Adequate Maintenance:
Potholes Ahead — More Local Road Dollars Needed

Introduction

Local streets and roads are an integral part of the Bay Area's transportation network and represent a huge investment of public resources. One goal of MTC has been to work with cities and counties to identify and manage needed repairs to their local street and road networks. MTC advocates the adoption of preventive maintenance programs as a cost-effective approach to maintaining and extending the serviceability of these networks. Currently, deterioration of the Bay Area's roadways has created large unfunded repair backlogs in a majority of jurisdictions.

MTC is committed to maintaining a Metropolitan Transportation System, or MTS, consisting of freeways and local routes deemed essential to regional mobility. The primary challenge for cities and counties is to adequately maintain their non-MTS streets and roads.

Local street and road needs are divided into two categories:

1. "pavement" includes rehabilitation or reconstruction of existing roads, plus preventive maintenance to extend pavement life.

2. "non-pavement" includes related roadway maintenance of such items as storm drains, traffic lights, pedestrian walkways, retaining walls, storm damage, curb cuts for wheelchair access, etc.

Local road maintenance is funded from many sources, including: state gas taxes, county sales taxes, and other local sources, such as city and county general funds, bonds, and traffic fees.

Proposition 42, approved by voters in March 2002, dedicates the state sales tax on gasoline to transportation, a portion of which is earmarked for local roads. Unfortunately, due to the state's fiscal crisis, the statute has been suspended and the earmarked funds have never materialized.

Program Issues

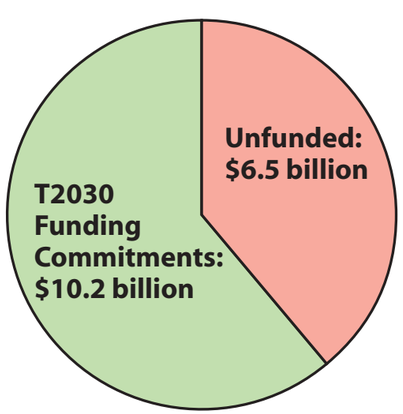
1. The 25-year pavement/non-pavement maintenance needs for the Bay Area total $16.7 billion. Projected revenues over the same period are expected to be only about $10.2 billion (covering just 61 percent of the needs), resulting in $6.5 billion in unfunded needs.

2. Experience shows that delayed maintenance leads to even costlier rehabilitation. As shown below, if it costs $1 to keep a section of roadway pavement in good condition through timely maintenance, it will cost $5 – five times as much – to restore the same roadway if it is allowed to deteriorate to the point where major rehabilitation or reconstruction is needed.

3. The magnitude of the road shortfall suggests that maintenance will likely be deferred on some facilities, thus increasing overall costs.

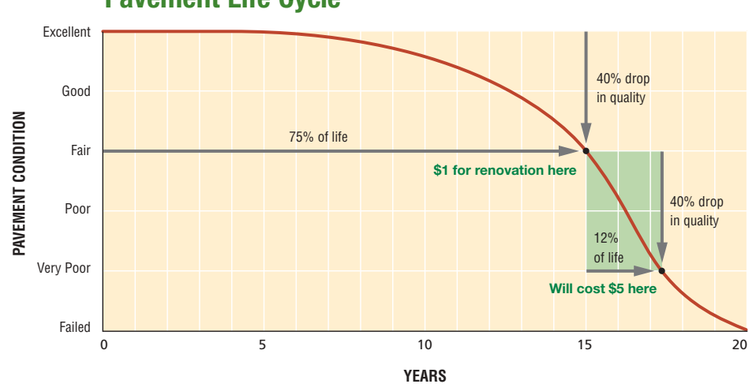
Transportation 2030 Phase 1 Decision

The Commission committed $990 million in discretionary funds to cover a portion of the pavement and non-pavement MTS local streets and roads rehabilitation shortfall, leaving $6.5 billion in non-MTS local streets and roads unfunded.



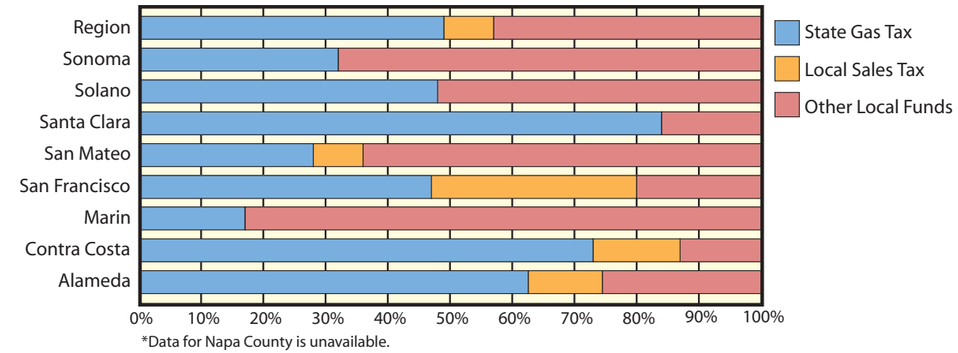
Total Need: $16.7 billion

Pavement Life Cycle



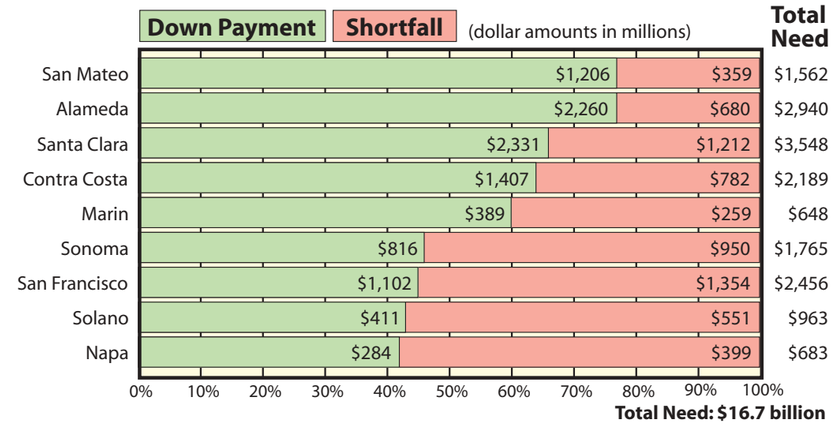
Time varies depending on traffic, climate, pavement design, etc.

