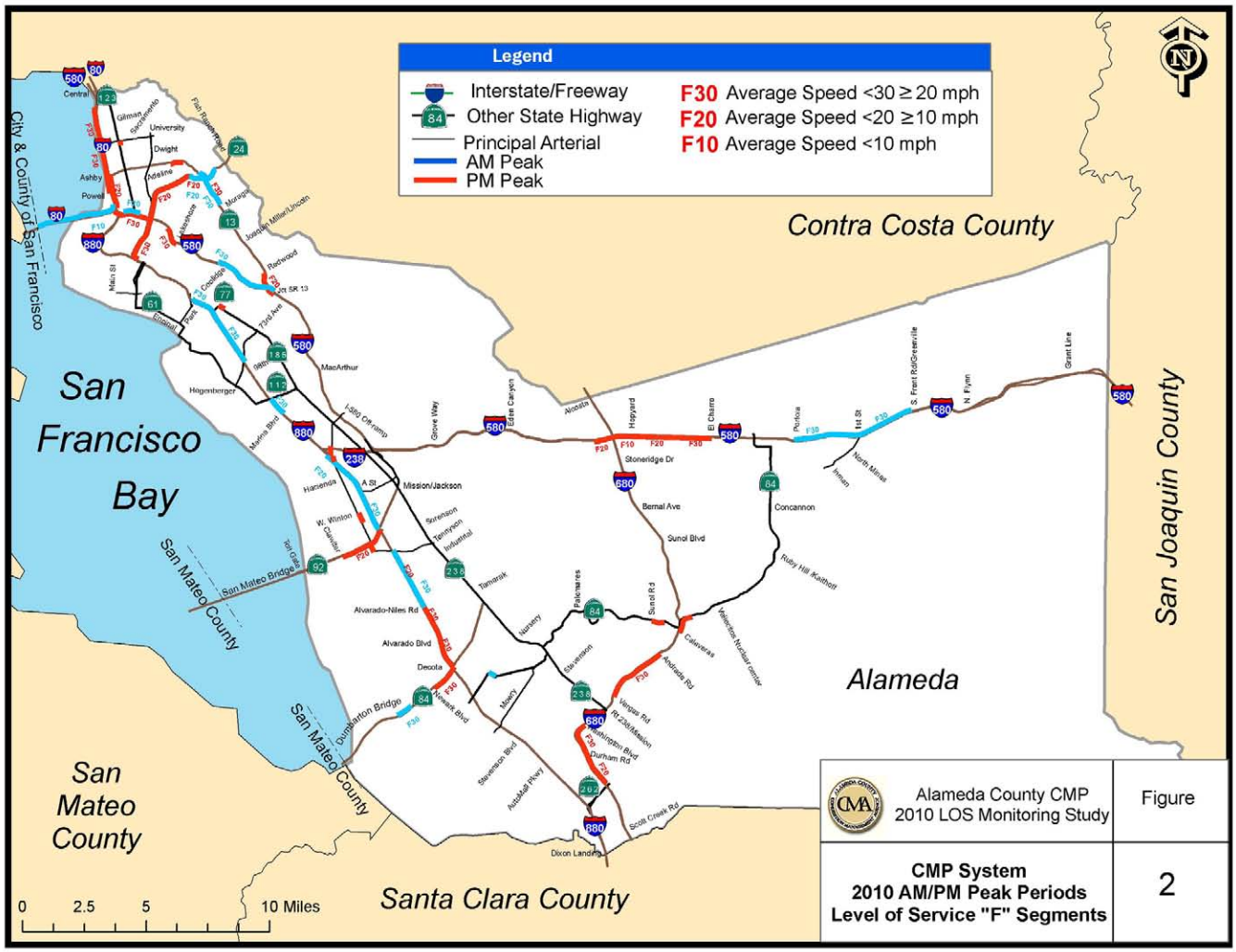
Vehicle Hours of Delay (VHD)

Vehicle hours of delay (VHD) is a measure of the level and duration of congestion on a particular roadway. Figure 4-4 shows the VHD levels on all county freeway facilities between 1990 and 2008. The trends are similar to those for Level of Service. The highest levels of delay in this period occurred around 2001 and have fallen since then due to the economic recession.

Average Travel Speeds

Figure 4-5 shows Alameda County's average vehicle speed trends for freeways and arterials between 1990 and 2010. Since the early 1990s, county freeways and arterials have experienced smaller fluctuations in speed during the PM peak period in comparison to the AM peak period. AM peak period vehicle speed has followed trends similar to LOS and

Figure 4-3 2010 Level of Service "F" Segments



Source: Alameda County Congestion Management Program 2010 LOS Monitoring Study

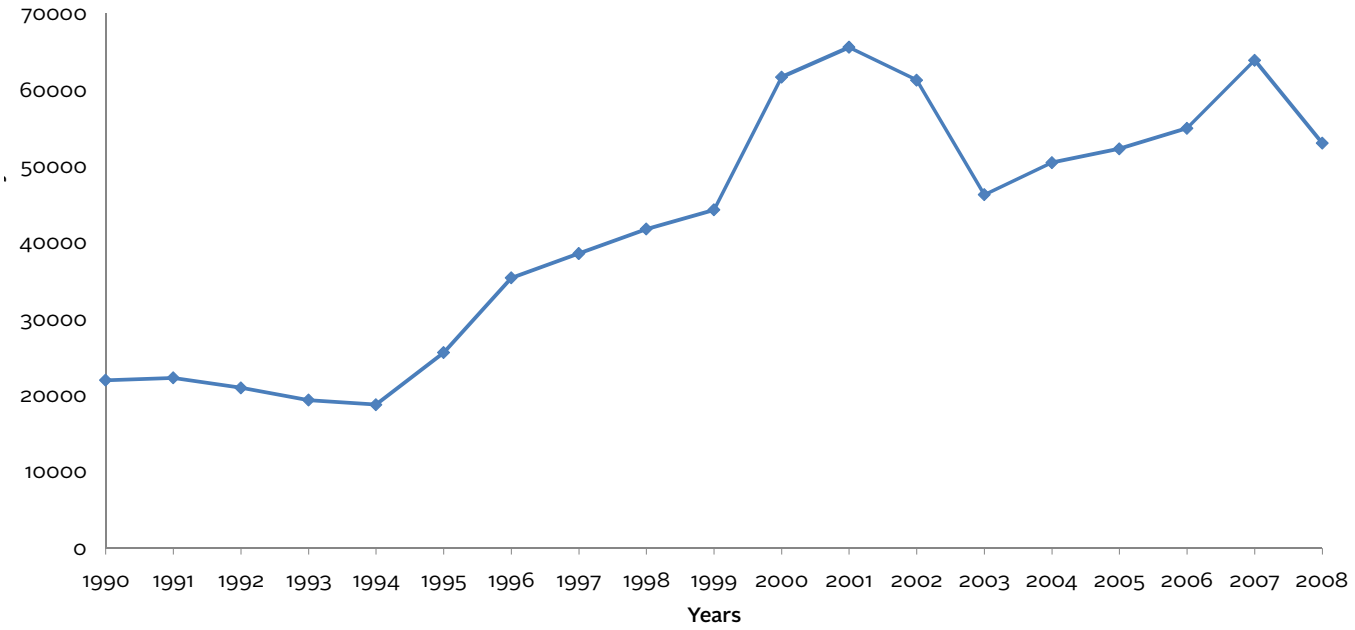
VHD, with the lowest speeds occurring around 2001, reflecting highly congested conditions, and have improved since. For example, morning freeway speeds increased over 30 percent from 2000 to 2006. Likely due to the economic recession, from 2006 to the present, overall average speeds have been improving for both freeways and arterials, particularly during the PM peak period. Overall average travel speeds on the freeway system during the PM peak period increased by about 4 miles per hour between 2006 and 2010. On county arterials, speeds increased 3.5 miles per hour between 2006 and 2010.

Road Maintenance

The Alameda CTC's Performance Report contains information on pavement conditions in Alameda County using the Pavement Condition Index (PCI). The PCI ranges from zero to 100, where zero represents the worst pavement conditions and 100 represents new (e.g., excellent) pavement. Figure 4-6 describes the PCI classification system.

Since 2003, around 80% of Alameda County roadways consistently have had PCI levels indicating fair to excellent conditions. Pavement conditions dropped slightly below average after 2006, but have generally improved since. However, PCI varies

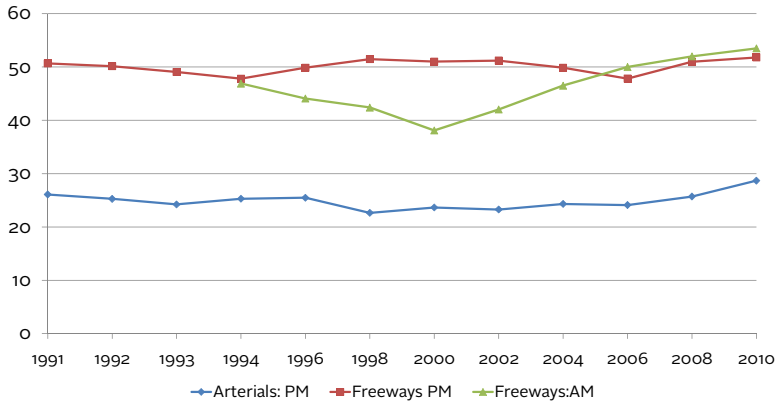
Figure 4-4 Vehicle Hours of Delay on Freeways



Note: Vehicle hours of delay for 1997 is an estimate. No data was collected in 1997.

Source: Caltrans District 4, Highway Congestion Monitoring Data (1990-2003), MTC Congestion Data (2004-2008)

Figure 4-5 Average Vehicle Speed (in mph)



Source: Alameda County CMA LOS Monitoring Reports 1994-2008

Figure 4-6 Rating of Pavement Condition

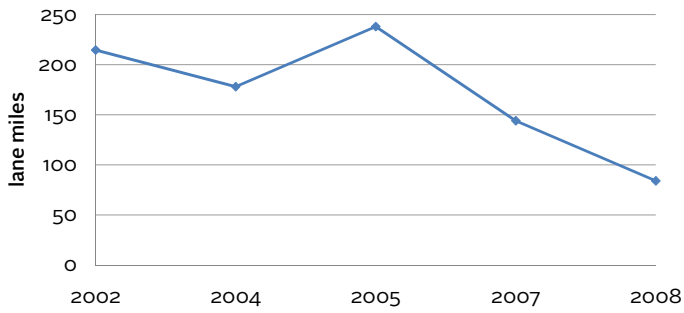
Classification	PCI Range
Excellent Condition	90-100
Very Good Condition	75-89
Good Condition	60-74
Fair Condition	45-59
Poor Condition	25-44
Very Poor Condition	below 25

Source: Alameda CTC 2008-2009 Performance Report

significantly by jurisdiction within the county, and not all jurisdictions are experiencing improved pavement conditions. For example, PCI scores in the cities of San Leandro, Oakland, and Berkeley were all below 60 in 2008, indicating fair conditions, and have been on a downward trend since 2003. By contrast the cities of Livermore, Dublin, Pleasanton, and Union city all had scores of 75 or above indicating "very good" condition. Data from 2009 and 2010 were not available at the time of publication.

Figure 4-7 shows the number of freeway lane miles within Alameda County needing rehabilitation from 2002 to 2008. The number peaked in 2005 but has been significantly reduced since and reached its lowest level in 2008, with 84 lane miles of freeways needing rehabilitation.

Figure 4-7 Freeway Facilities Needing Rehabilitation



Source: Alameda County CMA Performance Report 2008-2009

Figure 4-8 Collisions on Alameda County Freeways

Source: Caltrans, District 4 and Alameda CTC Performance Monitoring Report 2008-2009

Roadway Safety

Figure 4-8 shows the total number of collisions and collisions per million vehicle miles of travel on Alameda County freeways. According to these figures, 1995-2000 marked a period of increasing freeway collisions for the county. The number of freeway collisions peaked in 2000, when demand for all transportation facilities were significantly high due to the dot-com boom. Since 2000, freeway collision occurrences have been significantly decreasing. As shown in Figure 4-8, the number of freeway collision occurrences was at its lowest in 2008. This is consistent with national trends indicating steep declines in the number of collisions and collision rates since the start of the economic recession.

Future Conditions

Future conditions on the county's roadway facilities were estimated for 2035. Projections are based on data from MTC regional and Alameda County transportation models. The projected 2035 roadway conditions are based on employment and housing projections from 2007. The projections do not take into account short-term declines in expected employment due to the current economic recession.

The following performance metrics were measured for both the future baseline scenario (2035 model) and the existing baseline (2005 model):

- Vehicle miles traveled;
- Average overall speed;
- Average trip duration; and
- Average trip length.

The 2035 and 2005 system performance results are displayed in Figure 4-9. The following summarizes and highlights key points from the results:

- Vehicle miles traveled (VMT) are expected to increase by 60% in the AM and PM peak travel periods between 2005 and 2035. Without action by the county, most facilities will be operating over capacity in the future due to these increases.
- Average travel speeds on freeways and arterials are projected to decrease by about 25% by 2035. Freeway speeds will drop from 50 miles per hour in 2005 to 40 miles per hour in 2035; average arterial speeds will drop from 29 miles per hour to 26 miles per hour in the AM peak hour and 27 miles per hour in the PM peak hour in 2035.
- Average trip duration for the AM peak hour in 2035 (average time spent in congestion) is projected to more than triple from 2005, and average trip duration for the PM peak hour in 2035 will more than double.
- Average trip lengths in the AM peak hour will increase by 18% and by 14% in the PM peak hour between 2005 and 2035.

In the Future 2035 Baseline Scenario, many of the county's current top congested corridors will be operating over capacity. The top ten congested corridors in 2035 are shown in Figure 4-10.

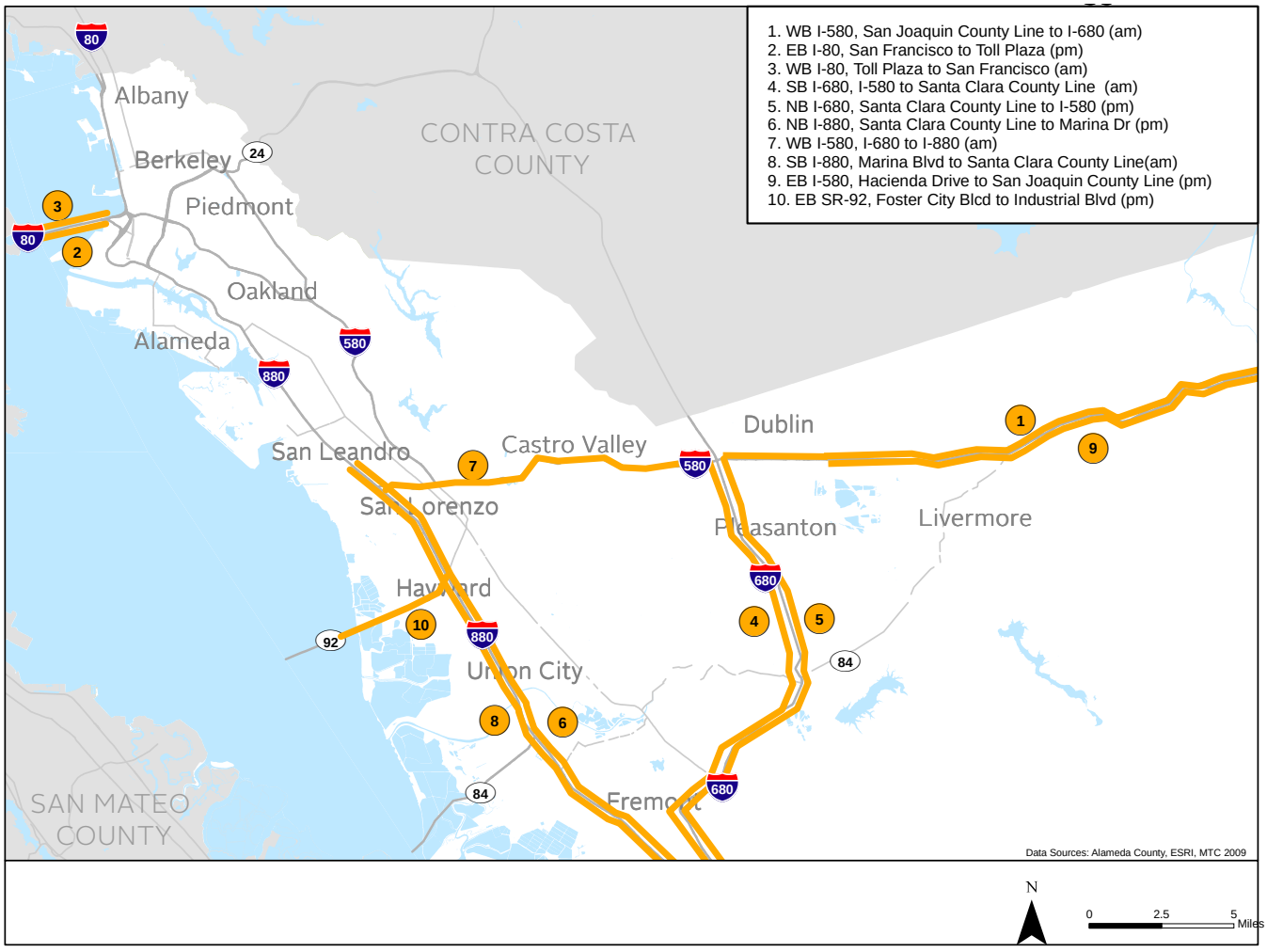
While these projections predict high levels of future congestion, there is uncertainty regarding how severe congestion will be, as congestion levels are strongly influenced by overall economic conditions.

Figure 4-9 Performance Measures 2035

Performance Measures	A.M. Peak Hour 2005	2035	P.M. Peak Hour 2005	2035
Vehicle Miles Traveled (millions)	2.5	4.1	2.6	4.2
Average Overall Travel Speed- Freeways (mph)	53.0	40.0	54.0	41.0
Average Overall Travel Speed - Arterials (mph)	29.0	26.0	29.0	27.0
Average Trip Duration - Autos Drive Alone (minutes)	22.3	58.7	22.5	46.5
Average Trip Duration - Autos Shared Ride 2 persons (minutes)	22.7	74.4	18.2	44.5
Average Trip Duration - Autos Shared Ride 3+ persons (minutes)	19.1	76.5	15.5	43.1
Average Trip Length - Autos Drive Alone (miles)	12.4	13.3	12.2	12.8
Average Trip Length - Autos Shared Ride 2 persons (miles)	11.9	13.4	9.6	10.8
Average Trip Length - Autos Shared Ride 3+ persons (miles)	9.9	13.7	8.0	10.4

Source: Alameda County Transportation Models

Figure 4-10 Top 10 Congested Freeway Corridors in Alameda County 2035



Source: Alameda County Transportation Models

TRANSPORTATION SYSTEM MANAGEMENT

Alameda County's roadway network contains several of the most congested corridors in the nine-county Bay Area. A number of innovative strategies are being used to manage this congestion, including Travel Demand Management (TDM) and Transportation Systems Management (TSM) programs. This section focuses on profiling existing TSM programs in Alameda County. TSM measures draw on technology and other techniques to directly manage traffic flows. These strategies include:

- **Signalization Improvements** (timing, phasing, and coordination) optimize traffic flow along arterial corridors to reduce congestion and improve safety for drivers, pedestrians, and bicyclists traveling through signalized intersections.
- **Signal Priority/Preemption** is used to better manage conflicts in demand between different modes. Transit signal priority provides extended green times for transit vehicles, enabling them to provide improved service to passengers. Emergency-vehicle preemption improves incident response times by providing an immediate green light to police vehicles, fire trucks, and ambulances.
- **Ramp Metering** regulates traffic entering freeways in congested conditions. Metering helps manage demand on the freeway to ensure that total flow on the freeway does not exceed capacity. Many ramp metering schemes provide bypasses for carpools and transit vehicles to further reduce travel delay or encourage mode shift.
- **Advanced Traveler Information Systems (ATIS)** provide pre-trip and en-route traveler information concerning traffic conditions, weather, incidents, construction, and other special events. These systems manage demand on transportation facilities by providing travelers with access to real-time information in planning their trip.
- **Incident Detection and Management** strategies including special traffic-signal timing plans, variable message signs, and emergency preparation and evacuation plans enable transportation agencies to adapt their existing system and manage demand effectively and safely during non-recurrent forms of congestion.

TSM measures can also include changes to facility design such as signage, optimization of intersection geometries, and improvement of pavement markings. These strategies provide low-cost measures for managing traffic, reducing conflicts between different turning movements, and improving safety of transportation facilities.

TSM strategies, if deployed appropriately, can provide a multitude of benefits for travelers as well as the environment, such as reduced congestion, improved traveler information, and improved safety. This translates into environmental benefits such as reduced fuel consumption, improved air quality, and reduced emissions.

Existing Conditions

Major TSM programs in Alameda County include ramp metering on several segments of the freeway system and several signal coordination and phasing/timing optimization projects, including the East Bay Smart Corridors Program. The county also benefits from 511®/Advanced Traveler Information System (ATIS) service available throughout the Bay Area. Bay Area 511® is managed by a partnership of public agencies led by MTC, the California Highway Patrol, and the California Department of Transportation. 511® provides a phone and web source for real-time Bay Area traffic, transit, rideshare, and bicycling information. In addition to these established programs, the county has several notable TSM projects, which are highlighted on the following pages.

East Bay Smart Corridors Program

The East Bay SMART Corridors Program is a multi-agency cooperative effort between Alameda County Transportation Commission (formerly the Alameda County Congestion Management Agency), Caltrans, Federal Highway Administration (FHWA), Federal

Bay Area 511® is a phone and web source for real-time Bay Area traffic, transit, rideshare and bicycling information.

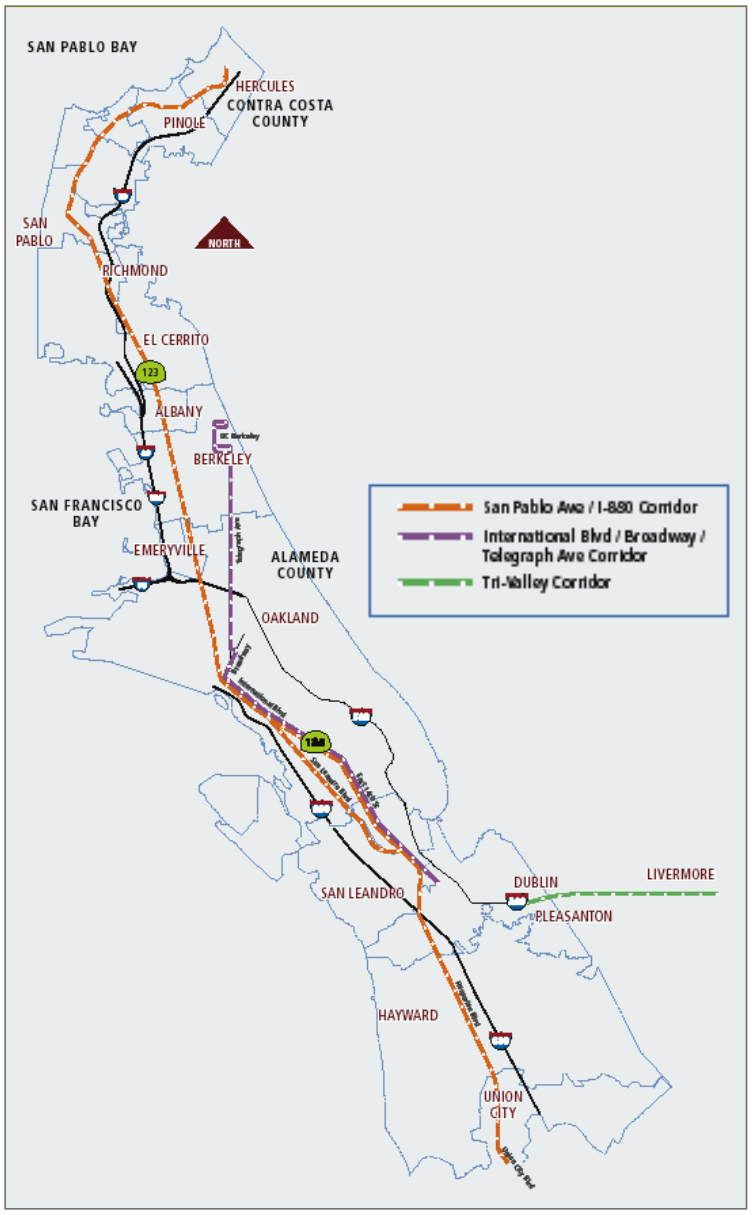
Source: 511.org

Transit Administration (FTA), California Highway Patrol (CHP), and the Metropolitan Transportation Commission (MTC) that began in 1995 to address traffic congestion and incident management along East Bay regional routes and major metropolitan areas. The program encompasses all aspects of transportation management in the region including traffic operations, incident management, transit service, and advanced traveler information.

The program includes three major arterial corridors in the East Bay portion of the San Francisco Bay Area: the San Pablo Avenue Corridor, the I-880 Corridor (consists of the freeway and parallel arterials from Oakland to Union City), and the International/ Telegraph Avenue Corridor (Figure 4-11). Specific strategies deployed as part of the SMART Corridors Program include:

- Reviewing the condition and operations of current interconnections between traffic signals to optimize intersection signal timings and activation of signal coordination. This also allows dynamic modification of timing plans to accommodate traffic during recurrent and non-recurrent forms of congestion.
- Installing Closed Circuit TV (CCTV) and Video streaming processors to allow traffic engineers and the public to view and respond to real-time traffic conditions. Installing monitoring detection stations that provide real-time volume, speeds, and level of congestion.
- Equipping arterial intersections with emergency vehicle preemption and transit signal priority systems.
- Creating a SMART Corridors website that disseminates and real-time traffic and incident information to the public, and interfacing this website with Bay Area 511®.
- Equipping transit and paratransit vehicles with Automatic Vehicle Location (AVL) technology to enable tracking of vehicles and the provision of real-time bus arrival and departure information. This information is provided to travelers via the SMART Corridors website using NEXTbus interface.
- Equipping fire department vehicles with Automatic Vehicle Location technology system to track assets at the dispatch center.
- Providing on-board emergency systems for fire departments to provide them with real-time video and incident information.

Figure 4-11 East Bay SMART Corridors Map



Source: East Bay SMART Corridors Program website : www.smartcorridors.net

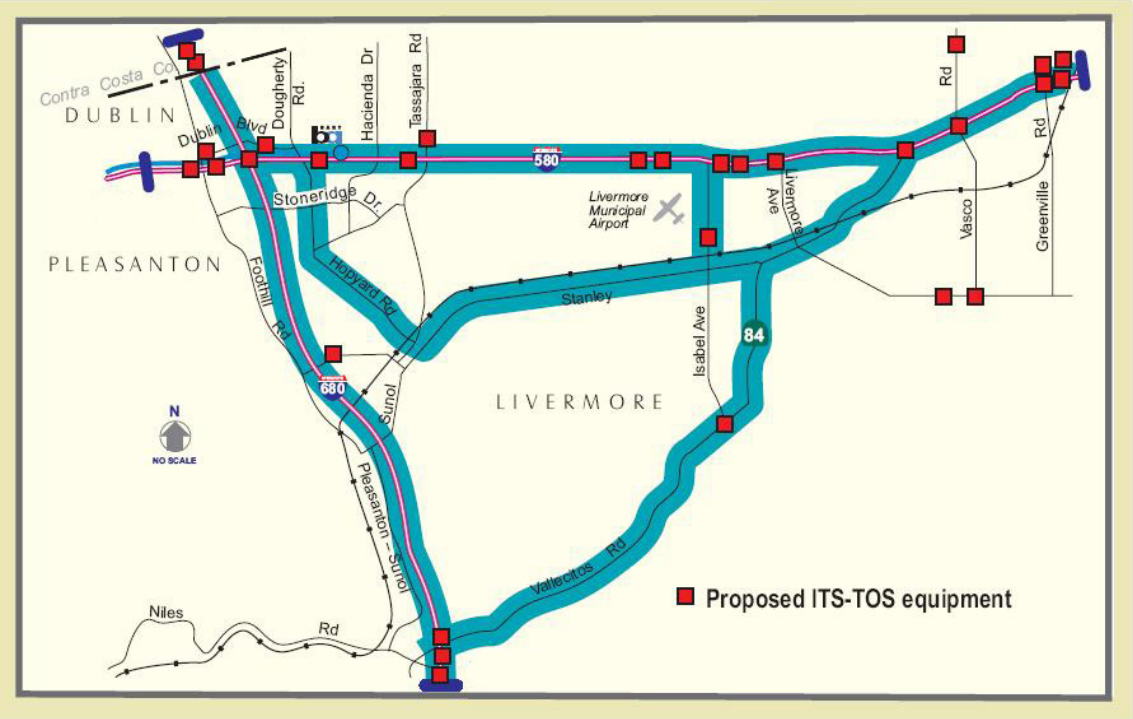
I-580 SMART Corridor

As part of the on-going construction for the I-580 Corridor HOV/HOT Lanes Project, a Transportation Management Plan (TMP)/Traffic Operations System (TOS)/ Intelligent Transportation System (ITS) project was established to provide real-time traffic information to motorists during construction efforts. The plan, which was completed in 2008, was integrated with East Bay SMART Corridors program, in cooperation with Alameda CTC and Caltrans. The TMP called for the installation of monitoring devices along I-580, I-680, and SR84, as well as local arterials in the cities of Livermore, Dublin, and Pleasanton (Figure 4-12). This project included the provision of ITS elements such as changeable message signs, video monitoring, ramp metering, and other communications/monitoring equipment or hardware.

West Grand Avenue Transit Enhancements Program

The Alameda CTC and AC Transit are joint sponsors of the Regional Express Bus program funded by Regional Measure 2 (RM2), a funding source created in 2004 with the passage of a toll increase on the seven state-owned toll bridges in the Bay Area. The MTC administers RM2 funds to reduce congestion and to make improvements along the toll bridge corridors. The West Grand Avenue Transit Enhancements Project is a component of the Regional Express Bus Program funded through RM2. This project includes transit system engineering analysis, traffic signal modification, signal retiming, interconnect and intersection improvements along the MacArthur/Grand/West Grand corridor to improve transit system operations. It also included an operational evaluation and modification of the existing Maritime Street on-ramp bridge to permit a new lane to be used exclusively as an HOV from Maritime Street/West Grand Avenue intersection to the I-880 northbound connector.

Figure 4-12 I-580 Traffic Management Plan Project



Source: Alameda CTC and www.i580info website

Future Conditions

Many of the county's existing TSM strategies have prompted the development of new projects to expand TSM in the future. For instance, the Webster Street SMART Corridor takes its cue from the original East Bay Smart Corridors Program. The successes of the USDOT's Integrated Corridor Management (ICM) Initiative, which promotes the development of a coordinated, dynamic, and multimodal cross-network operations system for managing different transportation facilities and traffic scenarios, has also encouraged state and regional transportation agencies to begin the process of implementing ICMs in their most congested corridors. The Federal ICM initiative prompted the I-80 Integrated Corridor Mobility Project described in further detail in the sections below This section presents these future upcoming TSM projects and other on-going or planned TSM measures in Alameda County.

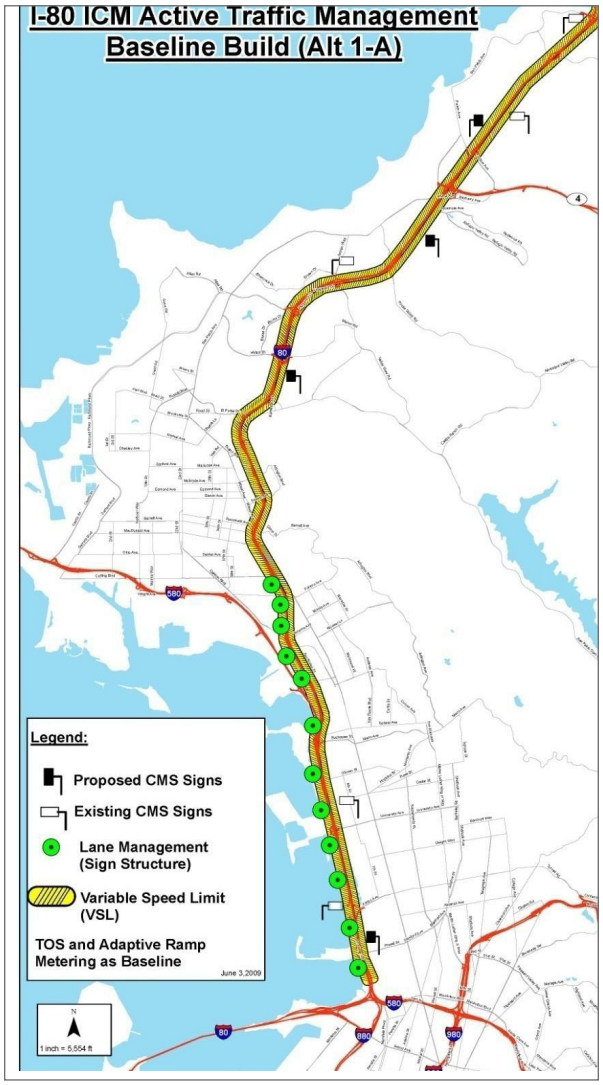
Webster Street SMART Corridor

The Webster Street SMART Corridor Project is a multiagency cooperative effort between Alameda CTC, the City of Alameda, the City of Oakland, and AC Transit. The project goals are to improve efficiency and safety along the Webster and Posey tubes through the implementation of Intelligent Transportation System (ITS) elements. The project extends along the Webster Street Corridor at the west end of the City of Alameda between the intersections of Central Avenue in Alameda City and Harrison Street/7th Street intersection in Oakland. The project is currently in the design phase. Several ITS strategies identified for this Corridor Project include:

- Signal re-timing improvements at intersections in Constitution Way
- Traffic signal coordination along Webster Street, Constitution Way, and Lincoln Avenue
- Closed Circuit Television (CCTV) at key locations along the Webster Street corridors for traffic monitoring
- Emergency vehicle preemption and transit signal priority along Webster Street
- Implementation of a vehicle detection system to monitor traffic volumes and speeds in real time along arterial streets in the project area
- Deployment of Trailblazer Signs (TBS) to inform motorists of real time traffic conditions and provide additional travel information during road closures and emergencies
- Establishment of an integrated communication network linking these ITS elements amongst the various cities and agencies

The project is expected to provide improved mobility and safety and emission reductions. The signal priority strategies will improve emergency vehicle and transit operations and emergency vehicle incident response times. The optimization and synchronization of traffic signals along the Webster Street Corridor will aid in optimizing traffic flow and reducing emissions in the area. Lastly, the new surveillance equipment and integrated communications network will improve the quality of traveler information, relieve congestion, and promote interagency coordination.

Figure 4-13 I-80 ICM



Source: Alameda CTC and Kimley-Horn ICM Project Presentation at the 2nd International Symposium on Freeway and Tollway Operations, June 2009 Honolulu, HI

I-80 Integrated Corridor Mobility (ICM)

The I-80 ICM Project is an Alameda County Transportation Commission project undertaken in cooperation with regional and local transportation partners and stakeholders including Contra Costa Transportation Authority, Caltrans, California Highway Patrol (CHP), Metropolitan Transportation Commission (MTC), FHWA, FTA, Bay Area Rapid Transit (BART), AC Transit, and the county and city agencies along the I-80 Corridor from the Carquinez Bridge to San Francisco, Oakland Bay Bridge and parallel arterials (Figure 4-13). The project is intended to enhance current TSM strategies along I-80 using an integrated system that will monitor and maintain optimal traffic flow as well as improve safety and mobility along the corridor. TSM and ITS elements proposed for this project include adaptive ramp metering, traffic light synchronization program, traffic surveillance and monitoring, advanced traveler information system, and management systems for freeway, arterial, transit, and incidents. The project is currently under development.

East Bay Rapid Transit

The AC Transit Bus Rapid Transit Project set to begin service in 2015 will operate between Berkeley, Oakland, and San Leandro (Figure 4-14). The BRT Project will include TSM elements such as transit signal priority and signal upgrades to improve bus rapid transit travel times and reduce the impact of roadway congestion on transit reliability.

MTC 2035 Plan Projects

MTC's 2035 Regional Transportation Plan lists several committed TSM-related projects in Alameda County including:

- Installation of traffic monitoring systems, signal priority and coordination, and ramp metering along the I-880, I-238, and I-580 Corridors.
- Provision of Intelligent Transportation System (ITS) elements for arterial management in Oakland, including: updated signal controllers, signal coordination, transit signal priority, automated vehicle location (AVL) technology on transit, radar detection, and real-time traveler information.

Figure 4-14 East Bay Bus Rapid Transit Program

Source: AC Transit

BEST PRACTICES

This section presents best practices in the area of Transportation Systems Management (TSM) including case studies of national transportation agencies with well-established TSM plans and performance monitoring programs. It also includes innovative practices for low-cost TSM solutions across various facility types and presents case studies of emerging technologies, and innovative projects and initiatives that advance the concept of regional TSM.

TSM Plans and Performance Monitoring

Duluth, MN
Superior Metropolitan Interstate Council (MIC), Minnesota and Wisconsin Transportation Systems Management (TSM)

MIC's TSM program includes monitoring and planning efforts designed to optimize and improve the state of the region's TSM strategies, equipment, and programs. The ultimate goal of the program is to improve safety and efficiency through low-cost and effective TSM techniques such as roadway striping, access management, and traffic signal coordination. This program identifies potential locations of concern along Minnesota and Wisconsin roadways within the MIC area (Figure 4-15). The locations are ranked according to their potential needs for capacity and/or safety improvements. The monitoring efforts then are used to influence future transportation improvement projects and strategies considered in the region.

Figure 4-15 MIC Locations of Concern

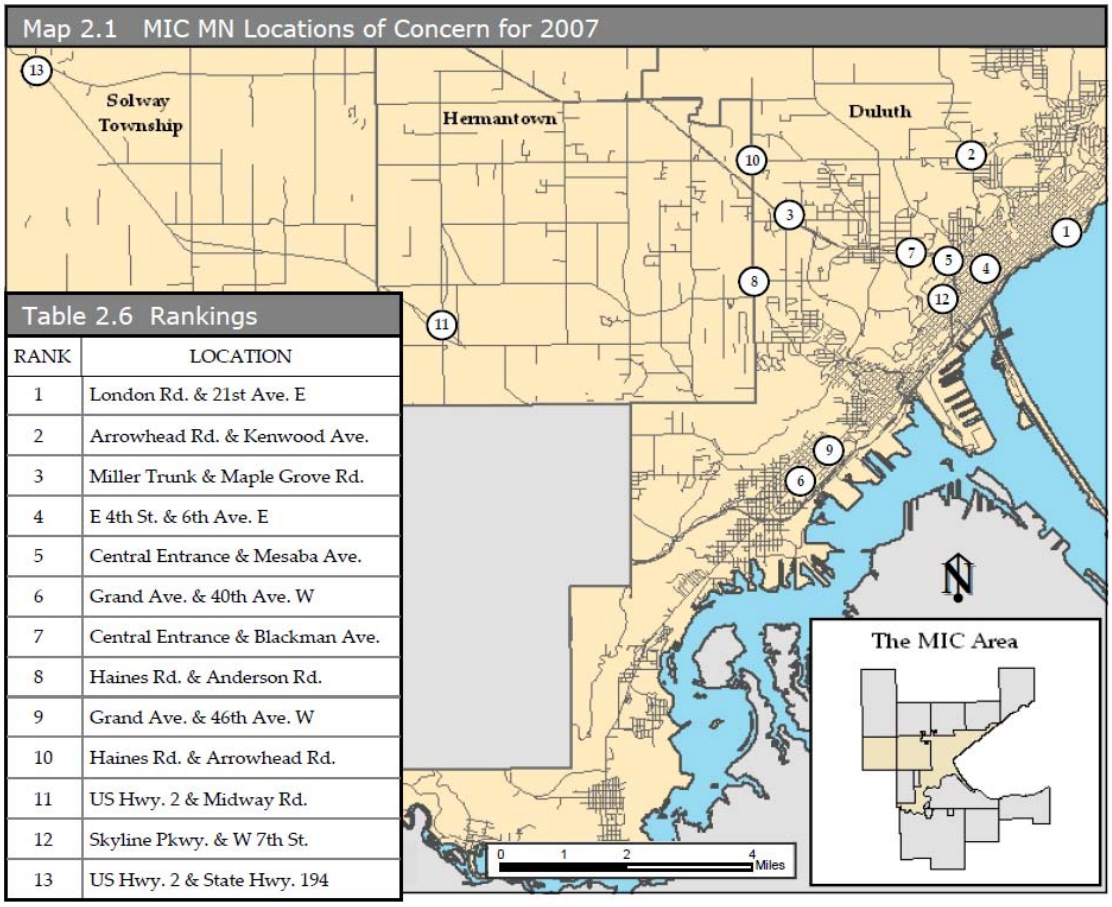


Table 2.6 Rankings

RANK	LOCATION
1	London Rd. & 21st Ave. E
2	Arrowhead Rd. & Kenwood Ave.
3	Miller Trunk & Maple Grove Rd.
4	E 4th St. & 6th Ave. E
5	Central Entrance & Mesaba Ave.
6	Grand Ave. & 40th Ave. W
7	Central Entrance & Blackman Ave.
8	Haines Rd. & Anderson Rd.
9	Grand Ave. & 46th Ave. W
10	Haines Rd. & Arrowhead Rd.
11	US Hwy. 2 & Midway Rd.
12	Skyline Pkwy. & W 7th St.
13	US Hwy. 2 & State Hwy. 194

Source: Duluth Superior MIC

Arlington County, VA
Master Transportation Plan Demand and System Management Element

Arlington County publishes a Demand and System Management Element to supplement the county's Master Transportation Plan. The Demand and System Management Element defines the goals and policies that influence the county's current and proposed TSM and Transportation Demand Management (TDM) strategies. The element also provides an existing conditions summary of current TSM and TDM strategies along with associated performance measures to provide an update on the state of the system. Several of the program's TSM strategies cover traffic signals, ITS, and emergency preparedness.

Innovative Low Cost Traffic Engineering Improvements

Detroit and Grand Rapids
Michigan Low Cost Engineering Improvements

Many agencies have successfully employed low-cost traffic safety measures to reduce collisions and improve roadway operating conditions for their regions. For example, the AAA Club of Michigan within the Detroit and Grand Rapids area examines the region's intersections and recommends and implements a variety of low cost safety improvements where needed. These low-cost solutions include replacement and relocation of signal heads for improved visibility, installation of left turn lanes, re-striping, and exclusive left turn phases. As a result of these efforts, these two jurisdictions have seen 50% reduction in total crashes and a benefit / cost ratio of 15:1 return on investment for these improvements.

Emerging Technology and TSM Initiatives

Integrated Corridor Management (ICM) Initiative

The USDOT's ICM Initiative is multimodal and multi-agency approach to TSM. The initiative is designed to promote the development of innovative approaches to managing traffic operations through an integrated network-based transportation management system. The goal is to develop a framework for linking transportation hardware, databases, and decision-support software across multiple jurisdictions and agencies to better manage congestion, provide improved

Overhead Signals – Improving Visibility

Image from FHWA Primer on Low Cost Engineering Traffic Improvements

Double Left Turn Lanes and Double Right Turn Lanes Help Accommodate High Priority Movements

Image from FHWA Signalized Intersections: Informational Guide, Publication number FHWA-HRT-04-091, August 2004

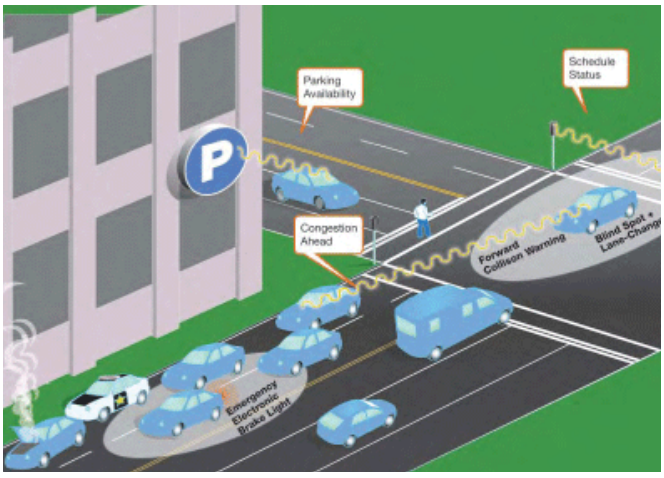
real-time traveler information, and develop a dynamic, adaptive transportation corridor that will efficiently respond to both recurrent and non-recurrent forms of congestion. The ICM initiative enhances TSM practice through an integrated approach to operations, maintenance, monitoring, detection, and response. ICM combines a variety of ITS strategies such as adaptive ramp metering, traffic light synchronization, traffic surveillance and monitoring, and advanced traveler information systems. There are currently eight "Pioneer Sites" that will serve in the development, deployment, and evaluation of ICM. Figure 4-16 shows the various pioneer site locations and the various corridor assets that are integrated with ICM.

IntelliDrive℠

IntelliDrive℠ is a multimodal initiative that links vehicles, infrastructure, and passenger communications devices through wireless communications. The successful deployment of this research effort, which is sponsored by the USDOT, will ultimately enhance safety, mobility, and reduce environmental impact on surface transportation. There are several applications in development including safety applications using vehicle-to-vehicle technology and vehicle infrastructure integration (VII) technology that enables wireless exchange of safety and operational data between vehicles and/or roadway infrastructure in order to inform the driver of potential hazards on route. There are also mobility applications that inform Traffic Management Center managers of the transportation system performance and alert the agencies and fleet operators of appropriate actions based on conditions. The system also has the ability to enhance real-time traveler information.

Figures 4-17 and 4-18 show how IntelliDrive℠ provides a centralized system for the collection and dissemination of traveler information, which makes it especially useful for Transportation Systems Management at a state-wide or regional level. The state of California is conducting research on the potential use of vehicles as "sensors" or "probes" that collect information on travel conditions to improve the quality of traveler information. At the regional level, the Metropolitan Transportation Commission (MTC) is analyzing the feasibility of IntelliDrive℠ technologies to support high occupancy toll (HOT) and express lane operations. For HOT and Express

Figure 4-17 Illustration of Intellidrive℠



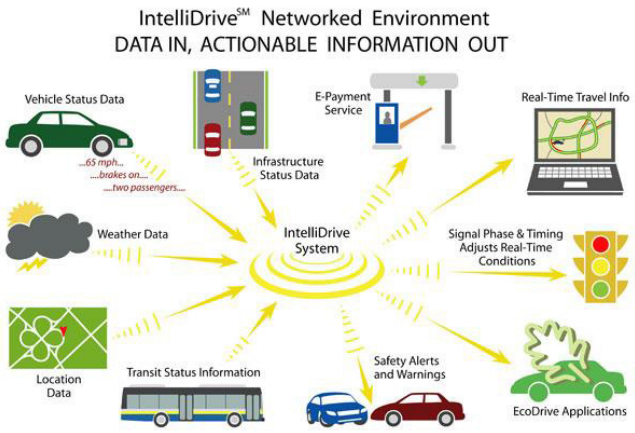
Source: http://www.rita.dot.gov/publications/horizons/2009_05_01/images/intellidrive.gif

Figure 4-16 ICM Pioneer Sites

Pioneer Site Location	HOV	Tolling	Value Pricing	Real-Time Control	Fixed Route	Express Buses	Bus Rapid Transit	Commuter Rail	Light Rail	Subway/Heavy Rail
	Corridor Assets to Be Integrated with ICM									
	Freeway			Arterial		Bus		Rail		
Dallas, Texas	◆	◆		◆	◆	◆			◆	
Houston, Texas	◆	◆	◆	◆	◆	◆	◆			
Minneapolis, Minnesota	◆	◆	◆	◆	◆	◆	◆			
Montgomery County, Maryland	◆			◆	◆	◆		◆		◆
Oakland, California	◆	◆		◆	◆	◆	◆	◆		◆
San Antonio, Texas				◆	◆	◆				
San Diego, California	◆	◆	◆	◆	◆	◆	◆			
Seattle, Washington	◆			◆	◆	◆		◆	◆	

Source: http://www.its.dot.gov/ICMS/pioneer.htm

Figure 4-18 IntelliDrive℠ Network



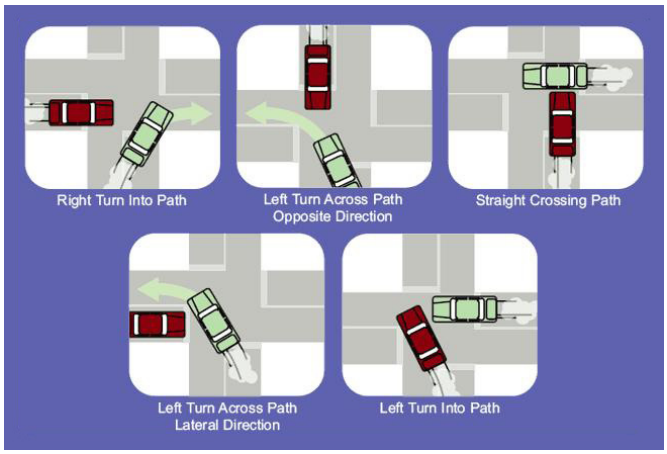
Source: http://www.intellidriveusa.org/

lane operations, IntelliDrive℠ technologies can be used to improve current procedures concerning toll collection, toll transaction processing, disseminating traveler information, and traffic and roadway safety monitoring.

Cooperative Intersection Collision Avoidance Systems (CICAS)

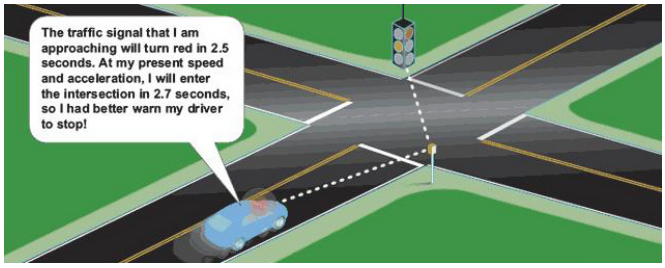
The USDOT sponsored Cooperative Intersection Collision Avoidance Systems (CICAS) is an optimized combination of vehicle-based and infrastructure-based systems used to address intersection crash problems. The crash scenario (Figure 4-22) illustrates potential crash scenarios. CICAS combines in-vehicle sensors and roadway sensors that work together to warn drivers of potential collisions. For instance, Figure 4-20, illustrates a system that warns vehicles about a potential red light violation. The USDOT is working in partnership with automotive manufacturers and state and local transportation agencies to test the development of CICAS.

Figure 4-19 CICAS Crash Scenarios



Source: USDOT Five-Year ITS Program Plan online at http://ntl.bts.gov/lib/jpodocs/repts_te/14289/plan2-5.htm

Figure 4-20 Signal Violation Warning



Source: USDOT Five-Year ITS Program Plan online at http://ntl.bts.gov/lib/jpodocs/repts_te/14289/plan2-5.htm

SUMMARY OF NEEDS

Alameda County experiences some of the highest levels of roadway congestion in the Bay Area. Several freeway segments in Alameda County, particularly segments of I-80 and I-580, are consistently ranked among the top ten most congested corridors in the Bay Area.

Congestion levels are expected to increase in the future. The degree of increase is uncertain and depends on economic conditions and population trends. However, projections indicate future levels of congestion may be severe. Given the physical and financial constraints of adding capacity to the county's freeway system, future programs and projects are needed to address congestion using innovative and alternative strategies such as Transportation System management (TSM)and Intelligent Transportation Systems (ITS) along with investments in alternative modes of travel.

Future levels of driving, travel speeds, and congestion will also impact the number of collisions occurring on county roads. Although roadway fatalities and injuries have fallen off significantly in the last few years as driving has declined in response to the economic recession, collisions are likely to begin increasing again once conditions improve. Investments in roadway safety are needed to ensure future fatalities and injuries are minimized or eliminated.

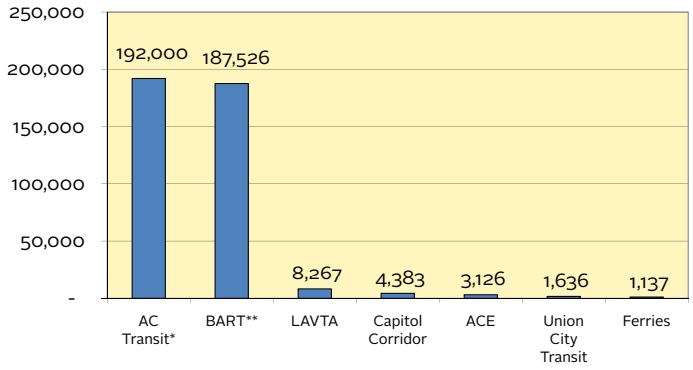
Roadway maintenance is another major concern. Although the majority of Alameda County freeways currently are in fair to excellent condition, the cost of maintaining roadways and bridges is mounting, and funding shortfalls are estimated in the billions of dollars. Roadway maintenance becomes more expensive the longer it is deferred, so investments in regular maintenance are critical to ensure the transportation system is maintained as cost-effectively as possible.

CHAPTER 5. TRANSIT

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 BART and AC Transit, which account for the vast majority (close to 95 percent) of transit usage in the county. 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. For example, Emery Go-Round in Emeryville had a ridership of 1.3 million in 2009, which was more than two and a half times the ridership for Union City Transit. Outlined below are ridership statistics and some of the key performance measures for the "major" transit operators in Alameda County (Figures 5-1 – 5-5).

Image from Nelson\Nygaard

Figure 5-1 Average Weekday Ridership, by Alameda County Operator



* Estimated FY2008-09 daily boardings in Alameda County, based on calculation using service hours and population, from ACCMA 2005-2006 Performance Report
** January 2010 trips with one or both ends in Alameda County
All other data is FY2008-09 and systemwide

Figure 5-2 Farebox Recovery Ratio, by Alameda County Operator (FY 2008-09)

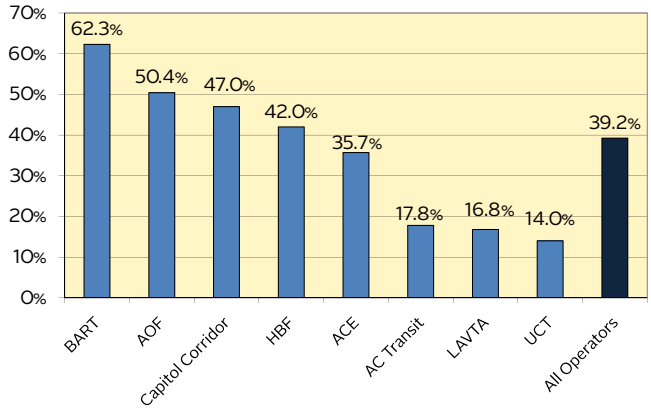


Figure 5-3 Service Effectiveness, by Alameda County Operator

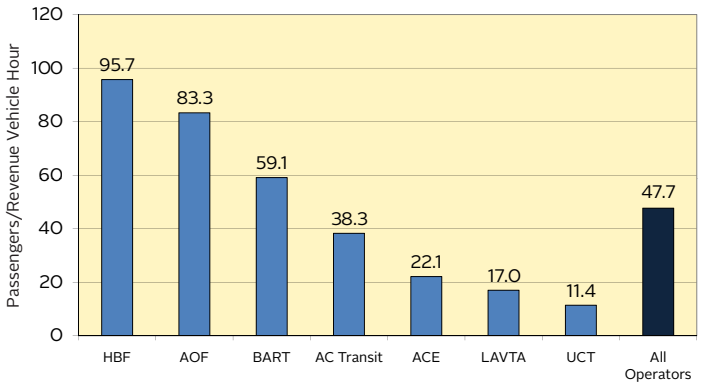


Figure 5-4 Cost Effectiveness, by Alameda County Operator)

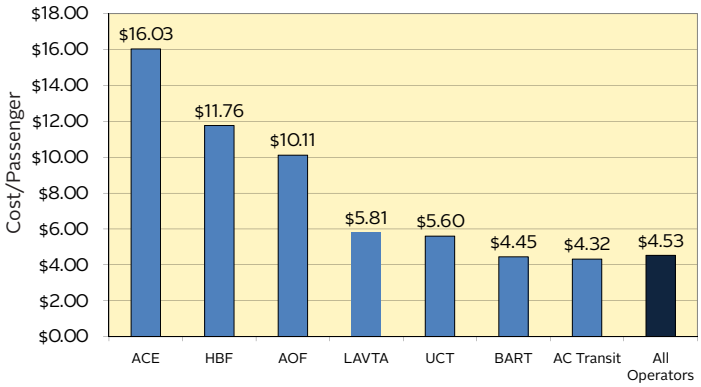
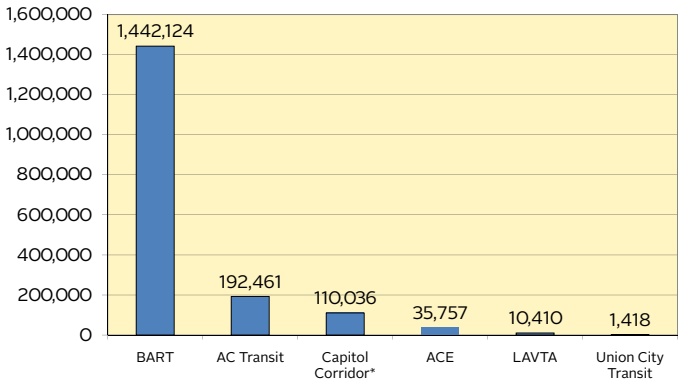


Figure 5-5 Annual Passenger Miles



* FY 2007-08

LEGEND:
ACE: *Altamont Commuter Express*
AHBF: *Alameda Harbor Bay Ferry*
AOFS: *Alameda/Oakland Ferry Service*
LAVTA: *Livermore Amador Valley Transit Authority*
UCT: *Union City Transit*

Sources:

Metropolitan Transportation Commission (MTC): *Statistical Summary of Bay Area Transit Operators*, May 2010

Capitol Corridor Joint Powers Authority: *Capitol Corridor Business Plan Update – FY2010-11 – FY 2011-12*, March 22, 2010

BART: *Monthly Ridership Report, January 2010*

National Transit Database *2009 Transit Agency Profiles*

All data is FY 2008-09 except: BART Ridership, which is January 2010, Passenger Miles, which are Federal Transit Adminstration Reporting Year 2009, and Capitol Cooridor Passenger miles which are FY 2007-08

Averages all weighted by ridership

EXISTING CONDITIONS

In this section, each Alameda County transit operator is briefly described. Figure 5-6 shows the highest capacity transit lines in the county including the rail network and AC Transit's rapid bus lines. There are many other transit routes serving Alameda County, as described below.

MAJOR TRANSIT OPERATORS

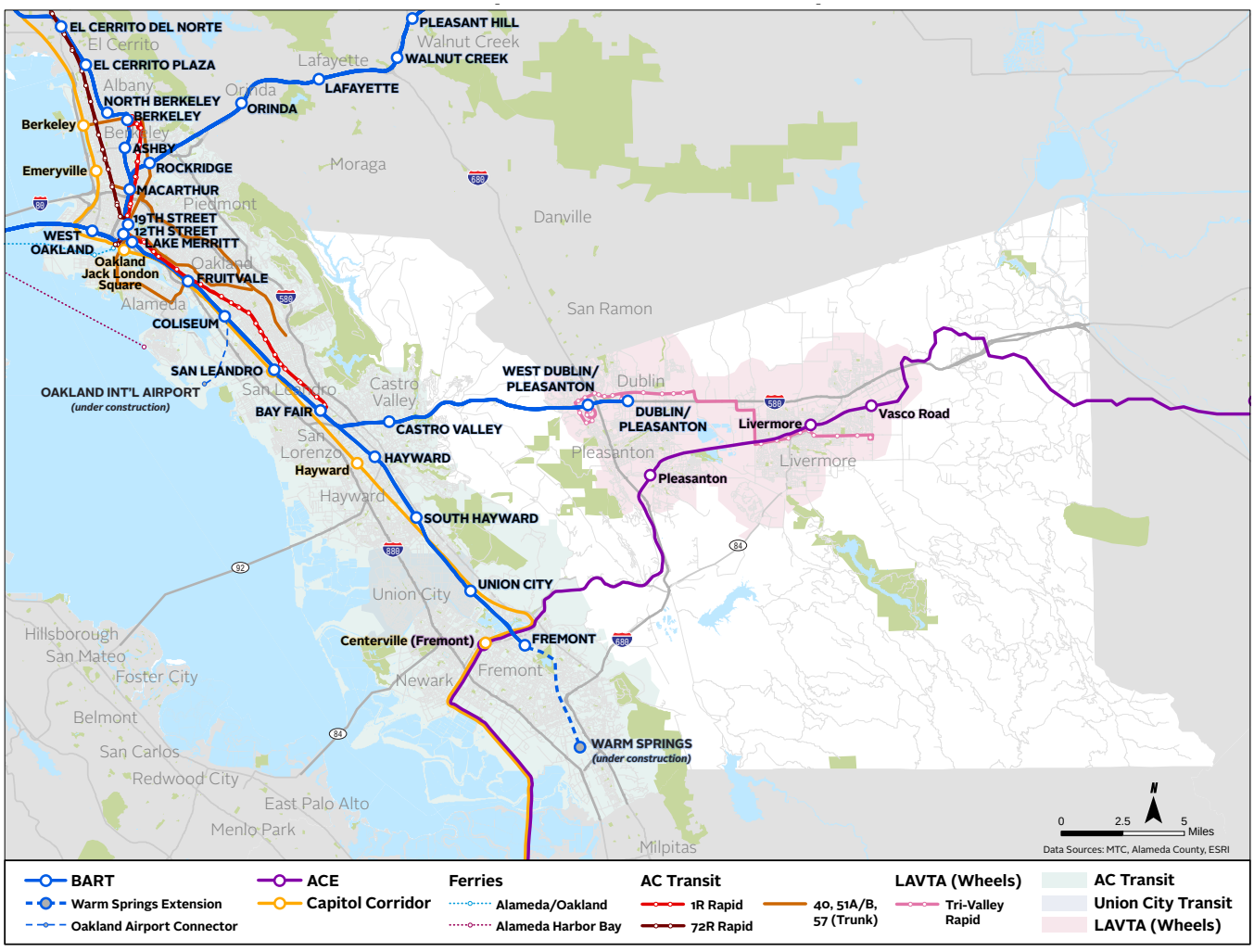
Rail

BART

The Bay Area Rapid Transit (BART) District provides electric third rail-powered, grade-separated rail service to four Bay Area counties: Alameda, San Francisco, Contra Costa and San Mateo. The system includes 104 miles of track, serving five lines and 44 stations (Figure 5-7). All five lines serve Alameda County, and 16 of the 20 stations in the county are served by two or more lines. The 12th Street / Oakland City Center (11,856 exits per weekday in Fiscal Year 2010), downtown Berkeley (11,317), 19th Street Oakland (9,161), MacArthur (7,596) and Dublin/ Pleasanton (7,561) stations are the five busiest in the system outside of San Francisco. Ridership, as measured by the number of daily exits at remaining stations in the county range from 6,932 (Fremont) to 2,311 (Castro Valley). With connecting bus service at each station, BART stations serve as the transit hubs for Alameda County. As shown in Figure 5-8 the five busiest Alameda County stations are compared with the five busiest stations systemwide.

Three of the five BART lines (Pittsburg/Bay Point-SFO-Millbrae, Dublin/Pleasanton-Daly City, and Richmond-Fremont) operate from early morning until

Figure 5-6 Alameda County Major Transit (Existing and Under Construction)



after midnight seven days a week. The other two (Richmond-Daly City-Millbrae and Fremont-Daly City) do not operate early mornings, evenings or Sundays. Weekday headways on each line are 15 minutes, and nine of the 19 Alameda County stations – all those served by two or more Transbay lines – enjoy combined weekday headways for service to and from San Francisco of every 7.5 minutes or better.

Because BART is a grade-separated system with relatively few stops, service is fast and reliable – particularly service between Alameda County and San Francisco, through the Transbay Tube under San Francisco Bay. Systemwide, BART's average speed including stops is close to 35 miles per hour, and on-time performance (less than five minutes late) hovers around 95 percent.

Because BART is a high-capacity system, it is also relatively cost-effective to operate, as a 10-car train with a maximum capacity of 1,070 (560 to 600 seated) requires just a single operator. For this reason, and due in part to distance-based fares ranging as high as $10.90 for a one-way trip (the maximum adult fare within Alameda County is $4.35), BART's farebox recovery ratio in Fiscal Year 2009 was a relatively high 62.3%. Its cost per boarding was $4.45, meaning that the subsidy required per passenger was relatively low at $1.68. The system is very productive, carrying 59.1 passengers per hour (per railcar) over the whole system.

BART is governed by an elected Board of Director. Alameda County is represented by five directors, three of whom also represent parts of other counties. While most of BART's revenue comes directly from riders, close to one-quarter comes from county sales taxes, and it is also funded by property taxes and other sources. BART's adopted Fiscal Year 2011 operating budget is $582 million.

***BART** Service began in 1972*

Governing Body:
Transit district created by legislature

669 revenue vehicles

93-mile service area

5 routes

Ridership per capita: 138

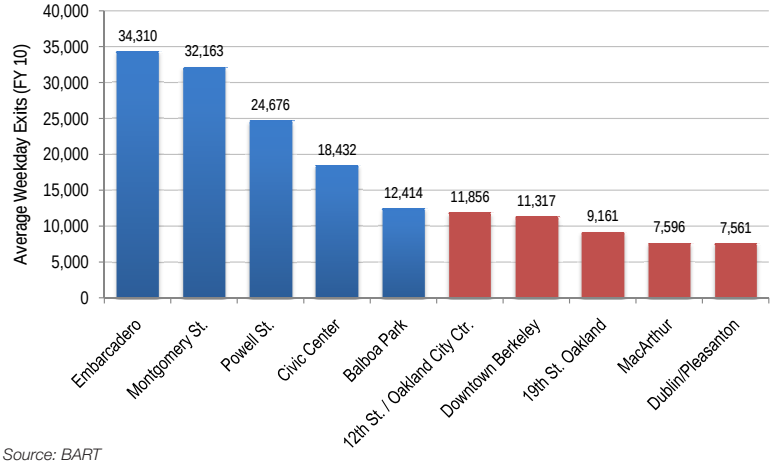
Total Operating Costs (FY 08-09): $520,535,000

Annual System-wide Ridership (FY 08-09): 114,655,000

Source: Metropolitan Transportation Commission (MTC): Statistical Summary of Bay Area Transit Operators, May 2010.

Figure 5-7 BART Map

Figure 5-8 Top 5 BART Stations in Alameda County vs. Top 5 Systemwide



Source: BART

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Capitol Corridor

The Capitol Corridor is an intercity passenger rail system that provides service to 16 stations along its 170-mile corridor, which roughly parallels I-80, I-680, and I-880. Service levels have increased dramatically in recent years, with 32 daily train trips (22 on weekends) between Sacramento and Oakland, 14 daily trains between Oakland and San Jose, two daily trains between Sacramento and Roseville, and two daily trains between Roseville and Auburn. Capitol Corridor stations are located in 8 northern California counties and provide direct connections to an additional 19 local public transit systems and 5 passenger rails systems (BART, VTA, ACE, Caltrain, and Amtrak). Within Alameda County, there are six Capitol Corridor stations, located in Berkeley, Emeryville, Oakland (Jack London Square), Oakland (Coliseum), Hayward, and Fremont.

In order to provide additional connections, the Capitol Corridor also operates dedicated motor coach bus service. Within Alameda County, motor coach buses provide connections on both weekdays (approximately 5:00 a.m. to midnight) and weekends (approximately 6:30 a.m. to midnight) between the Emeryville Station and downtown San Francisco, with service frequency typically every 30-60 minutes.

Service frequencies for the Capitol Corridor have quadrupled over the past decade and the Capitol Corridor has also seen a 245% increase in ridership over that time period. In recent years, however, the Capitol Corridor has seen slight declines in ridership, which is consistent with the economic downturn. For Fiscal Year 2009, ridership declined 5.5% to 1.6 million riders. Despite the recession and state budget crisis, the Capitol Corridor was able to maintain service levels and experienced only a 1.4% decrease in revenue in Fiscal Year 2009. Over the past decade, the Capitol Corridor has periodically adjusted its fares, including in FY 2007-08 when a simplified fare structure was introduced. For FY 2011-12, the Capitol Corridor will perform periodic fare reviews, which may include fares increases. Finally, on-time performance reached an all time high in Fiscal Year 2009 at 93%, up from 86% in the previous year.

Capitol Corridor *Service began in 1991*

Governing Body: Capitol Corridor Joint Powers Authority (CCJPA)

32 weekday trains and 22 weekend trains

170-mile corridor with 16 stations

6 Alameda County stations

Total Operating Costs (FY 09-10): $31,107,931

Annual System-wide Ridership (FY 08-09): 1,559,625

Source: Metropolitan Transportation Commission (MTC): Statistical Summary of Bay Area Transit Operators, May 2010.

The Capitol Corridor charges distance based fares ranging from $6 to $37 for a one-way ticket. For example, a one-way ticket between Sacramento and Oakland (Coliseum) is $25. In Fiscal Year 2009, the Capitol Corridor's farebox recovery ratio was 47%, down from 55% in Fiscal Year 2008.

The Capitol Corridor is governed by the Capitol Corridor Joint Powers Authority (CCJPA), whose 16 Board Members are elected officials from the six public transit agencies along the Capitol Corridor route. Since the CCJPA formation, BART has provided dedicated staff and management support. The Capitol Corridor's operating budget for Fiscal Year 2010 was $28.5 million. Like all transit agencies in California, ongoing and future financing for the Capital Corridor remains uncertain due to state budget challenges. However, the Capitol Corridor has been designated funds from Proposition 1A (California High-Speed Train Act) and is eligible for recently allocated federal rail dollars.

ACE

The Altamont Commuter Express is a commuter railroad making three round trips every weekday (westbound during the AM peak period, and eastbound in the PM) between Stockton and San Jose. In Alameda County, trains stop at Vasco Road in Livermore, in downtown Livermore and Pleasanton, and in Fremont. In Alameda County, ACE serves to transport both Central Valley commuters to Alameda County jobs as well as Alameda County residents to jobs in Santa Clara County.

ACE relies heavily on local buses and shuttles to provide "last-mile" connections to employment sites, including a shuttle for Lawrence Livermore National Laboratories employees, LAVTA and AC Transit routes.

As a commuter railroad making few stops (nearly 10 miles apart on average), ACE is a relatively fast service, averaging close to 40 miles per hour including stops. When the economy is strong and traffic is at its most congested on Interstates 580 and 680, which ACE roughly parallels, ridership spikes: in 2001, during the "dot-com boom," it reached 4,762 boardings per day. In Fiscal Year 2010, which was a recession year, it was 2,864.

Also during good economic times, ACE suffers more from delays caused by conflicts with freight traffic on the Union Pacific (UP) right-of-way it uses. In 2005, on-time performance (arrival at the terminal within five minutes of schedule) was just 75.7%. However, it has improved to above 90% in the most recent fiscal year.

***ACE** Service began in 1998*

Governing Body: San Joaquin Regional Rail Commission (SJRRC)

Active fleet of 30 train cars

1,248-mile service area

1 route

Ridership per capita: .2

Total Operating Costs (FY 08-09): $12,776,000

Annual System-wide Ridership (FY 08-09): 797,000

Source: Metropolitan Transportation Commission (MTC): Statistical Summary of Bay Area Transit Operators, May 2010.

ACE charges distance-based fares ranging as high as $11.75 for an adult one-way ticket or $300 for a monthly pass. In Fiscal Year 2009, its farebox recovery ratio was 35.7%, its cost per boarding was $16.03, and its subsidy per boarding was $10.31. It had productivity of 22.1 passengers per hour (per railcar).

ACE is funded by Cooperative Service Agreement between the San Joaquin Regional Rail Commission (SJRRC), the Alameda CTC, and the Santa Clara Valley Transportation Authority (VTA). SJRRC owns and operates the service (actual operations are contracted out to a private company); however, two Alameda County representatives sit on the eight-member SJRCC board. ACE's Fiscal Year 2009 operating budget was $12.8 million, close to half of which was funded by county sales taxes. Alameda County's Measure B Expenditure Plan (from 2000) included $10 million for ACE capital expenditures and $30.1 million for ACE operating expenditures over the life of the sales tax.

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Image from Flickr user ingridtaylar. Licence info: http://creativecommons.org/licenses/by/2.0/.

Ferry

Alameda/Oakland Ferry Service

The Alameda/Oakland Ferry Service (AOFS) is a public transit ferry system that provides daily weekday service and limited weekend seasonal service between Alameda and Oakland to San Francisco. Additional seasonal service is provided to Angel Island (from Alameda and Oakland) and to AT&T Park during select weekday night and weekend day home games for the San Francisco Giants. San Francisco has two ferry terminals, the primary one at the Ferry Building and one also at Pier 41 (limited service), while Oakland and Alameda have one terminal each.

On weekdays, 13 departures are made from Oakland and Alameda to San Francisco and 12 departures are made from the Ferry Building to Alameda/Oakland. An additional five departures are made from Pier 41. During the PM peak, an additional "tripper" vessel is available for service from San Francisco to Alameda/Oakland. Typical frequencies on the weekdays are over an hour, with peak service of 35 minutes. Travel time between the Ferry Building, Alameda, and Oakland is 65 minutes. Weekend service is seasonal, with an additional nine roundtrips in summer, six roundtrips in the fall and spring, and no weekend service in January and February.

The AOFS offers both single tickets and discount ticket books for frequent users. An adult roundtrip ticket costs $12.50. Three levels of discounted ticket books are available: 10-ticket (5 roundtrips) for $50, 20-ticket (10 roundtrips) for $90, and 40-ticket (20 roundtrips) for $170. Additional discounts are available for youth, seniors and disabled, military personnel, and groups. Free AC Transit transfers are provided with each ticket. In Fiscal Year 2009, the farebox recovery ratio for the AOFS was 50.4%, down from 53% in 2008.

Ridership for the AOFS has fluctuated over the past decade, peaking in 1990/00 at 506,073 riders and dropping down to 360,388 riders in 2003/04. Ridership has risen again since 2004, but the downturn in the economy has likely contributed to a recent 11.9% ridership decline, from 470,414 passengers in 2006/07 to 414,348 passengers in 2008/09. During commute periods, 65% of passengers originate in Alameda and 35% originate in Oakland. By contrast, during the weekends, 60-70% of passengers originate in Oakland. Finally, the system's cost per boarding was $10.11 and had a productivity of 83.3 passengers per hour.

AOFS is managed by the City of Alameda, which provides ferry service to the Oakland terminal through a fee for service agreement with the Port of Oakland. Operations of the ferries themselves have been contracted out to the Blue & Gold Fleet. In Fiscal Year 2009, operating costs for AOFS were just over $4 million, with over 75% of funding coming from fares. Alameda County's Measure B Expenditure Plan (from 2000) included $11.1 million for ferry expansion and improvements over the life of the sales tax.

As discussed in the future conditions section of this chapter, management and operation of the AOFS will be taken over by the San Francisco Bay Area Water Emergency Transportation Authority (WETA) starting in 2011 in an effort to consolidate, coordinate, and expand ferry services in the Bay Area.

The Alameda Harbor Bay Ferry

The Alameda Harbor Bay Ferry (AHBF) is a public transit ferry that provides service between the Harbor Bay Ferry Terminal on the south side of Alameda and the Ferry Building in San Francisco. The AHBF provides service during the morning and evening peak commute periods on weekdays. Three morning and evening trips are provided from Alameda to San Francisco, and two morning and four afternoon trips are provided from San Francisco to Alameda. No weekend service is provided.

AHBF offers both single tickets and discount ticket books for frequent users. An adult roundtrip ticket costs $13. Two levels of discounted ticket books are available: 10-ticket (5 roundtrips) for $55, 20-ticket (10 roundtrips) for $100. In addition, a monthly pass for $185 is also available. Free Muni and AC Transit transfers are provided. Additional discounts are available for youth, seniors and disabled, military personnel, and groups. In Fiscal Year 2009, the farebox recovery ratio for the AHBF was 42%, up from 38.8% in 2008.

Much like the AOFS, ridership for the AHBF has fluctuated over the past decade. Ridership peaked in 2007/08 at 148,598, but dropped slightly in 2008/09 to 147,191, less than a one percent decline. For 2008/09, its cost per boarding was $11.76 and had a productivity of 95.7 passengers per hour.

The AHBF is currently managed by the City of Alameda, with Harbor Bay Maritime under contract to provide operational services. In Fiscal Year 2009, operating costs for AHBF were approximately $1.68 million, with 73% of funding coming from fares.

As discussed in the future conditions section of this chapter, management and operation of the AHBF will be taken over by the San Francisco Bay Area Water Emergency Transportation Authority (WETA) starting in 2011 in an effort to consolidate, coordinate, and expand ferry services in the Bay Area.

__Ferry Service__ began in 1989 (__AOFS__) and 1992 (__AHBF__)

Governing Body: 5-member Alameda City Council

Active fleet of 4 ferries

22-mile service area

4 routes

Ridership per capita: 5.5

Total Operating Costs (FY 08-09): $5,719,000

Annual System-wide Ridership (FY 08-09): 400,000 (AOFS) and 143,000 (AHBF)

Source: Metropolitan Transportation Commission (MTC): Statistical Summary of Bay Area Transit Operators, May 2010.

Bus

AC Transit

The Alameda-Contra Costa Transit District is the largest provider of bus service in Alameda County, with approximately 218,000 boardings per weekday in Fiscal Year 2009 on its fixed routes, of which approximately 192,000 were in Alameda County. The District spans from Richmond to Fremont, and from San Francisco Bay to the East Bay hills. As of late-2010, AC Transit operates 71 local lines, two Rapid lines, one limited-stop line, and 33 Transbay express lines, with service to San Francisco, as well as supplementary service (for school and shopping trips), All-Nighter and paratransit services.

The system's busiest corridors are in the north county cities of Oakland, Berkeley, Alameda and San Leandro, in central county. In 2009, the system's busiest route with more than 20,000 daily boardings was Line 51, which operated primarily along College Avenue, Broadway, and Santa Clara Avenue between Berkeley and Alameda. To improve reliability, Line 51 has since been split at Oakland's Rockridge BART Station into Lines 51A (serving the Alameda end of the alignment) and 51B (serving the Berkeley end). The system's busiest corridor with approximately 24,000 daily boardings is Telegraph Avenue, International Boulevard and East 14th Street between Berkeley and San Leandro, which is served by Lines 1 and 1R, a rapid service. The system's other rapid service is Line 72R on San Pablo Avenue between downtown Oakland and Richmond.

Image from ACTransit.org

***AC Transit** Service began in 1960*

Governing Body: 7-member elected board

Active fleet of 632 motor buses

364-mile service area

107 routes (71 local, 2 Rapid, 1 limited, 33 transbay)

Ridership per capita: 49.2

Total Operating Costs (FY 08-09): $323,111,000

Annual System-wide Ridership (FY 08-09): 69,649,000 (fixed-route only)

Source: Metropolitan Transportation Commission (MTC): Statistical Summary of Bay Area Transit Operators, May 2010.

AC Transit's Transbay express routes act as a supplement to BART, serving primarily commuters during peak periods and parts of the county that are farther from BART stations. Almost all routes are destined for the Transbay Terminal in downtown San Francisco, although service is also available to Peninsula cities including Palo Alto.

AC Transit's "base" one-way adult cash fare for local service is $2, plus 25 cents for a transfer to another local line. Adult Transbay fares are $4. An adult monthly pass (now available only loaded onto Clipper cards, and not in paper form) costs $80.

AC Transit serves a diverse array of urban and suburban communities, and productivity and cost-effectiveness vary widely. Systemwide, there were 38.3 boardings per hour in Fiscal Year 2009, farebox recovery was 17.8%, and the average cost per boarding was $4.32.

The District is governed by a Board featuring five directors elected by ward, plus two at-large. Its adopted Fiscal Year 2011 operating and capital budget was $323.1 million. AC Transit is funded in large part by property and sales taxes. both of which have declined due to the poor economy. Given the loss of this local revenue, combined with drastic reductions in State support, the agency has experienced severe budget deficits in recent years and has repeatedly reduced service, including two service cuts in 2010, and a third possible in 2011.

Livermore Amador Valley Transit Authority/Wheels

Livermore Amador Valley Transit Authority/Wheels (LAVTA) offers fixed-route bus service, paratransit service, and shuttle services to major regional transit centers and the VA hospital, and "school tripper" services for the cities of Dublin, Pleasanton, and Livermore. LAVTA's system is comprised of 12 fixed routes, one interegional route, three commuter shuttle routes, and 15 "school trippers" which are like normal bus routes, yet are specifically designed to serve a given school during the AM/PM school commute periods. LAVTA utilizes two major transit centers – the Dublin/Pleasanton BART station and the Livermore Transit Center – to facilitate transfers for its routes. LAVTA provides paratransit service in Dublin and Livermore, as well as intercity service in Pleasanton. Daytime service within Pleasanton is provided by the City of Pleasanton Paratransit Service (PPS).. LAVTA service is provided seven days a week for both the fixed-route and paratransit services.

Ridership for LAVTA's fixed-route services has increased steadily over the past five years, peaking in 2008/09 at 7,800 daily passengers. LAVTA has a graduated fare structure with single fares at $2 and discounted fares for seniors and persons with disabilities. Discounted tickets and monthly passes are also available for general users, seniors, and persons with disabilities. In Fiscal Year 2009, its farebox recovery ratio was 18%, its cost per boarding was $5.81, and it had a productivity of 16 passengers per hour. Route 10 serves as the "backbone" of the fixed-route system as it provides east-west service and crosses through the three downtowns of Livermore, Pleasanton, and Dublin. Route 10 is the most productive route in the system with 23 passengers per hour.

In addition, the Tri-Valley Rapid is scheduled to begin operation in 2011. This new "bus rapid transit" system will provide a service between Stoneridge Mall and Sandia/Lawrence Livermore National Laboratories. This service will incorporate common BRT elements, such as low floor buses, queue jump lanes, and signal prioritization with the goal of reducing travel time in this corridor by up to 20%. The new "Rapid" route will take over for Route 10 as the "backbone" of the system.

LAVTA operates under a Joint Exercise of Powers Agreement between the cities of Dublin, Livermore, Pleasanton, and Alameda County. LAVTA is governed by a seven member Board of Directors, composed of two elected city officials from each City Council, and one member appointed by the Alameda County Board of Supervisors. The operating budget for LAVTA in Fiscal Year 2009 was $14.6 million.

LAVTA/Wheels *Service began in 1986*

Governing Body: 7-member board

Active fleet of 92 vehicles

40-mile service area

12 fixed-routes, 15 school-trippers, 1 interregional, 3 commuter shuttles

Ridership per capita: 13.5

Total Operating Costs (FY 08-09): $14,647,000

Annual System-wide Ridership (FY 08-09): 2,195,000 (fixed-route only)

Source: Livermore Amador ValleyTransit Authority Final Mini-Short Range Transit Plan FY 2010 to 2019 (March 2010) and additional information provided by LAVTA staff.

Union City Transit

Union City Transit (UCT) offers both fixed-route bus service and paratransit service in the City of Union City. UCT is also unique in that it provides local services that offer connections to regional transit systems, including: AC Transit, BART, and the Dumbarton Express. UCT's system is comprised of five fixed routes: 1A, 1B, 2, 3, and 4. Service is available seven days a week on most routes. Service times vary from route to route, but UCT generally operates from 4:35 a.m. to 10:30 p.m. on weekdays, Saturdays from 6:40 a.m. to 7:30 p.m., and Sundays from 8:00 a.m. to 6:30 p.m. Service frequencies differ by route and time of day but range from every 20 to 60 minutes on weekdays and 60 minutes on weekends.

UCT fixed-route ridership has grown steadily over the past five years, reaching 463,000 in Fiscal Year 2008/09, almost a six percent increase from the previous year. Its average weekly ridership in 2008/09 was 1,636. UCT has a graduated fare structure with single adult fares at $1.75 and discounted fares for youth, seniors, and persons with disabilities. Monthly passes are also available for adults, youth, seniors, and persons with disabilities. In Fiscal Year 2009, its farebox recovery ratio was 14%, its cost per boarding was $5.60, and it had a productivity of 11.4 passengers per hour. As of 2006, Route 1A had the highest productivity with 14.5 passengers per hour.

Union City's five-member City Council serves as UCT's transit policy board. All direct operations and maintenance tasks are contracted to a private operator, currently M.V. Transportation. Operating costs for UCT in 2008/09 were approximately $2.6 million for its fixed-route services and $592,000 for its paratransit services.

Union City Transit *Service began in 1974*
Governing Body: 5-member City Council
Active fleet of 21 vehicles
18-mile service area
5 routes
Ridership per capita: 6.3
Total Operating Costs (FY 08-09): $3,188,000
Annual System-wide Ridership (FY 08-09): 463,000 (fixed-route only)

Source: Metropolitan Transportation Commission (MTC): Statistical Summary of Bay Area Transit Operators, May 2010.

Image from Nelson\Nygaard

Additional Transit Operators

Emery Go-Round

The Emery Go-Round is a shuttle service offering connections between the MacArthur BART Station in Oakland – where 80% of all shuttle trips begin or end – and various locations in Emeryville, including the Amtrak Station, Bay Street, and major employers such as Pixar. While the service is privately administered, it is free of charge and available to the general public.

On weekdays service runs from approximately 5:45 a.m. to 10:30 p.m., on Saturdays from 9:30 a.m. to 9:30 p.m., and on Sundays from 10:30 a.m. to 6:30 p.m. Headways are generally every 15 minutes on weekdays and 20 minutes on weekends. Real-time arrival information for all routes is provided by NextBus.

Ridership has grown steadily since service began in 1997. In 2003 annual ridership was approximately 775,000. By 2009, it had reached 1.3 million. In 2010, cost per passenger trip was just $1.52.

The Emery Go-Round was initially administered by the City of Emeryville and funded by a public/private partnership. It is now administered by the Emeryville Transportation Management Association (TMA), a non-profit organization. The TMA and shuttle service are funded by a property-based business improvement district (PBID), under which all commercial and industrial property owners in the City are assessed a fee. In 2010, Emery Go-Round operating expenses were approximately $2.4 million.

Image from Nelson\Nygaard

"B" Line

The "B" is a free shuttle service operating on weekdays in downtown Oakland. A public-private partnership, it is funded primarily by a $997,000 Bay Area Air Quality Management District (BAAQMD) grant, administered by the City of Oakland and operated under contract by AC Transit. AC Transit buses with low floors and relatively few seats are used; however, they are distinctly branded. The service operates between Grand Avenue and Jack London Square primarily along Broadway, making stops every few blocks, and runs every 11 to 16 minutes from 7 a.m. to 7 p.m. Monday through Friday. The service was introduced in the summer of 2010, and funding has been secured for two years. If additional funding can be found, the service could be expanded to operate evenings and/or weekends.

AirBART

AirBART is a shuttle service administered by BART providing connections between the Coliseum/Oakland Airport BART Station and Oakland International Airport. Shuttles operate on 10-minute headways from early morning until midnight seven days a week, with scheduled one-way travel time of approximately 15 minutes (although according to BART, run times can be up to 30 minutes). Buses stop immediately in front of the main (San Leandro Boulevard) entrance of the BART Station and a short walk from both Terminals 1 and 2 at the airport, and make no interim stops. One-way adult fare is $3. Average daily ridership in 2008 was 2,650, representing mode share for airport trips of about 9%.

AirBART is scheduled to be replaced by the Oakland Airport Connector (see "Future Conditions") in 2014.

Other Shuttles

San Leandro LINKS is a free shuttle system that provides a direct connection from the San Leandro BART station to numerous locations in West San Leandro. San Leandro LINKS is available during peak commute hours on weekdays (5:45 - 9:45 a.m. and 3:00 - 8:00 p.m.) and make stops at 23 locations throughout San Leandro. Shuttle frequency is every 20 minutes. LINKS is funded by businesses along the route through a Business Improvement District Tax and a variety of local and regional agencies. LINKS is managed by the Transportation Management Organization through a board of local volunteers from the business community and City representatives, while the LINKS shuttles are maintained and operated by M.V. Transportation.

The West Berkeley Shuttle is a free shuttle system that provides a direct connection from the Ashby BART station to major employment centers in West Berkeley. The West Berkeley Shuttle operates during peak commute hours on weekdays (5:40 – 8:40 a.m. and 3:00 - 6:00 p.m.). The shuttle makes stops at eight locations in the morning and seven in the evening. Shuttle frequency is every 30-40 minutes. The West Berkeley Shuttle is a partnership between the City of Berkeley, West Berkeley corporate sponsors, and the Bay Area Air Quality Management District. Daily operations are managed by the Berkeley Gateway Transportation Management Association.

The University of California at Berkeley operates a shuttle system called Bear Transit. Bear Transit consists of five daytime routes, two fixed-route "night safety" shuttles during the week, one "To Your Door" night shuttle Sunday to Friday, as well as an additional demand-responsive night shuttle. The five daytime routes operate during the week with service generally provided from 6:45 a.m. to 7:25 p.m. Service frequency varies from 12 to 30 minutes. Night shuttles generally operate from 7:45 p.m. to 2:55 a.m., while the demand responsive night shuttle operates from 2:00 a.m. to 6:00 a.m. The shuttle system primarily serves the main campus, downtown Berkeley, as well as neighborhoods and residences near the main campus. One of the five routes also provides services to the Richmond Field Station. Bear Transit is open to anyone. Individuals affiliated with UC Berkeley ride for free, while all other riders must pay a $1 fare.

The Lawrence Berkeley National Laboratory (LBNL) is located on the hillside above the UC Berkeley campus. To facilitate access for employees and visitors, the LBNL provides shuttle services to the main UC campus, downtown Berkeley, off-site facilities, and the downtown Berkeley and Rockridge BART stations. Three of the five routes primarily serve the campus and Berkeley area. These routes have 10-16 minute frequencies. One shuttle also primarily serves the Rockridge BART station during the morning and evening peak, while the other shuttle serves areas to the west of downtown Berkeley. These two routes have 60 minute frequencies. LBNL shuttles are free, but are only available to LBNL employees, UC Berkeley students or faculty, or Lab visitors.

Finally, a number of other public and private institutions provide free shuttle services to and from locations within Alameda County. These include:

- Alta Bates Summit Medical Center (ABSMC): ABSMC operates a free weekday shuttle service consisting of five routes. The five routes serve the Alta Bates campus, the Herrick campus, the MacArthur BART station, as well as various medical office buildings and parking lots/garages. Operating hours vary between the routes, but range from 4:30 a.m. and 12:40 a.m., with 15-30 minute frequencies.
- Kaiser Oakland Medical Center (OMC): Kaiser OMC operates a free weekday shuttle service between MacArthur BART station, the Oakland Kaiser Permanente Medical Center, and the Mosswood Building. Operating hours for MacArthur BART are from 5:30 a.m. to 9:00 p.m. and from 9:00 a.m. to 5:30 p.m. for the Mosswood building. Shuttle frequency is every 15 minutes.
- Bishop Ranch: Bishop Ranch is a corporate office park located in San Ramon Valley. To accommodate more than 30,000 employees, Bishop Ranch provides nine shuttle routes, four of which serve the Dublin/Pleasanton BART station and the Pleasanton ACE train station. Service is provided free to employees on weekdays from about 6:00 a.m. to 9:00 p.m.
- Cal State University, East Bay (CSUEB): CSUEB provides a free shuttle service between campus and the Hayward BART station for students, faculty, and staff. The shuttle runs on weekdays from about 6:30 a.m. to 10:30 p.m., every 30 minutes. The shuttle is funded via parking citation fees.
- Mills College: Mills College in Oakland operates a free shuttle service between the college, Kaiser, UC Berkeley, and the Rockridge (weekdays) and MacArthur (weekends) BART stations. The shuttle operates from 6:45 a.m. to 10:30 p.m. on weekdays, 11:00 a.m. to 10:45 a.m. on Saturdays, and 11:00 a.m. to 6:50 p.m. on Sundays. The shuttle is available to students, faculty, and staff. Guests must pay a $3 one-way fare.
- Heald College: The Hayward campus for Heald College operates a free weekday shuttle service for students to the South Hayward BART station. Operating hours from BART to the campus are 7:15 a.m. to 5:45 p.m. Operating hours from campus to BART are from 12:00 p.m. to 10:30 p.m.

Paratransit

Fixed-route transit providers are required under the Americans with Disabilities Act (ADA) to provide complementary demand-responsive, origin-to-destination service within three-quarters of a mile of fixed routes.All public, fixed-route operators in Alameda County provide these services. In addition, a number of shuttle services for seniors and disability populations, such as East Bay Paratransit and other city-based services are provided throughout the county, described in Chapter 6.

The greatest number of paratransit trips in the county are provided by East Bay Paratransit (the ADA mandated service); in FY 2009/10, East Bay Paratransit provided close to 700,000 trips for ADA paratransit registrants. In addition, Union City Transit and LAVTA also provide ADA mandated paratransit trips in the Union City and Dublin/Livermore/ Pleasanton areas. Approximately 66,000 annual paratransit trips are provided on LAVTA's Wheels service, while Union City Transit averages approximately 18,000 annual paratransit trips. Figure 5-9 illustrates the geographic range of service areas of each of these programs.

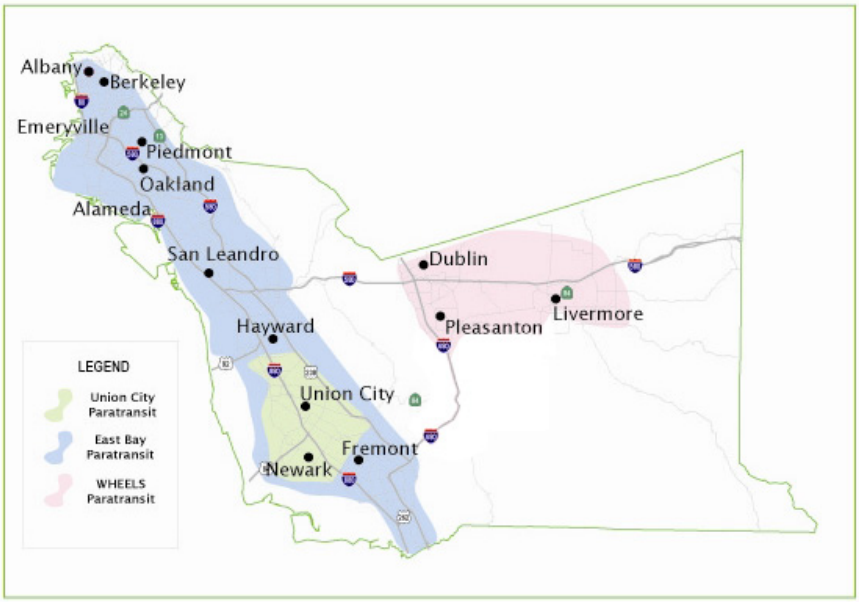
East Bay Paratransit Service

East Bay Paratransit (EBP) service is provided under a joint agreement between AC Transit and BART. In addition to fulfilling a federal requirement of all transit agencies, EBP fills a critical need in the mobility spectrum for people with disabilities who are unable to use fixed-route services. Next day, curb to curb service is available to all those who are registered with the program. No trip requests can be denied if they fall within the hours of service and service area of the paratransit program, which are similar to those of fixed-route.

East Bay Paratransit Van
Source: Nelson\Nygaard

Over 20,000 county residents are registered with the program, and about 60% of them schedule at least one trip per year. For the remainder, the service acts as an important safety net if all other options fall through. Riders pay $4 for trips up to twelve miles. However, fares increase up to $7 for trips of 20 miles or more, including to San Francisco. Due to the range of requirements under the ADA, East Bay Paratransit is more costly to provide than the Measure B paratransit programs, which allow for a number of restrictions such as trip caps or trip denials. East Bay Paratransit trips to ADA registered clients cost over $50 one-way, which is consistent with industry standards for large metropolitan areas. The annual program cost is about $18 million, so Measure B covers less than one-third of the EBP operating costs.