Bay Area Local Street and Road Funding by Source



*Data for Napa County is unavailable.

Road Maintenance Expenditures (and Shortfalls) by Bay Area County 2005 – 2030



Total Need: $16.7 billion

Calls to Action

1. **Condition Maintenance Funds**
   MTC commits funding for local streets and roads maintenance based on the county shortfall levels. Counties with the largest shortfalls receive the highest levels of Transportation 2030 Plan funding. This may act as a disincentive to counties that do make a hefty investment in their local road system. To address this unintended result, MTC and its partners should develop ground rules to condition street and road funding on support and implementation of efficiency measures; and require that additional regional maintenance funding be used to supplement, not supplant, the local maintenance budget.

2. **Devote More Local Sales Tax Revenues to Road Maintenance**
   Most Bay Area transportation sales taxes allocate 20 percent to 25 percent of revenues to the upkeep of local streets. Counties should increase this share to address projected maintenance shortfalls.

3. **Self-Help for Every County**
   Cities' and counties' continued reliance on their general funds to finance street rehabilitation is unproductive, particularly since the general funds are often tapped out by police, fire and other needs. Cities and counties need to look to the voters to approve general fees such as transportation sales taxes, vehicle license fees, fuel taxes and the like to pay for pothole repair.

4. **Strengthen the provisions of Proposition 42** so that it cannot be routinely suspended.

Adequate Maintenance:
Keeping Trains and Buses Humming

Introduction

Public transit plays a critical role in the Bay Area's transportation system. It provides mobility to people without access to cars, including those who are low-income, elderly, disabled, and school-aged children. During the congested commute hours, public transit provides an alternative to driving, which helps reduce the numbers of cars on the roads. As transit funding becomes increasingly scarce, the challenge is to find ways to sustain and maintain today's core transit system. The prudent expenditure of transit operating and capital replacement funds is necessary to balance operating and capital replacement costs with reduced revenues.

Program Issues

1. Operating and capital replacement costs for Bay Area transit providers are projected to total $69.3 billion ($16.2 billion capital and $53.1 billion operating) over the next 25 years. Revenues over the same period are expected to be about $62.4 billion, resulting in $6.9 billion in unfunded needs.

2. The Commission has decided to make a regional investment in vehicles and fixed guideway replacement and rehabilitation before funding proposed service expansion.

3. As with local streets and roads, delayed maintenance of the transit system leads to even costlier rehabilitation.

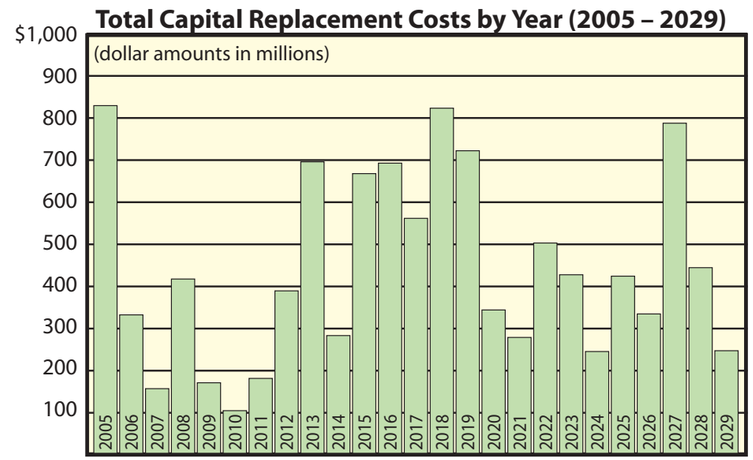
4. BART has by far the largest transit capital replacement need ($7.1 billion) of any Bay Area transit operator, accounting for nearly 44 percent of the region's total transit capital replacement need over the next 25 years. Due to its high ridership and extensive track mileage, BART also attracts considerable capital replacement funds for the Bay Area under federal law. Even with a $4.4 billion down payment on BART's need, BART is facing a $2.7 billion capital replacement shortfall. This comprises 65 percent of the total capital replacement shortfall for all transit operators.

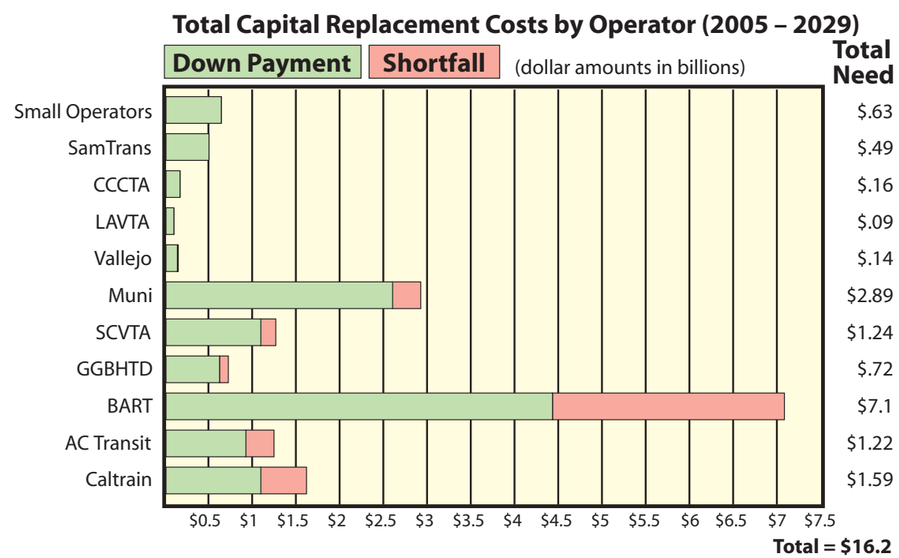
5. Transit operating shortfalls will need to be managed through system efficiencies and revenue enhancements.

6. Improved maintenance alone will be insufficient to meet the transit needs of a growing Bay Area. Increased service levels are needed to boost transit ridership and accommodate future population growth.

Transportation 2030 Phase 1 Decision

In December 2003, the Commission earmarked $1.3 billion of Transportation 2030 revenues for transit capital expenses. This $1.3 billion, added together with $10.8 billion already committed to that purpose, covers about 75 percent of the need, leaving an unfunded transit capital replacement cost for all operators of $4.1 billion.





Calls to Action

1. **Condition Capital Replacement Funds**
   MTC commits funding for transit operating and capital based on the transit operators' shortfall levels. This results in transit operators with the largest shortfalls receiving the highest levels of Transportation 2030 funding. MTC and the transit operators must find innovative and equitable ways to condition capital replacement funds, so that everyone takes responsibility for making adequate investments to operate and maintain the transit system.

2. **Extend Useful Life and Reprioritize Capital Replacement**
   The region should work towards extending the life of its bus and rail vehicles, thus getting more mileage from the fleet before purchasing new capital assets. There may be cases where maintenance and service facilities could be more fully utilized to fix and maintain the existing stock, reducing the capital replacement shortfalls.

3. **Allow Voters to Increase Transportation Development Act (TDA) Funds**
   MTC supports state legislation that would allow counties the option of asking voters to double TDA funds by passing a quarter-cent sales tax increase. TDA funds represent one-quarter of one percent of the statewide sales tax, and are earmarked for public transit, paratransit and pedestrian and bicycle programs.

4. **Dedicate Sales Tax Funds to Transit Operations and Maintenance**
   Because transit is a cornerstone of the Bay Area transportation system, expenditure plans for local transportation sales taxes must include funds for transit operations and capital replacement as well as transit expansion projects.

5. **Consolidate Transit Operators**
   While there is no "ideal" number of transit operators for our nine-county region, it is clear that having some two dozen separate transit operators is not the right answer. These operators should be consolidated into a smaller and more manageable number of agencies, which — if done right — could reduce cost and improve service. Napa County's consolidation of its six operators into a single agency in 2001 could serve as a successful model.

6. **Challenge BART to Go to Voters — Twice**
   BART will place a $980 million general obligation property tax bond measure on the November 2004 ballot in Alameda, Contra Costa and San Francisco counties to seismically strengthen the Transbay Tube, stations and elevated tracks. Since BART's capital needs are the largest among Bay Area operators, the agency may need to place a second bond measure on the ballot at a future date to deal with its unfunded $1.72 billion capital replacement and remaining seismic retrofit needs.

Adequate Maintenance:
State Highways Showing Their Age

Introduction

The State Highway System is one of California's most valuable transportation resources. It is the foundation on which the vitality of California's economy is built, linking people and goods with growing urban centers and major international ports.

Much of the State Highway System was planned, designed and built in the 1950s through the 1970s, and some of it has never been rehabilitated. Not only have these facilities aged beyond their design life, they have been subjected to more truck and auto traffic than originally assumed. This combination of age and increased demand has caused faster rates of pavement deterioration, concentration of accidents and increasingly longer travel times.

State law requires Caltrans to prepare a 10-year State Highway Rehabilitation Plan for all state-owned highways and bridges. An increased emphasis on safety and roadway rehabilitation is reflected in the 2004 SHOPP (State Highway Operations and Protection Program), with the goal of reducing fatal and injury accidents and the number of miles of distressed pavement. Other goals include easing congestion through operational improvements, restoring highway planting, and fixing rest areas.

Program Issues

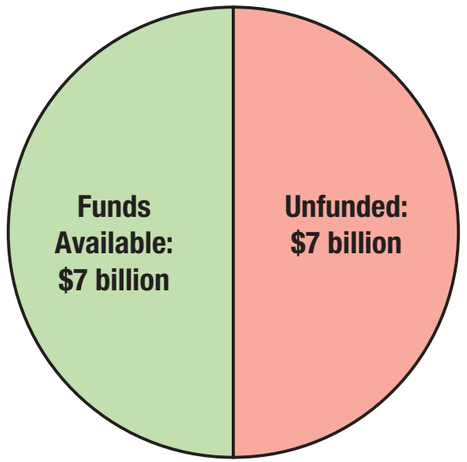
1. As illustrated in the pie chart below, Bay Area SHOPP needs over the 25-year life of the 2030 Plan total about $14 billion, while projected revenues over the same period are expected to cover only $7 billion, resulting in $7 billion in unfunded needs.

2. The Commission has not yet identified any new funding sources for the $7 billion in unfunded SHOPP needs in Transportation 2030. The state will need to tap into its existing resources to pay for this shortfall.

3. The magnitude of the state highway rehabilitation shortfall suggests that maintenance may have to be delayed on some highways, thus increasing overall road repair costs.

4. Insufficient funding for operations will result in lost opportunities to ease congestion "hot spots" by reducing delays caused by accidents and incidents, such as through changeable message signs, freeway service patrols and other incident management programs.

5. While we cannot build our way out of congestion, investments must be made to address serious bottlenecks and close gaps in our highway system. These additional lanes will require additional maintenance, and more funding.