Figure 5-9 Map of Paratransit Service Areas



Source: Nelson\Nygaard

Operating and Capital Funding

For all their differences, Alameda County transit operators share one thing in common: financial challenges. In short, traditional funding sources for transit have decreased precipitously. For example, local funding sources, in the form of property and sales tax revenues, have declined sharply due to the poor economy. In addition, because of the perpetual state budget crisis, revenue that traditionally has gone to transit agencies instead was used to backfill the general fund, resulting in billions of dollars in lost operating revenue in recent years. The funding outlook for transit is described in greater detail in Chapter 11.

As a result of the on-going transit funding crisis, BART, AC Transit, LAVTA and other county operators have cut service, raised fares, or reduced staff – in some cases, all three. In 2009, BART reduced frequencies for evening and weekend service from 15 to 20 minutes – a 33% cut – raised fares by 6%, raised the fare for trips to San Francisco International Airport by $2.50, and after long negotiations with its unions, managed to finally reach agreement on changes to benefits and work rules that will save tens of millions of dollars.

It is AC Transit's seemingly perpetual fiscal difficulties, however, that may have generated the most sensational headlines. A recent Contra Costa Times headline asked "Is AC Transit headed toward a death spiral with (its) latest service cuts,"– and such rhetoric is perhaps unsurprising given that by the time 2010 is complete, the agency will have cut service twice: by 8% in March and by another 7% in October and November. Another cut in service scheduled for December of 2010 would have eliminated half of all weekend service and four of six All-Nighter lines. However, these cuts were able to be avoided after an arbitration panel settled a contract dispute with the labor union that represents drivers and mechanics, thereby saving $13 million. Fares are not scheduled to be raised in the immediate future, but they have been increased as recently as 2009.

In addition to existing needs for the operation of current services, transit operators, especially BART, are facing significant challenges in identifying and securing funding for future capital expenditures. BART's capital needs over the next 25 years have grown substantially as it plans to expand its system, enhance its service and capacity, reinvestment in the current system, and improve passenger security and safety. BART's Capital Improvement Plan (CIP) from Fiscal Year 2008 identifies capital needs of $11.4 billion for the following five categories of projects and programs:

- **System Reinvestment:** The current program for system reinvestment focuses primarily on the replacement and renovation of many of BART's core operating infrastructure and systems, including:
    - Train Control System
    - Communications
    - Traction Power System
    - Wayside Facility Infrastructure
    - Station Renovation/Modernization
    - Vehicle Replacement
- **Earthquake Safety:** Includes retrofit of the BART system, with highest priority on the Transbay Tube and the portion of the system from the west portal of the Berkeley Hills Tunnel to Montgomery Station.
- **Security and Safety:** Program to enhance and expand BART's security and safety programs, including: monitoring and detection programs, increased surveillance activities, system preparedness, public education programs, emergency response drills, and emergency communications infrastructure.
- **Service and Capacity Enhancement:** The primary goal of the program is to attract and serve additional ridership with enhanced station accessibility (especially for persons with disabilities), station area development and access improvements for transit and non-motorized modes, and projects to increase the system's ability to carry additional passengers.
- **System Expansion:** BART has identified a number of significant and expensive system expansion projects in its 25-year CIP. These include:
    - Warm Spings Extension
    - East Contra Costa Expansion (eBART)
    - Oakland Airport Connector (OAC)
    - West Dublin/Pleasanton Station
    - Silicon Valley Rapid Transit Project (San Jose Extension)

As of 2008, of the $11.4 billion BART needs for these five categories of capital expenditures, roughly $5.6 billion has been identified and committed to various projects, which leaves a 25-year capital deficit of approximately $5.8 billion. The 2008 CIP attributes this shortfall to three of the above categories: System Reinvestment ($3.3 billion), Service and Capacity Enhancement ($2.3 billion), and Security ($.2 billion). In fact, the projected capital deficit of BART is 63% of its 2035 capital expenses. Given the current economic climate and the highly competitive environment for transportation dollars, BART will face significant challenges in both the near- and long-term as it seeks to identify funding to bridge the gap in its capital funding needs.

In short, Alameda County transit operators need a significant amount of funding, yet the outlook for these operators, both in terms of near-term operating costs and long-term capital expenditures, is bleak. Traditional funding sources, such as the gas tax, have failed to keep pace with costs, and given the current political climate, it is unlikely that these sources will be increased to meet funding needs. Other traditional state funding sources are highly unpredictable and can no longer be relied upon. Furthermore, it remains unclear as to what effect recent ballot measures (Proposition 26) will have on the ability of local governments to utilize "fees" to fund transportation programs and projects, but the prospect of securing a 2/3 majority of votes for such fees will be extremely challenging. The funding climate will be described in additional detail in Chapter 11, but it is clear that, for at least the short-term, transit operators will continue to have to rely on service reductions, fare increases, and staff reductions to balance their budgets.

Coordination of Services

There are 28 different transit operators in the Bay Area. In Alameda County alone, there are nine operators, plus a wide variety of public and private institutions providing shuttle and paratransit services. While the size and ridership levels of each of these operators vary dramatically, each operator plays a crucial role in the communities they serve. On a localized level, many transit operators are successful in meeting the mobility needs of their designated service areas. However, most transit riders in the Bay Area and Alameda County do not rely on just one operator, but are using multiple transit systems to get from their homes to work, school, or other daily activities throughout the region. It is at this regional level that the often fragmented, inefficient, and poorly coordinated nature of the regional system emerges.

The multitude of operators makes it very difficult to create a user-friendly regional transit system. First, each operator has a separate base fare structure, plus a wide range of discounts, monthly passes, and eligibility requirements. Fare structures, especially in the context of recent fare increases, change frequently, making it difficult for passengers to ensure that they can easily pay their fares. Second, problems with schedule coordination, whether they are real or perceived, can create strong disconnects for customers and reduce ridership. This is a major issue as transit operators try to not only serve their areas, but ensure that their customers can access other providers. For example, many of the smaller transit providers have service frequencies and schedules that do not necessarily match with larger regional systems, making transfers between systems both complex and unreliable. Transfers and coordination between service providers is especially challenging on weekends and at nights when some smaller operators may not provide service or have frequencies that may make transit impractical to use. Third, wayfinding is a crucial process that helps passengers find their origin, destination, and the most convenient path in between. Unfortunately, wayfinding schemes and signage between transit operators are not coordinated, which can disorient, confuse, and, potentially, discourage the user.

Providing the public with the information they need so that transit trips can be efficiently planned is one method to overcome these challenges. 511.org is the region's primary transit information portal. It provides real-time schedule information, a trip planning tool, as well as information on different transit systems, commute programs, and other travel alternatives. The service is available via the internet and the phone, as well as through mobile phone applications. While the development of 511.org has been a significant step forward in transit information, concerns remain about the proliferation and utilization of this service, especially for smaller transit providers, as well as bilingual and low-income populations.

Finally, transit systems in Alameda County are often faced with the problem of "last mile" connections, which generally refers to the last mile gap between a transit station and a user's origin/destination, whether it be home, school, work, or another transit system. In Alameda County, there are a number of physical gaps between transit operators that make creation of a seamless network challenging. For example, ACE

operates a station in both Pleasanton and Fremont, yet both of these stations are miles from the Dublin/Pleasanton and Fremont BART stations, respectively. In both cases, ACE passengers must utilize local bus services to access BART. Similar conditions exist with passengers using the Alameda-Oakland Ferry Service, Amtrak, and BART. Passengers wishing to transfer between these services in Alameda County must either connect via local bus services or, in the case of Amtrak, an additional motor coach trip over the Bay Bridge. The end result is a transit trip that may get an individual where they need to go, but not necessarily in the most convenient or efficient manner possible.

MTC recognizes these issues and has prioritized better coordination of transit systems from not only an operational perspective, but also from a physical planning perspective. In addition to funding 511.org and its ongoing implementation and refinement, MTC recently completed a study that focused on transit connectivity improvements at regional hubs. The 2006 *MTC Transit Connectivity Plan* looked at five prototypical transit hubs that could be found in a variety of Bay Area settings, identified key issues for each setting and transit hub type, and prioritized recommendations for improved connectivity. One of the key recommendations centered on improved technology to allow for universal fares (Clipper "smart cards") and increased utilization of real-time schedule information (NextBus). These two technologies are discussed in greater detail below. Finally, MTC has recently funded the *Transit Sustainability Project*, the goal of which is to identify ways to optimize service delivery and to ensure that transit in the Bay Area is sustainable in the long-term. Key issues to be evaluated in this ongoing study are system coordination, and potentially, system consolidation. This project is discussed in greater detail below.

Technology

Clipper

In order to overcome existing barriers related to coordination between transit systems, as well as the challenges that passengers can experience managing fares and transferring from one transit system to another, many of the major transit agencies in the Bay Area (BART, AC Transit, Caltrain, Golden Gate Transit & Ferry, and Muni) are transferring to Clipper "smart cards." The goal of Clipper is to improve the customer experience and transit accessibility by making it easier for passengers to pay transit fares across multiple agencies and platforms. Ultimately, a "seamless" payment system will result in increased transit ridership throughout the region.

Clipper is a universal fare payment "smart card" that provides "all-in-one" capability to transit users by keeping track of passes, discount tickets, ride books and cash value, as well as recognizing and applying all applicable fares, discounts and transfer rules for different transit agencies. Value can be added to a Clipper card on-line, by phone, in person at Add Value Machines, at retail stores or ticket offices, at work via commuter benefit programs, or automatically using a credit card. Clipper has a five dollar card acquisition fee, but that fee has been waived during the initial rollout of the program.

TransLink, the Bay Area's previous iteration of this "smart card" technology, was phased out in June of 2010 and has since been transitioned to Clipper. However, TransLink cards can still be utilized with the new Clipper interface. Clipper is administered by MTC.

Image from Flickr user AgentAkit. Licence info: http://creativecommons.org/licenses/by/2.0/.

Real-Time Arrival Systems

NextBus is a private company that utilizes Global Positioning System (GPS) data and proprietary software to provide real-time arrival, departure, and travel time information for public transit agencies across the country. The ultimate goal of this technology is to eliminate one of the key barriers to transit use – passengers having to wait for the next vehicle for an unknown period of time. NextBus information is provided on the internet, via wireless devices and mobile phones, or on electronic displays at selected transit stations. In Alameda County, AC Transit, Emery Go-Round, Lawrence Berkeley National Labs, the Alameda/Oakland Ferry System, and the Alameda Harbor Bay Ferry have all contracted with NextBus. LAVTA provides real-time information through its WebWatch system.

FUTURE CONDITIONS

Demographic Projections and Transit Needs

Like all communities in the Bay Area, Alameda County is projected to change significantly over the coming decades. Changes in population, employment, household size, travel demand, and travel cha-racteristics are all factors that will greatly influence the type, service area, and demand for transit services. Chapter 2 documented these changes in much greater detail, but a few observations about how certain demographic trends will shape the provision of transit service in Alameda County can be made here.[1]

First, Alameda County's population is projected to grow substantially. From 2005 to 2035, Alameda County's population will grow by nearly 30%, the third highest growth rate of the nine Bay Area counties. More importantly, the number of people over 65 years of age is projected to increase by more than 160% from 2005 to 2035, the second highest rate in the Bay Area. By 2035, 21% of Alameda County residents will be over 65 years of age. Third, Alameda County had the second highest share of low-income residents (household income less than $42,000) of the nine Bay Area counties in 2007. Finally, total employment and the number of employed residents are projected to increase by 46% and 58%, respectively.

All of these demographic trends reinforce the importance and growing need for high quality, accessible, and efficient transit services in Alameda County. As the population increases and grows older, as commuters increase, and the share of low-income residents expands, transit providers in Alameda County will face an escalating demand for their services. Transit operators must acknowledge and plan for these trends in order to meet this demand in a sustainable manner that supports the region's larger goals for growth and climate change.

Transit Projects

The following section describes a range of "major" capital projects that are in various stages of planning, design, or actual construction. These include several heavy rail extension projects, expanded bus rapid transit, and new ferry service. Several of these projects have secured required funding, while others are still in the early phases of project development and have yet to fully identify project funding.

Warm Springs and Silicon Valley BART

The BART extensions to Warm Springs in Fremont and to the City of Santa Clara effectively constitute a single extension, south from the current terminus at Fremont Station through Warm Springs to downtown San Jose, then northwest to Santa Clara.

The 5.4-mile, $890 million Warm Springs extension is under construction, with a scheduled completion date of 2014. It includes a tunnel under Fremont Central Park and at-grade running in alongside the Union Pacific tracks to the south. Its single largest source of funding (approximately $220 million) is Measure B. It will not include any interim stations, although a potential future station location in the Irvington District of Fremont has been identified. The optional Irvington Station is dependent on future funding to be secured and provided by the City of Fremont. Warm Springs Station will feature close to 2,000 parking spaces. The project is projected to result in 4,700 new transit trips per day upon opening.

The BART to Silicon Valley project will eventually add another 16 miles and six stations. The project is being phased: in Phase 1, which is scheduled to begin construction in 2012 and be completed by 2018, the line will be extended 10 miles to Berryessa in East San Jose, with an interim station and intermodal connection to VTA light rail in Milpitas. This segment is projected to add 46,000 daily riders to the BART system by 2030.

Phase 2 remains unfunded. It is projected to add another 52,000 riders to the system, and would include a connection to California High-Speed Rail at

1 All demographic trends are based on ABAG's Projections 2007.

San Jose Diridon Station, as well as a connection to VTA light rail in downtown San Jose and to Caltrain at Diridon and in Santa Clara.

Together, the Warm Springs and Silicon Valley BART projects would result in much higher usage of BART stations in Alameda County. With this in mind, BART and VTA have collaborated on a *BART Silicon Valley Rapid Transit Core Stations Modifications Study* of capacity demands at existing BART stations. The study identified required improvements at stations including stations in Alameda County. Funding sources have not yet been identified. One capacity expansion that might eventually be required is a direct connection between the Dublin/Pleasanton and Fremont lines; currently, riders must travel north to Bay Fair Station before transferring.

Oakland Airport Connector

The OAC will be an Automated Guideway Transit (AGT) connection between the Coliseum/Oakland Airport BART Station and Oakland International Airport, replacing the existing AirBART shuttle service (see previous section, "Existing Conditions"). The 3.2-mile, $484 million project recently broke ground and is scheduled to open in 2014. $89 million of the OAC's funding came from Measure B.

As a grade-separated (elevated) system, the OAC will be able to avoid the traffic congestion that currently results in AirBART travel times of as much as a half-hour each way during peak periods. In-vehicle travel time for a one-way trip on the new service is projected to take approximately 13-15 minutes. As an automated system, it will also be able to operate relatively frequently without incurring additonal labor costs, and headways are projected to be every four minutes. However, its BART and airport stations will be slightly farther from each facility than existing AirBART stops, and fares, while not yet set, may be up to $6 each way. Ridership is projected to grow from about 2,650 per day on AirBART in 2008 to between 3,770 and 4,810 by 2020, according to BART estimates based on varying assumptions about fares, parking rates and airport patronage.

Water Emergency Transportation Authority and the Berkeley Ferry Terminal

The San Francisco Bay Area Water Emergency Transportation Authority (WETA) was established in 2008 via state legislation with the goal of consolidating and coordinating existing passenger ferry services, planning for the future expansion ferry services, and coordinating ferry transit emergency response services. Currently, the Alameda-Oakland Ferry Service (AOFS), the Alameda Harbor Bay Ferry (AHBF) service, and the Vallejo BayLink all provide transit ferry service between San Francisco and the East Bay. These services and their operations are scheduled to be consolidated under WETA management in mid-2011. Other ferry services currently operated by the Golden Gate Bridge, Highway and Transportation District (serving Larkspur and Sausalito) are not part of this consolidation plan and will not be managed by WETA.

In addition to managing existing services, WETA is also responsible for the planning and implementation of a significant expansion of ferry services and terminals throughout the Bay Area. In Alameda County, two new routes have been proposed. The first is a new service between a new terminal in Berkeley and the San Francisco Ferry Building. This service is projected to take 22 minutes and reach ridership levels of approximately 1,700 weekday passengers by 2025. The proposed Berkeley terminal will be located at the Berkeley Marina, a 100-acre site located off the west end of University Avenue. Total projected costs for this new ferry service are estimated to be $57 million, which includes $34 million for terminal construction and $23 million for new ferry vessels.

The second proposed new service for Alameda County is between Oakland and a new ferry terminal at Oyster Point in South San Francisco. This new service is proposed to operate every 30 minutes during peak commute periods only. Completion of the new South San Francisco terminal is scheduled for 2011, with initial ferry service also beginning in 2011. Funding for these two new terminals and routes has been made available from Regional Measure 2, Proposition 1B, as well as local and federal funds.

East Bay Bus Rapid Transit

AC Transit is developing a BRT project in the Telegraph Avenue/International Boulevard/East 14th Street corridor between the downtown Berkeley BART Station and either the San Leandro or Bay Fair BART Station. The BRT project would replace the existing Line 1R rapid service, and possibly Line 1 local service as well.

The project is currently undergoing final environmental review, so its final design has not yet been determined. However, the project alternative under study would feature bus-only lanes and bus stops in the center of the street in most of the corridor within Oakland, and in parts of San Leandro (there would be

no dedicated lanes in Berkeley). Stops would feature raised platforms for level or near-level boarding, and ticket vending machines would allow prepaid boarding through all doors. Stops would be about every one-third-of-a-mile on average, and weekday headways could be every 5 minutes.

AC Transit has projected significant improvements in reliability, speed (approximately 18%) and ridership (approximately 18,000 more boardings per day in the corridor, and nearly 7,000 new transit trips daily overall). However, there could be significant parking and traffic impacts, depending on the final configuration.

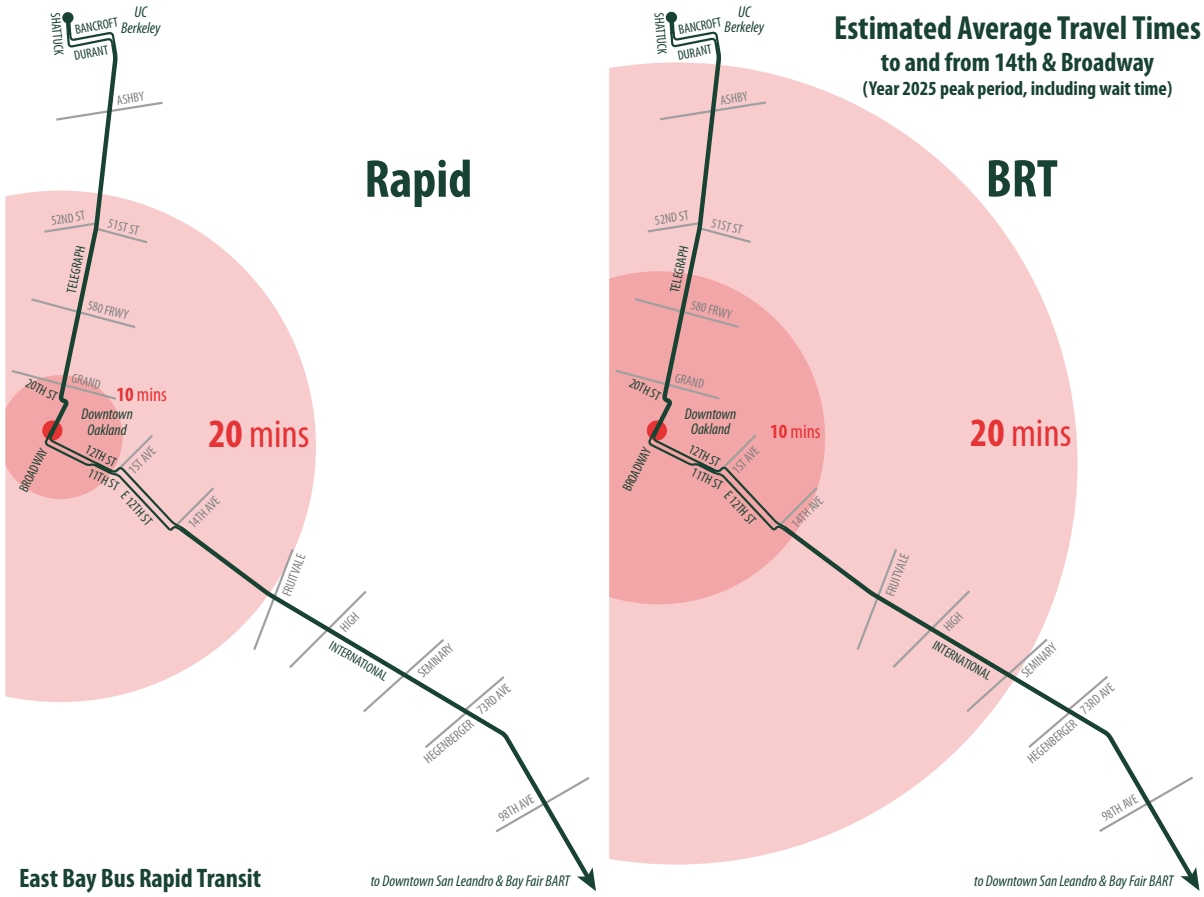
The project is projected to cost approximately $235 million, and has already obtained most funding from local and regional sources (a $50 million federal Small Starts grant is also anticipated). Final environmental review is expected to be completed in the coming months, and the project should go before each city's council for final local approvals shortly thereafter. It is scheduled for completion in 2015.

Figure 5-10 shows projected travel times to and from downtown Oakland for BRT service (or for rapid bus service if BRT were not implemented) in the year 2025, including average wait times for buses.

The Transbay Transit Center

The Transbay Transit Center is the Bay Area's vision for a new "Grand Central Station of the West" – a regional transit hub that will provide connections between eight Bay Area counties and 11 regional transit agencies. The $4.185 billion project will be located in San Francisco's SoMa district (between Second and Beale Streets at Mission Street), and includes the replacement of the recently demolished Transbay Terminal at First and Mission Streets, the extension of Caltrain and High-Speed Rail from Fourth and King Streets into downtown, and the construction of new

Figure 5-10 Projected BRT Travel Times



residential, commercial, retail, and office uses, as well as new public open space. Project construction began in 2008 and full project build out is scheduled for 2018.

The new five-level Transit Center will include a dedicated bus deck that will serve as AC Transit's primary bus facility for its Transbay bus services. In addition, new elevated bus ramps will be constructed to provide direct connections between the Transit Center and the Bay Bridge. While the Transit Center is being built, a temporary bus terminal was constructed on the SoMa block bordered by Howard, Main, Folsom, and Beale Streets. The temporary terminal opened in August of 2010 and will accommodate all local, regional, and paratransit services that have routes to and from this area.

Full funding for the Transbay Transit Center has yet to be secured, but roughly $2.3 billion of committed funds come from a variety of local, regional, state, and federal sources.

Livermore BART

Another planned BART extension in Alameda County would continue 11.3 miles past the current terminus at Dublin/Pleasanton to stations in downtown Livermore and at Vasco Road, near Lawrence Livermore National Laboratories. It would include intermodal connections to ACE (see previous section, "Existing Conditions") or, possibly, to high-speed regional rail service (see next item, "Altamont Corridor Rail Project") at both locations.

The preferred alternative (2B), shown in Figure 5-11, was unanimously endorsed by the BART Board of Directors, the Livermore Planning Commission, Livermore City Council, and Tri-Valley Regional Rail Policy Working Group. From Dublin/Pleasanton, the alignment would continue in the median of Interstate 580 to a point just east of Isabel Avenue, where it would continue in a tunnel under Portola Avenue to the Union Pacific/ACE right-of-way, from whence it would run at-grade. There would be a train yard located along the extension.

The selected alternative had the highest projected ridership of any of the studied alternatives, 31,900 daily boardings in 2035. It would also have a capital cost of $3.83 billion. There is as yet no strategy for funding the Livermore BART extension.

Altamont Corridor Rail Project

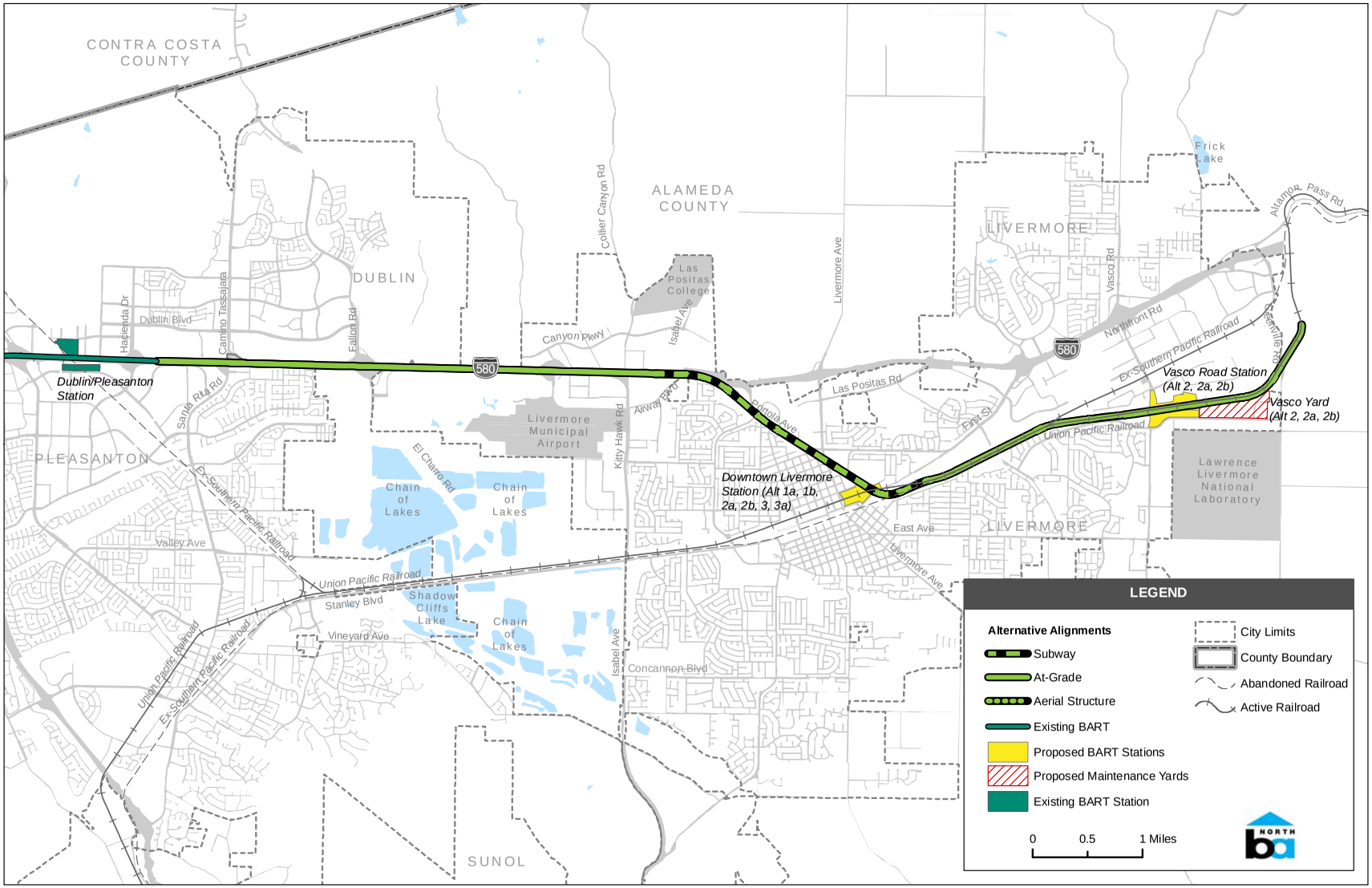
In 2008, the California High-Speed Rail Authority decided to route future high-speed trains between the Bay Area and Central Valley over Pacheco Pass in Santa Clara County instead of the Altamont. Nonetheless, the Altamont remains a regional priority for major investments in transit improvements, as a significant commuter market already exists between San Joaquin County and Alameda and Santa Clara counties, and substantial population growth is projected in San Joaquin and other Bay Area-adjacent Central Valley counties. The corridor was identified as a priority in the 2007 MTC *Regional Rail Plan* (see later section, "BART Metro"), and in 2008 the High-Speed Rail Authority made it eligible for high-speed rail funding under Proposition 1A, the $9.95 billion bond measure approved by voters.

The Altamont Corridor Rail Project (Figure 5-12) would result in "semi-high speed" – potentially 150 miles per hour or faster – service in portions of the ACE corridor between Stockton and San Jose, on passenger-only tracks either within the existing Union Pacific/ACE right-of-way or along new alignments. Through the Alternatives Analysis process, a range of potential alignments and station locations have already been identified, including possible BART connections in Union City and Livermore (see previous item, "Livermore BART"). There would likely be Alameda County stations in Livermore, Pleasanton and Fremont. Trains would be compatible with and could use high-speed rail tracks in the Central Valley, enabling direct service to Sacramento and Modesto. The project is a collaboration between CHSRA, the San Joaquin Regional Rail Commission and the Federal Railroad Administration.

Dumbarton Rail

The Dumbarton Rail project would connect the Union City BART Station – which is currently being converted into an intermodal hub that will also serve Amtrak Capitol Corridor – to the Peninsula via a new rail bridge over San Francisco Bay just south of the Dumbarton Bridge, which would take the place of an abandoned trestle that was used by freight trains until the 1980s. Service would be provided to Fremont's Centerville Station, and new stations are planned in Newark (along Willow Avenue near Thornton Street) and East Menlo Park. Trains would continue onto the Caltrain right-of-way in Redwood City, and compatible commuter railcars would be used.

Figure 5-11 Alternative 2B - Portola-Vasco



Source: WSA; AECOM, 2010.

ALTERNATIVE 2B - PORTOLA-VASCO

FIGURE 1-2

Figure 5-12 Altamont Corridor Connectivity

As described in the project's 2006 Environmental Phase 1 Alternatives Analysis and Project Purpose and Need, service would consist of six weekday trains departing Union City during the AM peak period, with three continuing north from Redwood City to San Francisco, and three continuing south to San Jose. In the evening, all would return to Union City. Updated ridership projections incorporating revised land use projections, higher tolls on the Dumbarton Bridge and more frequent service reportedly show an increase from previous figures to 6,000 or more boardings per weekday by 2035.

The San Mateo County Transportation Authority (SMCTA) is currently conducting phase two environmental review. The project has been in planning for well over a decade, but has not yet secured full funding. It is estimated to cost close to $700 million to construct, only about half of which has been secured.

A high-speed rail bridge in the same corridor was studied by the California High-Speed Rail Authority as part of an Altamont Pass alignment, but another alternative was selected. CHSRA found that such a bridge would cost several billion dollars and could have significant environmental impacts. However, the Altamont Corridor Rail Project, while it does not include a Dumbarton Bridge, could potentially make use of a high-speed rail-compatible bridge to connect the Central Valley and Tri-Valley directly to Peninsula communities including Palo Alto. As currently planned, the Dumbarton Rail bridge would not be high-speed-compatible.

Bus Rapid Transit Projects

In addition to AC Transit's East Bay Bus Rapid Transit project, LAVTA's Tri-Valley Rapid project, and AC Transit's existing Lines 1R and 72R (see previous section, "Existing Conditions"), rapid bus projects have been proposed for several other Alameda County corridors. One is in active planning: AC Transit's Transbay Bus Rapid Transit or Grand-MacArthur project would extend across the Bay Bridge into San Francisco, would consist of traffic signal priority and other relatively modest upgrades, and is projected to result in 1,500 new transit trips per day.

Figure 5-13 Select Elements of Bus Rapid Transit

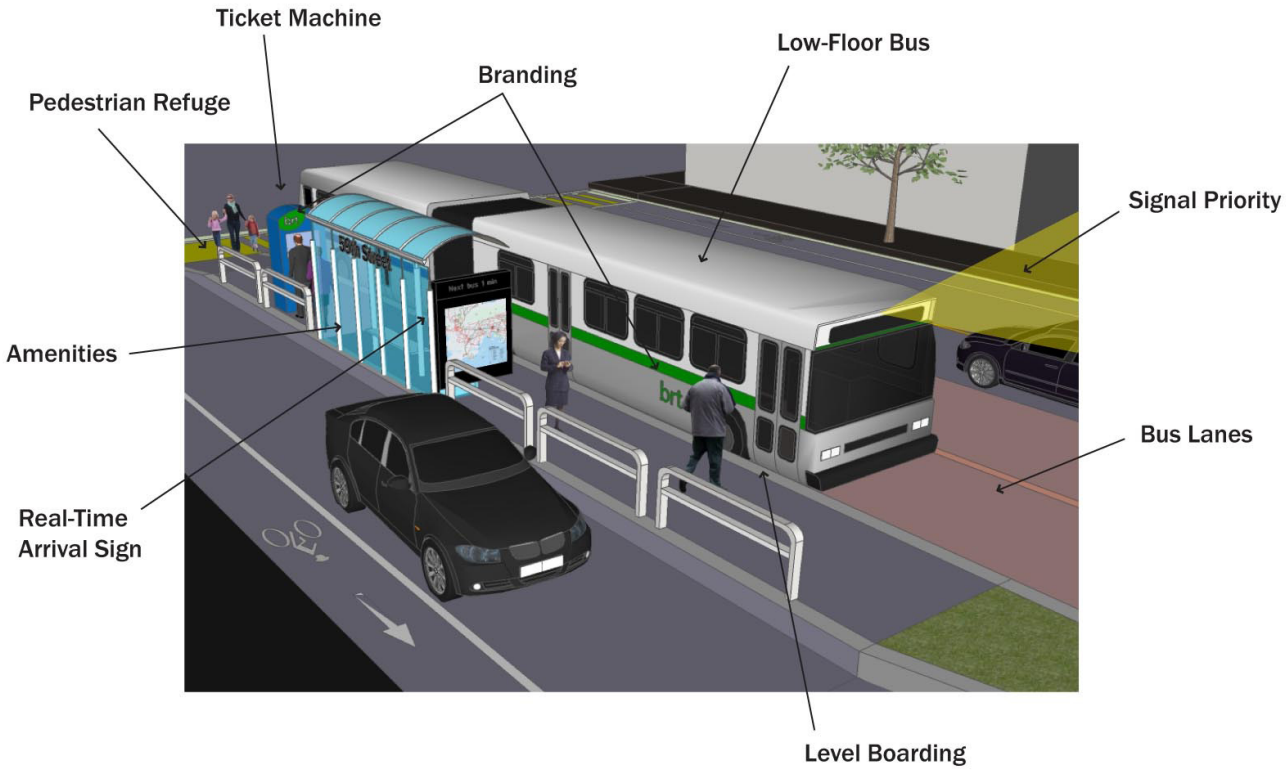


Image from Nelson\Nygaard.

The term "bus rapid transit" is used to describe a range of projects, from those consisting of relatively modest upgrades to existing bus service (such as Lines 1R and 72R, which AC Transit refers to simply as "rapid bus" lines) to those including more extensive infrastructure, almost resembling light rail (such as the East Bay Bus Rapid Transit project). Typical rapid bus projects, as shown in Figure 5-13, can cost as little as a few hundred thousand dollars per mile to implement, but even the East Bay Bus Rapid Transit project is projected to cost much less to construct (about $14 million per mile) than a light rail line would in the same corridor – and for this reason, BRT may be an attractive alternative for many corridors in Alameda County.

One fact about BRT that is important to bear in mind is that it consists of a *package* of improvements that can be implemented individually and incrementally. Indeed, rapid bus projects – which typically rely on nothing more expensive or extensive than limited stop spacing, low-floor buses and signal priority to improve speed and reliability – include the sorts of relatively simple improvements that could be applied across multiple corridors at relatively low cost.

Streetcars

In the first part of the 20th Century, Alameda County enjoyed an extensive network of streetcars. There has been discussion in recent years of restoring service in downtown Oakland and Emeryville.

In 2004, BART, the City of Oakland and the Port of Oakland considered an Oakland project as part of the Jack London BART Feasibility Study. More recently, an advocate proposal has received media attention, Oakland elected officials have expressed support for the concept, and staff has sought funding for further study. While the BART study considered various alignments connecting City Center to Jack London Square, more recently the focus has been on Broadway, where a free shuttle service was recently introduced (see previous section, "Existing Conditions"). The alignment could be extended north of City Center.

In Emeryville, meanwhile, advocates have proposed an alignment connecting to the MacArthur BART Station.

Figure 5-14 Portland Streetcar

Image from Flickr user aaron_anderer. Licence info: http://creativecommons.org/licenses/by/2.0/.

Numerous U.S. cities have implemented or are planning streetcar lines. Probably the best known of these is Portland, Oregon, where studies have found a significant impact on nearby property values and development (Figure 5-14). Streetcar capital costs are generally higher than for BRT projects, but lower than for other rail projects; recent streetcar projects have cost close to $50 million per mile. Typically, streetcars operate in traffic lanes and stop every few blocks, and are thus no faster than local buses. However, in addition to their economic development impact, streetcars offer a higher-quality ride and image and have been found to attract significantly more riders than buses. Streetcars can be modern vehicles, such as those used in Portland; "replica" models based on historic designs; or vintage cars, although relatively few of the latter remain available.

BART Metro

In 2007 MTC, in collaboration with BART, Caltrain and the California High-Speed Rail Authority, completed a long-term Regional Rail Plan. Among its recommendations was an evolution in the nature of BART. Unlike most third-rail systems, BART is not a "metro" as the term is generally understood. It is more suburban (just 16 of its 44 stations are in the central cities of San Francisco and Oakland); it runs relatively infrequently (every 15 minutes weekdays); its stations are often several miles apart; and even its cars, with their rows of padded seats, have attributes of commuter rail. BART might be described as a "hybrid" of commuter rail and a metro, striving to serve distinct urban and suburban markets with a "one-size-fits-all" model.

Recognizing that opportunities for further suburban expansions are approaching their limits, the Plan recommended that BART expand the capacity of its core system with a second Transbay Tube (featuring a new line from Oakland into San Francisco), infill stations on existing lines, and new tracks in select locations to allow additional service within the urban core. "BART Metro" service might even be provided by different cars with fewer seats and more doors. At the same time, express or "skip-stop" service and more comfortable cars could be provided for longer trips, and short extensions could offer connections to other rail systems. In short, BART would essentially operate two systems over the same tracks: one focused on the urban core, and the other serving suburban commuters.

While it is yet to be defined, the BART Metro concept holds a number of possible implications for long-term planning in Alameda County:

- **New BART Line and Stations.** While an alignment for a second Transbay Tube was not identified by the Regional Rail Plan and is yet to be determined, in its 2002 Bay Crossings Study MTC identifed an alignment extending west from the "Oakland Wye" with a new Jack London Square station at Clay Street. Another possible alignment would feature a fourth set of tracks through the Wye (through 12th Street/Oakland City Center and 19th Street Oakland stations) extending under the Oakland Estuary and across Alameda. There could be new stations in Alameda's West End and/or at Alameda Point, and capacity for travel on or off of the island's western end, a corridor now served only by the Posey and Webster Tubes, would be greatly expanded. A second Tube could include tracks for conventional or high-speed rail, and would likely connect to San Francisco's South of Market district and west side.
- **Infill Stations on Existing BART Lines.** Irvington in Fremont was previously identified as an "optional" station on the Warm Springs extension. Another potential infill location closer to the urban core is near 8th Street and East 14th Avenue in Oakland, adjacent to the San Antonio District. The distance between Lake Merritt and Frutivale stations is approximately 2.75 miles, and census tracts within walking distance of the site have among the highest population densities in Alameda County (well in excess of 30,000 persons per square mile, according to the 2000 census). BART is at-grade in this area, which could reduce station construction costs and impacts.
- **Increased BART Service.** While the extent of the "urban core" in which BART would increase service is unclear, it would likely include all Oakland stations (except possibly Rockridge) as well as the Ashby and downtown Berkeley stations in Berkeley. It might also include the San Leandro and Bay Fair stations. Combined weekday headways at some stations are now as little as 3.75 minutes (at West Oakland); however, evening and Sunday headways for service to and from San Francisco at all other Alameda County stations are just 20 minutes, and for stations on the Richmond line north of MacArthur, including Ashby and downtown Berkeley, transfers are required.

Policy

AB 32, SB 375, and Sustainable Community Strategies

As discussed in Chapter 3, California Assembly Bill 32 (AB 32), also known as the California Global Warming Solutions Act, was signed into law by Governor Arnold Schwarzenegger in 2006. The legislation seeks to reduce carbon and other greenhouse gas (GHG) emissions in California to year 1990 levels by 2020. For the transportation sector, the most relevant piece of implementing legislation associated with AB 32 is Senate Bill 375 (SB 375). SB 375 seeks to reduce vehicle miles traveled (VMT) by better integrating land use and transportation planning. While ultimate land use planning authority will continue to reside with cities and counties, metropolitan planning organizations (MPOs) will be required to include in the next update of their Regional Transportation Plans (RTPs) integrated land-use and transportation plans called "Sustainable Community Strategies" (SCSs). RTPs must be consistent with SCSs, meaning that transportation funding decisions would be used as leverage to encourage, but not require, local land use authorities to amend their general plans in order to be in compliance with regional plans.

In order for cities and regions to meet their reduction targets, SCSs will undoubtedly need to emphasize the importance of coordinated land use and transit planning. The success of land use planning scenarios that seek to increase density by focusing population and employment growth in existing centers will be largely dependent on the availability of high quality and accessible transit services with sufficient frequency and capacity to accommodate the transit demand and mode shift a coordinated land use strategy would make possible. Similarly, the ability of a region to increase transit ridership and decrease VMT is largely a function of the density of population, housing, and employment in areas immediately surrounding transit services.

SB 375 recognizes the critical role that the linkage between land use and transit will play. More specifically, SB 375 includes a number of elements intended to support transit-oriented development (TOD) and offers exemptions to, or streamlining of, California Environmental Quality Act (CEQA) environmental review requirements for developmental projects that conform to a region's SCS or meet other criteria related to density, affordability, energy efficiency, and access to transit.

It should be noted that MTC has adopted as a target for its SCS process that the region must house 100 percent of its projected 25-year growth at all income levels without displacing existing low-income residents. It is unclear how this might impact transit projects in "gateway" areas such as Alameda County, where projects might extend beyond regional boundaries.

SB 375 and AB 32 are discussed in more detail in Chapter 3.

Transit Sustainability Project

In recent years, transit operators in Alameda County, the Bay Area, California and the U.S. have been confronted with declining revenues and annual deficits in their operating budgets amounting to tens of millions of dollars. They have responded by raising fares and reducing service – in some cases repeatedly. AC Transit, for example, has suffered through multiple rounds of service reduction (see previous sections).

However, a longer-term structural problem also exists: increasing wage and benefit costs (and to a lesser extent, fuel costs) have resulted in declining cost-effectiveness, and in its 2009 *Transit in Transition report,* MTC noted that since 1997, operating costs for Bay Area transit providers had increased by 50% – yet service had increased by only 16%, and ridership grew just 7%. The region's average subsidy per transit trip, $3.58, was significantly higher than in Boston ($2.38), Chicago ($1.97), Philadelphia ($1.88), Los Angeles ($1.87) or New York ($1.68). In the *Transportation 2035 Plan for the San Francisco Bay Area,* MTC projected a total operating deficit for Bay Area transit providers over the next 25 years of $8.5 billion. Moreover, revenue sources can be unreliable; in recent years, State Transit Assistance (STA) funding has been cut, and sales tax revenues have fluctuated depending on the economy.

With all this in mind, MTC has begun the *Transit Sustainability Project,* or TSP. According to MTC, the project will:

> *establish a framework and implementation plan for a more robust, financially viable transit system…The TSP will include a comprehensive, fact-based analysis of the existing system focused on service design and delivery, financial viability, and decision-making structures. The analysis will also acknowledge the role external factors play in the long-term viability of the transit system, such as land use and transportation pricing, which are*

critically important as the region grapples with preparing the Sustainable Communities Strategy required by SB 375.

This "three-legged stool" approach – including cost containment, service design and delivery, and governance and decision-making – has the potential to result in far-reaching recommendations that could prove controversial. For example, MTC is planning "comprehensive service analyses" of sub-regions including the Inner East Bay and Transbay Corridor – evaluations that could result in recommendations to reduce or consolidate some BART, AC Transit, and Union City Transit service. However, any recommendations will be carried out in collaboration with local entities, and the study will also consider means to increase revenues, such as a regional gas tax. The project is scheduled for completion in late 2011.

SUMMARY OF NEEDS

The provision of transit service in Alameda County is multi-layered, inter-connected, and, above all else, complex. Transit needs vary greatly from one community to another, yet each transit operator is united by the goal of providing high-quality transit to enable greater mobility and accessibility throughout the county and region. The current state of transit in Alameda County is a story of ambition tempered by an unprecedented economic downtown. On one hand, transit agencies in Alameda County are at the forefront of transit planning, as operators, local governments, and communities explore innovative practices designed to not only improve existing services, but transform the way people travel in the Bay Area. Furthermore, there exists a number of high-profile transit projects within Alameda County, such as High-Speed Rail, several BART extensions, the Oakland Airport Connector, and Dumbarton Rail, which are designed to increase ridership and improve mobility. These projects have seen significant investment and allocation of resources thus far, and moving forward, they will continue to reshape Alameda County's transit network.

At the same time, this grand vision has proven difficult to move forward in an era of disappearing, unpredictable, and increasingly competitive revenue streams. As Alameda County plans for the next countywide transportation plan and transportation expenditure plan, it is clear that transit will continue to play an increasingly crucial role. As such, a number of the current and future needs must be addressed to ensure that transit service in Alameda County is high-quality, efficient, accessible, supportive of land use and climate change goals, and financially sustainable. A number of high-priority needs are briefly summarized below.

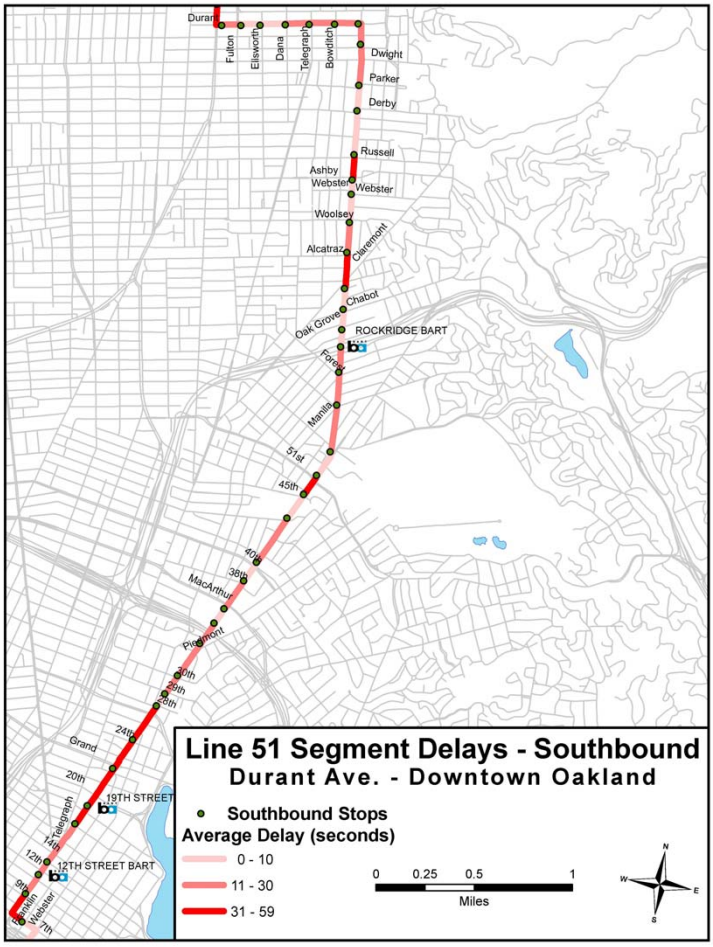
- **Connectivity:** Given the size of the service area and number of transit providers in Alameda County, it is clear that improved transit connectivity is a major need that must be addressed moving forward. Poor connectivity and inefficient transfers between systems is one of the biggest obstacles to encouraging mode shifts and building transit ridership. The long-term ability of major capital expenditures – BART extensions, regional rail improvements in the Altamont corridor, bus rapid transit – to dramatically shift travel behavior throughout the county and region will largely depend on the presence of strong linkages between systems. For example, the Altamont Corridor Rail Corridor project, which would provide "semi-high speed" service in the ACE corridor between Stockton and San Jose, would be mutually supportive of the proposed Livermore BART extension, but only if crucial connections are made between stations. On a local level, transit operators must continue to address the "last mile" problem. Access improvements at key stations that emphasize convenient transit connections, as well as safe and accessible non-motorized travel options will significantly enhance the customer experience and increase transit ridership. Finally, the county and region must continue to refine and expand a universal fare system, as well as explore ways in which to provide real-time transit information to passengers in a beneficial, convenient, and accessible manner.
- **Expansion vs. System Maintenance/ Enhancement:** One of the inherent challenges in the growth of any transit network is the conflict between expanding the network to capture new riders and maintaining/enhancing core service to ensure that the needs of existing riders are met. Not surprisingly, this conflict often takes place in the context of a highly competitive funding environment. This tension is especially perceptible in Alameda County. As the county continues to grow the demand for "expanded" transit service (namely BART) that connects suburban population and employment centers to the larger region will only increase. While providing regional transit service to these areas is important, such multi-billion dollar expansions ultimately take a significant "slice of the transit pie," thereby limiting the degree to which resources can be allocated to the maintenance and enhancement of local and inner core services. These services

not only help to funnel ridership to BART and other regional rail operators, but they are also the primary transit choice for low-income and minority residents living in Alameda County's urban core. Given the recent financial difficulties of AC Transit, the county will have to be even more cognizant of this conflict in its efforts to meet the needs of all of its riders.