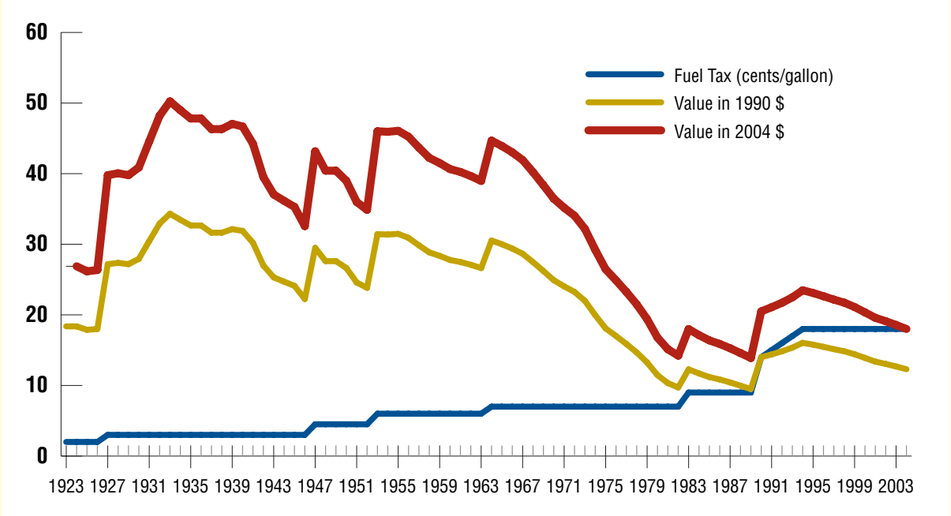


Total Need: $14 billion

Calls to Action

1. Index the State Gas Tax to Inflation
It is long past time for the Legislature to increase the state gasoline tax! Since it was last raised in 1990 (from 9 cents to 18 cents per gallon), the gasoline tax has lost 25 percent of its value to inflation (see chart). Today, California's gas tax is lower than that of 36 other states, and is below the national average of 20.4 cents per gallon. At the very least, the state gas tax should be indexed to inflation — as it is in 11 other states — to prevent the continued erosion of its purchasing power over time. This is the logical user-based revenue source to maintain and sustain the State Highway System.

California's Fuel Tax Loses Value



2. Trim the STIP to Support the SHOPP
Failing an increase in revenues to maintain the state highway system, the state will be faced with deferring more and more of its maintenance needs. Such a strategy has increasingly negative long-term implications. To avoid this, more dollars may need to be directed to the State Highway Operations and Protection Program (SHOPP), which funds state highway maintenance needs. Unfortunately, this will leave less state funding available for new road, highway and transit projects in the State Transportation Improvement Program (STIP).

3. Leverage Limited Existing Highway Funds
Find creative ways to leverage limited federal and state funds with regional and local dollars.

4. Create User-Based Fees
We must send the proper price signal to motorists to encourage wise use of the highway networks. With severe limitations on our ability to expand and maintain the supply of highway lanes, the focus must turn to managing demand.

California Cities Dominate Rough Road List
Bay Area Claims No. 2 and No. 4 Spots

Top 10 Urban Areas with Unacceptable Ride Quality on Highways and Arterials

	Urban Area	Percentage Unacceptable
1.	Los Angeles	67
2.	San Jose	67
3.	San Diego	61
4.	San Francisco-Oakland	61
5.	New Orleans	51
6.	Sacramento	50
7.	Kansas City	44
8.	Oklahoma City	44
9.	San Bernadino-Riverside	42
10.	Boston	42

Source: The Road Information Program (TRIP) analysis of Federal Highway Administration data

System Efficiency:
Teamwork and Technology

Introduction

The effort to make Bay Area travel easier and more convenient stretches across multiple jurisdictions, requiring MTC to work in concert with many other agencies to ensure not only that each piece of the regional transportation system works as efficiently as possible, but that the components mesh smoothly to create a unified network. The Regional Operations Program includes initiatives encompassing:

- 511 traveler information (511 Traffic, 511 Transit, Regional Rideshare Program);
- Incident management (Freeway Service Patrol, emergency vehicle preemption of traffic signals);
- Traffic operations, including Caltrans' Regional Transportation Management Center, smart corridors, center-to-center data exchange, coordination of traffic signals across city boundaries, etc.);
- Transit operations, including transit Automatic Vehicle Location systems, priority at traffic signals, express bus services, etc.; and
- Technical assistance for cities and counties (pavement management, traffic engineering).

The Regional Operations Program will improve the efficiency of the existing regional transportation system. For example, ramp metering has been shown to increase freeway capacity by 14 percent while also increasing freeway speeds by 22 percent and decreasing the number of collisions by 26 percent. Retiming traffic signals decreases unnecessary stops by 15 percent, increasing traffic speeds by eight percent. AC Transit's Rapid Bus program on San Pablo Avenue decreased travel time by 14 percent and increased peak period ridership by 66 percent, and 19 percent of the new riders previously made the trip by car.

Program Issues

1. Full deployment of the Regional Operations Program is expected to cost about $725 million over 25 years, yet projected revenues over this period total only $306 million, or slightly more than 40 percent of anticipated needs.

2. MTC's long-term vision for freeway traffic operations includes real-time monitoring of speed and volume on all freeways, increased management of congestion through message signs and ramp meters, and automated data exchange (including radio between jurisdictions on all freeways). Given limited funding, this vision likely will be implemented only on highly congested freeways.

3. An aggressive deployment of new technologies would maximize the Bay Area transportation network's efficiency by: improving data collection for 511 (including driving times on HOV lanes and arterial streets as well as mixed-flow freeway lanes); making available multilingual phone and Web options for all travel information; expanding TransLink® integration and smart card distribution; and improving congestion management through enhanced traffic flow monitoring and real-time communication with motorists.