- **Rapid and High-Quality Bus Service:** While regional rail services are a vital piece of the transit network, local bus services are the backbone of transit service in Alameda County, as they provide the first transit linkage between neighborhoods and the larger region. AC Transit, LAVTA, and Union City Transit provide the majority of local bus service in the county, and for each of these providers certain corridors and routes experience higher ridership than others. These routes will play an important role as the county and region seek to focus population and employment on key corridors. Improvements to these corridors that emphasize high speeds and reliability will be necessary to meeting increased demand. AC Transit has already begun the planning processes for its primary bus rapid transit corridor and LAVTA's new rapid route is set to begin service in 2011. These projects are the first of their kind in Alameda County, and will help to guide the future development of similar bus services.
- **Financial Sustainability:** Transit agencies across the county are cutting service, laying off employees, and raising fares in an attempt to balance the budget. There is little hope on the horizon as funding for transit is at best uncertain, and, at worst, declining further. Above all other issues and needs, it is likely that operators will need to rethink how they provide service. The traditional means of achieving financial certainty will no longer suffice in this economic climate and operators will have to consider how to overhaul their systems. Achieving financial sustainability will require data-driven evaluations and studies that emphasize and prioritize productivity-related improvements across entire systems.

  Several operators have already begun these efforts and there exist several regional precedents to build upon. For example, SFMTA's Transit Effectiveness Project (TEP) was the first "top-to-bottom" evaluation of Muni in decades. It resulted in data-driven recommendations designed to improve customer convenience, reduce travel time, and increase reliability. AC Transit has performed similar, yet smaller evaluations of some of its key routes in an effort to reduce delay and improve reliability. For example, the *Route 51 Service and Reliability Report* resulted in numerous small-scale recommendations, such as splitting the route to isolate delays, bus stop consolidation, schedule refinements, improved passenger amenities, and new operator and dispatch procedures. Finally, MTC's *Transit Sustainability Project* will build off of the TEP, is designed to address these issues on a regional scale, and will begin the difficult conversation of how to improve regional efficiency and sustainability for the Bay Area's 28 transit operators.

  To achieve long-term financial sustainability for transit agencies in Alameda County, difficult and likely unpopular decisions will need to be made. The foundation for any systemic changes to how transit service is provided in Alameda County should ultimately be based on comprehensive and fact-based analysis. In short, how those decisions are made is as critical as their final outcomes.
- **Capacity:** Finally, a number of cultural, demographic, political, financial and environmental trends point toward increasing demand for transit service over the coming decades. To accommodate this demand, and to be able to achieve equity and environmental goals, transit service will have to be improved in all of the ways already identified -- but adequate capacity will also have to be provided, including sufficient frequency of service to attract the maximum possible number of new users. This issue is intertwined with the previous issues, particularly financial sustainability. In short, simply maintaining and enhancing the existing transit system will be a significant challenge; but over the long term, major expansion will become necessary.



Source: AC Transit: Route 51 Service and Reliability Report, December 2008

CHAPTER 6. COMMUNITIES OF CONCERN

"Communities of Concern" is a term adopted by the Metropolitan Transportation Commission (MTC) to refer to communities in the Bay Area that face particular transportation challenges, either because of affordability, disability, or because of age-related mobility limitations. To begin to address the needs of these communities, MTC created the Lifeline Transportation Program. The program originated during the period of federal and state welfare reform in the late 1990s. By combining a variety of federal, state, and local funds, the program was able to fund a diverse range of fixed-route and demand-responsive projects, including continuing and expanded fixed-route transit, shuttles, taxi vouchers, guaranteed ride home programs, children's shuttles, auto loans, car-sharing, and mobility management. Fourteen projects in Alameda County have been funded since the inception of the Lifeline program, in addition to dozens of local Measure B-funded programs that address the mobility needs of people with disabilities and seniors. Despite the implementation of this broad array of programs, many transportation gaps remain.

Image from ACTIA

INTRODUCTION

This chapter provides an overview of the transportation programs that have been implemented in Alameda County to address the specific needs of low-income residents, people with disabilities, older adults, and youth. Particular attention is paid to the transportation needs that these population groups continue to face.

A 2001 evaluation of the Lifeline program recommended community-based transportation planning as a way for communities to set priorities and evaluate options for filling local transportation gaps. As a result, in 2002, MTC launched the Community Based Transportation Planning (CBTP) Program. Since that time, CBTPs have been completed in five communities of concern in Alameda County, including South and West Berkeley, East and Central Oakland, Alameda, unincorporated Central County, and West Oakland.

EXISTING CONDITIONS

Transportation Needs and Options for Communities of Concern

Low-Income Populations

As indicated in Chapter 2, almost 90% of trips in Alameda County are taken in cars, either as drivers or passengers. Yet 13% of households in Alameda County do not own cars, which is the second highest rate in the Bay Area. In addition, many households are unable to meet their mobility needs with only one available car. The correlation between limited auto availability and low income indicates a greater dependence on public transit among impoverished county residents than the rest of the population. Overall, 11.4% of County residents take public transit to work, but the proportion among low-income residents is much higher. AC Transit ridership surveys indicate that 72% of bus riders are low-income.

The CBTPs identified the cost of buying and operating a car, including purchase, insurance, gas, and maintenance, as representing a major concern for low-income residents. Overall, the combined effects of steadily eroding transit services that disproportionately serve low-income residents, with the high costs of owning a car, have had a substantial impact on the mobility of this segment of Alameda County's population.

In addition to the challenges associated with auto ownership, the hundreds of residents who provided input to the CBTPs ranked the following as the greatest concerns for low-income residents of the County:

- The high cost of using AC Transit and BART
- Safety from crime while waiting for or riding the bus
- Poor walking conditions, in particular with regard to lighting and sidewalk conditions
- Lack of bus service in the evenings and on weekends

Besides the key concerns mentioned above that were reflected in all CBTPs, some of the specific needs identified in each of the CBTPs include:

South and West Berkeley

- Improved transit frequency
- Improved crossing conditions and lighting for pedestrians and bicyclists along transit corridors and near BART stations.
- Increased markings on pavement for bicyclists.

East and Central Oakland

- Cost of using AC Transit and BART, particularly due to the additional cost of transfers, the precision with which transfer windows are recognized and the short window in which they are valid.
- Safety from traffic and from crime at bus and BART stations, as well as on board AC Transit buses.

West Oakland

- More bus service on weekends, at night and early in the morning
- More frequent daytime bus service
- Lower cost for buying and operating a car (purchase, insurance, gas, maintenance, etc.)

Central County (unincorporated)

- Information about transit and transportation programs
- Lack of sidewalks, bicycle lanes, crosswalks and other amenities.
- Inability to access basic needs and services (grocery stores, hospitals, etc.) with the existing transportation system.

Alameda

- Impacts on bicyclists of the following: speed of automobiles, poor pavement conditions, availability of bike lanes, and ability to transfer to other modes with a bicycle

- Need for traffic calming in several locations for pedestrian safety.
- Inadequate facilities for dropping off and picking up children at schools

Mobility Options for Alameda County Youth

Twenty-three percent of Alameda County's population is under 18 years old. A higher proportion of youth fall below the poverty line than in the overall population (13.7% versus 10.9%). As such, youth whose families do not have access to a car and are dependent upon public transit are particularly sensitive to fare increases and service cutbacks. This can affect their school attendance. According to an AC Transit report "2008/2009 On-Board Rider Survey", 22.8% of riders are between 13 and 17, and 25.6% of riders pay the "youth fare." AC Transit provides a Youth Pass that is available until age 19, and has become the focus of much attention due to fluctuations in cost. The 31 day pass was priced at $27 until 1999, and then lowered to $15 in 2000, which is the cost at the time of this report, although increases are currently under consideration. Union City Transit makes Youth Passes available for $29, and LAVTA has a $60 Student Pass.

All three agencies have considerable service that is student oriented. 60,000 daily trips on AC Transit are taken by school-age children, with dozens of routes specifically designed to meet the needs of students. A substantial proportion of LAVTA's routes provide service to schools, and approximately 21 percent of Union City Transit's riders are youth. However, as these agencies face continued financial challenges, cutbacks in service and fare increases will have a disproportionate impact on youth who have limited alternatives available to affordable fixed-route transit.

People with Disabilities and Older Adults

In many parts of the U.S. the passage of the Americans with Disabilities Act (ADA) in 1990 resulted in a dramatic expansion of transportation options for people with disabilities, but also a steady scaling back of options for those who may have disabilities that do not meet the strict paratransit eligibility requirements of the ADA. As a result, while the ADA has improved mobility for some, many frail seniors who relied on social service transportation would be less mobile than before passage of the ADA if not for additional investments in specialized services, such as Alameda County's Measure B.

In the past eight years, over $60 million of Measure B funding has been invested in transportation programs that serve the needs of people with disabilities and seniors in Alameda County. The allocation of 10.45% of Measure B funding for elderly and disabled transportation programs reflects the value placed on accessible transportation by the voters of Alameda County. For those involved in the planning and provision of accessible transportation, it is also an acknowledgement of the substantial mobility gaps faced by members of these target groups.

While over half of Measure B funding for specialized services has been allocated to ADA paratransit services—primarily East Bay Paratransit (described in the prior Chapter)—a significant proportion of the funding has been devoted to complementing the mandatory services and attempting to fill the significant mobility gaps that remain even after ADA requirements have been met. Funding for specialized services has been divided into mandatory programs such as East Bay Paratransit (54% or 5.63% of the total measure), base non-mandatory programs (currently 32% or 3.39% of the total measure), and gap programs (14% or 1.43% of the total measure). The third category has been particularly valuable in allowing cities to establish pilot programs that adopt innovative approaches to addressing service gaps. For those that are successful, funding in subsequent years can become available through the base funding allocations.

Base programs are funded through a formula that distributes funds by planning area and by city. The funding formula for city-based programs is approved by PAPCO and the ACTIA Board of Directors. Cities receiving Measure B funds submit an annual program plan and performance reporting, also approved by PAPCO.

Gap programs are discretionary and are funded through a grant application process. Grant approvals and funding priorities are determined by the Paratransit Advisory and Planning Committee (PAPCO), which is made up of 28 members appointed by each Alameda County jurisdiction and transit provider.

In addition to the substantial funding provided to city-based paratransit programs in the county, about 22% of Measure B funding is allocated to AC Transit for transit operations, but it is not directed specifically for paratransit service. AC Transit and BART's accessible transit services do, however, provide transportation for thousands of East Bay seniors and people with disabilities who do not require demand-responsive transportation.

A Broad Range of Transportation Programs Beyond Fixed-Route Service are Offered in Alameda County

Many of the County's transportation options for communities of concern have been funded through the Lifeline program and Measure B funds. Some of these are described below.

Services Targeted Towards Low-Income Population

A range of services have been developed and funded through the CBTPs that specifically address the mobility needs of those who live in low-income households. Besides services specifically allocated for transit agency routes, such as the WHEELS Route 14 and AC Transit Lifeline services in West Contra Costa County, they include:

- West Oakland Library Shuttle
- Improvements to the Ashby BART station/Ed Roberts campus
- San Leandro LINKS Shuttle
- Neighborhood bicycle centers
- Purchase of bus vehicles and shelters

Community-Based Services for Seniors and People with Disabilities

Due to the diversity of cities within the county, a broad range of Measure B-funded, and other city-based paratransit programs have been developed to meet a variety of mobility needs. Cities have welcomed the opportunity to customize their programs in order to meet the specific needs of city residents. However, this patchwork of services resulted in significant inconsistencies in the level of service available to seniors and people with disabilities in each city. In order to address these disparities, PAPCO in 2006 approved a series of Minimum Service Levels that address such factors as who the program serves; the type of service provided; hours of service and service area.

While a greater level of program consistency was achieved following the implementation of the minimum service levels, the programs remain very diverse in their service parameters and modes of service delivery. Figure 6-1 provides an overview of various service parameters for each city, including: service area; fares; trip limits; days and hours of operation.

It should be noted that the types of services offered tend to reflect the specific conditions in each of the four planning areas. In North County, which includes the cities of Albany, Berkeley, Alameda, Piedmont, Emeryville, and Oakland, most of the service is provided through taxis. Central County, which includes Hayward, San Leandro, and unincorporated communities such as San Lorenzo, Cherryland, Ashland and Castro Valley, shuttle and paratransit van services are available.

The East County planning area includes the Tri-Valley communities of Dublin, Pleasanton, and Livermore, and exhibits a high level of coordination between services, which receive additional funding through the cities' general funds. South County includes the cities of Fremont, Union City and Newark, which also work closely together to avoid service duplication.

Innovative Services

While the majority of city-based funding is allocated to the provision of demand-response service, either through paratransit or taxis, a number of innovative programs have been developed in the county that serve specific mobility needs. Highlighted below are a sample of these programs, including the Hospital Discharge Program, Medical Return Transportation Program, Paratransit Waiting Areas, Travel Training to Cultural Minorities, and Wheelchair and Scooter Breakdown Service.

Hospital Discharge Program: This program addresses the needs of people who are discharged from a hospital and need accessible transportation. It also assists people with disabilities who are admitted on short notice into a hospital, and then discharged soon thereafter without having made transportation arrangements. The Alameda CTC has entered into a contract with a private paratransit provider to make accessible vehicles available at short notice. The Alameda CTC conducts in-service training with discharge planners at participating hospitals, and sells the hospital low-cost vouchers with which to pay for the rides. Discharge planners provide patients information about paratransit, assist them in completing an application (approximately 75% of discharged patients are not already registered with a paratransit program), and schedule the ride with the provider. While this serves a small number of residents—approximately 180 trips are provided each year—the program is a lifeline for those who have no alternatives, and represents a great savings to the hospitals that would otherwise need to pay substantial amounts for ambulance services or taxi vouchers.

Figure 6-1 Alameda County Paratransit Program Parameters

Program/Service Type	Service Area	Fares	Trip Limits	Days/hours of operation
East Bay Paratransit				
Pre-scheduled	Alameda County, parts of Contra Costa County, and San Francisco	$3.00 - $7.00	No Limit	Same as AC Transit and BART
City of Alameda				
MRTIP Program	Bay Area	Free	No Limit	24/7
Premium/Supplementary Taxi Program		50% off metered fare		
Flu Shot Taxi Service		Free		
Group Trips	N/A	Free		Events
EBP Tickets	EBP service area	2 free EBP coupon books		N/A
City of Albany				
Taxi	Albany, Berkeley, Oakland, Richmond	$2.40/mile (subsidy capped at $15/trip)	No Limit	24/7
Albany Senior Center Community Shuttle	Albany, El Cerrito, Berkeley	Free		Weekly Th-Fr 9-1pm – El Cerrito Plaza, Ranch 99, Safeway and Target 3rd Mon 9:30am-1pm – Hilltop Mall Last Mon 9:30am-1pm – dollar store
Group Trips	Bay Area	Free		All days 8:00 AM–6:00 PM
City of Berkeley				
Taxi Scrip Program	Up to 50 miles	3 free taxi scrip books every 4 months	Varies	24/7
Wheelchair-Van Program	Bay Area (except Marin)	Free	Varies	24/7
EBP Ticket Program	EBP service area	Free	Max. of 18 tickets	N/A
City of Emeryville				
Taxi	Emeryville and neighboring areas	10% of Taxi meter	$160 per annum	24/7
Pre-scheduled - Van	94608 zip code	Free	3 per week	Mon-Fri 9:00 AM–5:00 PM
Shuttle			No Limit	
Group Trips	Bay Area	Varies depending on trip cost	No Limit	Per event

Program/Service Type	Service Area	Fares	Trip Limits	Days/hours of operation
City of Fremont				
Same day (limited)	Fremont, Newark, Union City	$3 per 1-way trip	24 per quarter	Mon-Fri 8:00 AM–6:00 PM
Pre-scheduled		$3 per 1-way trip	24 per quarter	Mon-Fri 8 AM–6 PM Sat-Sun 9 AM–3 PM
Group Trips	Within 30 miles of Fremont Senior Center	$2 per 1-way trip	1 outing per group a month	By arrangement
City of Hayward				
Same Day (limited)	Hayward and adjacent areas	$2 for every 10 miles, up to 30 miles	120 vouchers per year Shuttle ridership has no limits	Mon-Sat 5:00 AM–8:30 PM
Pre-scheduled				
Shuttle (Not yet in operation)		Free		Mon-Fri 9 AM–5 PM
Group Trips		$2 per round trip	TBD	Tues & Thurs 10:30 AM–1:30 PM
Livermore Amador Valley Transit Authority (LAVTA)				
Same Day (limited)	Livermore, Dublin, Pleasanton	$3.50	No Limit	24/7
Pre-scheduled				
Group Trips	Livermore, Dublin, Pleasanton	Varies depending on trip cost		Varies
City of Newark				
Same Day (limited)	Fremont, Newark, Union City	$2.00 per 1 way in Newark. $3.00 per 1 way outside Newark	No Limit	Mon-Fri 8:30 AM–5:00 PM
Pre-scheduled				
City of Oakland				
Taxi Program	Oakland, Piedmont	$3 for taxi scrip books valued at $10	48 per annum, with exceptions for health care	24/7
Wheelchair van program		$3 for van voucher		
Shuttle	Dimond-Fruitvale and East Oakland	Seniors	No Limit	Mon-Fri. 4 hours per day
Group Trips (limited)	Oakland, Piedmont	Varies	As available	Varies
City of Pleasanton				
Pleasanton Paratransit Service (PPS)	Pleasanton, Livermore, Dublin, San Ramon	In-town $3- $3.50 Out of town $3.50 - $4	No Limit	Mon-Fri 8 AM–5 PM Sat 9 AM–4 PM
Downtown Route (DTR)	Pleasanton	$1.50	No Limit	Mon-Fri 8:30 AM–5:00 PM

Program/Service Type	Service Area	Fares	Trip Limits	Days/hours of operation
City of San Leandro				
Medical trips door to door	City limits	$4.00/10 miles Registrants pay $20 Annual Fee	No Limit	Mon-Fri 8:00 AM–5:00 PM
FLEX Shuttle	City limits and connects to Hayward Shuttle Service	Free Registrants pay $20.00 Annual Fee		Mon-Fri 9:00 AM–3:00 PM
Union City				
Same Day (limited)	Union City, parts of Hayward, Fremont, Newark	$2.25 each way	No Limit	Mon-Fri 4:15 AM–10:30 PM Sat 7 AM–7:30 PM Sun 8 AM–6:30 PM
Pre-Scheduled				
Group Trips	Trip must take place within a four hour period			
South County				
Tri-City Taxi Voucher Program	Fremont, Newark, Union City	$2 per voucher (good for up to $12 fare; may use 2 vouchers per ride)	36 vouchers per 6-month period	8:00 AM–8:00 PM
East County				
WHEELS Para-Taxi Program	Must originate in WHEELS Dial-a-Ride area	30% of fare (including tip of up to 15%) up to $10	$80 per month	24/7

NOTE: There are no specific programs operated by Dublin, Piedmont or Alameda County.

Medical Return Trip Program (MRTP): PAPCO members identified a significant problem for East Bay Paratransit users who were having a difficult time estimating the end time of their medical appointments. Due to the lack of control over the duration of an appointment, riders were either building in substantial cushion to ensure that the vehicle would not arrive before they were ready, or were missing trips repeatedly. MRTP was created to allow riders to book one-way paratransit trips to medical appointments, and then call a Measure B funded taxi for the return trip. Originally funded through a grant, this service has been absorbed into the base program of most Measure B providers offering taxi service.

Paratransit Waiting Areas: The lack of designated waiting areas for paratransit pick-ups at medical facilities frequently results in missed trips as drivers and riders wait in different locations. The city of Fremont embarked on a Measure B funded program to coordinate with hospitals that were willing to designate pick-up/drop-off locations for paratransit services. Technical and financial assistance was offered to hospitals to help with the design of the pick-up/drop-off locations, including signage, paint treatments, placement of street furniture. However, in most cases in South County the hospitals installed the improvements at their own expense. An example of a paratransit waiting area is depicted in the figure on the previous page. In the remainder of the County, despite concentrated efforts to interest medical facilities in these improvements, very little interest was shown and no tangible improvements resulted from the program.

Travel Training to Cultural Minorities in South County: The City of Fremont led a tri-city effort to train almost 200 seniors from cultural minorities, many of whom do not use English as their home language. Some participants had used transit in their

Ohlone Paratransit Stop Sign at Kaiser - Fremont Medical Center
Source: Nelson\Nygaard

Travel training with seniors in Fremont
Source: Susan Lubeck

native countries but were deterred from using local transit services for a variety of reasons. Training was conducted in Farsi, Hindi, and Spanish, with special training for individuals within each community to provide additional travel training sessions within their communities. Alameda CTC also does travel training throughout the County.

Wheelchair and Scooter Breakdown Service: Alameda CTC (formerly ACTIA) was informed by PAPCO and TAC members that wheelchair users occasionally find themselves stranded because their wheelchairs have broken down, and calling an accessible cab in that situation is not always feasible and can be very costly. In order to address this need, Alameda CTC (formerly ACTIA) entered into a contract with a paratransit provider that is available round the clock to provide this service, free of charge to the user. While each year the major part of the assigned budget for this program has remained unexpended, for the approximately 100 wheelchair users who benefited each year, the existence of this program has been a lifeline.

Designated Paratransit Waiting Area: Kaiser – Hayward Medical Center
Source: Nelson\Nygaard

FUTURE CONDITIONS

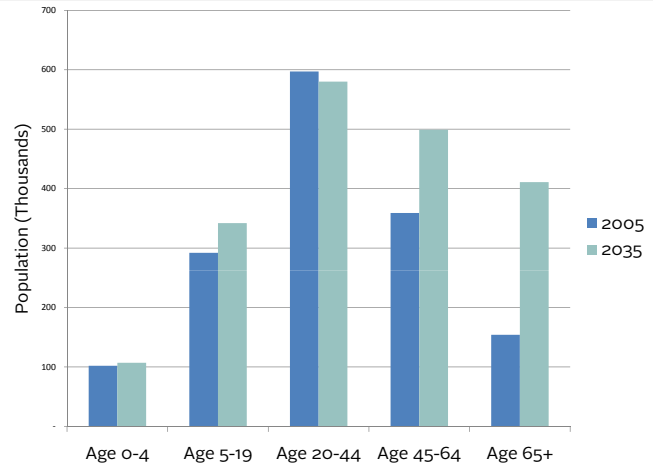
In the context of the current fiscal climate, and anticipated economic trends in the near future, the transportation challenges faced by low-income Alameda County residents can be expected to grow as discretionary income to pay for vehicle ownership and public transit options erode. At least in the short term, the range and affordability of public transit options can be expected to diminish.

For the senior population, the picture is more mixed. As discussed in Chapter 2, according to ABAG projections, between 2005 and 2035 the senior population in Alameda County is projected to grow by approximately 167%, as opposed to 30% for the population as a whole. It will be important to understand where this growth will be focused to appropriately allocate resources to match users' needs. Figure 6-2 illustrates the much more rapid growth among seniors than the general population.

To a large extent, the growth in senior population can also be viewed as a proxy for growth in the population of people with disabilities. As residents age in place, the potential for providing transportation services to these individuals on the lowest cost modes becomes increasingly difficult. The growth in the senior population is expected to be particularly significant in suburban areas in the eastern part of the county, which are the least transit-friendly.

In addition to the demographic shift towards a larger segment of seniors in the total County's population, a number of other trends have led to the re-examination of accessible transportation service delivery in Alameda County. These trends include:

Figure 6-2 Population Growth in Alameda



- A nation-wide shift away from binary models of fixed-route/paratransit service during the past decade, which have resulted in more "hybrid" services
- Measure B revenues failing to meet projections, as a result of the recession
- Travel demand patterns changing due to demographic shifts, particularly the increases in the aging population

SUMMARY OF NEEDS

The discussion in this chapter has focused on the needs of communities of concern. These can be summarized as follows:

Enhanced Fixed-Route Service

Since fixed-route service remains a significant mode of transport for those who are unable to drive or do not have access to a car, enhanced transit services will continue to be an important means of providing access to jobs, social services, education, and medical services, as well as maintaining social connections for those who are isolated. These pertain to all population groups in communities of concern.

The primary improvements that will be needed are:

- Transit service is that is affordable, more frequent, and over a longer span of daily service hours
- Improvements to bus shelters and stops to make them more accessible and safer
- More speedy bus service for those who are able to walk longer distance to get to their stops (such as BRT), and localized service for those who may be disadvantaged by the increased distance between BRT stops

Enhanced Paratransit Services

Paratransit will continue to be an important safety net for people with disabilities who are unable to ride fixed-route services. The primary improvements to paratransit service can be summarized as follows:

- Affordable paratransit fares
- Countywide, on-demand service, especially for medical trips
- Improved paratransit on-time performance
- Access to locations unserved by ADA paratransit programs
- Additional capacity on city-based paratransit for non-medical trips, such as group and weekend trips.

Older adult about to cross street at cross-walk.
Source: Nelson\Nygaard

Improvements to Pedestrian Environment

Safety of the pedestrian environment is a major concern for all communities of concern, but in particular seniors and people with disabilities. Improvements include:

- Installation of curb cuts and enhanced crosswalks
- Improved connectivity at BART stations and the ability to transfer between BART and the bus
- Improvements to bicycle amenities, including bike lanes, improved pavements, enforcement of traffic speeds, lighting, ability to transfer to other modes

Information and Assistance

Information about transit service routes and schedules is critical to expansion of fixed-route usage. However, given the disproportionate number of non-English speakers in this population, and the limitations faced by those with visual and cognitive disabilities, there will always be room for improvement. Information needs can be summarized as follows:

- Continued focus on easing the use of existing informational materials, either through increased customer service staff, more translated materials, or user-friendly publications that can simplify the task of understanding trip planning options
- While the publication of "Access Alameda" in a number of languages has proven to be an important community resource, there remains a need to increase dissemination of this information more widely throughout the county

Establishment of County-Wide Programs to Address Needs of Seniors and People with Disabilities

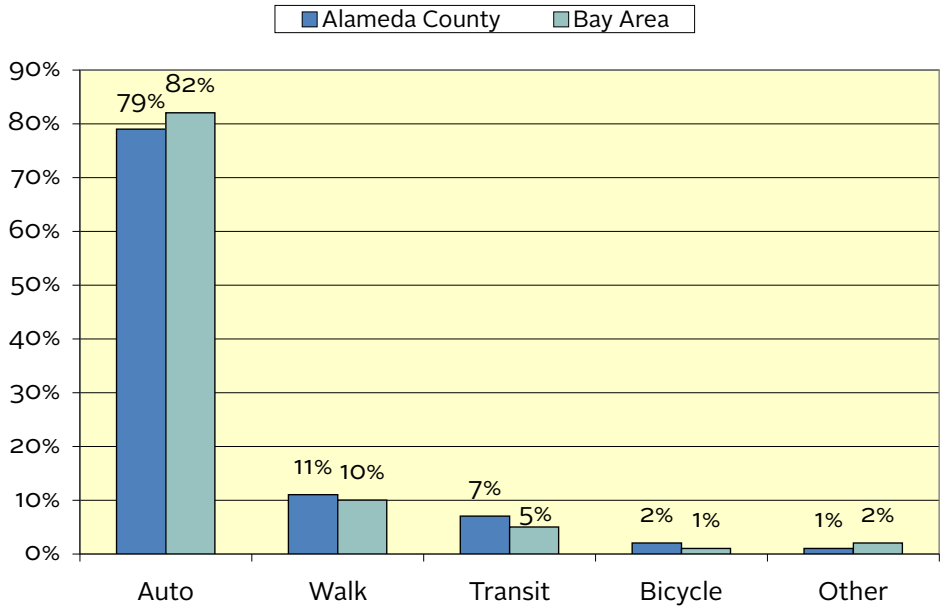
A limited number of strategies could be most effectively implemented at the county level, rather than by city-based programs. These include:

- Mobility management program to coordinate information throughout the county, and assist consumers with information and referral at a minimum, and possible trip planning and scheduling at a later phase
- Fixed-Route Travel Training to enable those who have mobility or linguistic challenges to use fixed-route transit
- Taxi Program Coordinator for all taxi programs funded through Measure B
- Older Driver DriveWell Program to promote continued, healthy driving by seniors, and enabling seniors to know when to retire from driving
- Expanding the City Carshare/City of Berkeley Accessmobile, which provides a wheelchair accessible carshare van, to other communities
- Volunteer Driver Program to oversee recruitment and training of drivers, provide supplemental insurance, conduct background checks and other reviews of driver records, and in general provide overall coordination of the program
- Unified contracting for group trips with one or two providers across a number of cities. Alameda CTC funded vehicles, as well as those funded through Section 5310 dollars, could be pooled for this purpose.
- Pooling of accessible vehicle purchases to ensure better prices and consistency of vehicle quality

CHAPTER 7. BIKING IN ALAMEDA COUNTY

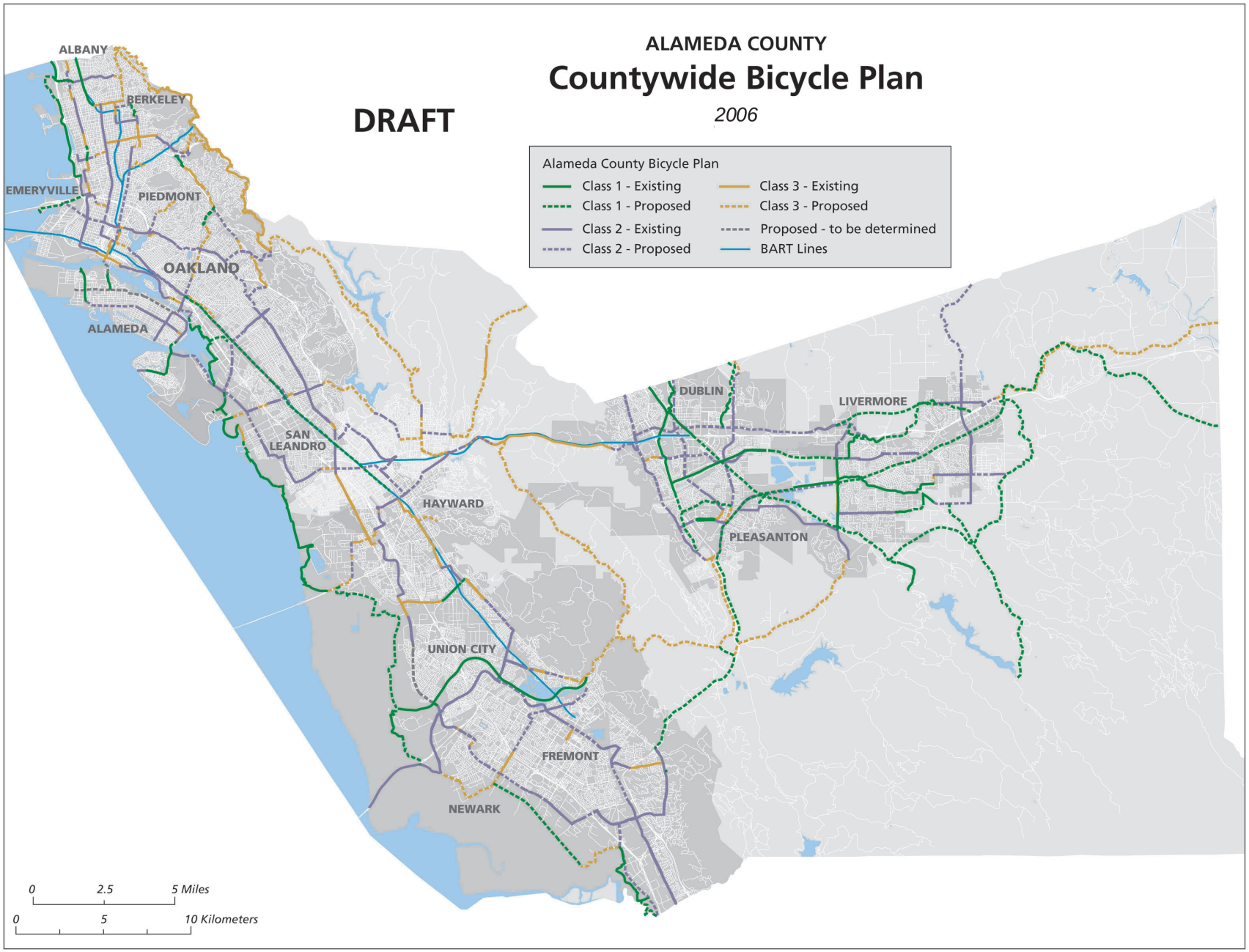
In Alameda County, as in the Bay Area as a whole, bicycling represents a small, but growing, share of all trips. The bike mode share, the percent of travel undertaken by bicycle, in Alameda County (2.0%) is greater than that of the nine Bay Area counties as a whole (1.4%).

Figure 7-1 Mode Share For All Trips



Source: BATS2000

Figure 7-2 Countywide Bicycle Plan



EXISTING CONDITIONS

Bicycling In Alameda County

It appears that bicycling in Alameda County is on the rise. The U.S. Census, for example, indicates that commuting by bicycle has increased by approximately 20% since 2000. Although the share of cycling trips is small in comparison to overall travel, the absolute number is quite high, making bicycling an important and necessary travel mode. In 2000, the Metropolitan Transportation Commission's Bay Area Travel Survey (BATS)[1] estimated that approximately 593,000 bicycle trips were made every week in Alameda County, or almost 85,000 trips daily. It should be noted, however, that this number is conservative because BATS does not include bicycling (or walking) trips to or from transit; such trips are counted as transit trips. If biking trips to and from transit are included, the weekday number of bike trips in the county increases by almost 77,000; this includes 57,000 to AC Transit stops, 20,000 to BART stations, plus additional trips to the county's other transit agencies.

Bicycling has become an important travel mode in Alameda County for a variety of reasons. First, Alameda County offers an increasingly robust and varied network of safe and accessible bicycling facilities that bicyclists can use for recreation, commuting, and daily activities. In the urban core of the North County, for example, cities like Berkeley and Oakland have substantially developed their bicycle networks in the form of bicycle facilities on key corridors, and Berkeley and Emeryville have a network of bicycle "boulevards" on neighborhood residential streets. Alameda County jurisdictions have also invested substantial resources into the development of the County's regional bicycle and trail system. Regional facilities like the San Francisco Bay Trail, the Bay Area Ridge Trail, and the Iron Horse Trail all provide world-class recreational bicycling, enhanced bicycle access to regional destinations, and key commuting connections. In Alameda County, these facilities are extremely well-utilized. For example, the highest share of existing (32%) and projected (28%) annual trips on the Bay Trail are in Alameda County.[2] Figure 7-2 shows the bicycling network in Alameda County from the 2006 bike plan.[3]

In addition, bicycling in Alameda County is significantly enhanced by ongoing efforts to strengthen connections between the bicycling and transit networks. Bicycling has been relatively well-integrated with existing transit systems in Alameda County through efforts such as the 2009 AC Transit Bicycle Parking Study, the Safe Routes to Transit grant program, and recent major expansions to BART's bicycle infrastructure (e-lockers, bikestations, and modified rail cars). AC Transit, BART, and other transit operators also all allow bicycles on their transit vehicles.

Finally, Alameda County and local jurisdictions continue to support investments in bicycling infrastructure with complementary policies and programs that encourage bicycling as a safe travel mode. Numerous cities, as well as the County, have prioritized their bicycle plans as a means to identify high-priority investments. Programs like Safe Routes to School enhance access for youth by improving bicycling infrastructure near schools, while promotional activities like Bike to Work Day strive to make bicycling a more common commute mode.

The rest of this section takes a closer look at the specifics of bicycling in Alameda County, highlighting mode share and trip purpose, demographics of bicyclists, trip distribution, and bicycle safety.

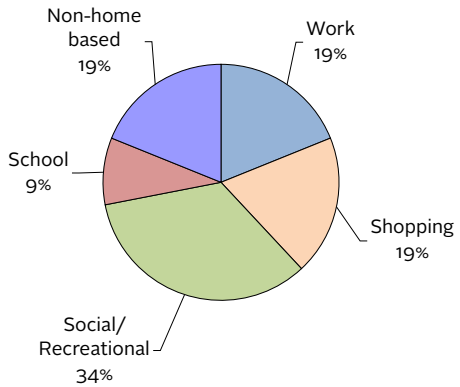
Mode Share and Trip Purpose

According to BATS, the breakdown of bicycle trips in Alameda County by trip purpose is as follows:

- Social/recreational (34%)
- Work (19%)
- Shopping (19%)
- School (9%)
- Non-home based (begin and end someplace other than home) (19%)

Figure 7-3 shows this breakdown.

Figure 7-3 Bike Trips By Purpose in Alameda County



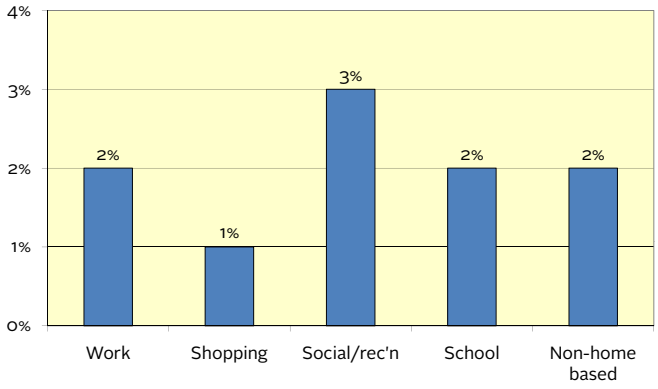
Source: BATS2000

1 BATS is a large-scale household travel behavior survey conducted by phone and mail across the nine-county Bay Area, most recently in 2000. BATS data was utilized to analyze bicycling and pedestrian travel because it provides much more detailed data than that of the U.S. Census.

2 The San Francisco Bay Trail Project Gap Analysis Study, ABAG (2005)

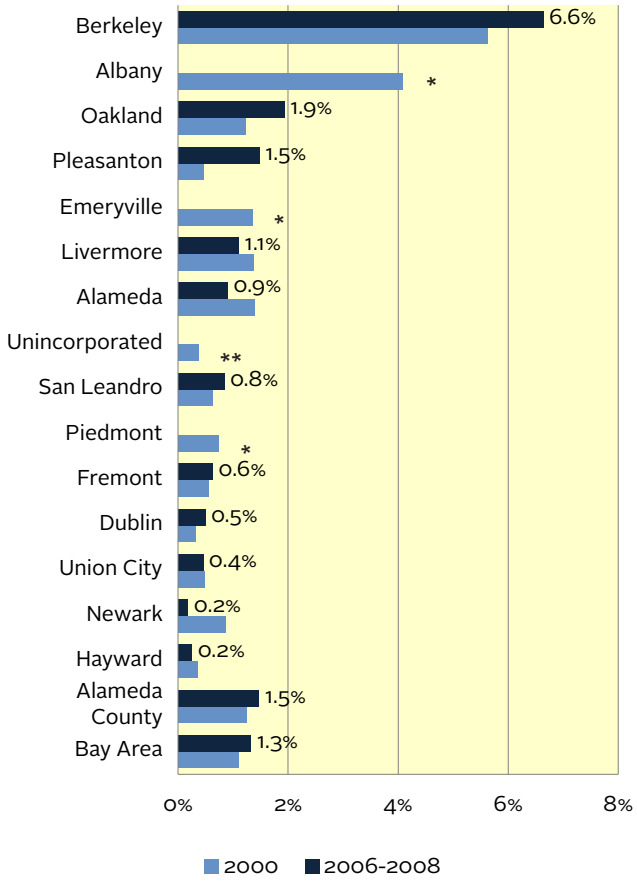
3 Map will be replaced when the 2010 update is available.

Figure 7-4 Bike Mode Share By Trip Purpose in Alameda County



Source: BATS2000

Figure 7-5 Commute-To-Work Bike Mode Share



Sources: 2000 Census and 2006-2008 ACS

* The 2006-2008 ACS does not provide data for Emeryville, Albany or Piedmont. Figures for these cities are from 2000 only.

** The 2006-2008 figure cannot be determined without data from all the jurisdictions.

Although 2% of all trips countywide in 2000 were by bicycle, that share varied somewhat depending on the purpose of the trip. For instance, 3% of all social/recreational trips were by bike. Conversely, only 1% of shopping trips were by bicycle, perhaps because shopping by bike requires panniers or other means of carrying purchases, which many cyclists do not own. The bicycle mode share for work, school and non-home-based trips was approximately the same as the overall county bike trip rate of 2% (see Figure 7-4).

The American Community Survey (ACS) samples travel behavior (and other information) more frequently than the U.S. Census, but not in nearly as much detail,[4] including data on the mode share of commute-to-work trips for each of the 15 local jurisdictions in the county (14 cities and the County's unincorporated areas). Figure 7-5 shows the bike mode share in each jurisdiction.

According to ACS, overall, the bicycle commute share increased from 1.2% to 1.5% between 2000 and 2006-2008. Although this is still a small share of overall commuters, it represents a 21% increase in less than a decade, reflecting the growing popularity of bicycle transportation. Alameda County's bike mode share of commute-to-work trips in the same period is slightly higher than the Bay Area's as a whole (1.5% compared to 1.3%). Although many jurisdictions saw little change in their commute bike rate (or even a statistically insignificant decrease), the share of commuters who traveled by bike in at least three jurisdictions increased significantly; Berkeley (5.6% to 6.6%), Oakland (1.2% to 1.9%), and Pleasanton (0.5% to 1.5%). This growth in biking mode share occurred concurrently with significant investments in support of bicycling such as bicycle safety education, creation of Bicycle Boulevards, and installation of bike parking.

4 ACS commuter bicycle rates are typically lower than BATS data due to a number of factors: rather than surveying work trips as BATS does, ACS asks commuters what their "typical" commute mode was the previous week. This methodology tends to undercount trips made by occasional bicycle commuters.

Demographics of Bicycle Riders

Bicycle riders are younger and more often male than the population as a whole. The income of bike commuters incomes varies widely and include many "choice riders" who could drive or take transit but prefer to bike. Rider demographics are summarized below.

Gender

In Alameda County, as in the U.S. as a whole, far fewer women bicycle than men. Women make only one third of all bicycling trips, or just under half as many as men. Women's bike mode share (biking trips as a percent of all trips) is less than half that of men (0.9% versus 2.1%) (see Figure 7-6).

Age Distribution

As shown on Figure 7-7, younger populations have a higher bicycle mode share. The highest bicycle mode share in Alameda County is for the 18-22 age cohort at 11.3%. Not surprisingly, as people get older they typically use bicycles less often as a means of transportation, as evidenced by the fact that less than 4% of people over 65 years of age travel by bicycle. Clearly, bicycle mode share is directly correlated to physical ability and age, and no matter the facility type, the feasibility of bicycle travel declines as individuals get older.

Income

Bicycle ridership also varies by income level. In Alameda County, the highest mode shares for bicycle travel are in the "low" (less than $30,000) and the "high-medium" ($60,000-$100,000) quartiles. Households with the highest incomes bicycle the least, 1.1% of all trips made by these households. In relative terms, this is a significant difference: an Alameda County resident in the lowest-income group is more than 60% more likely to travel by bicycle on a given trip than someone in the highest-income group. This can partially be explained by lower vehicle ownership rates at low income levels, and the need to find alternative travel modes, whether it be solely by bicycle or using a bicycle to connect to transit services.

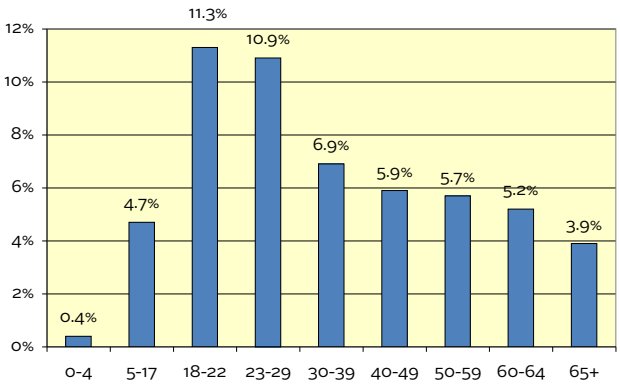
Figure 7-8 also shows that as the bicycle mode share decreases with higher incomes, the raw number of bicycle trips per person per day does increase as income goes up. This is explained by the fact that the higher an individual's income, the more total trips—regardless of mode—they tend to take.

Figure 7-6 Bike Mode Share By Gender

	Share of all biking trips	Share of the population	Bike mode share
Women	33%	51%	0.9%
Men	67%	49%	2.1%

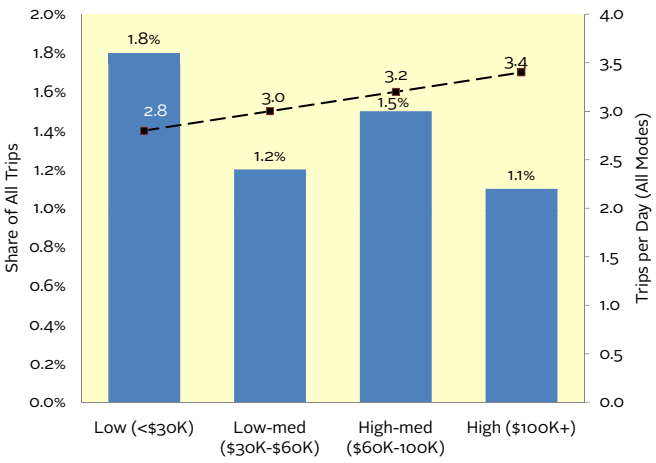
Source: BATS2000

Figure 7-7 Bike Mode Share By Age Group in Alameda County



Source: BATS2000

Figure 7-8 Bicycle Mode Share and Total Bicycle Trips per Person, By Household Income Level in Alameda County



Source: BATS2000

Activity Centers

Although biking and walking do have different facility needs and travel characteristics, bicycle and pedestrian activity centers tend to be similar. For example, biking and walking both offer crucial connections to transit, and, as a result, transit stations are major trip attractors for both. In addition, biking and walking are especially appropriate for certain population segments, such as youth. Consequently, schools are one of Alameda County's major biking and walking activity centers. For a more detailed discussion of activity centers and trip generators for bicyclists and pedestrians, see Chapter 8 on pedestrian travel.

Trip Distribution

As shown in Figure 7-9, a full three quarters of all bicycle trips in the county are in North County, well over its population share of 42%. Fewer Central and South County residents are bicycling. Those areas account for almost 50% of the population but only 13% of the county's bike trips.