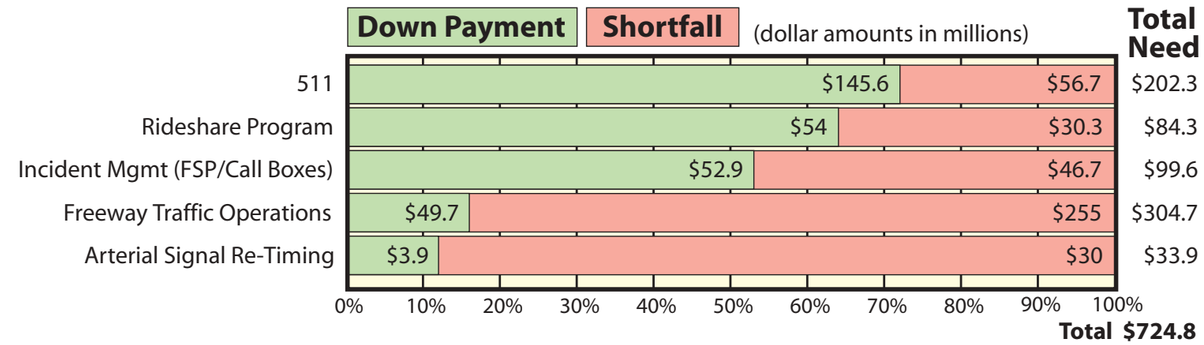
4. Expansion of the Freeway Service Patrol (with new weekend, mid-day and morning service hours) would enhance both congestion management and incident response.

Transportation 2030 Plan Phase 1 Decision

In the 2030 Plan, MTC will add $251 million to the $55 million previously committed to fund core programs benefitting the entire region. This includes 511, the regional rideshare program, freeway operations, incident management, and funding for three years of regional signal timing. However, full deployment of the Regional Operations Program will require an additional $419 million to sustain and enhance the existing programs.

Bill Hall

John Blaustein



Calls to Action

1. Increase Vehicle Registration Surcharge for Incident Management
The successful Freeway Service Patrol program is partially funded through a $1 assessment on vehicle registrations. Since accidents, stalls, spilled debris and other incidents account for up to 40 percent of traffic congestion, doubling the assessment to $2 would provide dedicated funding for programs to reduce incident-related traffic delays.

2. Complete the Instrumentation of the Bay Area Freeway Network
Real-time information on traffic conditions throughout the Bay Area freeway system is essential to Caltrans' and the CHP's ability to immediately summon the right type of assistance (e.g., tow truck, ambulance, etc.) to where it is needed, and to inform travelers of the danger ahead. Sufficient State Highway Account funding should be dedicated for better operation of the existing freeway system.

3. Prioritize Completion of the 511 Phone and Web Systems
Peoples' ability to make smart choices about when, where and how they travel depends on access to information. This includes real-time information about traffic conditions, transit service and parking availability. And in a growing region with residents and visitors from around the globe, this information must be available in multiple languages.

4. Implement Freeway Metering Lights
Traffic lights at freeway on-ramps are a proven and effective way to reduce freeway delays and increase freeway volumes. Recent studies have documented that local streets flow better after metering is implemented. The regional interest in reducing freeway congestion must be allowed to overcome the objections from a few cities about "spillover" traffic on local streets.

5. Improve Arterial Operations
Many arterials throughout the Bay Area are routinely congested. Retiming the traffic signals is a cost-effective way of minimizing normal peak-period congestion for cars and buses, especially where major roads pass through several cities. "Smart Corridors" enable cities to quickly respond to major traffic fluctuations (e.g., traffic that is diverted onto city streets from nearby a freeway after a major collision; congestion after a Sharks game, etc). To ensure efficient operation of the arterial portion of the regional transportation system, the Bay Area must provide a stable source of operating funds.

6. Reaffirm the CHP's Preeminence on Highways
Jurisdictional conflicts and confusion between the CHP, local police and fire departments, and other agencies often lead to chaotic responses to major highway accidents — and needless delays. A new policy should make clear that, on the state highway system, the CHP is always in charge.

System Efficiency:
New Strategies for Cleaner Air

Introduction

The Bay Area has some of the cleanest skies of any metropolitan area in the U.S. Regional air quality has steadily improved due in large part to cleaner motor vehicles and fuels, and reduced emissions from industrial and commercial sources. The number of days on which ozone levels exceed state and federal standards has fallen dramatically. But more progress is needed to ensure healthy air quality every day. At stake are billions of federal dollars earmarked for Bay Area highway and transit projects that could be withheld or even canceled for air quality reasons. While the Bay Area meets the federal one-hour ozone standard, the region currently does not meet either the state's more stringent one-hour ozone standard or the federal government's newer eight-hour standard.

Program Issues

Many different sources contribute to air pollution. Stationary sources such as factories, power plants, and dry cleaners; mobile sources such as cars, buses, planes, trucks, and trains; and naturally occurring sources like windblown dust all contribute to air pollution. Among the principal pollutants considered harmful to people and the environment are:

- ***Ozone*** is a gas emitted by a chemical reaction between oxides of nitrogen (NOx) and volatile organic compounds (VOC) in the presence of heat and sunlight. "Good" ozone occurs naturally about 10 to 30 miles above the earth, while "bad" ozone forms in the earth's lower atmosphere (ground-level). Motor vehicle exhaust and industrial emissions, gasoline vapors, and chemical solvents are some of the major sources of NOx and VOC that help to form ozone. Sunlight and hot weather cause ground-level ozone to form in harmful concentrations in the air, which is often referred to as summertime pollution.

- ***Particulate matter (PM)*** includes dust, dirt, soot, smoke and liquid droplets found in the air. Particles can be suspended in the air for long periods. Some particles are directly emitted into the air from sources such as cars, trucks, buses, factories, construction sites, tilled fields, unpaved roads, stone crushing and burning wood. Others may be formed through chemical change of gases such as when gases from burning fuels react with sunlight and water vapor or fuel combustion in motor vehicles. Serious health problems may arise from breathing particulate matter.