Not only are more bicycle trips taken in North County, but the Albany-Berkeley-Oakland-Emeryville-Piedmont-Alameda region also has the highest bicycling rate at 3% of all trips. Because bicycle trips tend to be relatively short, in terms of both time and distance, it makes sense that biking is more prevalent in the denser North County. As shown in Figure 7-10, nationally, almost 60% of bike trips are under 15 minutes (roughly 3 miles), while only 7% of bike trips are over an hour (12 miles). This data underscores the feasibility of bicycling to replace short car trips of approximately 5 miles and less.

Bicycle Safety

Collisions, fatalities and injuries

Over the past eight years, an average of 581 bicyclists per year were involved in traffic collisions in Alameda County, with an average of just under three fatalities per year. Since 2001, between one and five people have been killed per year while riding bicycles in Alameda County. (See Figure 7-11) The number of annual bicycle injuries remained relatively stable between 2001 and 2007, fluctuating within a narrow range between 500 and 600. While the cause of the 2008 spike in collisions involving bicyclists is uncertain, the $4/gallon gasoline that year that prompted many non-cyclists to try cycling for transportation for the first time may have been at least partially responsible. Between 2000 and 2008, bicyclists made up 2.4% of all traffic fatalities in Alameda County; 20% higher than the county's bike mode share (2.0%).

Figure 7-9 Share of Bicycle Travel in Alameda County Compared with Share of Population by Planning Area

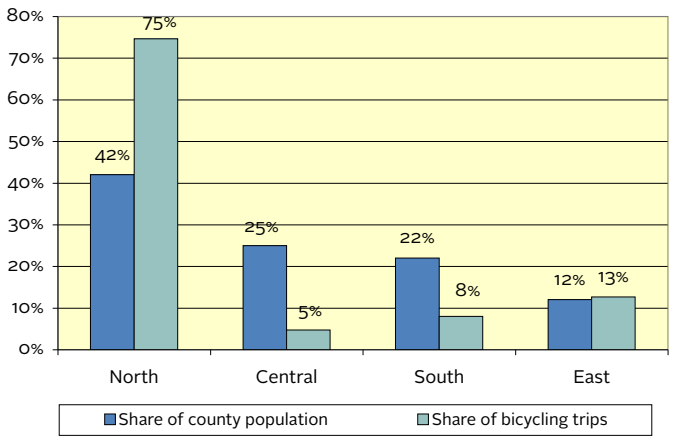


Figure 7-10 Duration of Biking Trips, Nationwide

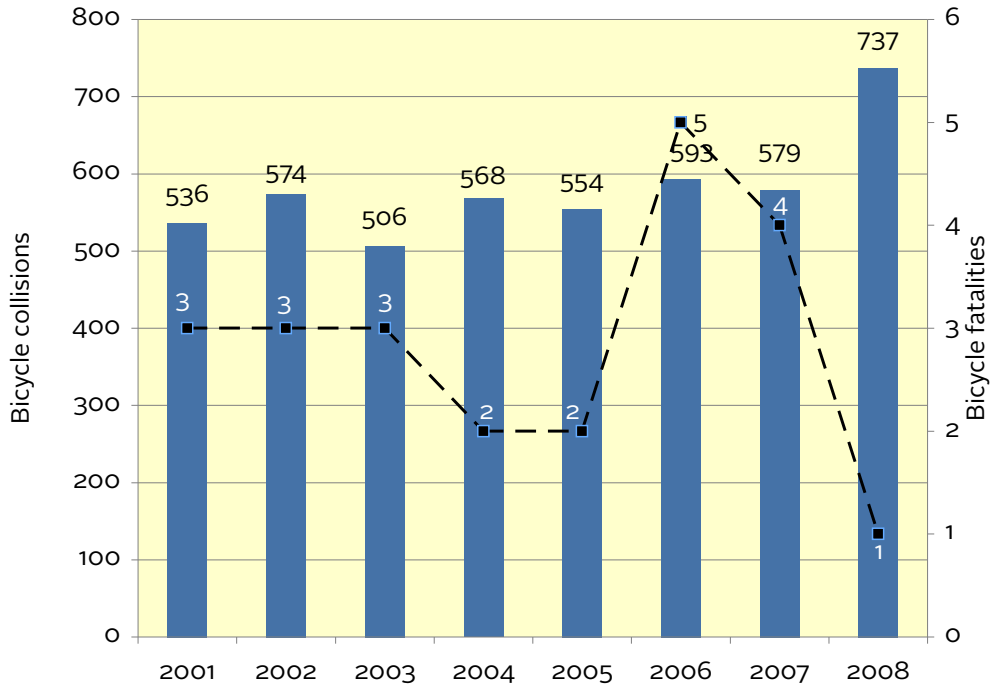
Minutes	Approx. distance (miles)	Percent of trips by bike
0-5	0-0.25	10.50%
5.1-10	0.25-0.5	26.90%
10.1-15	0.5-0.75	21.10%
15.1-20	0.75-1	12.20%
20.1-25	1-1.25	2.50%
25.1-30	1.25-1.5	12.50%
30.1-45	1.5-2.25	7.80%
45.1-60	2.25-3	1.60%
>60	>3	4.90%

Source: National Household Travel Survey, 2009

Most motor vehicle/bicycle collisions in Alameda County occur between central Berkeley and downtown Oakland. However, Figure 7-12 shows that North County has a much lower share of the county's collisions than of bike trips (58% of bike collisions but 75% of bike trips). Central and South County have higher proportional shares of collisions than bicycle trips, while East County has an equal share of each.

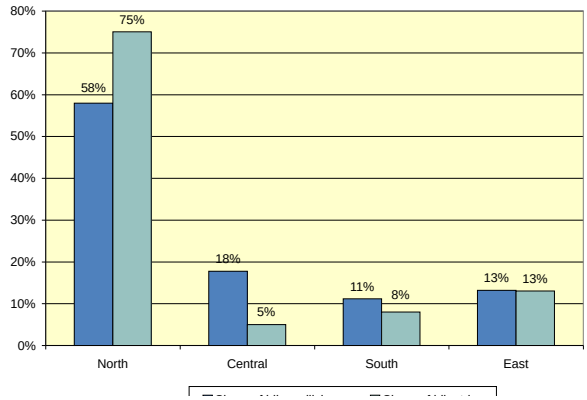
A better way of analyzing the relative safety of each planning area in Alameda County is by comparing collisions per 100 bicycle trips. This is illustrated in Figure 7-13. North County, while having the highest share of bicycle collisions, has the fewest collisions per 100 bike trips at 3. Although it has a small share of the county's collisions, Central County has the most collisions per 100 bike commuters, 15, a rate five times that of North County.

Figure 7-11 Bicycle Collisions and Fatalities in Alameda County



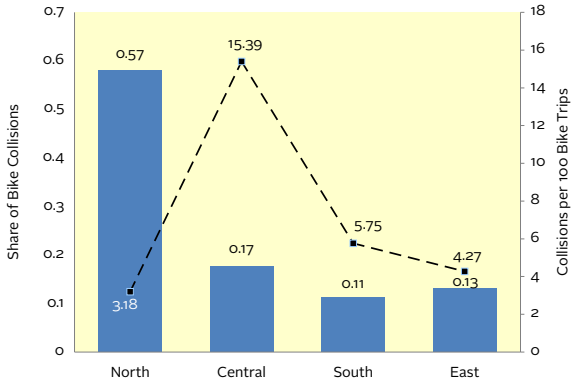
Source: SWITRS

Figure 7-12 Share Of Bicycle Collisions, Population and Bike Trips By Planning Area



Sources; SWITRS, 2000 Census, 2006-2008 ACS

Figure 7-13 Share of Bicycle Collisions and Collisions Per 100 Bike Trips



Sources; SWITRS, 2000 Census, 2006-2008 ACS

Facilities

On- and off-street network

The most prominent and conspicuous element of any jurisdiction's bicycle facilities is its network of lanes, routes, bike boulevards, or off-street paths, These facilities are the traditional backbone of bicycle facility investment, as they serve to not only provide bicyclists with the physical space in which they need to ride, but also guide bicyclists to streets and paths that offer the most safe, convenient, and accessible routes to key destinations. While the breadth and depth of bicycle infrastructure investment varies, most jurisdictions in Alameda County have made significant strides in the past decade developing their bicycle networks. In fact, cities like Berkeley and Oakland have pioneered many of the national best practices in facility development, such as bicycle boulevards.

Furthermore, 14 jurisdictions had either completed or were in the process of completing a bicycle plan. These plans serve as the framework for the development of a bicycle network, and will guide future investment in each jurisdiction's bicycle network.

Finally, the network of Class I bicycle paths throughout Alameda County continues to serve as a national model. The major trail systems in Alameda County include the East Bay Regional Park District's extensive trail network, including the Iron Horse Trail in the East planning area, and the Alameda Creek Regional Trail between Fremont and the Bay; and the San Francisco Bay Trail. In addition to an abundance of countywide and inter-jurisdictional trails, Alameda County has many miles of local trails. Outlined below are some of the primary paved trails that travel through and link urbanized areas in Alameda County.

East Bay Regional Park District Trails

East Bay Regional Park District (EBRPD) is a California-designated special district, which operates and maintains 175 miles of trails in Alameda County, 48 of which are paved. Additionally, the District has identified 91 additional trail miles in Alameda County in its 2007 Master Plan for future construction.

Iron Horse Trail

The Iron Horse Trail—built along the alignment of an abandoned railroad right-of-way—travels through central Contra Costa County and the Tri-Valley area, through Dublin to the Dublin/Pleasanton BART station. EBRPD has plans to extend the Trail south through Pleasanton and east through Livermore, eventually to the San Joaquin County border.

Alameda Creek Regional Trail

The Alameda Creek Trail follows the historic course of Alameda Creek for twelve miles between the Fremont foothills and the San Francisco Bay and the Bay Trail. This continuous multi-use path also passes by Newark and Union City.

The San Francisco Bay Trail

The Bay Trail is managed by the Association of Bay Area Governments and will be a continuous 500-mile bicycling and hiking path around San Francisco Bay, including 119 miles along the Alameda County shoreline (called the "spine"), and another 65 miles connecting the Bay Trail to other trails, transit, local destinations, and points of interest along the waterfront. Estimates state that it will take up to 15 years to complete the trail through Alameda County. Once completed, the Bay Trail will stretch uninterrupted from the Albany Bulb, past the Berkeley Marina, Eastshore State Park, and the Emeryville Marina, provide access to the pathway on the new east span of the Bay Bridge, travel through Jack London Square, along Crown Memorial State Beach in Alameda, by the San Leandro Marina and the Hayward Regional Shoreline, through Union City, across Alameda Creek, past Ardenwood Historic Farm in Fremont and into the San Francisco Bay National Wildlife Refuge. Bay Trail plans include providing connections to regional transit centers whenever possible, including the Coliseum and El Cerrito Plaza BART stations in Alameda County.

Ohlone Greenway

The Ohlone Greenway is maintained by the local jurisdictions through which it passes and runs from near downtown Berkeley, past the North Berkeley BART station, through Albany, to just past the El Cerrito del Norte BART station, with planned links to the San Francisco Bay Trail. The Trail was built on BART property after construction of the Richmond BART line and consists of separate walking and bicycle paths through much of its length.

East Bay Greenway

The East Bay Greenway is a proposed 12-mile bicycle and pedestrian pathway that would extend from 18th Avenue in Oakland south to the Hayward BART station. The proposed alignment would predominantly follow the elevated BART tracks that run through this corridor, similar to how the Ohlone Greenway was developed in north Berkeley, Albany and El Cerrito (Contra Costa County). The design of East Bay Greenway is still be finalized and various regional agencies are currently working to secure funding for this project.

Physical barriers and connectivity gaps

Some of the most common reasons people do not bike—including lack of facilities, concerns about traffic safety and long distances—are at least partly related to the existence of physical barriers or connectivity gaps. Below is a list of significant barriers in Alameda County mentioned by local jurisdictions in a 2010 questionnaire.

Physical Barriers

Automobile and rail infrastructure—highways, railroads and interchanges—create a majority of the physical barriers in the existing bicycle network throughout Alameda County:

North County

- Interstates 80, 580 and 880
- State Routes 24 and 13
- Railroad tracks in Albany, Berkeley, Emeryville and Oakland
- Freeway and railroad crossings (especially the Gilman Street interchange)

Central County

- Interstates 580 and 880
- Railroad tracks
- San Leandro (I-880 interchanges at Davis Street, Marina Boulevard and Washington Avenue; and the Union Pacific Railroad Oakland Subdivision underpasses on Washington Avenue and San Leandro Boulevard)

South County

- Interstates 880 and State Route 84
- Union Pacific railroad tracks

East County

- Interstates 580 and 680

Connectivity Gaps

Connectivity gaps refer to missing connections or segments along bicycle routes, including multi-use paths and on-street facilities. Major connectivity gaps in Alameda County cited by local jurisdictions include:

North County

- San Francisco-Oakland Bay Bridge
- Lake Merritt channel (Oakland)
- Oakland Estuary waterfront (Oakland)

Central County

- Bay Trail gap between south Fremont Boulevard and Dixon Landing Road (Fremont)

South County

- Creeks and canals

East County

- Along the Iron Horse Trail crossing Santa Rita Road, the intersection of Stanley Boulevard at Valley and Bernal avenues (Pleasanton)
- Arroyo Mocho Creek at Stoneridge Drive (Pleasanton)
- Intersection of the Alamo Canal and Tassajara Creek trails and I-580 (Dublin)

While bikeways are the central element of a bicycle network, they are not the only component. Outlined below are several kinds of support facilities—namely bicycle parking, showers and lockers, and signage—that increase the utility of the bicycle network and promote the viability of bicycling as a transportation mode.

Bicycle parking

- Six cities have bicycle parking ordinances: Oakland, Berkeley, Emeryville, Hayward, Pleasanton and Union City. Several other jurisdictions have imposed parking conditions for certain projects as part of the development-approval process.
- Oakland's bike parking ordinance requires attended bike parking at certain large events.
- Oakland has a bicycle-rack installation program, although most other jurisdictions have installed racks in public places on a case-by-case basis. In addition, Oakland provides technical support to businesses that wish to install bicycle parking on their property.
- Almost all jurisdictions have installed at least some bicycle racks: seven have single-use bicycle lockers; Oakland and Fremont have shared-use electronic lockers (eLockers); Oakland, Emeryville and San Leandro have secured bike-parking cages; and Emeryville has an indoor bike room.
- BART provides racks at all its stations in Alameda County and lockers at all stations except 12th Street/Oakland City Center, 19th Street/Oakland and Downtown Berkeley. In addition, there are two bike stations, one at Downtown Berkeley (268 spaces) and the other at Fruitvale (250 spaces). Berkeley also has a new electronic card-controlled Bikestation at Ashby BART.
- Berkeley also has shared use e-lockers at the Capitol Corridor Rail Stop.

Showers and lockers

- Oakland has an ordinance requiring shower and locker facilities as part of certain new development projects. Pleasanton and San Leandro have occasionally required these facilities on a case-by-case basis, as part of the development-approval process. UC Berkeley has a policy to include them in all new buildings beyond a certain size.

Wayfinding signage

- Oakland, Berkeley and Emeryville have bike-route signage programs.
- Berkeley and Emeryville install bicycle boulevards signage with wayfinding and mileage information.
- Local agencies and the East Bay Regional Park District also place signage along inter-jurisdictional trails, such as the Bay Trail and Iron Horse Trail.

Planning, Support Programs and Advocacy

Local planning efforts

Bicycle plans at the local level are important because it is local jurisdictions that are responsible for planning, designing, constructing and maintaining bicycle facilities. In 2010, 14 jurisdictions either completed a bicycle plan or had one underway, up from ten in 2006, demonstrating the effectiveness of Alameda CTC's efforts to support local bicycle planning efforts with Measure B grant funding. In addition, the Alameda CTC is currently updating the 2006 Alameda Countywide Bicycle Plan. The updated plan will reflect current bicycling trends and needs, identify project and program priorities, as well as provide a framework for the allocation of funds. The update process began in May of 2010 and the final plan is scheduled to be approved by the Alameda CTC Board in March of 2012. This Countywide Bicycle Plan update will be coordinated with the Countywide Transportation Plan and the bike projects and programs that are identified will be incorporated or referenced in the Countywide Transportation Plan.

Local support programs

The focus in bicycle planning is often on building capital projects. However, support programs are also important because they increase the safety and utility of those projects. Local jurisdictions in Alameda County administer a broad range of bicycle support programs to complement their infrastructure-building efforts. These programs may be grouped under the categories of safety, law enforcement, education, promotion or encouragement, safe routes to school and traffic-calming. Below is a summary of jurisdictions now sponsoring various types of programs:

Safety

- **Bicycle Audit:** San Leandro
- **Bicycle Safety Education Campaign:** Albany, Berkeley, Dublin, Fremont, Pleasanton and San Leandro

Law enforcement

- **Bicycle/pedestrian traffic safety officers:** Alameda County
- **Pedestrian/bicycle enforcement activities:** Eight jurisdictions

Education

- **Inform motorists on bicycle/pedestrian laws:** Albany, Dublin and San Leandro
- **Traffic curriculum (schools, community centers):** Albany, Fremont, Dublin and San Leandro

Promotion/encouragement

- **Bike to Work Day:** Eleven jurisdictions
- **Bicycle races:** Alameda County, Albany, Emeryville and Fremont
- **Giveaways:** More than half of jurisdictions give away bicycle-related items such as helmets, lights, reflectors and water bottles
- **Bike maps:** All except Alameda County, Newark, Piedmont and Union City

Safe Routes to School (SR2S)

- Berkeley, Fremont, Hayward, Oakland and San Leandro have applied for and received grant funding for SR2S programs; Pleasanton, Livermore and Union City applied for funding but did not receive it
- Alameda County, Albany, Berkeley, Hayward, Livermore, Oakland, Piedmont and San Leandro participate in the countywide SR2S program through TransForm
- Newark and Emeryville do not have SR2S programs in their schools

Traffic calming

- Five jurisdictions (Berkeley, Emeryville, Newark, Pleasanton and San Leandro) have a substantial traffic-calming program, with a dedicated funding source
- Five jurisdictions (Alameda County, Albany, Fremont, Livermore and Oakland) have a traffic-calming program but with no dedicated funding source

Countywide support programs

In addition to the local programs, there are four multi-jurisdictional support programs of note:

- Measure B is a countywide half-cent sales tax that funds transportation projects, programs and plans throughout Alameda County. Five percent of Measure B revenue is earmarked for bicycle and pedestrian activities, of which 75% is directly programmed by the county's 15 jurisdictions and the remaining 25% is allocated by Alameda CTC at their discretion.
- Safe Routes to Schools (SR2S) Alameda County Partnership (www.transformca.org/sr2s). This program reaches students at more than 60 public elementary schools. It is led by TransForm, a local non-profit dedicated to improving transit and creating walkable communities.
- Bicycle safety classes for all ages, offered on a regular basis by both the East Bay Bicycle Coalition and BikeAlameda.
- Bike to Work Day has grown significantly in recent years. In 2008-2010, it was supported by a "lifestyle" advertising campaign under the tagline, "Get Rolling." Alameda County Transportation Commission has provided significant funding and leadership to expand Bike to Work Day in recent years.

Advocacy efforts

Bicycle advocacy seeks to encourage government to improve the bicycling environment and to encourage more people to bike more often. Bicycle advocacy has surged nationwide, particularly in the Bay Area. Alameda County has five bicycle advocacy groups:

- East Bay Bicycle Coalition (www.ebbc.org)
- Walk Oakland, Bike Oakland (www.walkoakland-bikeoakland.org)
- Bicycle-Friendly Berkeley Coalition (www.bfbc.org)
- BikeAlameda (www.bikealameda.org)
- Albany Strollers and Rollers (www.bfbc.org)

In addition, bicycle or bicycle/pedestrian advisory committees advise government agencies on bicycling and walking issues in several cities (Berkeley, Oakland, Emeryville and Fremont) and at Alameda CTC and BART.

FUTURE CONDITIONS

The importance of biking facilities will only continue to increase in Alameda County. Projected demographic trends and policy mandates will increase the amount of urban land uses that are more conducive to short biking and walking trips. Such trends will make addressing these needs more and more important. Furthermore, the growing need to address rising energy costs and climate change will only continue to shift demand to modes that are sustainable, healthy, and cost-effective. Alameda County and each jurisdiction within its boundaries will need to continue to monitor these trends and identify areas where investments in bicycling should be prioritized to further encourage bicycle use. For example, Priority Development Areas (PDAs), slated to accommodate up to half of the Bay Area's projected housing growth in compact, more dense infill development, are strong candidates for channeling future investments in pedestrian and bicycling infrastructure. Such investments will complement these land uses, while increasing the reach and impact of adjacent transit services.

SUMMARY OF NEEDS

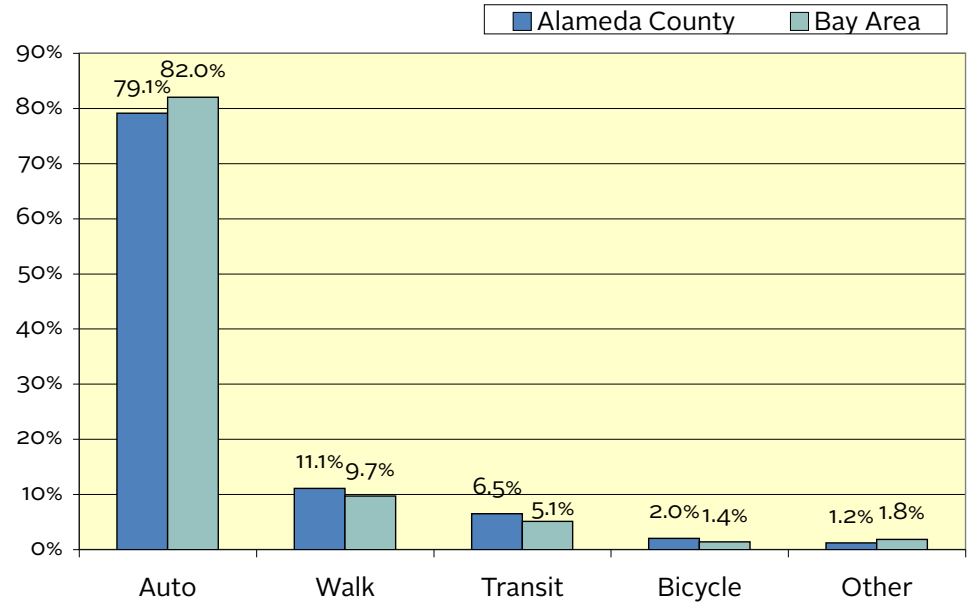
Almost every local jurisdiction cites lack of funding as a major barrier to making bicycle improvements. Based on a 2010 online survey of all 15 Alameda County jurisdictions, conducted during the development of the Alameda Countywide Bicycle Plan, the following is a sampling of bicycling needs in the County. This list is by no means comprehensive, but gives a sense of the scale of need for these modes. Readers should refer to the Countywide Bicycle Plan which is currently under development and is scheduled to be released in March 2012 for a complete index of all identified bicycle needs in the County.

- Dublin: $4.2 million for projects in the Bikeways Master Plan
- Emeryville: $5 million for bicycle improvements identified in their Capital Improvement Program, $10 million for I-80 bike-pedestrian bridge, and $13 million for future bike-pedestrian bridges
- Fremont: $42 million, for both bicycle and pedestrian projects
- Newark: Approximately $4 million for both bicycle and pedestrian projects
- Oakland: $27 million for projects in the Bicycle Master Plan and $8 million for a bicycle/pedestrian bridge over Lake Merritt Channel.
- Pleasanton: $29.7 million for bicycle projects in the Pedestrian and Bicycle Master Plan
- San Leandro: $23.2 million for both bicycle and pedestrian projects in the Bicycle and Pedestrian Master Plan
- Union City: $6 million (for lane reconfiguration on Union City Boulevard)

CHAPTER 8. PEDESTRIAN TRAVEL

Nearly every trip by any mode begins and ends as a walking trip. In Alameda County, as in the Bay Area as a whole, the percentage of trips made primarily on foot is second only to auto, with pedestrian trips representing over 11% of total trips.

Figure 8-1 Mode Share for All Trips



Source: BATS2000

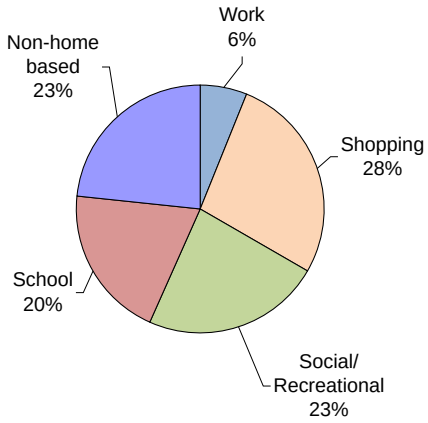
EXISTING CONDITIONS

In 2000, the Metropolitan Transportation Commission's Bay Area Travel Survey (BATS)[1] estimated that approximately 3.3 million trips were made primarily on foot every week in Alameda County. This translates to more than 470,000 daily walk trips. If walking trips to or from transit are included, the weekday number of walk trips in Alameda County nearly doubles. This includes approximately 360,000 trips to AC Transit bus stops, almost 53,000 to BART stations, plus additional trips to the County's other transit agencies. It should also be noted that in any trip count walking trips are undercounted because walking is a component of *any* trip. Whether a trip is by car, bus, train, or bike, at some point, every traveler must walk to and from a destination, making pedestrian infrastructure vital to almost everyone throughout Alameda County.

Because walking is so prevalent in Alameda County it is important that pedestrian facilities are safe, accessible, and responsive to a variety of users, while also positively contributing to the pedestrian experience and sense of place. For example, throughout this Chapter the term "pedestrians" includes people using wheelchairs and other mobility devices and "walking" includes use of wheelchairs and mobility devices. Most jurisdictions in Alameda County provide a minimum baseline of pedestrian facilities, which typically include sidewalks and crosswalks. However, there still is a wide range of pedestrian environments in Alameda County. For example, Oakland's downtown and adjacent Chinatown offer a compact, grid street pattern and a plethora of pedestrian amenities that are highly conducive to walking. Many other jurisdictions, particularly in their downtown cores, also boast pedestrian facilities that encourage pedestrian travel. Alameda County also has an extensive system of recreational trails that makes the county a premier destination for hiking. At the same time, every city in Alameda County can make improvements to its pedestrian facilities to improve connectivity, enhance accessibility, fill in network gaps, and create a welcoming environment for pedestrians. The rest of this section takes a closer look at the specifics of walking in Alameda County, highlighting mode share and trip purpose, demographics of pedestrians, trip distribution, and pedestrian safety.

1 BATS is a large-scale household travel behavior survey conducted by phone and mail across the nine-county Bay Area, most recently in 2000. BATS data was utilized to analyze bicycling and pedestrian travel because it provides much more detailed data than that of the U.S. Census.

Figure 8-2 Walk Trips By Purpose in Alameda County



Source: BATS2000

Mode Share and Trip Purpose

According to the American Community Survey (ACS), which samples travel behavior (and other information) more frequently than the U.S. Census, but not in as much detail, approximately 3.6% of work commuters in Alameda County walked to work in 2006-2008, an increase from 3.2% in 2000. In terms of mode share, this is a modest increase of 0.4%. However, that increase also represents a significant 14% growth in the number of pedestrian commuters, from 21,900 to 25,000, approximately.

When thinking about transportation, commute trips are often thought of first. However, trips to and from work are only one of the many reasons people walk. Because work trips tend to be longer trips, walking is less common as a primary mode for travel to work and more common for shorter neighborhood trips such as shopping.

The trip purpose for walking trips is in Figure 8-2. Of the 11% of all trips countywide that were made on foot in 2000, the most common trip purpose was shopping (27.4%), while the least common reason for walking was going to work (5.7% of all walk trips). More people walked to or from home than to or from other places (77% versus 23%).

School trips also constitute 1 in 5 walk trips in Alameda County. This is an important trip purpose to monitor because the vast majority of these trips are made by youth, an especially vulnerable population. Alameda County has made substantial investments in improving pedestrian environments at or near schools with the countywide Safe Routes to School

program. However, additional investment is needed to not only improve safety for the current students who walk to school, but also to encourage additional mode shifts in the future.

Demographics of Walkers

Walk trips in Alameda County are made by a wide variety of travelers and people across the economic spectrum. A summary of pedestrian demographics is presented below.

Gender

Of all the walking trips made in Alameda County, women make slightly more than men (52% vs. 48%). This closely reflects the overall gender split in the county (51% women, 49% men). Men and women make a similar percentage of their trips on foot: 11.5% of all trips for men and 10.6% of all trips for women.

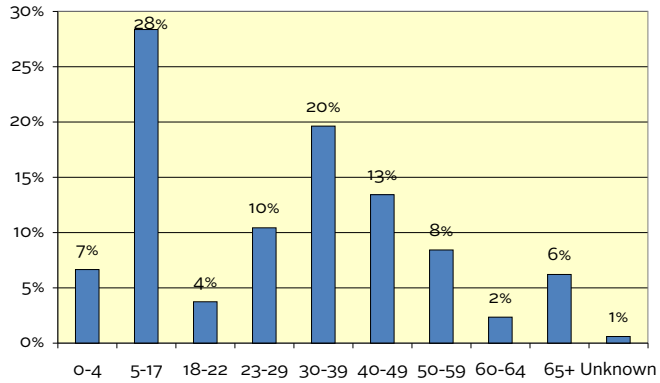
Age Distribution

Walking rates in Alameda County vary much more across age groups than across gender, with people under 39 and over 65 walking more than those in middle-age (ages 40-64). Children between the ages of 5 and 17 make 28% of all walking trips in the county, consistent with schools being the county's most popular walk destination. Walk trips by age are shown in Figure 8-3.

Income Level

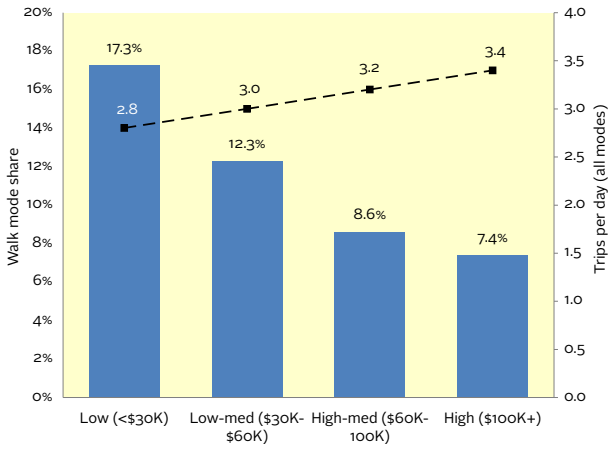
Walking rates vary even more across income levels than across age groups or gender. Households in the lowest income group (under $30,000) make a far higher portion of their trips on foot than the highest income group (17.3% versus 7.4%). However, because people tend to make more total trips per day by all modes as their income rises, the highest income group makes actual more walking trips per day than the lowest income group (3.4 versus 2.8). A comparison of walk mode share and trips per day by income group is shown in Figure 8-4.

Figure 8-3 Percentage of Total Walk Trips By Age Group



Source: BATS2000

Figure 8-4 Walk Mode Share By Household Income Level in Alameda County



Source: BATS2000

Image from Flickr user: maveric2003

Activity Centers

Throughout Alameda County there are locations where there are larger concentrations of non-motorized activity. Identifying these "activity centers" can help to facilitate investment in the highest priority and most cost effective pedestrian and bicycle projects. The scope, type, and number of these locations vary from planning area to planning area, yet they generally include primary, secondary, and post-secondary schools; transit stations and high frequency transit lines; downtowns and major commercial/retail centers; hospitals and medical facilities; civic and government buildings; and parks, trails, and open space. Outlined below is a small sampling of such locations for each planning area.

North County

- Two of the busiest pedestrian hubs in the County are Downtown Oakland and UC Berkeley. At UC Berkeley, during the busiest hour of the day, the intersection of Telegraph Avenue and Bancroft Way is crossed by more than 3,000 pedestrians, nearly one per second.
- College Avenue retail district
- Ridge Trail
- Ohlone Greenway

Central County

- Downtown Hayward and San Leandro
- CSU East Bay, Hayward
- AC Transit lines 1 and 1R
- Bay Trail and Hayward Shoreline

South County

- Downtown Fremont
- Centerville District
- Ohlone College
- Coyote Hills
- Alameda Creek Trail

East County

- Downtown Livermore and Pleasanton
- Pleasanton and Livermore ACE station
- Dublin/Pleasanton BART
- Stoneridge Mall
- Iron Horse Trail

Trip Distribution

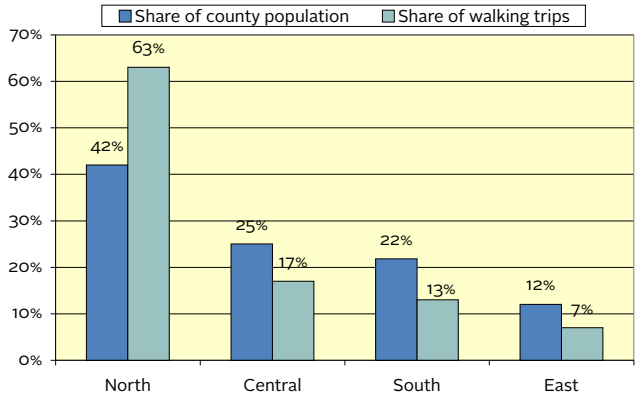
Figure 8-5 shows the percentage of walk trips made in each planning area. For comparison purposes, the chart also shows each planning area's share of the county's population.

More than half of all walking trips in the county take place in North County (63%), far above its population share of 42%. Central, South, and East County all have lower shares of the county's walking trips than of the county's population.

North County also has the highest percentage of people taking their trips on foot (16%); its share is almost three times higher than that of East County (6%). The built environment perhaps helps explain this variability in walking. Among planning areas, as density increases, so does the walking share of trips (Figure 8-6).

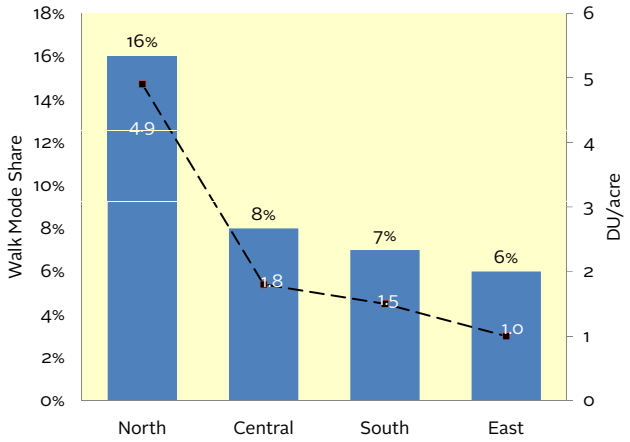
Walking trips tend to be relatively short, in terms of both time and distance. Almost 30% of walk trips nationally last five minutes or less (Figure 8-7). Assuming an average walking speed of 3 miles per hour, this translates to a quarter mile or less. Only 8% of walk trips in Alameda County are over 30 minutes (1.5 miles or more) long, which helps explain why the denser North planning area sees higher levels of walking than the rest of the county. Clearly then, walk trips increase when there are more destinations within a short distance from home or work locations.

Figure 8-5 Share of County Population and Walking Trips By Planning Area



Source: BATS2000, 2000 Census

Figure 8-6 Walk Mode Share and Average Density By Planning Area



Source: BATS2000; American Community Survey 2006-2008l; and Existing Land Use in 2000: Data for Bay Area Counties, Association of Bay Area Governments

Figure 8-7 Duration of Walking Trips, US

Minutes	Approx. distance (miles)	Percent of trips
0-5	0-0.25	29.70%
5.1-10	0.25-0.5	20.90%
10.1-15	0.5-0.75	20.50%
15.1-20	0.75-1	7.10%
20.1-25	1-1.25	3.70%
25.1-30	1.25-1.5	9.20%
30.1-45	1.5-2.25	5.30%
45.1-60	2.25-3	1.30%
>60	>3	1.30%

Source: National Household Travel Survey, 2009

Pedestrian Safety

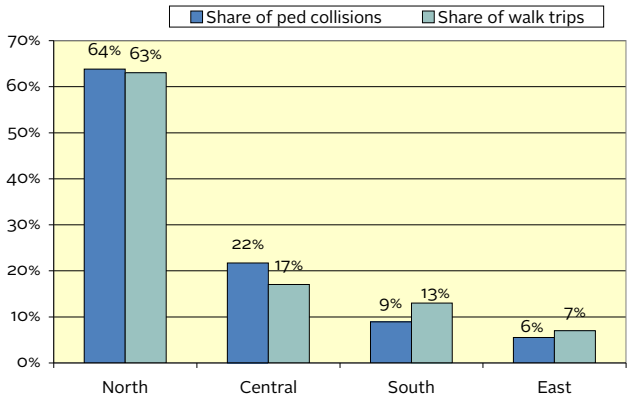
As shown in Figure 8-8, between 2000 and 2008, there was an average of 780 collisions per year in Alameda County involving pedestrians that resulted in at least serious or visible injuries, and an average of 25 annual fatalities. Fatalities ranged from a low of 18 in 2007 to a high of 34 in 2008.

Most pedestrian collisions are concentrated in two general areas: from central Berkeley to downtown Oakland; and from downtown Oakland to downtown Hayward, running through central San Leandro. It is not surprising that the number of collisions is higher where walk trips are more frequent. The share of the county's pedestrian collisions in North and East County are roughly in balance with their share of the county's walk trips, whereas Central County has a higher share of collisions than of walk trips (22% versus 17%) and South County shows the reverse pattern (9% of the county's pedestrian-involved collisions and 13% of its walk trips).

Figure 8-10 shows another method of examining collision rates is to chart collisions per 1,000 pedestrian trips. This methodology normalizes collisions by the number of walking trips and may therefore be a better indicator of pedestrian safety.

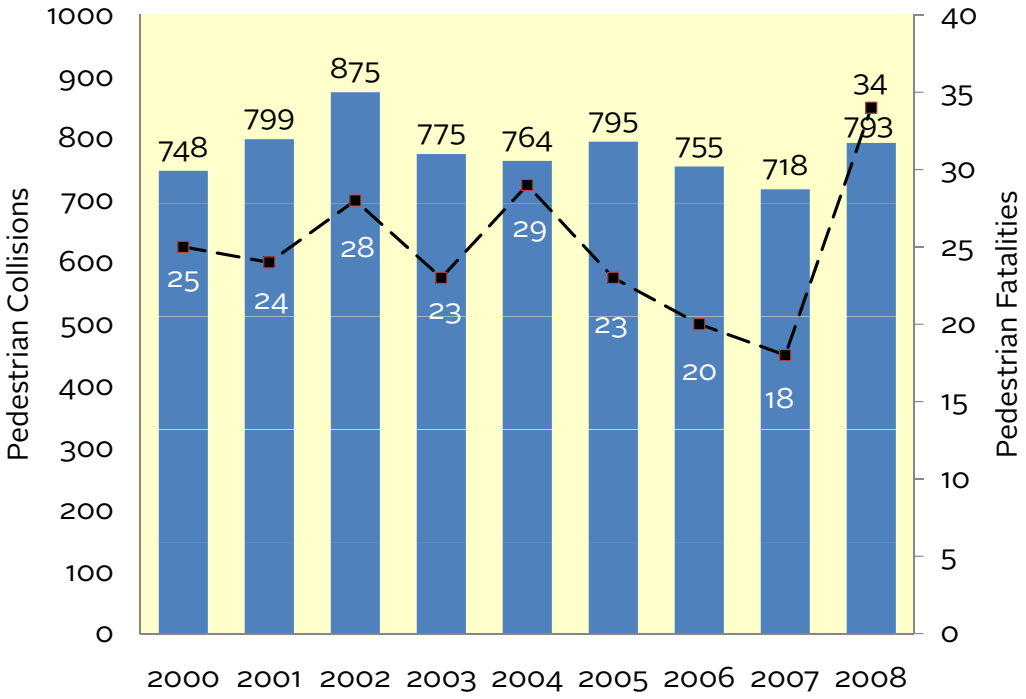
North County, while having by far the highest share of pedestrian collisions, has among the fewest collisions per 1,000 pedestrian trips, while East County has the most collisions per 1,000 pedestrian trips. Key factors may include a combination of auto speeds and relatively less frequent pedestrian crossings; making drivers less aware and cautious at intersections.

Figure 8-9 Share of Pedestrian Collisions and Walk Trips By Planning Area



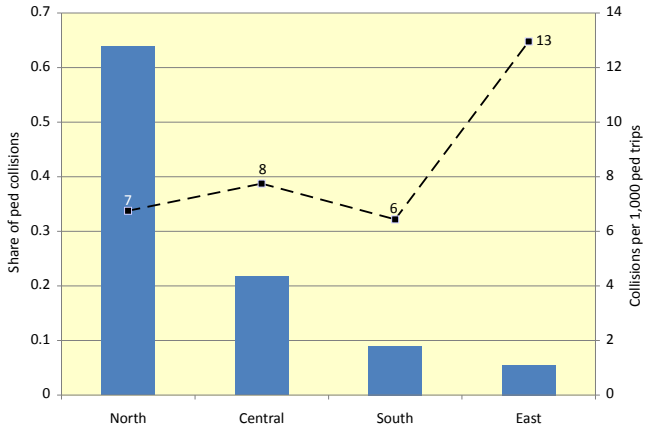
Sources: SWITRS, BATS2000

Figure 8-8 Pedestrian Collisions and Fatalities in Alameda County



Source: SWITRS

Figure 8-10 Share of Pedestrian Collisions and Collisions Per 1,000 Pedestrian Commuters



Sources: SWITRS, 2000 Census, 2006-2008 ACS

Pedestrians' share of total traffic fatalities

Pedestrians and bicyclists are the most vulnerable users of the transportation system. As a result, pedestrians (and also bicyclists) make up a disproportionate percentage of traffic fatalities and injuries. Figure 8-11 shows the pedestrian share of all traffic fatalities in the county. These percentages follow a similar pattern as the absolute number of pedestrian fatalities described previously.

Over the past nine years, pedestrians represented 24% of all traffic fatalities in Alameda County; more than twice the county's walk mode share (11%).

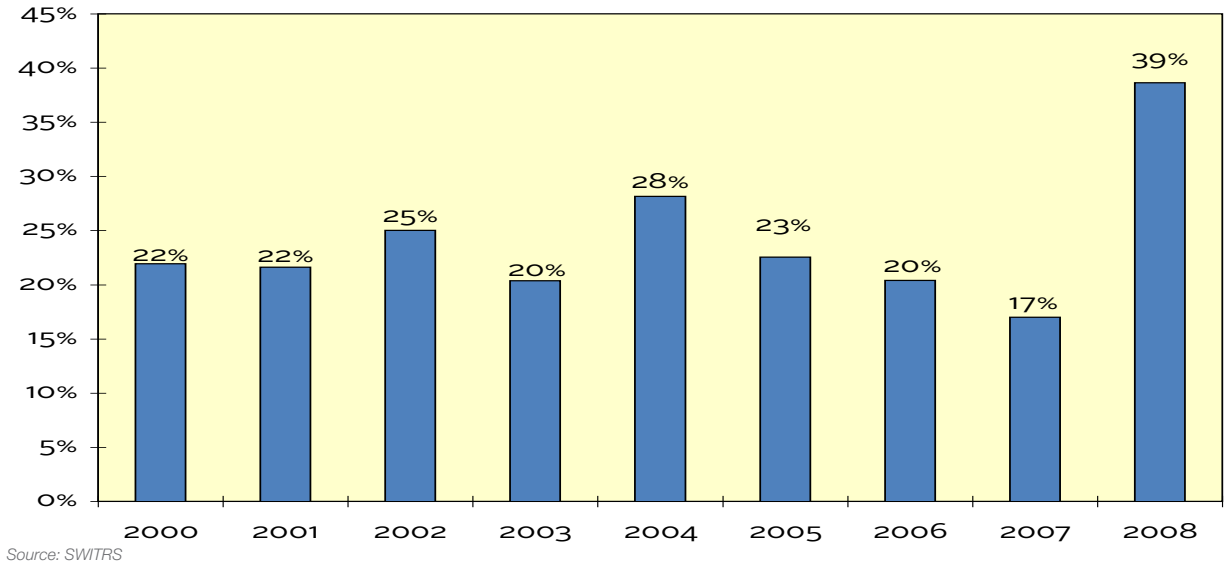
Pedestrian Facilities

For the most part, Alameda County is a welcoming place for pedestrians. Basic facilities are present in every jurisdiction, while some streets and districts are especially conducive to pedestrian travel and recreation. Alameda County also has an extensive system of trails that offer not only recreational opportunities, but key travel connections to transit and other regional destinations. The major trail systems in Alameda County include the East Bay Regional Park District's extensive trail network, the Iron Horse Trail in East County, and the Alameda Creek Regional Trail between Fremont and the Bay, and the San Francisco Bay Trail. Both pedestrian and bicyclists use these trails. A full description of Alameda County trail resources can be found in Chapter 7.

Physical barriers and connectivity gaps

Many of the same physical barriers and connectivity gaps that prevent Alameda County residents from bicycling also deter pedestrian transportation as well. Auto and rail infrastructure such as highways, interchanges and railroad tracks create significant barriers in Alameda County. Key gaps include missing segments along multi-jurisdictional paths and trails, as well as sidewalk gaps, and non-pedestrian-actuated traffic signals.

Figure 8-11 Pedestrians as Percentage of All Traffic Fatalities in Alameda County



Source: SWITRS

Physical Barriers

Automobile and rail infrastructure, highways, railroads and interchanges, create a majority of the physical barriers in the existing pedestrian network throughout Alameda County:

North County

- Interstates 80, 580 and 880
- State Routes 24 and 13
- Railroad tracks in Albany, Berkeley, Emeryville and Oakland
- Freeway and railroad crossings (Gilman Street interchange)

Central County

- Interstates 580 and 880
- Railroad tracks
- San Leandro (I-880 interchanges at Davis Street, Marina Boulevard and Washington Avenue; and the Union Pacific Railroad Oakland Subdivision underpasses on Washington Avenue and San Leandro Boulevard)

South County

- Interstates 880 and State Route 84
- Union Pacific railroad tracks

East County

- Interstates 580 and 680

Connectivity Gaps

Connectivity gaps refer to missing connections or segments along pedestrian routes, including multi-use paths and on-street facilities. Major connectivity gaps in Alameda County cited by local jurisdictions include:

North County

- San Francisco-Oakland Bay Bridge
- Lake Merritt channel (Oakland)
- Oakland Estuary waterfront (Oakland)

Central County

- Bay Trail gaps

South County

- Bay Trail gaps between south Fremont Boulevard and Dixon Landing Road (Fremont)
- Creeks and canals

East County

- Along the Iron Horse Trail crossing Santa Rita Along the Iron Horse Trail crossing Santa Rita Road, the intersection of Stanley Boulevard at Valley and Bernal avenues (Pleasanton)
- Arroyo Mocho Creek at Stoneridge Drive (Pleasanton)
- Intersection of the Alamo Canal and Tassajara Creek trails and I-580 (Dublin)

Planning, Support and Advocacy

Local planning efforts

Pedestrian plans at the local level are important because it is local jurisdictions that are responsible for planning, designing, constructing and maintaining pedestrian facilities. Several jurisdictions have recently completed or are in the process of completing their pedestrian plans. In addition, the Alameda CTC is currently updating the 2006 Alameda Countywide Pedestrian Plan. The updated plan will reflect current walking trends and needs, identify project and program priorities, as well as provide a framework for the allocation of funds. The update process began in May of 2010 and the final plan is scheduled to be approved by the Alameda CTC Board in March of 2012. Like the Bicycle Plan, this Countywide Pedestrian Plan update will be coordinated with the Countywide Transportation Plan and the pedestrian projects and programs that are identified will be incorporated or referenced in the Countywide Transportation Plan.

Local support efforts

Programs that support and encourage walking can be as important to protecting and promoting walking as pedestrian infrastructure projects. Local jurisdictions in Alameda County administer a broad range of such programs to complement their facility-building efforts. Many of the projects listed below parallel initiatives to encourage bicycling:

Safety

- **Walking audit:** Alameda County, Albany, Piedmont, Berkeley and San Leandro
- **Pedestrian safety education campaign:** Alameda County, Berkeley, Dublin, Fremont and San Leandro

Law enforcement

- **Pedestrian/bicycle traffic safety officers:** Alameda County
- **Pedestrian/bicycle enforcement activities:** Eleven jurisdictions: Alameda County, Albany, Berkeley, Dublin, Emeryville, Fremont, Hayward,

Livermore, Oakland, Pleasanton and San Leandro. These activities include "crosswalk stings," in which a plain-clothes police officer crosses the street and another officer gives warnings or tickets to drivers who fail to yield.

Education

- **Inform motorists on pedestrian/bicycle laws:** Albany, Berkeley, Dublin, and San Leandro
- **Traffic safety education:** Albany, Berkeley, Fremont, Dublin, and San Leandro

Promotion/encouragement

- **Walks and tours:** Albany, Berkeley, Fremont, Hayward, Oakland, Piedmont, and Pleasanton
- **Walking maps:** Berkeley, Emeryville and Oakland

Safe Routes to School (SR2S)

- Berkeley, Emeryville, Fremont, Hayward, Oakland and San Leandro have applied for and received grant funding for SR2S programs; Pleasanton, Livermore and Union City applied for funding but did not receive it.
- Alameda County, Albany, Berkeley, Hayward, Livermore, Oakland, Piedmont and San Leandro participate in the countywide SR2S program through TransForm.
- Newark and Emeryville do not have SR2S programs.

Traffic calming

- Five jurisdictions (Berkeley, Emeryville, Newark, Pleasanton and San Leandro) have a substantial traffic-calming program, with a dedicated funding source.
- Five jurisdictions (Alameda County, Albany, Fremont, Livermore and Oakland) have a traffic-calming program but with no dedicated funding source.

Multi-jurisdictional programs

In addition to the local programs, there are three multi-jurisdictional support programs of note:

- Measure B—a countywide half-cent sales tax for transportation projects—will continue to play a key role in funding pedestrian facilities throughout the county. Five percent of Measure B revenue is earmarked for bicycle and pedestrian projects and programs, of which 75% is directly programmed by the county's 15 jurisdictions and the remaining 25% is allocated by Alameda CTC at its discretion.
- Safe Routes to Schools (SR2S) Alameda County Partnership (www.transformca.org/sr2s). This program reaches students at more than 60 public elementary schools. It is led by TransForm, a local non-profit dedicated to improving transit and creating walkable communities.
- Tri-City Senior Walk Clubs, providing social and recreational opportunities for seniors in Fremont, Newark and Union City. Club participants follow a 20-week curriculum that encourages walking and promotes its health benefits, teaches awareness of pedestrian safety and personal security, and trains participants to identify and advocate for pedestrian improvements in their neighborhoods.[2]

Advocacy efforts

Pedestrian advocacy seeks to encourage government to improve the walking environment and to encourage more people to walk more often. While bicycle advocacy has surged in the past 20 years, pedestrian advocacy is less developed, but growing. Advocacy efforts active in the county, include:

- Pedestrian or pedestrian/bicycle advisory committees for several cities (including Berkeley, Oakland, Emeryville and Fremont), Alameda CTC and MTC.
- Walk Oakland, Bike Oakland (www.walkoaklandbikeoakland.org)
- Walkable Neighborhoods for Seniors (sponsored by United Seniors of Oakland and Alameda County; www.usoac.org/wn4s/index.htm)
- Pedestrian Friendly Alameda (active in the city of Alameda; www.pedfriendly.org)
- Albany Strollers and Rollers (http://sites.google.com/site/albanystrollersandrollers/)

FUTURE CONDITIONS

The importance of safe and accessible pedestrian facilities will only continue to increase in Alameda County. Projected demographic trends and policy mandates will increase the amount of urban land uses that are more conducive to short walking trips. Such trends will make addressing these needs more and more important. Furthermore, the growing need to address rising energy costs and climate change will only continue to shift demand to modes that are sustainable and cost-effective.

At the same time, there is growing recognition that walking (and also bicycling) can help reverse the public health epidemic caused by physical inactivity. According to California Active Communities, "In California,

2 www.actia2022.com/files/managed/Document/293/A090026_S_Tri_City_Senior_Walk_Clubs_102209.pdf

physical inactivity is by a large margin the most prevalent chronic disease risk factor..., contributing to an estimated 30,000 deaths each year." In recent years, public health agencies and professionals have become advocates of non-motorized transportation as they have become more aware of the connection between active transportation and health.

Alameda County jurisdictions will need to continue to monitor these trends and identify areas where investments in pedestrian infrastructure should be prioritized to further encourage walking. For example, Priority Development Areas (PDAs), slated to accommodate up to half of the Bay Area's projected housing growth in compact infill development, are strong candidates for channeling future investments in pedestrian and bicycling infrastructure. In addition, investments in pedestrian infrastructure around transit stations and transit lines will not only improve mobility, but help to increase the reach of transit services, thereby increasing transit ridership.

Many pedestrian facilities will also continue to be built as jurisdictions implement their Americans with Disabilities Act (ADA) Transition Plan. These plans describe the structural and physical changes—including new sidewalks and curb ramps—needed to remove barriers in the public right-of-way. All jurisdictions in Alameda County have adopted ADA Transition Plans.

SUMMARY OF NEEDS

Almost every local jurisdiction cites lack of funding as a major barrier to making pedestrian improvements. In that context, funding needs for pedestrian projects is an important existing condition that will help determine the countywide priorities. Based on a 2010 online survey of all 15 Alameda County jurisdictions, conducted during the development of the Alameda Countywide Pedestrian Plan, the following is a sampling of pedestrian needs in the County. This list is by no means comprehensive, but gives a sense of the scale of need for these modes. Readers should refer to the Countywide Pedestrian Plan which is currently under development and is scheduled to be released in March 2012 for a complete index of all identified pedestrian needs in the County.

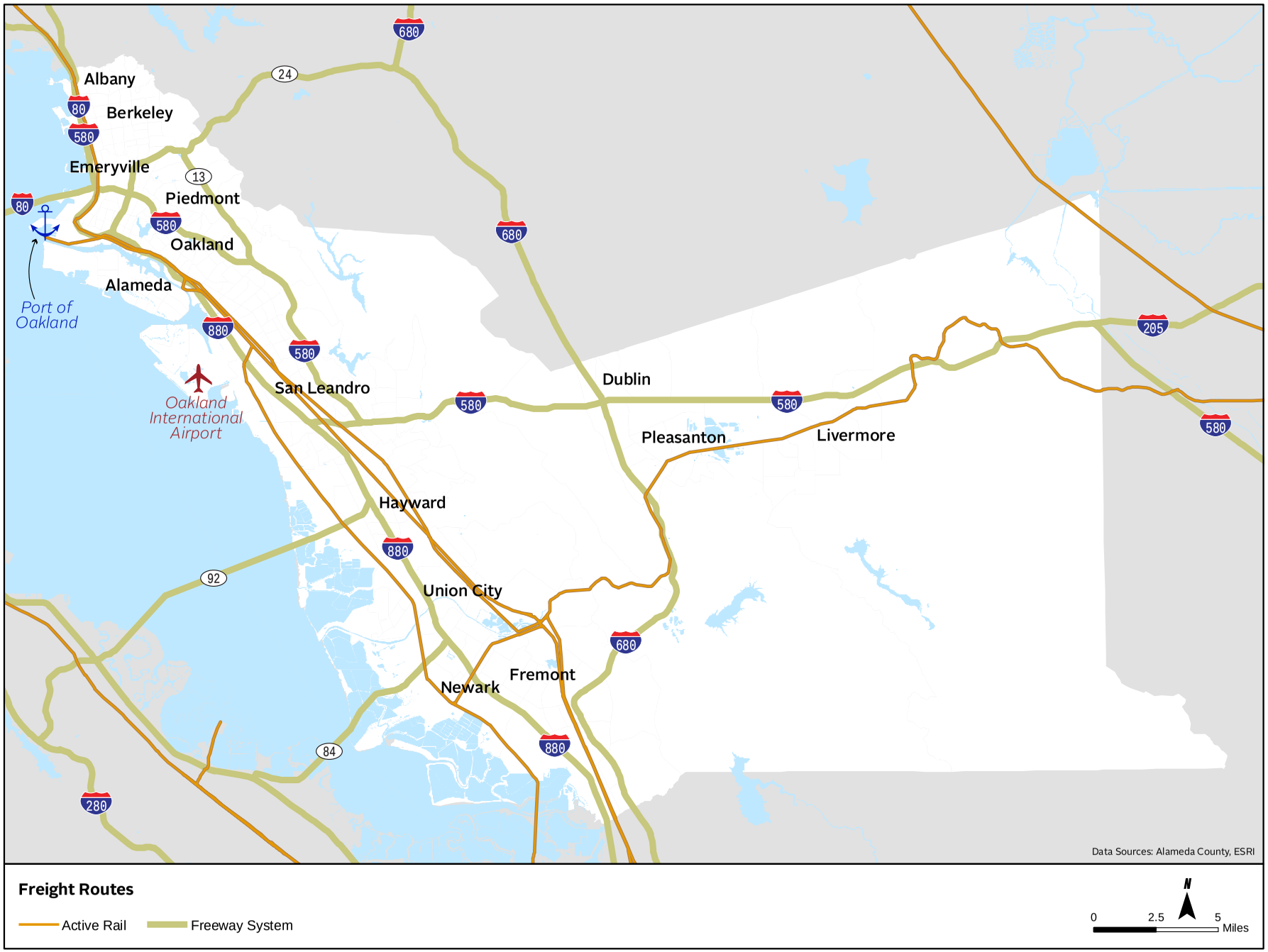
- **Dublin:** $84,000 annually to repair sidewalks.
- **Emeryville:** $1 million for pedestrian-priority zone streetscape improvemenets.
- **Livermore:** $7.4 million annually for 10 years to clear the backlog of sidewalk projects, and $2.7 million annually after that; $1.86 million annually for three years to remove the backlog of traffic control maintenance and $420,000 annually after that.
- **Newark:** Approximately $2 million.
- **Oakland:** $12,000,000, for a variety of streetscape improvement projects and maintenance activities.
- **Piedmont:** $100,000
- **Pleasanton:** $6,289,841
- **San Leandro:** $6,450,000 (East Bay Greenway, $2.7 million; East 14th South Area streetscape, $2 million; accessibility improvements at railroad crossings, $750,000; West Juana Avenue streetscape, $450,000; Bancroft Avenue and 136th Avenue crossing improvements, $550,000).
- **Union City:** $5.3 million ($3 million to upgrade all curb ramps to ADA standard; $2 million to install and repair sidewalk segments; and $300,000 to improve pedestrian-related features at traffic signals).

CHAPTER 9. GOODS MOVEMENT

Efficient goods movement enhances the region's competitiveness and reduces the costs of goods and services in Alameda County and the Bay Area. It facilitates both domestic and international trade by providing access to markets for local manufacturing, and providing connections to major consumer goods suppliers. International trade is the fastest growing component of local and regional goods movements, with major gateways located in Alameda County such as the Port of Oakland and Oakland International Airport. Trucking moves most freight traffic, a wide range of commodities, and serves all freight markets. Rail provides transportation for long-haul bulk movements and provides important transportation links to the Port of Oakland, which is serviced by both of the Class I railroads that operate in the region: Union Pacific Railroad (UP) and Burlington Northern Santa Fe Railway (BNSF). With the region's largest port, a major airport, numerous rail and trucking resources, Alameda County is a critical hub for goods movement nationwide.

Image from Cambridge Systematics

Figure 9 -1 Map Showing Major Freeways and Rail Lines



EXISTING CONDITIONS

Truck

According to MTC's *2004 Bay Area Regional Goods Movement Study Report,* trucks move about 80% of the freight tonnage in the Bay Area. Interstates-880, -80, and -580 are the major truck routes in Alameda County. The I-880/I-80 corridor carries the highest volume of truck traffic in the region and among the highest of any highway in the state. I-880 serves the Port of Oakland, Oakland International Airport, and the Oakland Intermodal Gateway Terminal[1], as well as a major concentration of industrial and warehouse land uses. The I-580 corridor experiences the second highest volume of truck traffic in the county, most of it long-haul in nature and involving the heaviest trucks. Increasingly, regional distribution centers have located in the San Joaquin Valley and trucks providing goods to the county and other Bay Area destinations use this corridor for access. The largest truck trip generators in the county are the Port of Oakland and the Oakland International Airport.

Trucks on the highway/roadway

Image from Cambridge Systematics

Rail

Rail carries 6% of the freight tonnage in the Bay Area. Oakland is the center of this rail network in Alameda County. Two Class I railroads operate in the county, Burlington Northern Santa Fe Railway (BNSF) and Union Pacific Railroad (UP) shown in photos below.

The UP line to Roseville, and the BNSF line to Stockton are the two major rail routes in the Bay Area. The UP and BNSF railroads each operate rail yards within the Port of Oakland complex, across the street from Oakland's eight marine terminals. Alameda County and Contra Costa County together are the top origins and destinations for Bay Area rail. The primary rail commodities moved in the area are crushed stone for construction, autos, steel, petroleum products, beverages, and waste and scrap. Rail provides transportation for long-haul bulk movements, and it provides an important transportation link to the Port of Oakland[2].

1 The Port of Oakland Intermodal Gateway Terminal is a near-dock rail facility completed in 2002 to make Port of Oakland more convenient for shippers and more competitive with other West Coast ports. Source: http://www.portofoakland.com/newsroom/pressrel/pressrel_80.asp

2 Source – MTC 2004 Bay Area Regional Goods Movement Study Report

BNSF Train

Image from Wikipedia: http://commons.wikimedia.org/wiki/File:BNSF_1291.jpg. Accessed November 17, 2010.

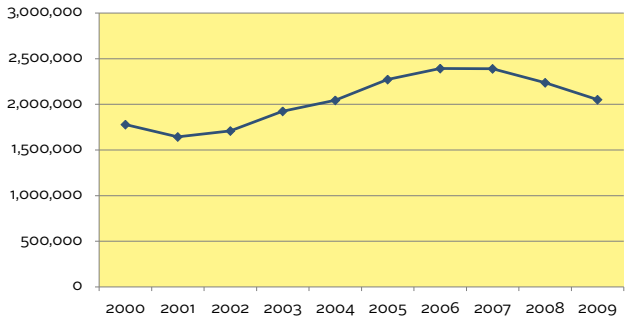
Union Pacific Train

Image from Wikipedia: http://commons.wikimedia.org/wiki/File:Union_Pacific-Diesel_Locomotive_4218.jpg. Accessed November 17, 2010.

Waterborne

Alameda County's waterborne freight includes containerized cargo at the Port of Oakland. Established in 1927, the Port of Oakland is a world-class international cargo transportation and distribution hub and the third busiest port in the West coast. Over 2 million twenty-foot equivalent units (TEUs) are handled annually by the Port, of which about 58% are exports and 42% imports (Figure 9-2). In 2008, $33 billion worth of goods passed over the port's wharves. The Port is the leading export seaport for the agricultural products from the Central Valley and the Napa Valley and Sonoma wine country. In addition, almost every state in the United States relies on the Port of Oakland for importing or exporting products. The majority of the Port of Oakland's trade is conducted with Asia (78%), with domestic locations in the Pacific, i.e., Hawaii and Guam, a distant second (16%). The port plays a critical role in meeting expected U.S. demand for imports from Asia and sending U.S. exports throughout the world. As shown in Figure 9-2, although port container volumes have decreased in the last three years (by 7% annually), overall the Port has exhibited a positive trend in the last decade with a 15% increase from 2000 to 2009.

Figure 9-2 Port of Oakland Container Volume

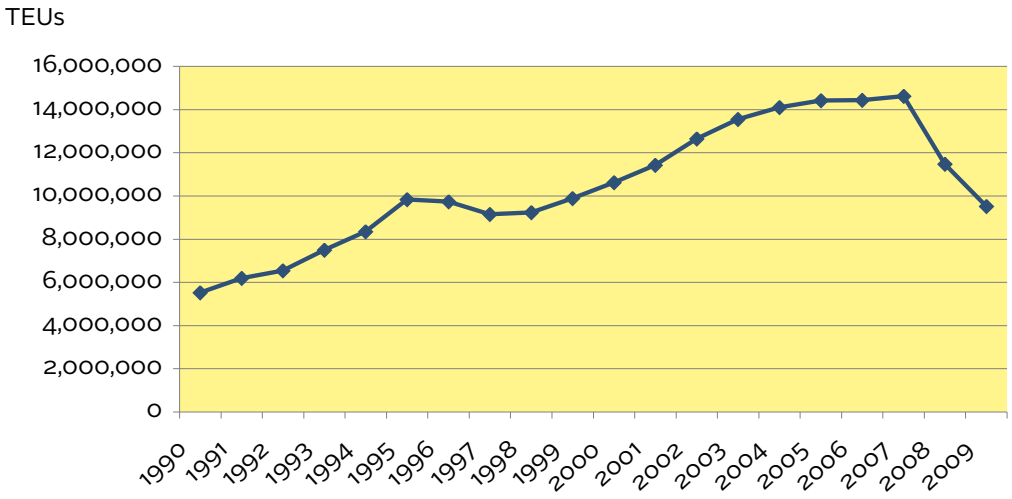


Source: American Association of Port Authorities (AAPA)

Port of Oakland

Image from Cambridge Systematics

Figure 9-3 Oakland International Airport Total Passengers – 1990 to Date



Source: OAK Passenger History by Month Beginning January 1990. Oakland International Airport Website: http://www.flyoakland.com/airport_stats_passenger_history.shtml. Accessed November 16, 2010.

Air

Oakland International Airport (OAK) is located south of the city's central business district in Alameda County. It is one of the three major airports in the San Francisco Bay Area, with 197 daily departures, of which 57 are all-cargo flights. The two passenger terminals and 32 boarding gates are located in the South Field where domestic scheduled services are provided by Alaska/Horizon Air, Allegiant, Delta and Delta Connection, Hawaiian, JetBlue, Southwest, United, and U.S. Airways/U.S. Airways Express. International scheduled services include Volaris with service to Guadalajara, Mexico. The major cargo carriers in this airport are FedEx, UPS, Ameriflight, and WestAir.

Oakland International Airport

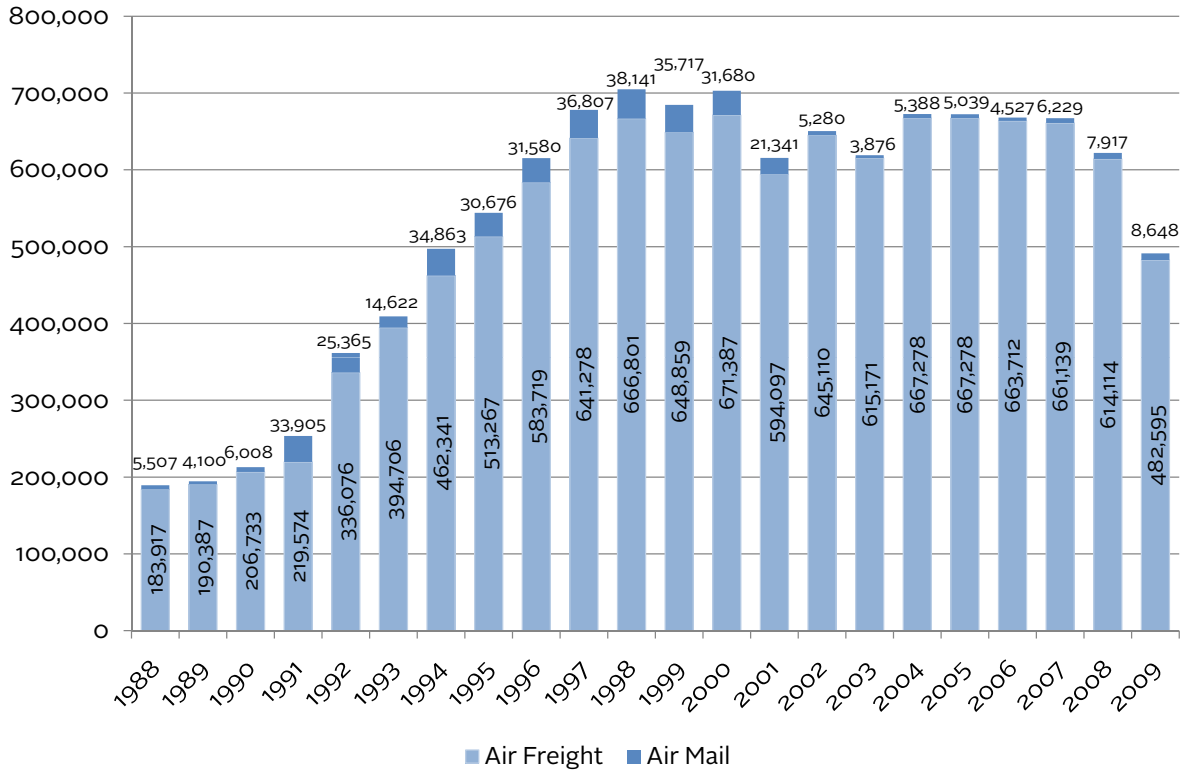
Image from Wikipedia: http://en.wikipedia.org/wiki/File:Two_737s.jpg. Accessed November 16, 2010.

In 2007 Oakland International Airport enplaned and deplaned about 14.6 million passengers, of which the vast majority (93%) were domestic passengers. As shown in Figure 9-3, the airport has experienced a 72% increase in passenger volumes over the last two decades. However in recent years there has been a drop in volume (35% decrease from 2007 to 2009), mainly attributed to a shift of domestic traffic from Oakland International Airport to San Francisco International Airport.

In 2008 Oakland International Airport completed major upgrades to its facilities. The $300 million Terminal Improvement Program added a new concourse with five additional boarding gates and waiting areas, expanded ticketing, security and baggage claim facilities, added new utilities, improved terminal access, and eased congestion in front of the terminals through a new roadway and curbside system.

Air freight in the Bay Area is mostly handled by Oakland International Airport. In 2007 Oakland International Airport handled about 661,000 tons of air cargo (Figure 9-4), but this fell to 483,000 tons in 2009. However, in that same year, Oakland was ranked number 12 out of the North American cargo airports for handling freight volume, and it is anticipated that air cargo tons will continue to grow in the next decades.

Figure 9-4 Oakland International Airport Air Cargo Volumes – 1988 to Date



Source: Year-end Airport Statistics Summary. Oakland International Airport Website: http://www.flyoakland.com/airport_stats_yearend_stats.shtml. Accessed November 16, 2010.

Figure 9-5 Actual and Forecast Aircraft Operations at OAK

Aircraft Operations	2007	2020	2035
Passenger Airlines	156,000	161,000	193,000
All Cargo Airlines	32,000	34,000	40,000
GA Jets	19,000	23,000	33,000
Total Air Carrier Runways	207,000	218,000	267,000
GA Runways	130,000	82,000	88,000
Total Airport	337,000	301,000	355,000

Source: Regional Airport Planning Committee. Regional Forecasts by Airport. June, 26 2009.

FUTURE CONDITIONS

Land Use and Goods Movement

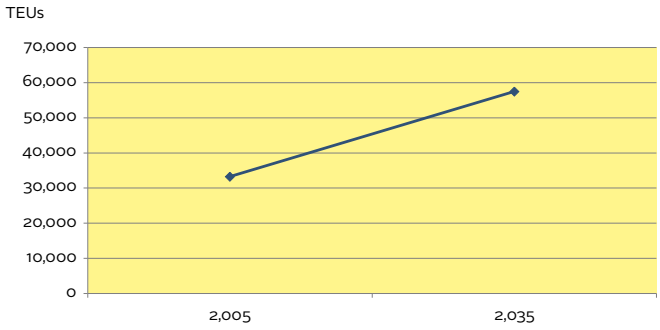
The MTC 2004 *Regional Goods Movement Study,* found that development trends and regional growth forecasts indicate increased demand for goods movement services, while at the same time a reduction in affordable, close-in location options for goods movement related land uses. Another study, the *2008 MTC Goods Movement/Land Use Project,* found that under current policies, a large share of the central Bay Area industrial land supply may transition to higher value new uses (office, residential, commercial). For example, 38% of existing industrial land along the East Bay I-80/880 Corridor is already planned for new higher–value uses. These trends could lead to relocation of goods movement related land uses to areas outside of central corridors, potentially leading to increases in land use conflicts, more truck miles and emissions, and higher costs of goods distribution. MTC is working with regional partners, including Alameda County, to develop and pursue specific strategies to address the displacement of goods movement related lands in their counties.

Truck

According to statistics contained in the Alameda County travel demand model, in addition to future forecast information from the Port of Oakland and Oakland International Airport, some of the major freight generators that produce the largest volume of truck trips within Alameda County are projected to be located in downtown Oakland, Fremont Auto Mall (and other adjacent businesses), University of California at Berkeley, and Newpark Mall and Shopping Center in Fremont. Truck trips produced by these locations (including the seaport and airport) are expected to grow on average by 70% in 2035 (Figure 9-6).

All the major truck corridors identified in Alameda County expect growing levels of recurrent congestion that affect the cost of goods movement. The MTC *2004 Regional Goods Movement Study* found that trucks are projected to find it more difficult to avoid peak period congestion in the future since congestion is expected to spread out into traditionally off-peak hours. In addition, this spreading is projected to result in part from future land use trends and policies that will push trucking businesses to the outer Bay Area. In addition to the added costs of congestion to goods movement, another future congestion-related issue impacting truck movement in Alameda County includes poor travel time reliability due to increased incident-related delays. Collisions involving trucks are particularly common in corridors not designed to handle high volumes of truck traffic, such as segments of I-880.

Figure 9-6 Daily Truck Trips Produced Within Alameda County by Top Transportation Analysis Zones



Source: Alameda County Travel Demand Model using 2007 land use projections.

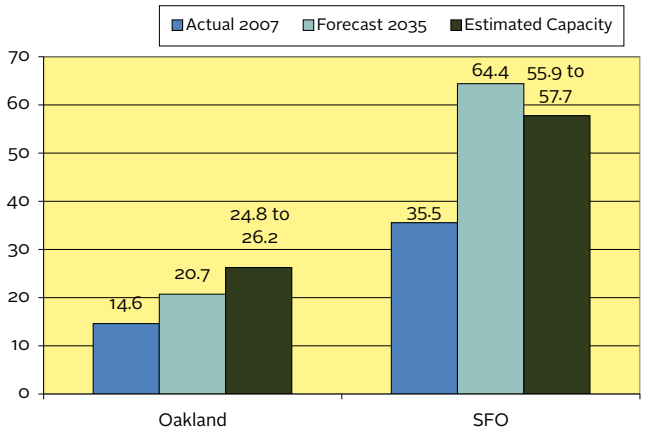
Availability of truck parking is expected to be another future issue. Truckers not domiciled locally prefer to leave the Bay Area at the end of their work assignment in large part because they know there are no satisfactory facilities in the immediate area. Commercial truck stop operators cannot find suitable sites, and if they do, they face difficult local conditions. This issue is projected to be worse by 2035. The *2008 Alameda County Congestion Management Agency Truck Parking Facility Feasibility and Locations Study* recommended that guidelines should be developed for accommodating and developing truck parking facilities, including identifying ways to accommodate truck parking facilities in local land use development processes.

Rail

For the most part, the Alameda County freight rail system is expected to function effectively in the future for the primary markets it serves. However, according to the MTC *2007 Regional Rail Plan* for the San Francisco Bay Area, freight rail traffic demand is expected to increase greatly over the next 50 years. Expanded and improved rail infrastructure will be needed to meet these growing demands and to mitigate any negative consequences associated with increased rail traffic. Specifically, increased traffic at at-grade rail crossings pose problems for the rail network and for passenger car and truck traffic.

AirBART Bus.
Image from Wikipedia: http://commons.wikimedia.org/wiki/File:AirBART.agr.jpg. Accessed November 18, 2010.

Figure 9-7 OAK Annual Passengers



Source: Regional Airport Planning Committee. Regional Airport Study: Airports Trends and Capacity, June 2009

Another future issue facing the rail system in Alameda County is the growing competition between freight rail needs and passenger needs in the Capitol Corridor which runs from Auburn in Placer County to San Jose in Santa Clara County, roughly parallel to I-80. This issue is also visible in the Altamont Pass Corridor (I-580) that runs from Stockton to San Jose. According to the MTC *2004 Regional Goods Movement Study,* more capacity will be needed to address these conflicting needs will likely be needed in the future.

Port

The MTC 2004 *Regional Goods Movement Study* forecast that volumes of containerized cargo will grow at 5% per year through 2020. The key to improved future utilization of the Port of Oakland is to focus on the transportation facilities in and around the seaport: improving intermodal rail facilities, increasing logistics space, and improving connectivity between the marine and rail terminals.

The Port has a number of major projects planned or underway to address future needs, including new on-dock rail at the Oakland Army Base (i.e., the Outer Harbor Intermodal Terminal (OHIT), and related uses, such as transloading facilities on port property. However, these projects have not been able to move forward due to major funding gaps. They are described under future projects in the following section.

Air

According to the Regional Airport Study being sponsored by the MTC, the Association of Bay Area Governments (ABAG), and the San Francisco Bay Conservation and Development Commisssion (BCDC), and as shown in Figure 9-7, passenger volumes at the Oakland International Airport are expected to grow 42% from 2007 to 2035 (increase from 14.6 million annual air passengers to 20.7 million). Similarly, cargo airlines aircraft operations are forecasted to increase by 25% from 2007 to 2035 (Figure 9-5).

There is some uncertainty about when growth will start occurring due to short-term trends showing declining passenger volumes at the airport. Over the last several years, a major shift of domestic traffic from Oakland International Airport to San Francisco International Airport (Figure 9-7) has occurred. The Regional Airport Study suggests the following possible causes: the launch of Virgin America at San Francisco International Airport and the competitive response of Southwest Airlines and JetBlue; volatile fuel prices, a global recession, and declining passenger demand; and the failure of several carriers at Oakland International Airport due to financial difficulties. However, Oakland International Airport may rebound from these challenges. The study suggests the Oakland market area is forecast to grow more rapidly than the San Francisco market for air travel (based on total household income).

Lack of airport capacity is not expected to be a major challenge at Oakland International Airport. In 2035, the airport is projected to have excess capacity while San Francisco International Airport is expected to be over capacity, presenting an opportunity for Oakland to pick up a greater share of future regional air traffic. However, constraints exist that could prevent Alameda County from meeting air cargo and air travel needs in the future. With domestic cargo focused at Oakland International Airport and international shipments focused at San Francisco International, shippers on both sides of the Bay need access to each airport, usually on very tight schedules. The MTC *2004 Regional Goods Movement Study* recommends that a fast ferry system linking the airport and major shipper concentrations across the Bay should be investigated. Peak period congestion is expected to become a more significant issue for expedited delivery shipments needing access to the airport, particularly related to the evening cutoff for overnight deliveries.

Access for passenger traffic to Oakland International Airport is expected to improve with the completion of the Oakland Airport Connector (OAC). The Oakland Airport Connector is an Automated Guideway Transit (AGT) system planned to connect BART and Amtrak riders at the Coliseum station to Oakland International Airport's terminals. The MTC recently voted to dedicate all $20 million of this year's state transportation improvement funding to the project. Once built, the Connector will replace existing AirBART buses. Design, utility relocation and construction combined for the $484 million project is expected to take three and one-half years to complete.

Two additional factors that could shape future conditions at Oakland airport are 1) potential diversion of air traffic to high speed rail and 2) sea level rise. According to the Regional Airport Study, approximately 9% of total passenger traffic could be diverted to high speed rail by 2035, assuming the system is operational at that time. The study authors indicate that this is a modest amount of diversion. The impact of sea level rise may prove a more significant consideration (Figure 9-8), not just for Oakland airport but for all low-lying infrastructure in the Bay Area. The 2009 *Caltrans Vulnerability of Transportation Systems to Sea Level Rise Preliminary Assessment* explains that the impacts may include flooding of tunnels and airport runways, washouts of coastal highways and rail tracks, submersion of dock and port facilities, and a potential shift of demand in transportation. Critical facilities at Oakland International and San Francisco International would be highly vulnerable with only additional inches of sea level rise.

Future Projects

The projects listed below have been identified as important to goods movement in Alameda County. Most require additional funds for completion.

Trade Corridors Improvement Fund (TCIF)

Altamont Corridor

The Altamont Corridor is a key corridor for agricultural products being exported from the Central Valley through the Port of Oakland. Several improvements have been proposed for the corridor and would be funded through the Trade Corridor Improvement Fund. These include an eastbound truck climbing lane on I-580 over the Altamont Pass, which will relieve traffic congestion and delay by separating slow moving traffic from existing mixed flow lanes, and safety improvements on I-880 at 23rd and 29th Avenues. As of December 2009, the estimated cost for the truck climbing lane project was $64 million, and expected to be funded entirely by the TCIF. The estimated cost of the I-880 improvements at 23rd and 29th Avenues is $97 million of which TCIF is expected to fund $73 million. Construction is scheduled to start August 2012.[3]

Oakland Trade and Industry Center (OTIC)

There are several capacity enhancement projects currently planned at the Port of Oakland that collectively are called the Oakland Global Trade and Industry Center. These are described below.

Marine Terminal Redevelopment

The Port of Oakland recently entered into a 50-year concession and lease agreement with Ports America Outer Harbor Terminals, LLC. Ports America plans to invest in marine terminal facility improvements. These include new entry and exit gates and substantial upgrades to container handling systems to expand capacity for increasing intermodal cargo volumes.

3 California Transportation Commission http://www.catc.ca.gov/programs/tcif.htm, Accessed November 29, 2010

Figure 9-8 Shoreline Areas Vulnerable to Seal Level Rise: 2040-2060

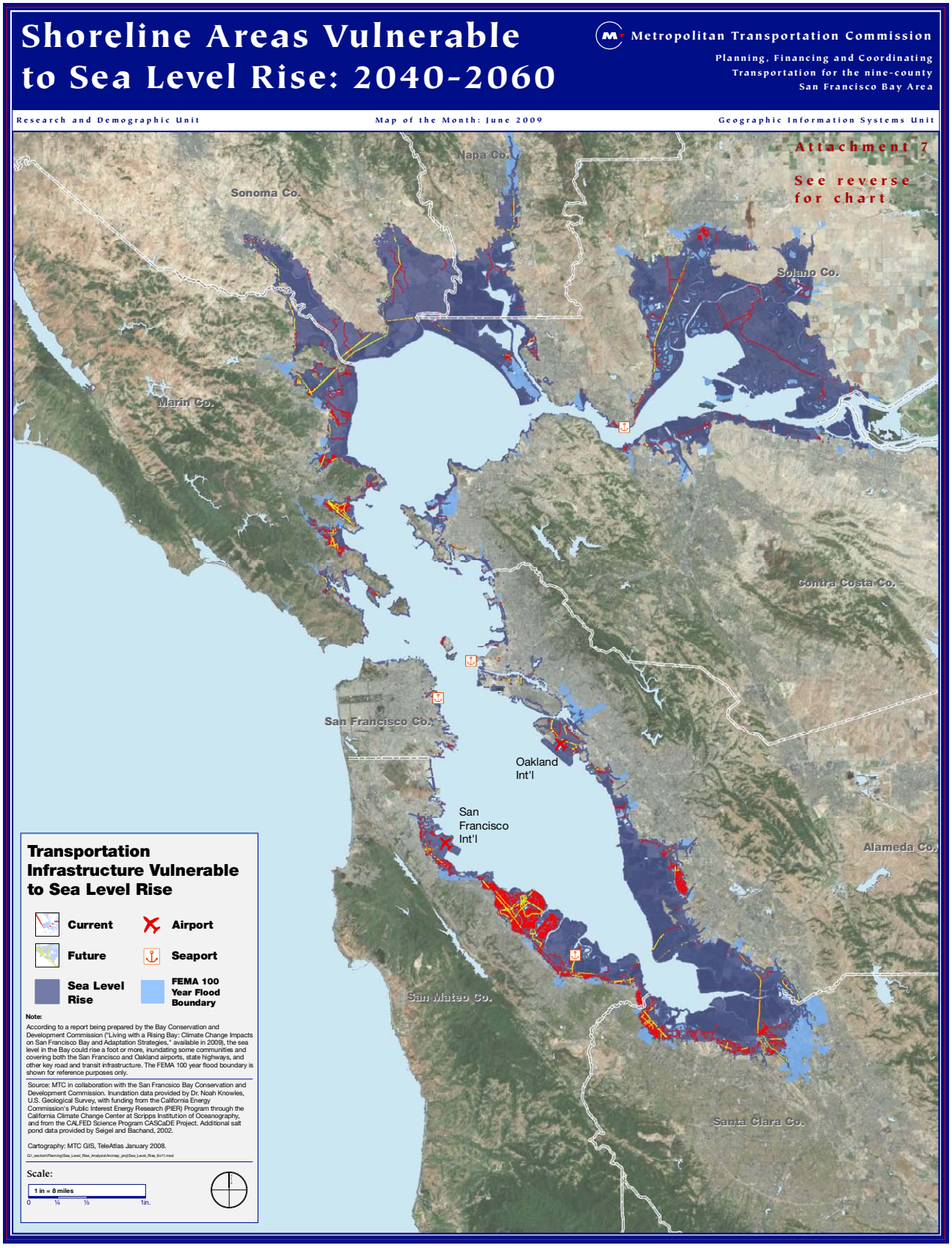


Image from MTC GIS, TeleAtlas January 2008.

Intermodal Rail Terminal and 7th Street Grade Separation

The proposed Outer Harbor Intermodal Terminal (OHIT) project includes a number of improvements including additional rail yards, electric powered rail-mounted cranes for container handling, expanded container storage areas, and other facilities. The project will improve the efficiency of container loading and unloading, increase port-wide intermodal throughput, and reduce congestion on mainline tracks adjacent to the Port.

The proposed 7th Street grade separation project will allow for the expansion of UP and BNSF rail yards and will maximize the benefit of the OHIT. Without the 7th Street grade separation, the benefits of the OHIT would be offset by bottlenecks at rail crossings due to slow train movements conflicting with at-grade truck traffic.

Trade and Logistics Facilities

The project proposes to incorporate more than 100 acres of the former Oakland Army Base adjacent to marine terminals to create new industrial space for goods movement companies to process their cargo. It will also attract other industrial uses that may benefit from being close to a thriving Port, such as manufacturing, assembly, or research and development facilities.

Funding OTIC

The proposed project (OTIC) is expected to cost an estimated $882 million, including $220.5 million for the 7th Street grade separation and $275 million for the new container terminal, site preparation for the trade and logistics facilities and related roadway improvements. Programmed funding through the TCIF, which was approved by the California Transportation Commission, totals $242.1 million for the 7th Street grade separation and the OHIT, which leaves a $253 million funding gap for these two projects. Both projects are scheduled to start in November 2011.

The proposed funding plan for the OTIC also envisions a requested federal share of $190.7 million, while the Port's private partners plan to provide 100% of the funding for the trade and logistics facilities, as well as the marine terminal improvements. Other public funding for the project includes $22 million from the Oakland Redevelopment Agency and $10 million in tax increment funding.

Martinez Subdivision Rail Line

The Port of Oakland and MTC have proposed improvements to the Martinez Subdivision rail line between the Port of Oakland and Richmond. The project will increase rail capacity through the addition of two mainline tracks, crossovers, and signaling. Over 66 trains (Amtrak, BNSF, UP) use this corridor's two mainline tracks per day, and current congestion and delays can be severe. This project is expected to nearly double capacity on the Martinez Subdivision, and will accommodate the additional 22 UP and BNSF trains anticipated by 2020. The cost of the project is estimated to be $35 million, of which 50% has been programmed to be funded by the TCIF. However, as of December 2009 the evaluation of the environmental analysis of the project was yet to be completed and a construction start date had not been scheduled.[4]

Goods Movement Emission Reductions Program

The Bay Area Air Quality Management District (BAAQMD) submitted a Goods Movements Emissions Reduction program for the Transportation 2035 Plan to be funded jointly by the BAAQMD, MTC, and the Port of Oakland. MTC has committed $45 million over five years to advance this program as part of the Transportation 2035 Plan. This program is expected to reduce future diesel particulate matter generated by trucks servicing the region, including the Port of Oakland, by replacing or retrofitting port and general goods movement trucks. The Port has also developed the Maritime Air Quality Improvement Plan (MAQIP) to achieve the 2020 goal of reducing cancer health risk associated with the Port's maritime operations by 85% from 2005 levels. In addition to the MAQIP and the clean truck program, Oakland has also implemented Virtual Container Yard (VCY) software to improve port operations and efficiency.

4 "Amended TCIF Program of Projects 12/1/09: www.catc.gov/programs/taf.htm

BEST PRACTICES

As a major goods movement hub, Alameda County may benefit from best practices developed in other locations. Best practices are not intended to be directly transferable but provide "food for thought" as projects are developed.

Creating "Green" Freight Solutions: Actions of the Port of Virginia

The Port of Virginia has teamed with partners such as the Virginia Department of Environmental Quality (DEQ), the Environmental Protection Agency (EPA), and a private barge operator to implement environmentally-sound improvements, including:

Inter-Terminal, Intra-Harbor Barge Service: The 64 Express

The James River Barge Line service operates the "64 Express" as a 100-mile long, inter-terminal, intra-harbor barge service. The marine corridor connects the Port of Hampton Roads with the Port of Richmond's multimodal freight and distribution gateway. Transportation service is provided by low-emission tugboats fueled with ultra-low sulfur diesel engines, allowing the company to offer "a cost effective, environmentally friendly, congestion relieving, and reliable alternative to all truck freight shipments to and from Hampton Roads.[1]" The 64 Express has benefitted the region in several ways:

Congestion benefits: In 2009, the barge operator eliminated an estimated 12,000 truck trips from local streets and highways (in particular along I-64[2]). It is anticipated that volumes will double in 2010, removing up to 24,000 trucks from local highways.

Environmental benefits: In 2009, the barge service reduced GHG emissions by an estimated 45% over the previous year. In addition, each container moved via barge (instead of truck) saves an estimated 31 gallons of fuel.[3]

The barge operator is continuing to expand service, in coordination with the local trucking community and regional ports. It is currently planned to expand the barge service in 2011 to transport containers to Norfolk, VA and Portsmouth, VA.

Hybrid and Ultra-Low Emission Locomotives: The Green Goat

In 2008, the Port of Virginia secured $1.3 million in Federal funding (largely from the EPA), to purchase a 1,500-horsepower switching locomotive that is completely powered by rechargeable batteries. Dubbed the *Green Goat,* this new locomotive brings several immediate environmental, public health, and economic benefits. The lack of a diesel engine means that there are no diesel exhaust emissions, as well as no associated impacts to local air quality concerns. In addition, the locomotive uses half the amount of fuel of traditional locomotives. In the first 18 months of service, the *Green Goat* used just 90 gallons of diesel fuel a day as opposed to 180 gallons a day used by traditional locomotives.

The Port of Virginia's 64 *Express* Barge Line
Image from The Port of Virginia www.portofvirginia.com

The Port of Virginia's ***Green Goat*** Locomotive
Image from www.hamtponroads.com, and Norfolk Southern

3 http://www.64express.com

4 The Craney Island Connection, www.craneyisland.com

5 http://www.64express.com

Trucks Waiting and Idling Outside of a Port Complex
Image from San Francisco Chronicle: www.sfgate.com

Truck Parking Solutions

Many communities across the nation are struggling with illegal truck parking. Generally attributed to a shortage of rest stops and suitable, legal parking for tractors and trailers, communities are dealing with rising numbers of tractors and trailers parking in residential zones, or illegally parking in commercial and industrial zones. This brings with it associated concerns with safety, roadway capacity and environmental and public health impacts. Some potential approaches for alleviating truck parking issues include:

Port of Oakland: Maritime Comprehensive Truck Management Program (MCTMP)

Adopted in June 2009, the MCTMP includes many actions to alleviate the instances of illegal truck parking by trucks serving the Port of Oakland. These actions include.[6]

- **Fund Enforcement through the Oakland Police Department (OPD):** Since 2000, the Port has funded two OPD officers to address truck safety violations, route regulations, and truck parking enforcement.
- **Raise Illegal Truck Parking Penalties:** The Port is considering working with City officials to investigate raising parking violation fees to $250.
- **Determine Community "Hot Spots":** The Port is also considering working with community officials to identify and map "hot spots" for illegally parked trucks, where enforcement and signage efforts can be targeted.[6]

North Jersey Transportation Planning Authority(NJTPA): Options to Reduce Truck Parking Demand

The NJTPA's 2009 report: *North Jersey Truck Rest Stop Study Refinement and Action Plan* included some options for reducing truck demand as a strategy to address truck capacity and parking issues. Some of these strategies include.[7]

- **ITS Improvement to Utilize Existing Capacity:** Where legal truck parking is offered, ITS should be utilized to advise truckers of available space. This may help to spur the development of more legal truck parking areas, as well as ensure that they are well-utilized.
- **Better Coordination Between Warehouse / Distribution Centers, Ports, and Shippers/ Receivers:** Coordination between the truck driver, dispatcher and pick-up and drop-off locations will reduce the need for staging, missed window times, waiting, queuing, and lost productivity.
- **Transportation Modal Shift:** Mode shift away from trucks, and towards short-haul rail and barging, may be possible in certain regions. This would clearly help to reduce the number of trucks queuing or competing for parking spaces.

6 *The Maritime Comprehensive Truck Management Program,* The Port of Oakland, 2009.

7 *North Jersey Truck Rest Stop Study Refinement and Action Plan.* The North Jersey Transportation Planning Authority, 2009.

Virtual Weigh Stations

Remote, unstaffed roadside enforcement facilities (known as virtual weigh stations (VWS)) are currently being studied and implemented in California and other locations nationally for potential application to improve roadside commercial vehicle enforcement programs. VWS can provide numerous operational benefits, including increased pavement/infrastructure protection, improved efficiency of enforcement assets, improved safety, and improved freight data, among others. In addition, VWS can support a reduction in GHG emissions, since trucks are not required to wait in queue at a VWS, and therefore do not idle while waiting for roadside inspections. VWS rely on several different technologies:

- **Interception and inspection** (as needed) of the overweight commercial vehicle.[8]
- **Weigh-in-Motion (WIM)** device (scale or sensors) to measure truck weight at VWS;
- **Camera** to take a picture to identify the vehicle;
- **Screening software** integrates data from the WIM and camera;
- **Dial-up, DSL, or wireless communication** is used to transmit this data to enforcement personnel or to a database management system;
- **A mobile enforcement officer** positioned downstream from the VWS accesses the VWS data and makes a screening decision;

VWS in California: Cordelia Prototype

California has a prototype VWS at Cordelia, in Solano County. The placement of the Cordelia virtual weigh station is at a point of congestion on a major Bay Area facility (I-80) that is not easily or cost effectively bypassed by commercial vehicles. It is also located in the same place as the PrePass transponder reader. The Cordelia virtual weigh station's in-pavement technical components include a bending plate WIM scale, a License Plate Reader (LPR), a vehicle detection system, and a camera triggering system. Data integration is performed by computer systems located in three roadside cabinets, which include the control systems, the PrePass computer, and the technology to convert digital images into pictures to match and compare with weight limits and compliance.

SUMMARY OF NEEDS

The future needs of Alameda County's freight system relate to major issues facing all freight modes. Major truck corridors identified in Alameda County (I-880, I-80, and I-580) expect growing levels of recurrent and non-recurrent congestion that affect the cost of goods movement. New strategies will be needed to manage existing capacity on truck routes, improve safety, and relieve bottlenecks where appropriate. Availability of truck parking is expected to be another future issue in the county. Truckers not domiciled locally prefer to leave the Bay Area at the end of their work assignment in large part because they know there are no satisfactory facilities in the immediate area. Expanded and improved rail infrastructure will be needed to meet growing rail freight demands, particularly at at-grade rail crossings and areas of competing passenger and freight demand.