- ***Carbon monoxide (CO)*** is a colorless, odorless gas formed when carbon in fuel is not burned completely. CO is a component of motor vehicle exhaust, which contributes about 56 percent of all CO emissions nationwide. Non-road engines and vehicles (such as construction equipment and boats) contribute about 22 percent of all CO emissions nationwide. Areas with heavy traffic congestion generally have higher levels of CO.

- ***Carbon dioxide (CO_2)*** is a major component of the carbon cycle, and results from the combustion of organic matter if sufficient amounts of oxygen are present. CO_2 also is produced by various microorganisms in fermentation and cellular respiration. It is present in the Earth's atmosphere at a low concentration and acts as a greenhouse gas.

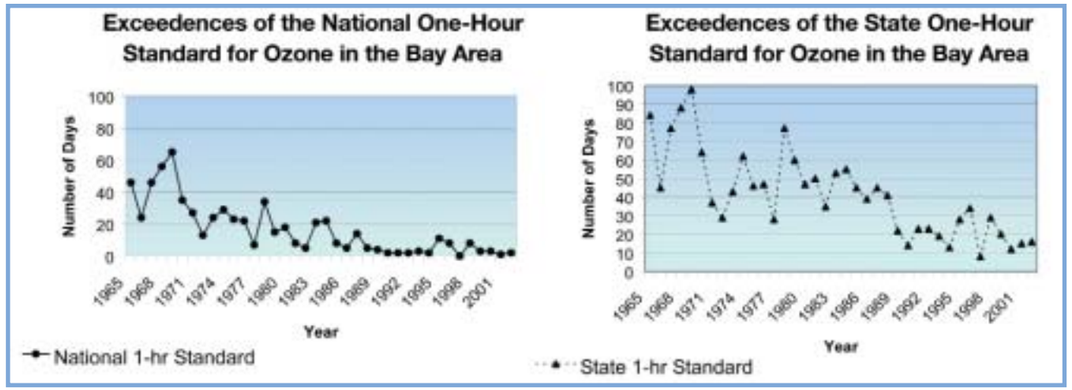
MTC, along with the Bay Area Air Quality Management District and the Association of Bay Area Governments (ABAG), prepares and implements plans to achieve the ozone standards. The most recent plan for the state standard is the 2000 Clean Air Plan, and the most recent plan for the national standard is the 2001 Ozone Attainment Plan. Each plan includes measures to reduce emissions of ozone precursors from a variety of sources.

The 2004 Bay Area Ozone Strategy, which is currently being prepared by MTC, the Air District and ABAG, is the update to both these plans. The 2004 Ozone Strategy will include a redesignation request and maintenance plan for the national one-hour ozone standard and a triennial revision to the Bay Area's strategy to attain the California State one-hour ozone standard. Stationary, mobile, and transportation control measures are key features in the Ozone Strategy. Responsibility for CO_2 control lies with the California Air Resources Board (CARB). Because CARB's strategy for reducing motor vehicles' CO_2 emissions emphasizes the use of hydrogen fuel cells, these solutions are likely to reduce transportation revenues generated by taxes on gasoline and diesel fuel.

Transportation 2030 Phase 1 Decision

The Commission in December 2003 adopted a new clean air goal for the Transportation 2030 Plan. The key objectives include: (1) achieve additional reductions in motor vehicle emissions through effective transportation control measures; (2) work with the Air District to develop new episodic control strategies for predicted high ozone days; and (3) help reduce particulate matter from buses and other heavy duty vehicles.

The Commission also committed $16 million towards a comprehensive program to improve Bay Area air quality, which is to be leveraged with $239.5 million from the Air District's Transportation Fund for Clean Air.



Calls to Action

1. Implement Spare the Air Day Strategies
The region should deploy focused and specific strategies to reduce emissions on the relatively few days (an average of six or seven annually in many locations) when temperatures are hot and ozone levels are high enough to exceed federal health standards. MTC, the Air District and ABAG should deploy measures (called "episodic controls") to reduce driving, such as extra speed enforcement on Bay Area freeways, limiting use of 1981 or older vehicles, and authorizing public agencies to require telecommuting. MTC, the Air District and BART are now experimenting with a program to provide free travel throughout the BART system during the morning commute period on Spare the Air days during the summer and fall in 2004.

2. Reduce Particulate Matter from Buses/Heavy Duty Vehicles
EPA's emission standards for post-1994 manufactured diesel trucks and buses have resulted in a 90 percent reduction in emissions of particulate matter. Older trucks and buses should be retrofitted with particulate traps to reduce emissions. EPA should continue to work with manufacturers to further reduce emissions from diesel engines, including non-road engines such as construction equipment. MTC, the Air District and ABAG, in consultation with EPA, should find ways to reduce particulate matter through funding assistance programs, similar to MTC's $14 million program to retrofit the emission control systems of 1,700 diesel buses operated by 12 Bay Area transit agencies.

3. Retrofit 1980-1994 Automobiles
CARB has demonstrated that catalytic converter replacement can reduce emissions on middle-aged to older cars, and has developed a program to evaluate replacing the evaporative canister in older cars. MTC plans to fund replacement of the catalytic converters in model year 1980-1994 passenger vehicles with medium-priced catalysts. The evaporative canister component of the program could be a pilot program to supplement CARB's testing of canister replacement.

4. Scrap the Oldest, Most Polluting Cars
The Air District's Vehicle Buy-Back Program pays $500 for operating and registered vehicles from 1981 and earlier. These cars are then scrapped by dismantlers under contract to the Air District. MTC could supplement this voluntary program with additional federal funds.

System Efficiency:
Equal Access for All
(not included)

System Efficiency:
Lifeline Program is a Safety Net
(not included)

System Efficiency: Walk and Roll!

Introduction

Walking and bicycling are two important means of mobility in the Bay Area. Laying sidewalks for pedestrians and wheelchairs, striping bicycle lanes, installing bicycle parking at transit stations and building multi-use trails can boost the convenience and utility of these modes of travel, and enhance a community's health and well-being.