The Port of Oakland has a number of major projects planned or underway to accommodate expected growth in container traffic, but many of these projects face significant funding gaps. Lack of capacity is not expected to be a major issue at Oakland International Airport, but freight linkages between Oakland and San Francisco International Airports may suffer due to regional congestion. Sea level rise is another issue that could impact low-lying freight infrastructure throughout Alameda County, including at Oakland International Airport and the port of Oakland. Finally, the relocation of freight-related land uses outside the metropolitan area may lead to longer truck trips and associated cost and emissions increases.

8 Cambridge Systematics, Inc., *Concept of Operations for Virtual Weigh Station, Final Report,* Cambridge, Massachusetts, June 2009, page 4-6

CHAPTER 10. PARKING AND TRANSPORTATION DEMAND MANAGEMENT

Traditionally, communities have tried to meet increasing demand for roadway or parking capacity by adding more supply—either through building lanes or adding parking structures. However, that approach has become increasingly unsustainable as there is less room available to add lanes in our built up areas and as cities have discovered the negative impacts that an ever increasing supply of roadways and parking lots has on the urban fabric. In addition, ample free parking and roadway capacity expansions have both been shown to induce more driving over time. It has become clear that the capacity expansion approach, originally intended to reduce congestion, may be worsening it, and may have a host of other unintended negative impacts as well.

The primary alternative to increasing supply is managing demand; changing the ways people travel has proven to be a quite effective way to manage congestion. Transportation demand management (TDM) consists of programs and policies that seek to affect the travel choices people make—the mode, time and duration of trips.

Image from Nelson\Nygaard

A large portion of traffic on our roadways is people driving their cars alone. Therefore, most demand management programs are designed to encourage people to travel by alternatives to the "single-occupant vehicle" (SOV), especially at peak hours when traffic is worst. Transportation demand management (TDM) can include strategies such as incentivies to use transit, to bike or to carpool, or providing alternatives such as carshare services that decrease the need for every individual to have a car. A number of typical TDM strategies are described in the sidebar on the following pages.

One of the most prominent and effective demand management strategies is managing the parking supply. Effective parking management has been shown to be a particularly effective way to manage the congestion on busy downtown streets that is caused by people "cruising" in their search for on-street parking. In addition, the overall availability and price of parking affects the mode choices people make when deciding how to get places. For example, since parking is expensive and more scarce (and since there are viable alternatives) in downtown San Francisco, many people traveling from Alameda County may choose to take BART or carpool rather than drive, which decreases traffic on the Bay Bridge.

In addition to being one of the single most important tools available for affecting the quantity of traffic on city streets, parking policy has also been shown to have substantial impacts on economic vitality, safety of all street users, and quality of the streetscape. A city's parking code (most importantly the minimum number of off-street parking spaces that a city requires for a new land use) shapes the form of our buildings and influences what is financially feasible to build. The type of parking facility and its integration with street design affect vehicle circulation, the movement and safety of transit vehicles, bicyclists and pedestrians and the quality of the streetscape. A brief overview of parking management strategies is also included in the sidebar on the following pages.

Transportation demand management can occur on multiple levels, with strategies appropriate for the region, the county and local jurisdictions, as well as individual employers or trip generators. Parking management is done at the city level: parking codes are a part of local zoning codes and parking management occurs primarily on local streets and roads and in city-owned public parking garages. Given this diversity, this Chapter concludes with an overview of how parking management and demand management could be integrated into the performance measures, projects and programs in the Alameda Countywide Transportation Plan and Transportation Expenditure Plan.

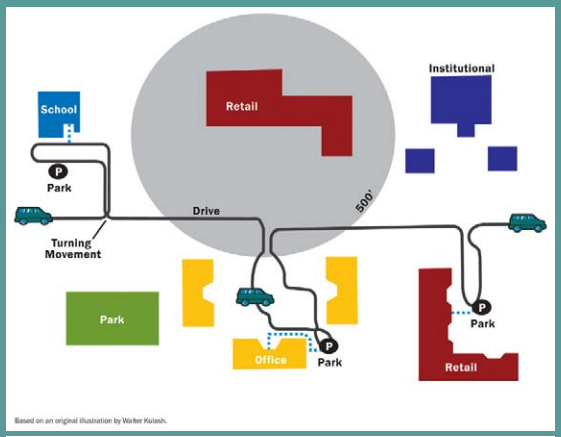
Transportation Demand Management Strategies

A number of the most effective TDM and parking management strategies are listed in the sidebars on the next few pages.

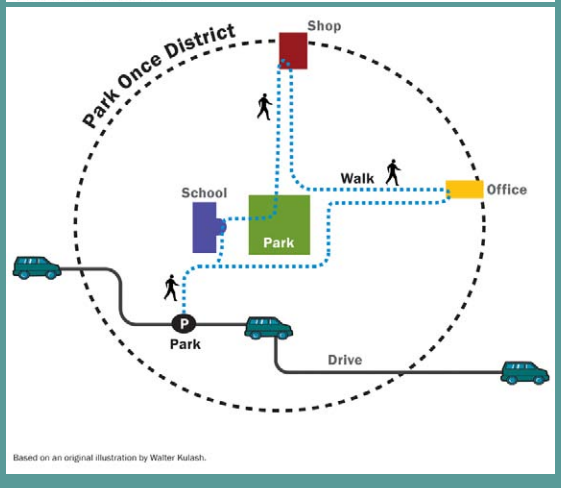
Compact Mixed Use Development & "Park Once" Districts

Land use is the best demand management. Maximizing access through proximity reduces travel and the need for parking. For example, reasonably dense, mixed use development where residents can walk to meet their daily shopping needs and employees can walk to get lunch and take care of daily errands eliminates many car trips that would have otherwise been necessary. In these compact, mixed use areas, it is often effective to implement a "park once" district that allows many uses to share the same parking supply, rather than every use having its own exclusive, separate parking space. The idea of a "park once" district is illustrated in the figures below which show a "conventional" parking scenario and a "park once" scenario.

CONVENTIONAL



PARK ONCE



Subsidized Transit Passes

In recent years, growing numbers of transit agencies have teamed with universities, employers, or residential neighborhoods to provide "universal transit passes." These passes typically provide unlimited rides on local or regional transit providers for low monthly fees, often absorbed entirely by the employer, school, or developer. The principle of employee or residential transit passes is similar to that of group insurance plans—transit agencies can offer deep bulk discounts when selling passes to a large group, with universal enrollment, on the basis that not all those offered the pass will actually use them regularly. These "universal transit passes" have been shown to reduce traffic congestion, increase transit ridership, and reduce existing parking demand.

Pricing Employee Parking & Parking Cash-Out

A majority of American commuters who drive to work today can park for free at work, which creates a strong incentive to drive to work alone. Parking cash-out is an alternative to directly pricing employee parking. In a parking cash out program, employers offer the cash value of the parking subsidy to any employee who does not drive to work in the form of a transit, vanpool, or carpool/walk/bike subsidy. This ensures that an equal transportation subsidy is provided to all employees who ride transit, carpool, vanpool, walk or bicycle to work. Parking pricing is one of the transportation demand measures that have the largest impact on employee drive-alone rate. Significant changes in mode split can be achieved even at suburban locations that lack transit service through incentivizing carpooling to work.

Source: Nelson\Nygaard

Car-sharing

Car-sharing provides individuals with access to a fleet of shared vehicles, allowing them to avoid owning a car, or a second or third car. Car-sharing at the workplace allows employees to take transit, walk or cycle to work, since a car will be available for business meetings or errands during the day. Car-sharing can also be used by businesses and government organizations to replace their fleet vehicles.

Alternative Work Schedules

Alternative work schedules typically allow or force employees to start and/or leave work outside of peak hours. These strategies are often a part of a company's Trip Reduction or TDM program. These can include flextime and staggered shifts enabling or mandating employees to arrive and leave at different times or the compressed work week where employees work fewer but longer days, such as four 10-hour days each week (4/40), or 9-hour days with one day off every two weeks (9/80).

Source: Nelson\Nygaard

Parking Management

Traditionally, parking policy has been based on requiring every new land use to build, at minimum, a given number of off-street parking spaces in a dedicated lot or garage to ensure that there are "enough" parking spaces for all potential users to drive and park under conditions of maximum demand for that use. On-street parking, in contrast, has been managed minimally. Despite a stated goal of congestion relief and avoidance of spillover parking on surrounding streets, traffic congestion and parking issues have gotten worse under this status quo and are projected to steadily worsen over the next 20 years. Dozens of studies have demonstrated that when there is ample free parking, people drive more. The amount of driving induced is substantial, as is the increase in parking demand.

In light of this evidence, in recent years cities are instead choosing to adopt a different parking management model. The basic tenants of this new approach to parking are:

Start by Managing Scarce, Valuable Curb Parking

Curbside parking spaces are a neighborhood's most valuable parking resource and a critical indicator and determinant of the economic health of a place. Instead of maintaining minimum parking requirements in an attempt not to have to manage on-street parking, communities can actively manage on-street parking through tools such as parking pricing and residential parking permits, and use this as a base to determine how to manage off-street parking.

Source: Nelson\Nygaard

Use Parking Price to Maintain Availability

For areas where parking demand exceeds on-street supply, rather than just building more off-street parking, cities can charge flexible, market rate prices for curbside parking spaces to ensure turnover of the most convenient curb-parking spaces for customers. Off-street parking can simultaneously be priced to incentivize its use and thereby lessen traffic caused by "cruising" in search of an on-street space. Further, the use of pricing instead of time limits can eliminate a key source of downtown parking anxiety which can counter-productively shorten the time people spend browsing for and consuming local goods and services.

New Meter Technologies

New meter technologies can be critical to enable flexible-pricing strategies to help meet on-street performance-targets. These new "smart" meters can also provide payment flexibility for customers, improving the customer experience.

Dedicate Revenue to District Where it is Collected

In order to build support for these parking policy and pricing changes, it is important to dedicate parking revenues to public improvements and services that benefit the blocks where the revenue is collected. If parking revenues seem to disappear into the General Fund, there will be little support for installing parking meters, or for raising rates. This often takes the form of a "Parking Benefit District," where meter revenue is collected and a local board determines how it is spent.

Use Revenues to Fund Transit and Demand Management

Rather than offering parking for free and allowing transit service to be user-paid, and thus comparatively expensive and relatively scarce, communities are funding transit service that is frequent and (for some users) free, investing in other modes such as bicycling, and funding incentives to take modes other than driving alone.

Reconsider Minimum Parking Requirements

Once a city is using on-street parking management techniques to avoid parking spillover and congestion, a reconsideration of minimum parking requirements becomes necessary. Reducing, creating flexibility in, or eliminating parking requirements does not mean that no parking is built, but rather that market forces would determine the appropriate level of supply, based on market demands, rather than relatively arbitrary city requirements, often set decades ago.

Unbundle Parking Prices from Leases & Rents

Rather than hiding the cost of parking in the cost of other goods and services through requiring new buildings to build ample off-street parking and offer it for free to their occupants and visitors, cities can make the costs of parking visible, so that citizens can make the choice to save money by using less parking.

EXISTING CONDITIONS

Demand management strategies, in particular parking management, are an indispensible part of Alameda County's transportation system, and their importance will only grow in the future as new approaches to congestion management become ever more important. A number of cities in Alameda County have already begun to implement policy innovations, and more robust TDM programs.

Cities are also beginning to reconsider their parking requirements, especially near transit stations, and to invest in technology to have better data to enable more efficient management. A selection of these city programs are profiled in this chapter indicating the range of parking and TDM strategies present in Alameda County today.

As described earlier in this report, Alameda County is quite diverse and different communities are facing different problems with regards to parking. However, there are also many commonalities in both the challenges communities are facing and the available solutions. For example, regardless of context, parking is often the locus of developer-citizen conflicts at new projects and "getting parking right" is crucial to the success of new development throughout the County. At least one case from each planning area is described below in an attempt to capture the range of parking issues present in Alameda County today and some of the solutions that are being tried.

Urban, transit-rich North County cities, such as Berkeley, are engaged in using novel technologies to collect robust data to enable dynamic pricing to respond to demand and decrease congestion while improving economic vitality of their historic downtowns. Older suburban communities in Central and South County, such as Hayward and Union City, are implementing a new parking paradigm as they encourage TOD at their BART stations and in their urbanizing downtowns. Traditionally auto-based suburban commuting cities in East County, such as Pleasanton and Dublin, have some urbanizing nodes and are also starting to encourage TOD at their BART stations and finding that parking is becoming a major lynchpin of political and economic success in those projects.

Countywide and Regional Programs

An example of a very successful countywide TDM program is the Alameda County Guaranteed Ride Home program. This program "guarantees" a ride home for all enrolled employees who commute by modes other than driving alone up to six times per year. This is a commuter benefit designed to encourage use of alternative modes by removing the uncertainty of not having your own car at work. It is available to all Alameda County employers and employees free of charge.

The regional 511 transportation information service offers a commute benefits program that includes a number of programs to support commuting by non-auto modes and sharing rides. 511 has a carpool ridematching service called "511 RideMatch" and a bike mapping tool called "511 BikeMapper".[1]

It should also be noted that, though not a regional or local change, pre-tax transit benefits nearly doubled in 2010 and pre-tax bicycle benefits were allowed for the first time on a federal level.

City of Berkeley

The parking problems in the City of Berkeley illustrate the most common parking management problems that cities in Alameda County are struggling with. The City of Berkeley has also implemented a number of parking and demand management advancements and their successes are also described below. Both Berkeley's successes and challenges give a real face to many of the parking and demand management issues and strategies that were discussed in the abstract earlier in this Chapter.

The Parking Problem in Berkeley

Berkeley's parking issues are similar to many downtowns. The general perception in downtown Berkeley is that downtown "has a parking shortage." However, photographs in Figure 10-1[2] reveal that, on a Saturday evening there is ample available parking in downtown, but it isn't at the curb. Nearly every curb space is full while in the open-to-the-public parking garages nearby, multiple levels of parking were entirely vacant.[3]

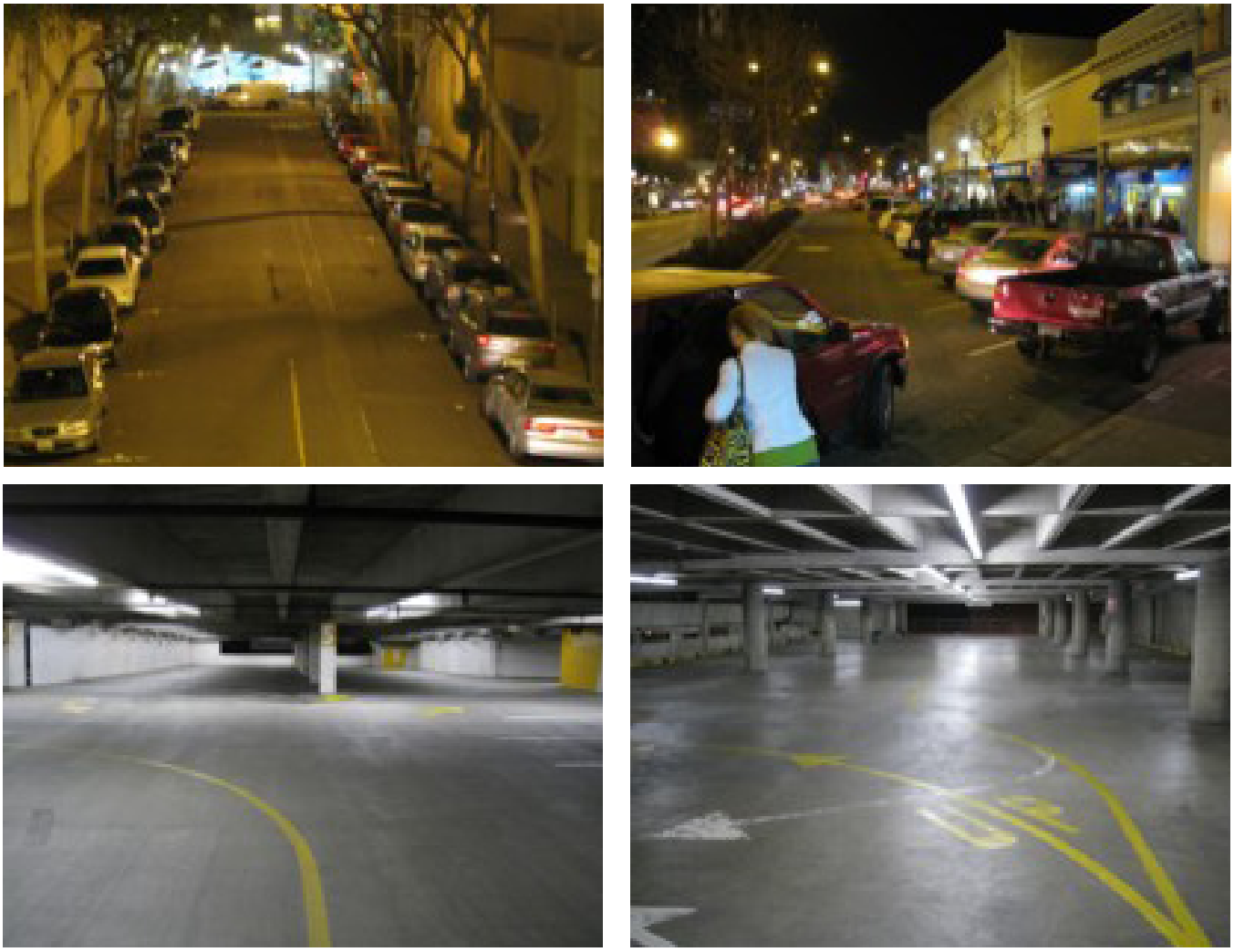
The explanation of this phenomenon lies in parking pricing and management. On Saturday evening, the standard price to park in the garages is a $5 flat-rate fee. After 6 P.M., curb parking is free. The curb parking is more visible, easier to reach, closer to destinations, and perceived by many to be safer than parking in a garage—and it's free. Given this

1 Source: 511 website, http://511.org

2 Photographs taken by Nelson\Nygaard staff on January 30, 2010, a Saturday evening, between 10 pm and midnight.

3 Garages: publicly-owned Center Street Garage and the privately-owned Allston Way Garage, both just half a block from Shattuck Avenue, the main street through downtown Berkeley.

Figure 10-1 Parking Contrasts in Downtown Berkeley



Saturday, January 30, 2010, 10 pm - midnight: Harold Way, Shattuck Avenue, the Allston Way Garage and the Center Street Garage, Berkeley.
Source: NelsonNygaard

combination of incentives, it becomes obvious why that the curb parking is full while the garages are half-empty. Further, for evening employees at restaurants and bars working shifts starting at 5 or 6 P.M., under current rules, it makes most sense to drop a few quarters in a meter that will turn off at 6 P.M., and then remain all night. Shoppers and diners who arrive later often find the curb parking full.

These late night visitors are left with three options:

1. Circle the commercial blocks until a curb spot opens up.
2. Pay $5 flat rate to park in a garage.
3. Search for parking on a nearby neighborhood residential street and park there for free.

Given that current residential parking permit area rules permit anyone to park up to two hours and after 7 P.M. for as long as they want, it is understandable that curb parking on many residential blocks near downtown is completely occupied for much of the evening, while the garages remain empty. Even during the weekday, studies have documented many nonresidents park in the residential permit parking blocks, often evading the spirit of the law by moving their cars every two hours to avoid being cited.

The combined issues of perceived parking shortages and acute neighborhood spillover parking while nearby parking garages are vacant are not unique to downtown Berkeley, but affect cities across Alameda County. There are a few key conclusions that can be drawn from this example that have broader implications for cities throughout the county:

1. Perceptions of an overall parking shortage may be a case of acute spot shortages rather than an overall lack of capacity. Nonetheless this misperception can negatively affect economic vitality, leading to demands for building more parking combined with ever emptier garages impacting the city's ability to pay off construction debt.
2. Building more spaces cannot solve this type of perceived parking shortage.
3. Better parking management can solve the perceived parking shortage, without driving away customers or damaging the downtown economy.

The Solution

The City of Berkeley has recently taken a number of innovative steps in terms of parking recently and continues to attract funds to take their parking management to a whole new level. The City recently won a MTC Climate Initiatives Program Innovative Grant and a U.S. DOT Federal Highways Administration Value Pricing Pilot Program to implement efficient demand responsive pricing through purchase of License Plate Recognition technology and other implementation steps.

Source: Nelson\Nygaard

Berkeley has a number of parking policies already in place:

- **Sustainable Parking Funding:** Berkeley's practice of using parking fees to cover the cost of municipal parking facilities is a sustainable way to fund parking
- **City of Berkeley Model TDM Employer:** The City of Berkeley has made considerable efforts to establish itself as a model employer with regard to transportation demand management.
    - The City's EasyPass program, established in 2002, provides free unlimited rides on all AC Transit buses to all City employees. As a result, 20% of former drive-alone employees now use AC Transit to commute to work; 59% of users reported they would reduce or stop riding the bus without the EcoPass.
    - Other programs include: secure bike parking and showering facilities, carpool, vanpool & car-sharing programs
    - All these programs combined have led to less driving and higher use of all non-auto modes.

- **TDM as Development Condition of Approval:** In downtown (as well as at other locations in the city), the city has frequently required that new developments comply with transportation demand management requirements as a condition of approval of the project.
- **Mandatory Employee Commute Benefit:** Berkeley (along with the cities of San Francisco and Richmond in Contra Costa County) passed an ordinance requiring all employers with 10+ employees to offer pre-tax commute benefits (TRACCC Ordinance).
- **New Technologies:** New technologies have also been integrated into Berkeley's parking system. Most recently, multi-space meters which accept both coin and forms of credit/debit cards have been installed throughout downtown Berkeley and the Southside. These devices ease the ability for users to pay by accepting additional forms of payment while also reducing the amount of parking fee collection infrastructure.
    - Berkeley has also investigated additional electronic wayfinding and guidance systems to complement the current parking supply to make searching for a parking space faster for consumers while enabling more efficient use of the city's existing parking supply.
- **Reduced parking requirements at Transit-Oriented Development:** Several award winning TOD projects in Berkeley were made possible by Berkeley's willingness to allow projects with little on-site parking. They also allow car-lift systems which enable developers to maximize efficiency in parking garages, freeing up space for ground floor commercial and housing.[4]
- **UC Berkeley's TDM Program:** UC Berkeley also operates a robust TDM program for students, faculty, and staff that is similar to that of the City, such as the AC Transit Class Pass Program.

Source: Nelson\Nygaard

San Francisco Bay Area Rapid Transit District (BART)

The Bay Area Rapid Transit District (BART) which provides regional heavy-rail transit services in the San Francisco Bay Area, has begun to transition towards market-based parking pricing. For selected areas, BART allows parking rates to vary by lot and has adopted occupancy-based criteria for adjusting daily and monthly reserved parking rates. In addition, BART has recently facilitated construction of TOD by eliminating the requirement that all displaced commuter parking be replaced as part of each project.

Parking at BART Stations

BART is actually one of the largest parking operators in the Bay Area. For most of the agency's history, the cost of building, operating, and maintaining commuter parking facilities has been paid for by all riders through fares and taxes, rather than through user fees (as station parking was available to commuters free of charge). Since 2005, BART has charged daily parking fees of $1-$5 and monthly reserved parking fees of $30 to $115 at all of its park-and-ride lots. Demand-based criteria are used to set monthly reserved parking fees and daily rates at selected stations and some members of the Board of Directors have proposed transitioning toward pure market-based parking pricing systemwide.

4 "Developing Parking Policies to Support Smart Growth in Local Jurisdictions: Best Practices" 2006 Metropolitan Transportation Commission (MTC).

Currently, prices vary by station as shown in Figure 10-2.

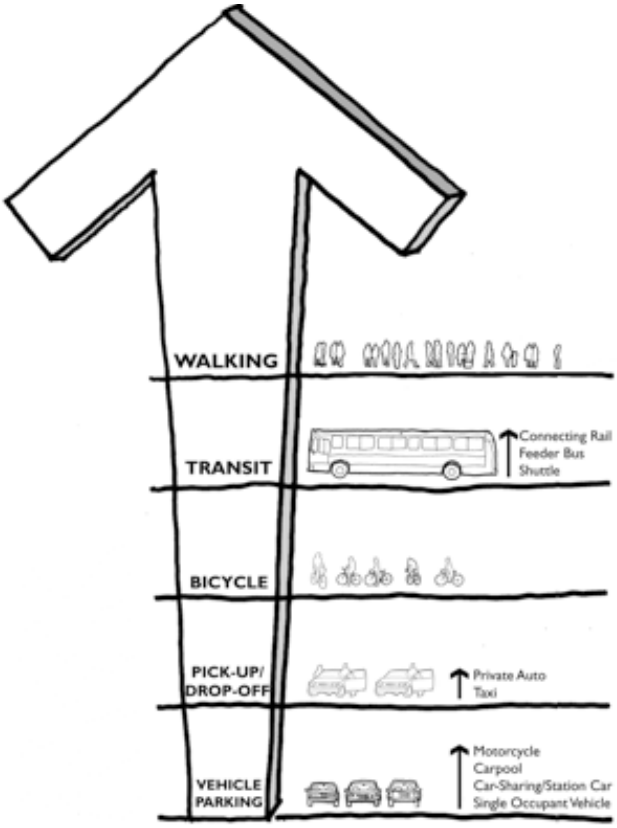
Figure 10-2 BART Station Daily Parking Fee

Station(s)		Daily Parking Fee
West Oakland		$5.00
Daly City Colma		$2.00
Ashby Castro Valley Dublin/Pleasanton El Cerrito del Norte El Cerrito Plaza Fremont Fruitvale MacArthur Lafayette Lake Merritt	North Berkeley Orinda Rockridge Walnut Creek Pleasant Hill Pittsburg/Bay Point Millbrae San Bruno South San Francisco Union City	$1.00

Facilitating Station Area Development

As it conducts station area planning, BART is focused on achieving the best combination of parking supply, parking management practices (including pricing), access facilities and services for all modes, and TOD to maximize ridership and revenue for each station and each corridor. To inform this planning work, BART commissioned development of an *Access Methodology* (2005) model that offers the most cost-effective mix of TOD, access improvements, and replacement parking for each station site. This set the stage for the new approach to station parking and development by establishing a hierarchy of station access modes that clearly prioritized non-motorized options and transit ahead of auto access and parking (see Figure 10-3).[5]

Figure 10-3 Hierarchy of Access Modes, San Francisco BART



Source: Nelson\Nygaard

5 *BART Access Guidelines* (October, 2003).

Monitoring

Motivated by concerns about impacts to BART ridership and revenues, as well as potential spillover parking impacts on surrounding neighborhoods, the BART Board directed its Marketing Department to conduct detailed parking occupancy surveys for two weeks before and two weeks after the initial implementation of pricing and to analyze daily station ridership in light of the survey results. Surveys throughout the system showed no significant impact on ridership or fare revenues.

Example: MacArthur Transit Village

This example briefly illustrates how BART's approach plays out in a real project in Alameda County. The MacArthur BART Station is a heavily used transfer station in the urban Temescal neighborhood of Oakland. Planning for the MacArthur Transit Village has been in the works since 1993. Given the high density of residents and jobs in the surrounding area, the pedestrian and bicycle accessibility of the site, the density of the TOD planned for BART property, and the availability of high frequency bus and shuttle transfers for station passengers, model results indicate that BART ridership and revenues would be highest with a development plan that includes just 50% of the existing supply of 600 spaces. Instead, responding to concerns about spillover parking and fears of lost parking revenue, BART has settled on a plan to replace 85% of current parking, and is working with the City of Oakland to accommodate a limited number of commuters parking on-street in surrounding neighborhoods.

Benefits

Benefits of BART parking policies include:

- **Equity benefits:** Parking fees that cover the full cost of building, operating, and maintaining station parking facilities, leave scarce transit agency resources for use in fulfilling the agency's primary mission to provide high quality public transportation services in the region. BART has thus reduced the practice of utilizing fare revenue from transit dependent commuters to subsidize parking for suburban commuters.
- **Increased revenue:** With ever tightening capital and operating budgets, parking pricing represented an opportunity to generate substantial new revenue from users. As of April 2010, these parking programs generate $13 million per year for BART. BART has allocated these revenues to the general fund, but some Directors have argued for dedication of parking revenues to station specific multimodal access improvements.
- **Improving commuter choices and parking availability:** Before parking fees were adopted, many lots were completely full by 8:00 A.M. Commuters from outside of the City of San Francisco could not be sure that they would find a parking space at a nearby BART station on any given day, reducing their incentive to take public transit. With BART's monthly reserved parking permits, commuters are guaranteed a parking space until 10:00 A.M. Meanwhile, proponents of dynamic, market-based daily parking pricing argue that it could be used to guarantee the availability of station parking for arriving travelers, regardless of the day or time of arrival.

Image from MacArthur Transit Community Partners, LLC

Hayward

Most of Hayward has conventional auto-oriented suburban parking standards, with minimum parking requirements. However, over the last few years they have been moving towards more transit-oriented parking and demand management polices around their BART stations. They have developed new development codes and are innovating their parking codes and development standards as well as designing comprehensive demand management policies to support their goals for these station areas.

The community's goals for these areas include creation of vibrant, livable neighborhoods with high-quality, safe, well-used public spaces; encouraging highest-intensity residential uses and essential community services within a short walking distance to the BART station; encouraging coordinated development, facilitating coordination of public and private parking resources to enhance neighborhood livability; and encouraging well-designed development that supports a high quality pedestrian realm and appropriately scaled development for the surrounding neighborhoods.

In 2006, the *South Hayward BART/Mission Boulevard Concept Design Plan* established new, more transit-oriented parking standards for several zones within the South Hayward BART/Mission Boulevard Plan area.[6] Within these zones, minimum parking requirements for residential land uses were eliminated and replaced by maximum parking limits.

The standards for these zones, while allowing developers of transit-oriented projects to provide whatever amount of parking they find appropriate to meet the demands of their particular target market, have not, as is sometimes feared, resulted in the provision of no parking at all. For example, the Wittek/Montana mixed-use development at the South Hayward BART Station, which proposes approximately 788 multi-family residential units, proposes to build approximately 898 parking spaces for the residential units despite no parking spaces being required.

The city is taking the same approach in the Mission Boulevard Specific Plan, also under development currently, covering all portions of Mission Boulevard lying outside of the Plan area mentioned above.

Hayward has also developed a Form-based Code for this area which establishes a clear vision for the future of the area and they are currently engaged in a TDM study to figure out the most cost-effective parking and transportation strategies to support and advance that vision. They are considering policies such as:[7]

- Commercial and Residential Parking Benefit Districts
- Investing meter parking revenues in TDM programs
- Deeply-discounted group transit pass programs
- Mandatory parking cash-out
- Unbundling parking costs
- Broader removal of minimum parking requirements

6 The South Hayward BART/Mission Boulevard Parking Area is defined as land zoned as Station Area Residential or Mission Boulevard Residential, as well as that zoned Neighborhood Commercial-Residential in the area bounded by Harder Road and Industrial Parkway along Mission Boulevard.

7 South Hayward BART/Mission Boulevard Form-Based Code Parking & Transportation Demand Management Strategy, January 2010 http://www.ci.hayward.ca.us/forums/SHBARTFBC/pdf/2010/SO_HAYWARD_Parking_Strategy_FINALDRAFT.pdf

Union City

Union City has also been moving towards a more urban, transit-oriented approach to parking in their BART station area. Union City broke ground on the "Intermodal Station District" in 2007. This will transform the Union City BART station area from a large industrial area with commuter parking lots into a vibrant, integrated downtown neighborhood. This will serve as an intermodal transit hub with BART, a major 16-bay bus facility, Capitol Corridor and Altamont Commuter Rail. It will also include new retail, job centers, housing, and public amenities.

Futhermore, the recent Union City Parking Meter Implementation Project resulted in the installation of Union City's first parking meters around the Union City BART station on both city streets and in the City's municipal parking lots near the BART station. The multi-space pay stations were installed just a few months after BART started charging $1 per day at BART parking lots in Union City. Commuters have multiple parking options and Union City has priced these options to incentivize commuters to park in off-street facilities and less convenient on-street locations, while the most convenient on-street parking near BART is prioritized for short term visitors and customers to Union City businesses. Pricing is used to ensure that BART parking does not negatively impact residents and businesses close to the BART station, while BART patron parking fees will be used to build and maintain sufficient parking for these commuters. Ridership at the Union City BART station actually increased after the parking charges were initiated at the station.

Union City is also currently engaged in TDM plans at some of the new developments in the Intermodal Station District. For projects in this District, parking requirement may be reduced contingent on implementation of a TDM program. Programs can include transit incentives, carsharing, and bicycle parking.

Figure 10-4 Union City BART Station Parking Map

Best for BART commuters	Ideal for neighborhood visitors	For the occasional BART user
Area S Permit **Where:** Parking Lot 2, Meyers Dr., J st. and Lot. 12th St. Alvarado - Niles Rd. (Northbound). **Hours:** Monday - Friday 8AM - 6PM **Cost:** $120 per quarter **Buy online:** www.ucparking.org (510) 477-1780	**Pay & Display** **Where:** Union Square, 11th St ▸ Enter hours to park ▸ Use credit/debit card or coin ▸ Take receipt ▸ Return to car and diplay receipt on dashboard **Cost:** $0.50 per hour **Hours** Mon - Sat , 8 am - 8 pm	**Pay by Space** **Where:** Parking Lot 1 ▸ Enter space number ▸ Enter hours to park ▸ Use credit/debit card or coin ▸ Keep receipt, no need to return to car **Cost:** $0.50 per hour • $3 max. **Hours** Mon - Fri, 8 am - 6 pm

Two hours limited FREE parking is also available on Meyers Drive, 12th Street, J Street Parking Lot and Alvarado-Niles Road.

Pleasanton

Hacienda Business Park Trip Reduction Ordinance (TRO)

The Hacienda Business Park, located in Pleasanton, is a 500-acre development containing approximately eight million square feet of office, commercial and light industrial uses. This area is zoned as a planned unit development and, as such, landowners are subject to a trip reduction ordinance (TRO). The TRO is unique in that it was one of the first ordinances to be applied to existing, as well as new employers, and it requires that all employers participate regardless of size.

Employers in the Hacienda Business Park must participate in an assessment district to fund any roadway changes which are necessary to prevent the intersection or freeway interchange level of service (LOS) from falling below D during peak hours. Those employers with 100 or more employees must participate in a trip reduction program.

The TRO establishes a performance standard for peak hour drive alone commute trips with a threshold of 55% or less of daytime workers driving alone during the peak hour. The threshold was set to enable all planned development to be accommodated while still meeting the LOS guidelines. Employers may meet this standing using any TDM measures they choose and are given three years to meet this standard. However, at a minimum, employers must name a transportation coordinator, establish a traffic mitigation program, and conduct an annual survey of employees' commute patterns.

In addition to meeting performance standards, employers must also abide by monitoring and enforcement requirements and procedures established in the TRO. This includes procedures for mandating the implementation of additional transportation management programs if monitoring results show that they are necessary. A task force made up of individuals from the business community rather than city staff, is responsible for overseeing employers to ensure that they are meeting the requirements of the TRO. By using members of the business community, the enforcement process becomes a peer review, and potentially peer pressure, rather than relying on government enforcement to ensure compliance. However, the City does maintain the ability to assess substantial fines if necessary.

Parking Cash-out in Pleasanton

The City of Pleasanton has a parking cash-out system called "pRide" that reimburses employees for using travel modes other than the single-occupant vehicle.[8] The City reimburses employees $2 a day ($1 if one-way). Participants register with the program, fill out a monthly log indicating which modes they used each day, and indicating any absences. This is reviewed by a manager, and then submitted to payroll. The reimbursement is added to the employee's paycheck as taxed income. Although the program is run on the honor system, where the employee simply states how they got to work, there are checks in place such as manager review of the log and verification of absences. Fraud appears to be minimal. This is supplemented by a pre-tax transit subsidy.

BEST PRACTICES

There are a number of "best practices" that can be found right here in Alameda County, as described above. However, other parking and TDM best practices are profiled here that might be instructive for Alameda County.

San Francisco's SFpark Pilot Project

Source: SF Park

San Francisco's SF*park* project is using "demand-responsive pricing to manage parking demand towards availability targets."[9] SF*park* is currently installing parking occupancy sensors on streets in eight pilot areas throughout San Francisco. The wirelessly networked sensors—mostly in metered spaces, but some in unmetered spaces—transmit data on parking space occupancy to the computers of the San Francisco Municipal Transportation Agency (SFMTA). The sensors are paired with wirelessly networked single-space and multi-space parking meters, which accept credit and debit cards as well as coins. The meter installations began in July and by December, nearly 5,100 spaces will be regulated by the new networked meters.

8 Source: Interview with Becky Perry, Pleasanton Transportation Department. www.ci.pleasanton.ca.us/

9 San Francisco Municipal Transportation Agency. SFpark Updated Scope of Work—Parking Pilot Projects Urban Partnership Program, August 6, 2008.

Requiring projects to develop and implement transportation demand management plans can be a highly effective way of reducing vehicle trips. However, to be effective, transportation demand management requirements must meet several conditions. Transportation demand management can be required through the terms of a development agreement for a specific project, included as part of the requirements of a Specific Plan, or mandated by a citywide ordinance. In all these cases, several conditions must be met. A City's transportation demand management plans and requirements must:

1. Work toward the achievement of a clear goal set by the City.
2. Set measurable goals and clear requirements for each project.
3. Establish viable long-term mechanisms for actively monitoring compliance with and then enforcing those requirements.

Setting transportation demand requirements is similar, in general terms, to the process of setting many other requirements for new buildings. For example, for life safety, communities require that a building's elevators be: (a) clearly shown on the plans submitted to the City; (b) built to a certain standard; (c) properly installed and tested before a certificate of occupancy for the building is issued; and (d) regularly inspected to ensure that they continue to be maintained. Finally, if these conditions are not met, cities have viable enforcement mechanisms (e.g., assessing penalties, or shutting down a site). To be more than words on paper, transportation demand management requirements must be approached in the same manner. Cities with effective TDM plans have thorough programs for monitoring, enforcement, and when necessary, assessing penalties.

Moreover, the best and most successful transportation demand management plans work to create an active partnership between the public and private sectors. This means crafting requirements that work to achieve legitimate public goals (such as minimizing traffic congestion and air pollution) at the lowest possible cost for property owners, developers and employers. The best transportation demand management requirements set for development projects also often build on and are supported by significant public investments in public transit (such as San Marcos' new Sprinter rail stations), ridesharing programs (such as SANDAG's regional ridesharing services) and citywide bicycle and pedestrian networks.

The occupancy sensors allow the city's parking managers to observe, on a continuous basis, parking occupancy on each block. The networked meters allow managers to easily adjust parking rates and hours of operation at each meter, simply by reprogramming the meters from a central computer.

The goal is to adjust prices up or down in increments of $0.25/hour every four to six weeks based on availability data from parking sensors. Prices can be adjusted block-to-block, in two-block units, or at any other appropriate scale area. The new prices may also be adjusted by time-of-day towards a goal of managing congestion, rather than strictly pricing based on length of stay.

SFMTA's goal with SF*park* is "to create a driver experience in which drivers either (a) go directly to a parking garage with available spaces; or (b) are able, most of the time, to find an on-street parking space as near to their destination as possible, preferably within a block or two of their destination."[10]

The SF*park* project relies on the fact that parking demand patterns are actually fairly predictable and recurring. In neighborhood commercial districts on a Sunday, for example, demand on many blocks is higher at 11 A.M., when restaurants are open, than at 6 A.M. So, on those blocks, Sunday rates may higher for the hour from 11 A.M. to noon than the hour from 6 to 7 A.M.

The goal is to shift some demand from the curb to private lots and garages and eliminate acute recurring curb parking shortages. This will have the added effect of lessening the phenomenon of cars circling the block in search of a free parking space.

MTC Parking Toolbox/Handbook

Another resource that could be useful in addressing parking and demand management for the Countywide Plan is a "Toolbox/Handbook" that was developed by MTC: *Reforming Parking Polices to Support Smart Growth: Parking Best Practices & Strategies for Supporting Transit Oriented Development in the San Francisco Bay Area.* This tool was developed by MTC for a training seminar on parking policies to support smart growth for local jurisdictions held in 2007. The handbook helps local jurisdictions define what type of area they are and identifying parking strategies that are likely to be effective in this type of area. It describes the various strategies and provides examples of best practices from around the region and country.

10 San Francisco Municipal Transportation Agency. SFpark Updated Scope of Work—Parking Pilot Projects Urban Partnership Program, August 6, 2008.

Bellevue, Washington

In downtown Bellevue, Washington, the drive alone commute rate fell by 30% from 1990 to 2000, falling from 81% driving alone to 57%.

Bellevue, Washington, (population 117,137) sits on the east side of Lake Washington, about a ten mile drive from downtown Seattle. Like many cities in Alameda County, it is a relatively prosperous and growing suburb in the orbit of a much larger city. Bellevue is notable for the progress that it has made in reducing drive alone rates in its downtown, despite the fact that it is not served by rail transit and has relatively little influence over its regional transit agency.

The City of Bellevue's Commute Trip Reduction program (CTR) was implemented by ordinance in 1993, two years after the State of Washington adopted the Commute Trip Reduction (CTR) Law, requiring cities in the most populous counties of the State to develop and implement a commute trip reduction ordinance. The city CTR now encompasses 53 employers and roughly 22,000 employees. The ordinance applies to every employer (private, public or non-profit) with 100 or more full-time employees arriving at a single worksite between 6 to 9 A.M.

The Bellevue Downtown Association, composed of 186 businesses, manages several voluntary programs to limit commute trips. TransManage, the transportation arm of the association, has actively promoted transit, ridesharing, and carpool services, partially through an employee commute benefit package. The package includes a FlexPass, to be used on different transit services and taxis, as well as a Qualified Transportation Fringe Benefits package, which allows employers with 20 or more employees to contribute up to $100 per month in transit or vanpool services as a tax-deductible expense. FlexPasses, issued by King County Metro, the Seattle area's regional transit agency, provide employees with free access to all of the agency's buses. Under this "universal transit pass" program, employers pay $65 per year per employee for every employee in their workforce: in return, every employee receives an annual pass, a benefit which has a normal annual price of $396-$1584.

Employers can require employees to pay for up to half the cost of the FlexPass. Employers who do participate in this program are eligible for a maximum $5,000 King County telework grant. The size of the incentive is based on the number of employees who telework at least one day a week.

Parking Policy

Currently, Bellevue requires downtown office buildings of more than 50,000 square feet to identify the cost of parking as a separate line item in all leases, with the minimum monthly rate per space not less than twice the price of a bus pass. For example, since the price of a monthly bus pass was $72 in 2003, the minimum price of a leased parking space was $144 a month. This requirement for "unbundling" parking costs does not increase the overall cost of occupying office space in a building because the payment for the office space itself declines as a result. In other words, unbundling separates the rent for offices and parking, but does not increase their sum. Bellevue is perhaps unique in routinely requiring the unbundling of parking costs from office leases. This innovative policy has several advantages. It makes it easy for employers to "cash-out" parking for employees (that is, to offer employees the value of their parking space as a cash subsidy if they do not drive to work), since employers can save money by leasing fewer spaces when fewer employees drive. It also makes it easier for shared parking arrangements to occur, since building owners can more easily lease surplus parking spaces to other users.

In addition, the city has shifted from high minimum parking requirements to enforcing parking maximums. The city code now set no minimums for housing and mixed-use retail located in certain downtown zones. All downtown residential units are limited to no more than two parking spaces. This move to less parking has had a noticeable impact on private employers. The engineering firm CH2M Hill still offers free parking to drive-alone employees,

but it also gives $40 per month to employees if they opt instead to walk, bicycle, carpool, or take transit. Ultimately, this saves employers money who no longer have to provide expensive parking and it lightens an employee's transportation budget.

Trip Reduction Results

Bellevue's CTR sets trip reduction goals in terms of reducing the proportion of single-occupant vehicles and vehicle-miles traveled per employee from the 1992 base year values. These targets started at the goal of a 15% reduction by 1995, rising to 20% in 1997, 25% in 1999, and 35% in 2005. Vehicle commute trips are calculated at one trip per person (two-person carpools counting as 1/2 trips per occupant, three-person carpools as 1/3 trips, etc.) Each vehicle commute trip eliminated due to telecommuting, alternative work schedules, bicycling, or walking counts as 1.2 trips eliminated.

Results from the Commute Trip Reduction program have been impressive. Overall in downtown Bellevue, the drive alone commute rate fell by 30% from 1990 to 2000, falling from 81% driving alone to 57%. In 1993, after considerable progress in reducing drive alone rates had already taken place, the Commute Trip Reduction went into effect. Among the CTR-affected worksites in the downtown, drive alone rates then dropped from 72.9% in 1993 to 58.5% in 2001, almost a 20% decrease. Among all CTR-affected worksites citywide, the drive-alone rate has dropped from 76.6% in 1993 to 69.2% in 2001—almost a 10% decrease respectively. These numbers do not meet the ambitious targets set under the Bellevue ordinance, but are notable nonetheless.

FUTURE CONDITIONS AND SUMMARY OF NEEDS

As the population grows and traffic gets worse, innovative approaches to congestion management will become more important. Most people agree that parking management and TDM measures must be addressed through the Alameda Countywide Transportation Plan since they are such a useful tool in meeting the goals of the plan, namely congestion management and encouraging use of non-auto modes. The following concepts describe the levels of programs that could be developed to support better management. In addition, this Countywide Plan will need to consider system performance more broadly than previous plans, including rewarding projects that actually reduce demand rather than expanding capacity. Using energy policy as an example, projects that reduce demand on the electric grid through efficiency or conservation are rewarded as "negawatt" projects—understanding that reducing demand defers the need for enhanced supply. While this concept is less well developed for transportation plans, the Countywide Plan will need to prioritize projects that reduce demand on our limited roadway infrastructure as a cost effective technique for reducing capacity needs.

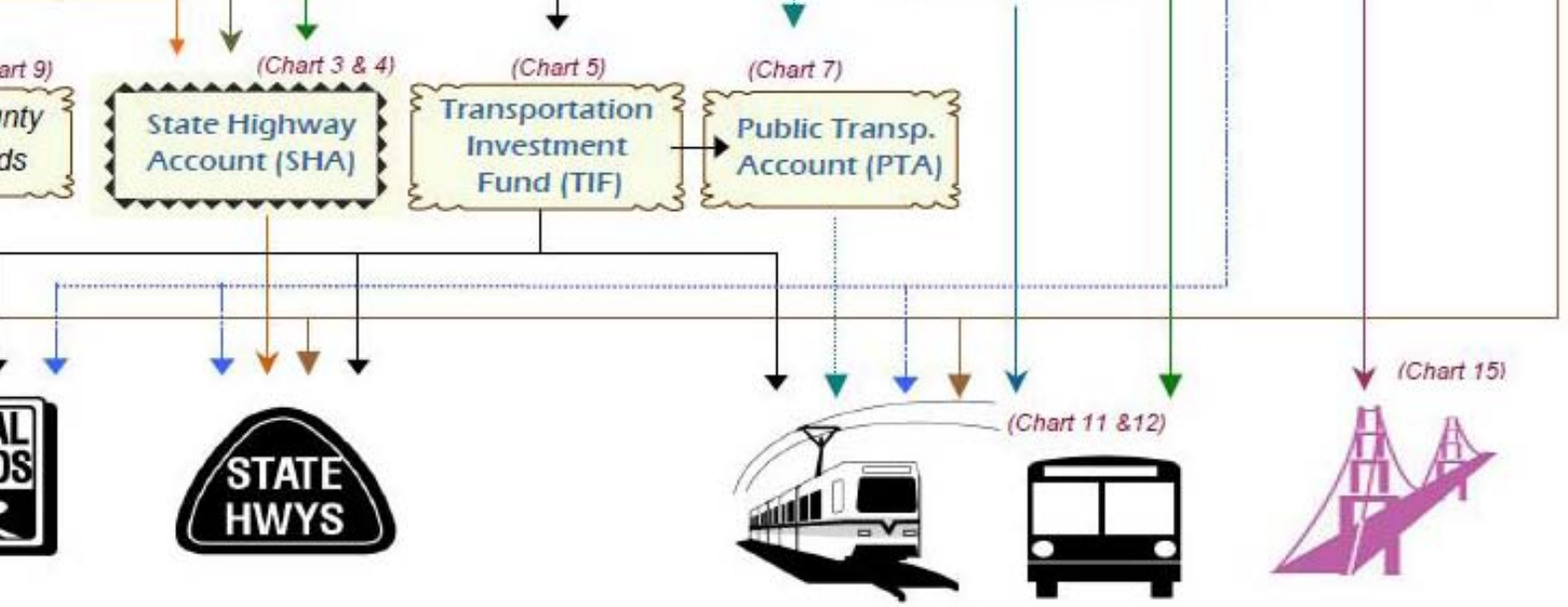
Fund Purchase of New Parking Technology: Parking technology is quite expensive. For example, upgrading all downtown single space meters to "smart" multi-space meters or purchasing license plate recognition technology and funding a staff person to collect and interpret parking data, is a large up front, and ongoing, expense. Parking technology does not easily fall within current regional MTC funding programs, highlighting the need for local funding. However, most cities cannot fund this through their General Funds alone. So, county funding must be directed to local entities for purchase of new parking technologies and/or data collection they require to implement parking reforms.