Quantifying the needs of pedestrians and bicyclists is a difficult task. And the cost of building a complete bicycle and pedestrian network remains unknown. The regional bicycle network identified in MTC's Regional Bicycle Plan has a rough estimated cost of $1 billion. But this network includes only regionally significant routes selected from countywide bicycle plans. Total projected costs rise to $1.5 billion when full buildout of the countywide bicycle plans is added to the Regional Bicycle Plan. In fall 2004, MTC will complete a regional pedestrian plan to identify needs and associated costs for improvements to pedestrian facilities regionwide.

Despite the uncertainty over the ultimate price tag for Bay Area bicycle and pedestrian facilities, it is clear that available resources fall far short of meeting the region's needs. Nonetheless, the region is making significant strides. The $200 million approved by MTC for bicycle and pedestrian improvements in Phase 1 of Transportation 2030 marks MTC's first-ever funding commitment for a regional bicycle and pedestrian program. In addition, Alameda, Santa Clara and San Francisco counties have committed close to $240 million in transportation sales tax funds for bicycle and pedestrian needs. Marin, Sonoma, Contra Costa and San Mateo counties — which have new sales tax measures or reauthorizations of existing sales taxes on the November 2004 ballot — pledge to dedicate another $160 million. An estimated amount of $245 million in traditional funding sources is available for bicycle and pedestrian needs. These sources include the Transportation Development Act, the Transportation Fund for Clean Air, the Bicycle Transportation Account, and Transportation Enhancement Funds.

Program Issues

1. The Regional Bicycle Network consists of over 1,500 miles of bicycle paths, lanes and routes, including facilities from each county's bicycle master plan and the entire Bay Trail. Upon completion of this network, over two-thirds of the Bay Area's residents will be within a one-half mile of a Regional Bicycle route.

2. The need for pedestrian facilities (sidewalks, pedestrian signals, marked crosswalks, etc.) exists in every neighborhood. But there is insufficient funding to address these demands. To prioritize the myriad needs — and help develop a regional pedestrian plan — MTC proposes to focus on projects that improve access to transit, schools and regional activity centers.

3. MTC's Regional Bicycle and Pedestrian Program will fund eligible projects that are part of the Regional Bicycle Network which support access to schools, transit stations and regional activity centers.

Transportation 2030 Phase 1 Decision

The Commission in December 2003 dedicated $200 million over 25 years for construction of regionally significant pedestrian projects and bicycle projects from the Regional Bicycle Network. In addition, the Commission approved a $27 million annual commitment to the Transportation for Livable Communities/Housing Incentive Program (TLC/HIP), which funds the planning and construction of bicycle, pedestrian and transit access capital projects.

Calls to Action

1. Address Pedestrian and Bicycle Needs in Capital and Rehabilitation Projects

Bicyclists, pedestrians, and wheelchair users must be given due consideration in the planning process, and bicycle facilities and walkways must be considered, where appropriate, in conjunction with all new construction and reconstruction of transportation facilities. This should include both transit and roadway projects. Transportation projects must also consider safety and contiguous routes for bicyclists and pedestrians. These actions greatly reduce the future cost of retrofitting facilities for non-motorized travelers, and encourage safe and convenient bicycling or walking.

2. Support Safe Routes to School Programs

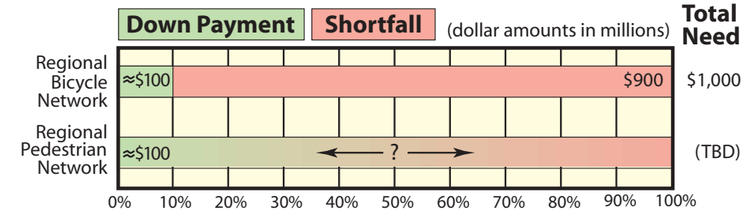
MTC and its partners should support the pending legislative extension of California's Safe Routes to Schools Program. Initially sponsored in Marin County, this program has proven to be an effective way to reduce peak-hour congestion near schools and create a hospitable walking and bicycling environments for children. In addition, the reauthorization of the federal surface transportation bill may include funds for a new national Safe Routes to School program.

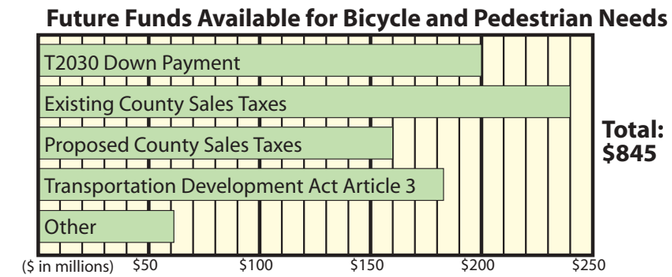
3. Support Walk- and Bike-friendly Transportation Sales Tax Measures

When developing transportation sales tax measures, counties should support more funds for non-motorized travelers. Most allocate about two percent to five percent of sales tax revenues to bicycle and pedestrian facilities. This may or may not be sufficient to address the needs of bicyclists and pedestrians in a given county. We therefore urge counties to work with local and regional bicycle coalitions and pedestrian safety groups to ensure that their local transportation sales tax expenditure plans devote sufficient resources to walking and bicycling.