However, there are also many components of parking and TDM that are local policy changes, not requiring funding per se. How can the Countywide Plan encourage policy changes that will move us towards our congestion reduction goals, but which the CWTP does not have direct control over?

Incentivize policy changes: The county can give cities financial incentives and matching grants to encourage cities to reform their parking policies, adopting measures such as removing minimum parking requirements, actively managing curb parking, unbundling parking costs from housing costs, etc. These local parking reforms create significant regional benefits of many kinds, such as reducing traffic congestion, air and water pollution; making housing more affordable; and spurring economic development. Specifically, the Countywide Plan could:

- Provide grants to cities for the acquisition and installation of parking meters (for curb parking) and parking access and revenue control systems (for off-street lots).
- Provide grants to cities to assist them with the management of curb parking. This would include:
    - Planning grants for the development of residential parking permit districts, residential parking benefit areas, and commercial parking benefit areas.

  - Capital and operating grants for the purchase and operation of enforcement vehicles and license plate recognition systems, parking stall occupancy sensors, handheld enforcements.
- Provide matching funds to cities that raise parking revenues by increasing curb parking rates, off-street rates, and/or enacting parking taxes. For example, providing cities with one dollar in regional funding for every one dollar in new local parking revenue that they raise would encourage cities to reduce existing parking subsidies and/or to enact parking taxes.
- Provide grants to cities to assist them in establishing and/or enforcing parking cash-out requirements and other transportation demand management ordinances.
- Provide planning grants to cities to help them reform outdated parking requirements.
- Fund training programs, technical assistance and symposia on best practices in reducing traffic and greenhouse gas emissions by reforming parking policies and practices.



CHAPTER 11. FUNDING AND FINANCIAL OUTLOOK

Funding will be one of the greatest challenges for this Countywide Transportation Plan update. It is commonly believed that most transportation revenue is derived from the public in the form of out-of-pocket fees, such as transit fares or bridge tolls. However, while these financing mechanisms do play a significant role, about $1.6 billion a year, they only account for 18% of annual transportation funding in the Bay Area as a whole. Other local sources, such as Alameda County's half cent sales tax for transportation, "Measure B," contribute the bulk of transportation revenues. In fact, $3.6 billion annually come from local and regional tax revenues. In all, local sources comprise 60% of all transportation revenue in the Bay Area.

Despite Alameda County's willingness to raise local revenues through sales tax and the newly enacted vehicle registration fee, existing revenue sources can not keep up with spending demands. Over the next 25 years, the Metropolitan Transportation Commission (MTC) estimates that a total of $218 billion dollars, or $8.7 billion per year, will be needed to meet current and future transportation funding needs. MTC further estimates a nearly $50 billion shortfall simply to maintain existing transportation services and infrastructure in the region over 25 years. Much of this gap will need to be filled by locally generated revenue.

EXISTING CONDITIONS

The reliance on local sources to fund basic needs is a fundamental shift from previous decades, when state and federal dollars, largely in the form of gas tax revenues, made up the majority of transportation dollars. Today, state funds account for less than 25% of projected annual transportation revenue in the region (see Figure 11-1) annually, while federal funding accounts for less than 15%. Some of these funds come to the region on a formula basis, while others come in the form of competitive grants or earmarks. Local funds make up nearly half of all available funding for transportation. Developing local funding plans is complex because local funds often require voter approval and areas of voter popularity do not always align with areas of highest need.

MTC develops a Regional Transportation Plan (RTP) which describes how local, regional, state and federal funds will be spent in the region. Figure 11-2 shows the projected 25-year allocation to projects and programs in the Bay Area. Maintenance and operations of existing infrastructure require the vast majority of available resources leaving less than 20% for new projects.

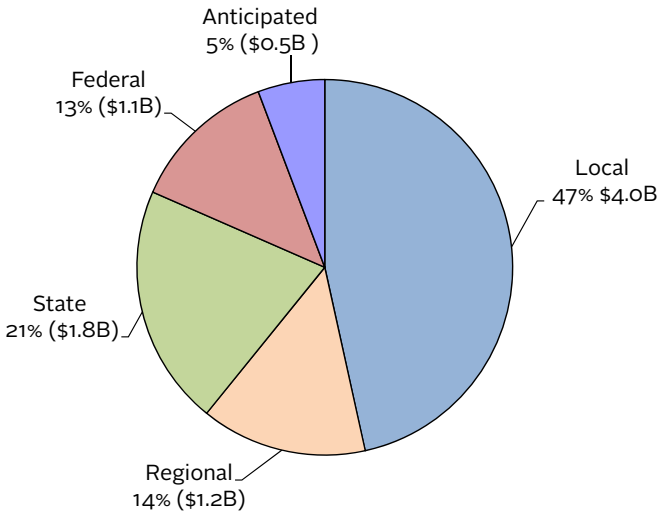
These expenditures do not match regional need. MTC estimates that there is a $49.4 billion shortfall for maintaining the region's transportation system over the next 25 years.

Existing Local Revenue Sources

Measure B is a ½-cent countywide sales tax in Alameda County. It was initially passed by voters in 1986 and reauthorized in 2000 and was intended to address this need for more local transportation revenue. Alameda County is one of 19 counties statewide that have passed this type of "self help" local sales tax for transportation purposes. It is one of seven out of the nine Bay Area counties that have sales tax measures. Measure B generates about $100 million annually, however, due to the economic recession, sales tax revenues have fallen significantly over recent years as discussed further below.

The current expenditure plan for Measure B, which will sunset in 2022 unless reauthorized, can be divided into two expenditure categories: 40 percent to fund capital projects, and 60 percent to fund programs that generally focus on operations and maintenance (see Figure 11-3). From 2002 to 2022, the sales tax was expected to bring in approximately $2.9 billion to serve major regional transportation needs and address congestion throughout the county. The current revenue forecast is approximately $2.1 billion, leaving a shortfall of $834 million. This leaves a $500 million shortfall which disproportionately impacts programs since additional funding including economic stimulus funds were able to backfill capital projects.

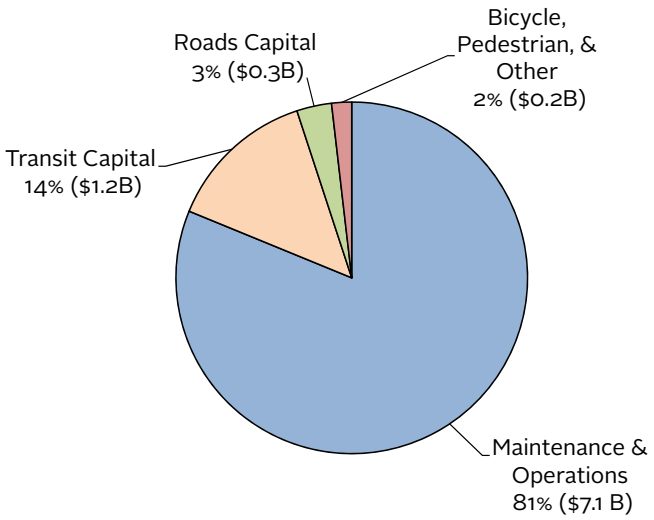
Figure 11-1 Projected Average Annual Regional Revenues



Note: Based on 2035 25-year projection, where the 25 year projected escalated revenue is divided by 25 to provide the average annual revenue.

Source: Metropolitan Transportation Commission

Figure 11-2 Projected Average Annual Regional Expenditures by Function



Note: Based on 2035 25-year projection, where the 25 year projected escalated revenue is divided by 25 to provide the average annual revenue.

Source: Metropolitan Transportation Commission

In conjunction with the development of a new countywide transportation plan, a new transportation expenditure plan (TEP) may also be developed with the goal of reauthorizing Measure B. A reauthorization of the TEP is being considered for two reasons. First, because the current Measure B capital projects have been largely built or committed, and in order to continue to proactively prepare for our future transportation needs, we need a new plan and source of funds for capital projects (which take many years to approve and build), Secondly, because many of the programs that are supported by Measure B have been affected by the decrease in funding caused by the economic downturn. These programs and their users are suffering as a result. A new transportation sales tax is a financially constrained document and must receive a 2/3 affirmative vote of the people. The existing Measure B will continue to be collected until 2022 unless it is replaced by a new measure.

In response to the ever increasing need for local revenue, the Alameda CTC placed Measure F on the November 2010 ballot. Measure F was passed by the citizens of Alameda County, who will see a $10 increase in their annual vehicle registration fee. The measure is expected to bring $110 million over the next 10 years to the County. Measure F will provide funds to make streets and roads safer and less congested for motorists, pedestrians, and bike riders, and will also provide funding for public transit and enhanced technology solutions, as shown in Figure 11-4. However, even with the passage of Measure F, funding gaps remain.

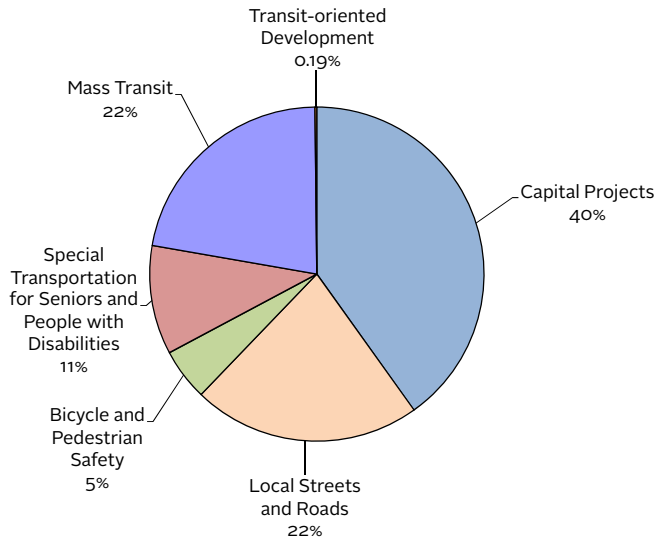
Whatever the sources of funding moving forward, transportation agencies will have to do more with less. Unless there is an unanticipated and dramatic shift in how transportation is financed at the federal level, Alameda County will simply not be able to meet all of its transportation needs. As a result, the County must become even more strategic in how it allocates funding and develops its funding priorities. The development of well-defined and agreed upon funding criteria is essential to ensuring that the allocation of revenue is done in a manner that supports regional goals, is cost-effective, and can leverage other revenue sources.

Current Funding Issues

What the Recession Means to Alameda County

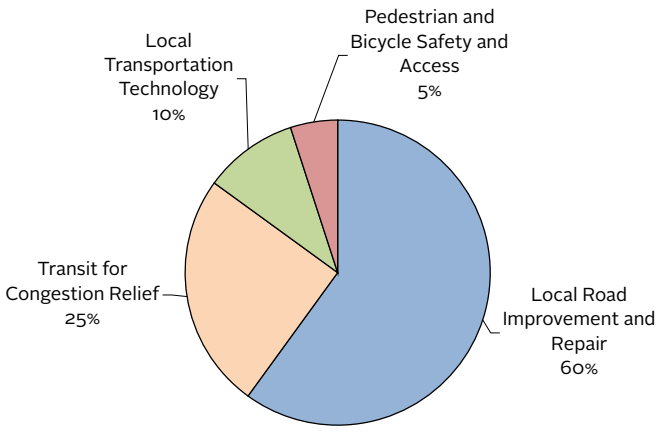
The current recession is projected by many to have had the worst economic impact on the country since the Great Depression. The effect on transportation has been significant in a number of ways. MTC estimates that Alameda County will face a $3.8 billion shortfall, from a $6.4 billion need, in streets and roads maintenance revenue. Local transit service has undergone cutbacks due to revenue shortfalls at all levels. In response to the recession and the cutbacks, transit service suffered ridership losses, and thus fare revenue losses, creating a spiraling problem. Costs for transportation programs and transit services continue to increase at a rate greater than revenue growth. Demands for all forms of transit service are also rising, though at a lesser rate, creating an ever increasing gap in the demand and cost for service. This is an increasing problem in the region. From 1997 to 2008, total operating expenses for the seven

Figure 11-3 Measure B Uses



Source: Alameda County Transportation Commission

Figure 11-4 Measure F Uses



Source: Alameda County Transportation Commission

largest Bay Area operators increased by 37 percent, significantly outpacing inflation rates.[1] In response to this, MTC has embarked upon a Transit Sustainability Project, an effort to ensure long-term viability in the region's transit system.

Limited Flexibility Impacts Spending

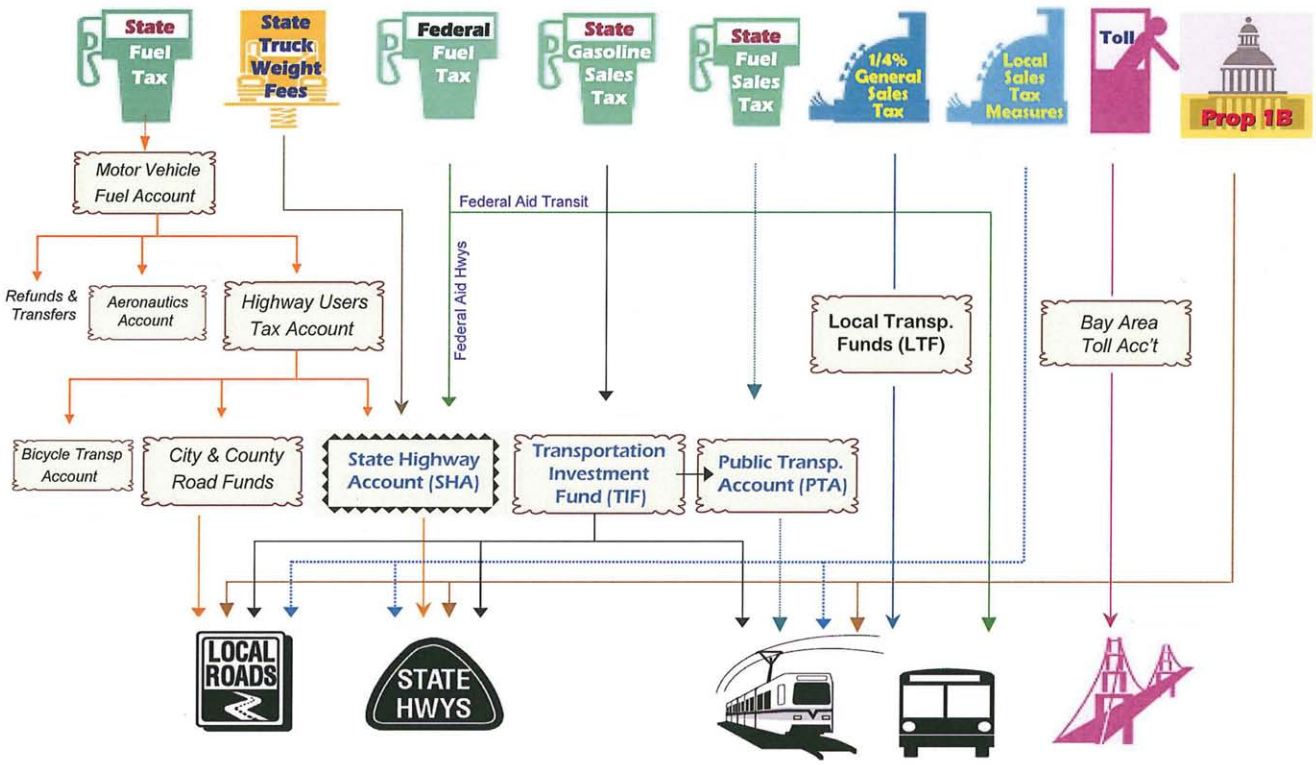
Unfortunately, developing a transportation plan requires more than identifying the most important or most popular projects to fund. There are significant limitations in the way each fund source can be spent. Specifically, many revenue sources, especially at the federal level, are restricted to capital improvements, and fewer revenue sources provide funds for maintenance and operations. This is an important issue since one of the county's main goals, in the 2008 Countywide Transportation Plan and a likely goal in the plan update, is to maintain and operate the existing transportation system.

A simplified overview of the major fund sources and what they can fund is shown in Figure 11-5. State funds mostly cover costs related to maintenance and capital projects. A relatively small amount of these funds are used for operational purposes. Federal funding is mainly used for capital projects, although certain transit capital funds can be used for operating purposes. It is important to note that few projects are funded entirely with one source of funds.

Some local funds are used for capital projects, often when federal and state grants require a local match. About 40% of the current Measure B sales tax was dedicated to capital projects, most of which have either been delivered or are underway (see Appendix A).

1 Source: Metropolitan Transportation Commission, Transit Sustainability Project, Technical Advisory Committee Meeting presentation on July 13, 2010.

Figure 11-5 California Transportation Funding



Source: "Transportation Funding in California," Caltrans

Volatility Impacts Projects and Programs

An additional challenge facing Alameda County and the region is funding volatility as illustrated in Figure 11-6. Virtually all fund sources are dependent on an expanding economy. While the sales tax has been relatively consistent, it too has fallen as the recession deepened. Fortunately for Alameda County, federal stimulus spending and other new funding sources helped to fill gaps and deliver planned capital projects. However, in the 60% of Measure B funds dedicated to on-going programmatic spending, revenue reductions have not been "made up" by other sources impacting important programs like streets and roads maintenance, specialized transit for seniors and person with disabilities, transit operations and bicycle and pedestrian programs.

State Funding is Limited

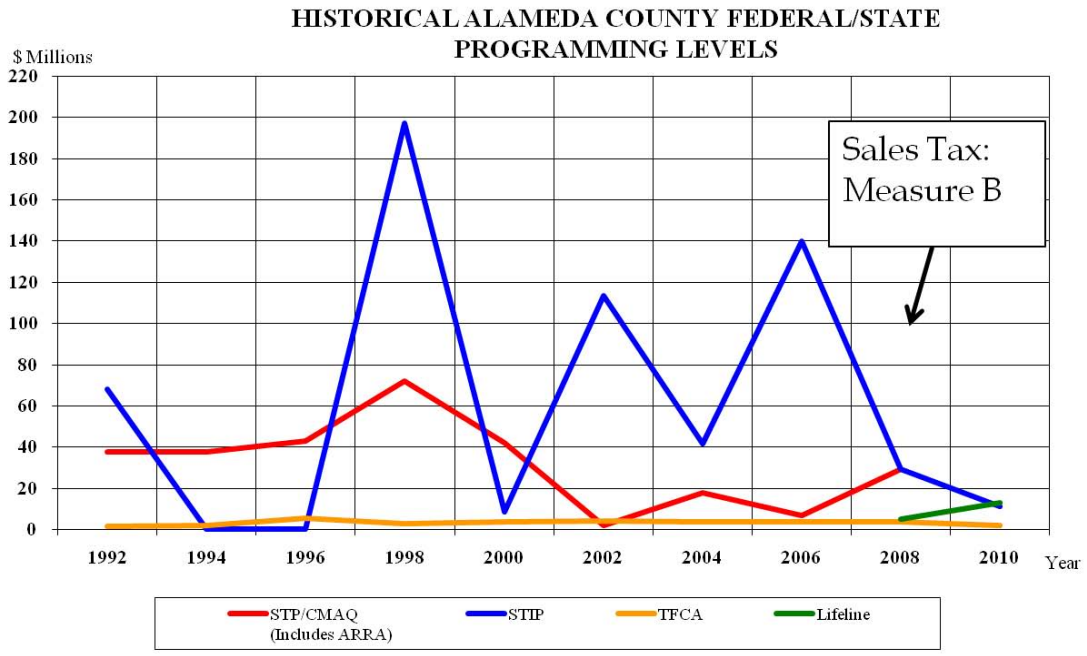
One of the major problems facing Alameda County, and California in general, is the current economic situation of California. This goes beyond the current recession as state budgets have been difficult to balance for a number of years. When preparing the budget for 2010, the California State Legislature struggled to close a deficit resulting from a structural imbalance between state revenues and expenditures, as well as a slow recovery from the recession. Many of the fixes in the current budget are short-term or temporary. This has led to significant cuts in transportation funding in the near term, and uncertainty for the future of state funding sources.

Early in 2010, Governor Schwarzenegger restructured transportation funding at the state level by eliminating the sales tax on gas, and increasing the state excise tax. The increase in the excise tax does not fully compensate for the loss of sales tax revenue, and leaves a total deficit of about $1 billion for transportation funding. In November 2010, two new propositions, Proposition 22 (designed to protect transportation funding) and Proposition 26 (broadening the definition of "tax" at the state and local level) were passed. The impact of these propositions on transportation funding is not clear and will likely be unresolved for some time. Ultimately, these funding issues will probably require resolution by the courts.

Federal Funding Continues To Focus on Capital Investments

At the federal level, the funding environment has not changed significantly in the recession. Federal funding for transportation continues to focus on capital investments. However, some sources generally intended for capital expenditures have a limited amount of flexibility to be used for operating expenses. A reauthorization of the Federal

Figure 11-6 Funding Volatility



Source: Alameda CTC

Transportation Bill, and potential continued economic stimulus spending in the near term, may provide new opportunities for Alameda County to access capital and operating funds. However, at the time of this writing, it appears that any new federal bill that is eventually passed will likely provide funding levels similar to that of the previous bill, SAFETEA-LU. In other words, Alameda County should not assume significant increases in federal allocations.

Some federal funds are appropriated to the state and the region on a formula basis, while some grants are competitive. Alameda County has identified that its main focus is to fund the maintenance and operation of the existing transportation system. Thus, a key issue that faces Alameda County with regards to federal funds is not necessarily the availability of revenue, but its flexibility. Given that a majority of federal funding is only eligible for capital costs, these revenue sources will not address all transportation needs.

FUTURE CONDITIONS

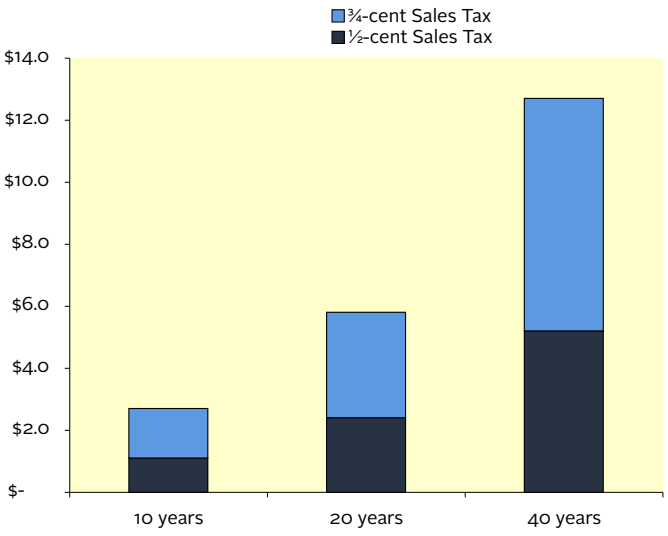
There are several potential ways that Alameda County can address funding shortfalls in the near-term (2 to 5 years). Regional options for funds that will be considered in MTC's Transit Sustainability Project include, but are not limited to, new bridge tolls and a regional gas tax. At the federal level, there are likely to be funds available from the reauthorization of the Federal Transportation Bill or through grants allocated by the Obama Administration. It is also possible that there will be additional federal economic stimulus funding. Another option for Alameda County at the local level is to add a new ¼-cent sales tax, bringing the Countywide sales tax for transportation to ¾-cent. A ¼-cent increase in the sales tax within the timeframe of the current measure would not make up for the shortfall Alameda County is currently facing, but with an estimated revenue of $506 million, it would be sufficient to eliminate the shortfall in the programs category.

There are also long-term options (5+ years) for potential new revenue sources. While the recent past and current outlook for state transportation funding has been bleak, the state has traditionally been a significant funding partner for transportation and it is probable that transportation funding will eventually be restored, and may even be enhanced. The passage of AB 32 and SB 375 by the state legislature and the passage of major statewide bond initiatives in 2006 for transportation infrastructure and in 2008 for high speed rail indicate that California is fundamentally committed to a clean and sustainable transportation system. Similarly, there is also a possibility for new federal programs, or additional funding for existing programs. The 2009 American Recovery and Reinvestment Act focused a substantial amount of funding on public transportation and high speed rail. Federal transportation funding initiatives are likely to be implemented over the long term.

At a regional level, funding made available from congestion pricing is likely to be an increasingly important source for Alameda County over time. Congestion pricing is already in place on the San Francisco-Oakland Bay Bridge and on the recently opened I-680 HOT Lanes. Another long-term option for Alameda County is to extend the transportation sales tax beyond the current measure. Figure 11-7 shows the potential revenues of the ½-cent sales tax in the next 10, 20 and 40 years. Figure 11-7 also shows projected revenues for a ¾-cent sales tax measure, should Alameda County choose to add the aforementioned ¼-cent sales tax in the near or long-term.

Alameda County's revenues, expenditures, and current funding issues are generally comparable to the region. There is simply not enough funding to accommodate the transportation needs of the County. New and expanded sources are required to maintain and expand the County's transportation system. Through the countywide and regional transportation planning processes, Alameda County will be well-equipped to plan for and shape new federal, state and local funding sources. Additionally, through these planning processes, Alameda County can position itself to seek opportunities for funding that may arise from new, yet to be determined sources.

Figure 11-7 Projected Sales Tax Revenues



SUMMARY OF NEEDS

Simply put, there is not enough transportation dollars to meet Alameda County's current and future transportation needs. While new sources of revenue may develop in the coming years and decades, it is unlikely that the current financing framework for transportation will be overhauled any time soon. Uncertainty and volatility at the federal and state levels will continue to shift the financing focus to local sources of revenue, such as additional sales tax measures, vehicle registration fees, regional gas taxes, and various forms of congestion pricing. In this funding climate, Alameda County must continue to innovate and develop new sources of revenue. In addition, Alameda County must continue to get smarter and more strategic in how it prioritizes projects and allocates revenue. Clear, well-defined, and progressive performance measures and allocation criteria will enable Alameda County to quickly identify projects that can deliver multiple benefits to a wide variety of users, while ensuring that those projects can secure regional, state, and federal support in a highly competitive funding environment. Funding is undoubtedly the great unknown as Alameda County plans its transportation network for the next 25 years. Nevertheless, Alameda County is well-positioned to ensure that it can continue to meet its mobility, accessibility, and sustainability goals for the region.

One of the key tasks moving forward is to collect more information about our funding and expenditure history and the cost effectiveness of current and future programs and projects. A more in depth look at this topic will be developed following this Briefing Book. With this context and further information, the stakeholders and Alameda CTC can move forward towards responsibly and effectively prioritizing projects and channeling funds in the Countywide Plan and Transportation Expenditure Plan.

ALAMEDA CTC

APPENDIX A. STATUS OF PROJECTS FROM THE 2008 COUNTYWIDE TRANSPORTATION PLAN AND 2002 TRANSPORTATION EXPENDITURE PLAN

Countywide Transportation Plan/
Transportation Expenditure Plan
Briefing Book

			2008 CWTP Information				Current Project Phase					
Index	Sponsor	Project/Program Title	Category	Planning Area	Cost Estimate ($ x Million)	Funding Request ($ x Million)	Planning/ Scoping	PE/Env	PS&E	Con	Closeout/ Complete	Comments/Notes
1	ACTIA	I-580 on- and off-ramp improvements in Castro Valley	Committed		34.9	0.0					X	
2	ACTIA	Transit enhancements funded by transit center development funds	Committed		4.8	0.0						on-going program
3	ACTIA	Paratransit for AC Transit, BART, non-mandated city programs, service gap coordination	Committed		154.6	0.0						on-going program
4	ACTIA	I-580 auxiliary lanes between Santa Rita Road/Tassajara Road and Airway Boulevard interchanges	Committed		5.5	0.0			X	X	X	W/B segments between Santa Rita and El Charro complete. E/B segment between El Charro and Airway in Con. W/B segment between Airway and Fallon in PSE.
5	Alameda	Stargell (formerly Tinker) Avenue from Webster Street (SR-260) to 5th Avenue	Committed		18.6	0.0					X	
6	BART	New West Dublin/Pleasanton BART Station	Committed		80.0	0.0				X		Design-Build contract nearly complete.
7	BART	BART-Oakland International Airport Connector	Committed		459.0	0.0				X		Contract awarded and NTP issued Funding Plan includes un-secured sources
8	Berkeley	Ed Roberts Campus at Ashby BART Station	Committed		43.5	0.0					X	
9	Caltrans	I-880/SR-92 Interchange Improvements	Committed		245.0	0.0				X		
10	Caltrans	Reconstruct I-880/SR-262 interchange and widen I-880 from SR-262 (Mission Boulevard) to the Santa Clara County line from 8 lanes to 10 lanes (8 mixed-flow and 2 HOV lanes)	Committed		186.8	0.0					X	I-880/Mission Blvd. Interchange Phase 2 deferred into Interchange Completion Project sponsored by Fremont.

			2008 CWTP Information				Current Project Phase					
Index	Sponsor	Project/Program Title	Category	Planning Area	Cost Estimate ($ x Million)	Funding Request ($ x Million)	Planning/ Scoping	PE/Env	PS&E	Con	Closeout/ Complete	Comments/Notes
11	Caltrans	Widen I-880 for SB HOV lane from Hegenberger Road to Marina Boulevard (reconstruct bridges at Davis Street and Marina Boulevard)	Committed		119.4	0.0			X			Project Development by CMA. CMIA ($94.6M)
12	Caltrans	I-880/Oak Street on-ramp reconstruction	Committed		26.7	0.0						
13	Caltrans	Extend HOV lane on I-880 NB from existing HOV terminus at Bay Bridge approach to Maritime on-ramp	Committed		19.0	0.0						
14	Caltrans	Widen I-238 between I-580 and I-880 from 4 lanes to 6 lanes; auxiliary lanes on I-880 between I-238 and "A" Street	Committed		122.6	0.0					X	
15	Caltrans	SR-84 WB HOV on-ramp from Newark Boulevard	Committed		12.5	0.0	X					Funding moved to another project.
16	Caltrans	SR-84 WB HOV lane extension from Newark Boulevard to I-880.	Committed		11.4	0.0					X	
17	Caltrans/ CMA	I-580 Eastbound Truck Climbing Lane	Committed		64.2	0.0			X			$64M of TCIF Bond funding.
18	CMA	Widen I-680 for southbound HOV/ HOT lane from SR-237 to SR-84 (includes ramp metering and auxiliary lane)	Committed		230.9	0.0				X		
19	CMA	Widen I-580 for EB and WB HOV and auxiliary lanes from Tassajara Road to Greenville Road	Committed		272.2	0.0			X	X		E/B HOV under construction. E/B Aux Lane in PSE. W/B HOV in PSE.
20	CMA	Extend NB I-880 HOV lanes north from Hacienda	Committed		167.5	0.0	X					LATIP ($155.5M)

			2008 CWTP Information				Current Project Phase					
Index	Sponsor	Project/Program Title	Category	Planning Area	Cost Estimate ($ x Million)	Funding Request ($ x Million)	Planning/ Scoping	PE/Env	PS&E	Con	Closeout/ Complete	Comments/Notes
21	CMA	Central Alameda County Integrated Corridor Mobility Program (includes adaptive ramp metering)	Committed		33.5	0.0	X					LATIP ($32.5M)
22	CMA	Soundwalls	Committed		10.0	0.0	X					STIP ($10.0M) & LATIP ($10.0M)
23	CMA	I-580 right-of-way preservation for transit in the I-580 corridor	Committed		123.5	0.0		X				
24	CMA/ ACTIA	Bicycle and pedestrian projects and programs	Committed		305.0	0.0						on going program
25	Dublin	Iron Horse Bicycle, Pedestrian and Transit Route	Committed		10.9	0.0			X			MB ($6.3M)
26	Fremont	SR-262/Warren Avenue/I-880 interchange improvements (including Union Pacific Railroad grade separation)	Committed		56.0	0.0			X			Includes Phase 1B work from I-880/Mission Blvd. inter-change project sponsored by Caltrans (ACTA MB project) Construction phase includes un-secured funding
27	Fremont	Infrastructure for future Irvington BART Station	Committed		2.4	0.0		X				
28	Fremont	Kato Road from Warren Avenue to Milmont Drive	Committed		5.4	0.0						
29	Fremont	Fremont Boulevard to connect to I-880/Dixon Landing Road	Committed		8.9	0.0						
30	Fremont	Washington/Paseo Padre Parkway Grade Separation	Committed		108.6	0.0				X		
31	Hayward	SR-238 Corridor Improvements between Foothill Boulevard/I-580 and Industrial	Committed		116.0	0.0				X		
32	Hayward	I-880 auxiliary lane West A to Winton	Committed		36.5	0.0	X					LATIP ($32.5M)

			2008 CWTP Information				Current Project Phase					
Index	Sponsor	Project/Program Title	Category	Planning Area	Cost Estimate ($ x Million)	Funding Request ($ x Million)	Planning/ Scoping	PE/Env	PS&E	Con	Closeout/ Complete	Comments/Notes
33	Hayward	I-880 auxiliary lane from Whipple Road to Industrial Parkway	Committed		21.9	0.0	X					LATIP ($19.5M)
34	Hayward	I-880/SR-92 Reliever, Clawiter/ Whitesell/SR-92 interchange	Committed		58.3	0.0		X				Phase 1 moving, Phase 2 delayed for funding. LATIP ($52.0M)
35	Hayward	I-880/Industrial Parkway West interchange, Phase 2	Committed		29.2	0.0	X					
36	Hayward	Construct street extension in Hayward near Clawiter and Whitesell Streets	Committed		26.9	0.0		X				Same as Phase 1 of Reliever Route
37	LAVTA	Livermore/Dublin Bus Rapid Transit Project	Committed		14.1	0.0				X		
38	LAVTA	Satellite Operations and Maintenance Facility	Committed		7.8	0.0						
39	Livermore	Las Positas Road Connection, Phase 2	Committed		7.3	0.0						
40	Livermore	West Jack London Boulevard Extension	Committed		18.7	0.0						
41	Livermore	4-lane major arterial connecting Dublin Boulevard and North Canyons Parkway	Committed		11.1	0.0						
42	Livermore	I-580/Isabel interchange improvements, Phase 1	Committed		155.9	0.0				X		MB, CMIA, Federal & Local funds
43	Newark	Dumbarton Rail Corridor Project	Committed		301.0	0.0		X				Current cost estimate $700M
44	Piedmont	Traffic signal on Grand Avenue at Rose Avenue/Arroyo Avenue intersection in Piedmont	Committed		0.3	0.0						
45	Pleasanton	I-580/San Ramon Road/Foothill Road Interchange Improvements	Committed		2.1	0.0			X			
46	Pleasanton	I-680/Bernal Avenue Interchange Improvements	Committed		17.0	0.0			X			

			2008 CWTP Information				Current Project Phase					
Index	Sponsor	Project/Program Title	Category	Planning Area	Cost Estimate ($ x Million)	Funding Request ($ x Million)	Planning/ Scoping	PE/Env	PS&E	Con	Closeout/ Complete	Comments/Notes
47	Port	7th Street Grade Separation	Committed		427.0	0.0						TCIF ($110.0M)
48	Port	Outer Harbor Intermodal Terminal (OHIT)	Committed		220.0	0.0	X					TCIF ($132.0M)
49	Port	Martinez Subdivision	Committed		215.0	0.0	X					TCIF ($17.5M)
50	San Leandro	Washington Avenue/Beatrice Street Interchange Improvements	Committed		2.5	0.0					X	
51	San Leandro	I-880/Marina Boulevard Interchange	Committed		36.1	0.0			X			Partially included with I-880 SB HOV project LATIP ($24.4M)
52	San Leandro	I-880/Davis Street I nterchange	Committed		24.4	0.0			X			Partially included with I-880 SB HOV project LATIP ($11.1M)
53	Union City	Union City Intermodal Station (Phase 1)	Committed		40.0	0.0				X		
54	WETA	Berkeley/Albany to San Francisco ferry service	Committed		56.6	0.0	X					
55	WETA	Alameda/Oakland to San Francisco ferry service and Harbor Bay to San Francisco ferry service	Committed		21.5	0.0						
56	AC Transit	Telegraph/International/E. 14th Street BRT	Tier 1	Multi	250.0	74.0		X				
57	Alameda	West End Transit Hub	Tier 1	PA1	1.4	1.4	X					
58	Alameda County	Castro Valley BART TOD	Tier 1	PA2	44.0	5.2						
59	BART	Warm Springs Extension	Tier 1	PA3	890.0	144.0				X		Project split into Subway and LTSS contracts Subway moer than 50% complete - fully funded LTSS proposals/bids due late January

			2008 CWTP Information				Current Project Phase					
Index	Sponsor	Project/Program Title	Category	Planning Area	Cost Estimate ($ x Million)	Funding Request ($ x Million)	Planning/ Scoping	PE/Env	PS&E	Con	Closeout/ Complete	Comments/Notes
60	Berkeley	TOD Infrastructure	Tier 1	PA1	5.2	5.0		X				Downtown BART Plaza and Transit Area - Phase 1 funded by $2.25M (including $1.8M TLC/CMAQ). BART and City seeking additional funds for Phase 2 (BART entrance construction)
61	CMA	I-580 Corridor Improvements: I-580 HOT Lanes from Greenville Road west to I-680	Tier 1	PA4	35.0	29.0						
62	CMA	I-580 Corridor Improvements: I-580 WB Auxiliary Lane from 1st St to Isabel	Tier 1	PA4	10.0	10.0						
63	Countywide	TOD Improvement Program	Tier 1	Multi	30.0	30.0						
64	Countywide	Arterial Performance Initiative Program	Tier 1	Multi	15.0	15.0						
65	Hayward	South Hayward BART Transit Village	Tier 1	PA2	50.0	5.0						
66	Oakland	Citywide ITS	Tier 1	PA1	22.0	22.0						
67	Oakland	SMART Growth/TOD: Transit Villages at BART Stations including but not limited to: Coliseum (replacement parking and station area improvements); MacArthur (replacement parking and station area improvements); and West Oakland (replacement parking, station area improvements and bike/pedestrian access	Tier 1	PA1	57.0	57.0	X	X				on going program in various stages of development
68	San Leandro	Downtown San Leandro TOD	Tier 1	PA2	4.0	4.0			X			$4.6m from TLC

			2008 CWTP Information				Current Project Phase					
Index	Sponsor	Project/Program Title	Category	Planning Area	Cost Estimate ($ x Million)	Funding Request ($ x Million)	Planning/ Scoping	PE/Env	PS&E	Con	Closeout/ Complete	Comments/Notes
69	San Leandro	Traffic Signal System Upgrade	Tier 1	PA2	2.0	2.0				X		$200K CMAQ; $300K TLSP
70	San Leandro	Bay Fair BART Transit Village	Tier 1	PA2	4.0	4.0	X					
71	AC Transit	Maintenance Facilities Improvements	Tier 2	Multi	16.1	16.1						
72	AC Transit	Transit Priority Measures/Speed Protection (includes Bay Bridge Related Improvements)	Tier 2	Multi	120.0	14.8						
73	AC Transit	Additional buses for Frequent Service Transit Network	Tier 2	Multi	22.0	22.0						
74	AC Transit	Grand/MacArthur BRT	Tier 2	PA1	41.0	30.0	X					
75	AC Transit	Transfer Center at or near Chabot College	Tier 2	PA2	2.0	2.0						
76	ACTIA	SR-84 Expressway widening, Jack London to Vallecitos	Tier 2	PA4	129.6	15.0						
77	Alameda County	Crow Canyon Road Safety Improvements	Tier 2	PA2	14.5	11.0	X					
78	Alameda County	East Lewelling Boulevard Roadway Improvements	Tier 2	PA2	11.7	9.9				X		
79	Alameda County	Pedestrian and Streetscape Improvements in Cherryland/ Ashland	Tier 2	PA2	17.6	15.0						
80	Alameda County	Vasco Road Safety Improvements Phase II	Tier 2	PA4	13.2	10.0						
81	Alameda County	Bicycle/Pedestrian Improvements on Stanley Blvd	Tier 2	PA4	6.0	2.0				X		
82	Alameda/ Alameda County	Estuary Bridges Seismic Retrofit and Repair	Tier 2	PA1	4.0	1.0	X					

			2008 CWTP Information				Current Project Phase					
Index	Sponsor	Project/Program Title	Category	Planning Area	Cost Estimate ($ x Million)	Funding Request ($ x Million)	Planning/ Scoping	PE/Env	PS&E	Con	Closeout/ Complete	Comments/Notes
83	Alameda/ Alameda County	Fruitvale Avenue Roadway Bridge Seismic Retrofit	Tier 2	PA1	8.0	5.0	X					
84	Alameda/ Alameda County	Fruitvale Avenue Rail Bridge Seismic Retrofit	Tier 2	PA1	2.6	1.0	X					
85	Alameda/ Caltrans	I-880 Broadway/Jackson Phase I	Tier 2	PA1	26.0	17.2	X					No R/W or Con funding identified
86	Albany	Bike and Pedestrian Improvements	Tier 2	PA1	2.3	2.3						$1.7M CMAQ in 2010 Block Grant for Buchanan Path
87	BART	Station Capacity Projects	Tier 2	Multi	32.5	32.5	X					
88	BART	Station Access Projects	Tier 2	Multi	26.5	26.5	X					
89	Alameda CTC	Gilman I-80 interchange improvements	Tier 2	PA1	7.0	5.5		X				Berkeley was origin lead agency.
90	Berkeley	Streetscape and Pedestrian Improvements	Tier 2	PA1	6.0	6.0						Pedestrian plan adopted 2010. $1.5M from Safe Routes to Schools and Safe Routes to Transit Grant.
91	Berkeley	Bicycle Plan Implementation	Tier 2	PA1	11.0	3.0				X		
92	Berkeley	Ashby I-80 interchange/Aquatic Park Access Improvements	Tier 2	PA1	2.0	2.0						
93	Berkeley	Berkeley Parking Pricing Program	Tier 2	PA1	5.0	3.0		X				Received $2.25M FHWA value pricing pilot program grant and $2M CMAQ Climate Initiative Grant.
94	Berkeley	Railroad Crossing Improvements, Phase 1	Tier 2	PA1	2.0	2.0		X				
95	Caltrans	Truck Parking facilities in North County	Tier 2	PA1	5.0	5.0						

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Index	Sponsor	Project/Program Title	Category	Planning Area	Cost Estimate ($ x Million)	Funding Request ($ x Million)	Planning/ Scoping	PE/Env	PS&E	Con	Closeout/ Complete	Comments/Notes
96	Caltrans	I-880 North Improvements:-I-880 SB and 66th/Hegenberger auxiliary Lanes	Tier 2	PA1	5.0	5.0						
97	CMA	Sound Wall Program	Tier 2	Multi	10.0	10.0						
98	Dublin	Bicycle/Pedestrian Improvements on Alamo Canal Trail	Tier 2	PA4	2.6	2.0			X			STIP-TE
99	Dublin	Dublin interchange improvements, (Hacienda & Fallon Road) Ph II	Tier 2	PA4	37.6	16.0	X					
100	Dublin/ Livermore/ Pleasanton	Project Development for I-580/680 Connector	Tier 2	PA4	15.0	15.0	X					
101	Emeryville	65th Street Bike / Pedestrian Bridge at I-80, Phase 1	Tier 2	PA1	3.7	3.5						
102	Emeryville	I-80 Eastbound off-ramp at Powell Street	Tier 2	PA1	1.8	1.5						
103	Fremont	SR-262 Mission Blvd Improvements	Tier 2	PA3	10.0	10.0						
104	Fremont	Automall Parkway Intersection Improvements between I-880 and I-680	Tier 2	PA3	42.0	9.0						
105	Hayward	I-880/West A Street interchange	Tier 2	PA2	27.0	27.0	X					LATIP ($27.0M)
106	Hayward	I-880/Industrial Parkway interchange, Phase 1	Tier 2	PA2	14.7	14.7	X					LATIP ($41.0M)
107	Livermore	I-580/First St. interchange Improve to ultimate configuration	Tier 2	PA4	37.0	4.0						
108	Livermore	I-580/Vasco interchange Improve to ultimate configuration	Tier 2	PA4	55.0	4.0						
109	Livermore	Isabel Avenue/I-580 interchange Phase II	Tier 2	PA4	28.0	4.0				X		
110	Livermore	I-580/Greenville Road inter-change improvements	Tier 2	PA4	43.0	4.0						

			2008 CWTP Information				Current Project Phase					
Index	Sponsor	Project/Program Title	Category	Planning Area	Cost Estimate ($ x Million)	Funding Request ($ x Million)	Planning/ Scoping	PE/Env	PS&E	Con	Closeout/ Complete	Comments/Notes
111	Newark	Central Avenue Railroad Overpass	Tier 2	PA3	18.3	12.6						
112	Oakland	I-880 improvement program including 42nd and High Access Improvements	Tier 2	PA1	24.9	19.0						
113	Oakland	SR-24 /Caldecott Tunnel Enhancements	Tier 2	PA1	8.0	6.0						
114	Piedmont	Addition of Bike Lanes and Congestion Relief in Highland and Magnolia Ave. areas	Tier 2	PA1	1.2	1.2						
115	Piedmont	Comprehensive City Street Upgrades	Tier 2	PA1	0.5	0.5						
116	Pleasanton	PSR Development for SR-84 Widening-Pigeon Pass to I-680	Tier 2	PA4	2.3	2.3	X					
117	Port	North Airport Air Cargo Access Road Improvements, Phase 1	Tier 2	PA1	10.0	5.0						
118	San Leandro	City of San Leandro Pedestrian and Streetscape Improvements	Tier 2	PA2	13.3	13.3						Same as San Leandro Downtown TOD
119	San Leandro	E.14th St at the Hesperian Blvd/150th Avenue.	Tier 2	PA2	3.4	2.0			X			
120	Union City	Union City Intermodal, Phase 2	Tier 2	PA3	21.0	14.0			X			
121	Union City	ACTA East West Connector (formerly SR84) between Mission Boulevard in Union City and I-880 in Fremont	Tier 2	PA3	160.2	9.6			X			Current cost estimate more than $200M
A1	CMA	I-80 Integrated Corridor Mobility (ICM) Project	Tier 3 (ITIP)						X			CMIA ($55.3M) TLSP ($21.4M)
A2	CMA/ Caltrans	I-880/23rd/29th Interchange	Tier 3 (TCIF)						X			TCIF ($73.0M)
A3		NB 238/880 Connector	NA									LATIP ($31.0M)
A4		I-880/Washington Interchange	NA									LATIP ($31.0M)

			2008 CWTP Information				Current Project Phase					
Index	Sponsor	Project/Program Title	Category	Planning Area	Cost Estimate ($ x Million)	Funding Request ($ x Million)	Planning/ Scoping	PE/Env	PS&E	Con	Closeout/ Complete	Comments/Notes
A5		I-880/Whipple Interchange	NA									LATIP ($13.5M)
A6		I-880/West Winton Interchange	NA									LATIP ($25.0M)
A7		92/Industrial Interchange	NA									LATIP ($6.0M)
A8		I-580/Strobridge Interchange	NA									LATIP ($21.0M)