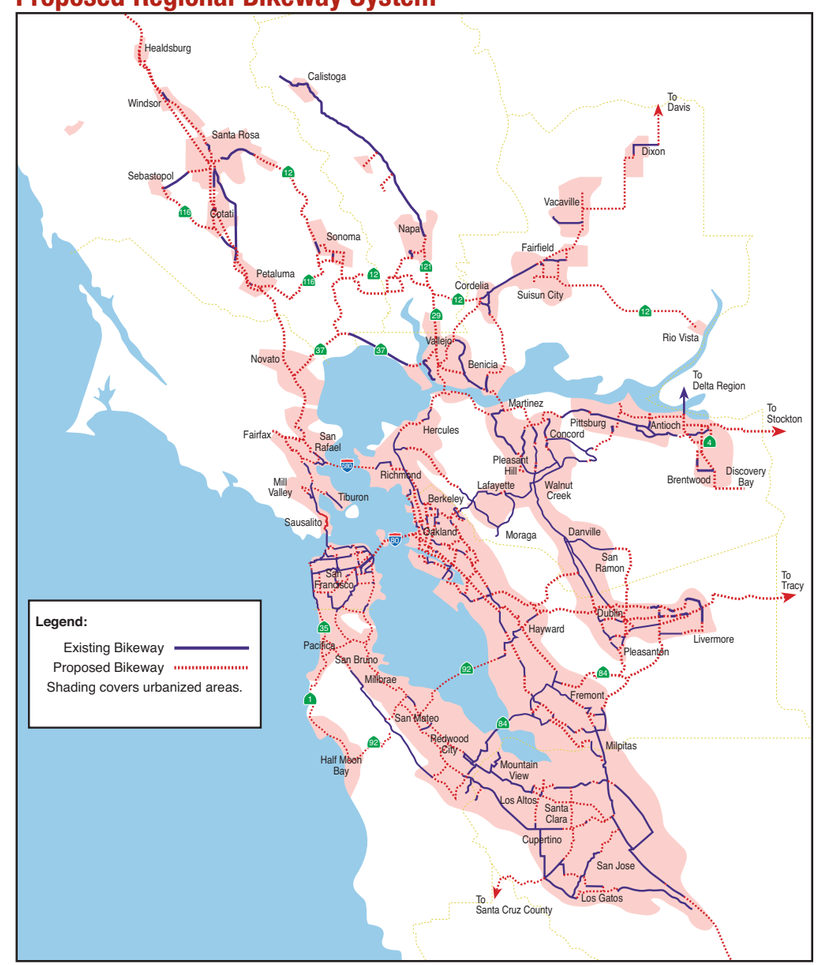
4. Give Bicyclists and Pedestrians a Little "TLC"

Cities, counties, and pedestrian and bicycle advocates should pursue funding opportunities through MTC's Transportation for Livable Communities/Housing Incentive Program (TLC/HIP) initiatives. These grants can be leveraged with non-transportation funding, such as community development block grants, redevelopment tax increment funds and Air District clean air funds. MTC has administered its successful TLC/HIP program since 1998. The Transportation 2030 Plan allocates $9 million annually amongst the nine Bay Area counties so they can launch county-level TLC/HIP programs. Santa Clara already has incorporated a county TLC and pedestrian program into its voter-approved sales tax expenditure plan. Contra Costa County will follow suit in its sales tax reauthorization measure, which will appear on the November 2004 ballot.





Proposed Regional Bikeway System



System Efficiency:
A Seamless Transit Trip

Introduction

Getting from point 'A' to point 'B' via public transit in the Bay Area should not be as challenging as it often is. Reducing travel times, providing more reliable connections, making it easier to pay, and ensuring that transfers are easy and safe will entice more of us out of cars and thereby help ease congestion and protect the environment.

The public frequently requests a more convenient and "seamless" transit network. Participants in MTC's outreach for the 2001 Regional Transportation Plan ranked improved transit connections as one of six top recommendations for getting more out of our existing transportation resources. The issue also was one of three priorities identified by focus groups for the Transportation 2030 Plan, and improved coordination among transit agencies was ranked a top priority in a 2030 Plan telephone poll.

Program Issues

In 2002, MTC launched a Transit Connectivity Project to identify key transfer barriers and recommend improvements. Barriers were identified in four categories.

1. **Service Connections:** Infrequent service, uncoordinated schedules and/or poor schedule adherence.

2. **Transfer Point Information and Amenities:** Lack of signage, indecipherable or out-of-date information, lack of shelters, seating, safe environment, restrooms, food, etc.

3. **Pre-Trip Information:** Lack of centralized telephone information, no access to customer service representatives at night and on weekends, barriers for non-English speakers.

4. **Fare Policies and Fare Collection:** Multiple and confusing fare and transfer policies.

Transit agencies, MTC and others are currently taking a number of steps to improve transit connectivity. For example, cross-platform rail transfers have been established in Richmond, Millbrae and San Jose. The TransLink® regional electronic fare card has been successfully tested and is ready for full implementation. The Altamont Commuter Express and Santa Clara Valley Transportation Authority operate an integrated rail shuttle to work sites. A number of operators are moving forward with real-time bus and train information at key transfer points.

Building on these connectivity improvements, the Transit Connectivity Project developed seven major recommendations for a seamless, regional transit system.

1. Establish a regional network of transit hubs and services.
2. Develop a regional signage and information assistance program.
3. Fully implement the regional transit trip-planning system.
4. Expand real-time transit information.
5. Improve customer telephone information services.
6. Develop a plan for "last mile" connecting services.
7. Complete TransLink® universal ticket roll-out.

Voter-approved Regional Measure 2 requires MTC to adopt a Transit Connectivity Study by December 2005. This effort will build upon the recommendations from the Transit Connectivity Project. Regional Measure 2 also provides funding for a number of connectivity improvements including:

- Direct platform access between Muni and BART at Embarcadero and Civic Center stations in Downtown San Francisco.
- $20 million for expanded express bus service and related infrastructure.
- $22 million to integrate TransLink® with operator fare equipment and expand the system to new transit services.
- $20 million to assist transit operators in implementing real-time scheduling.
- Planning assistance to develop an integrated fare program.

Transportation 2030 Phase I Decision

The Commission recognized the importance of improved transit connectivity when, in December 2003, it adopted a "Reliable Commute" goal, with the objective to "Make it easier for people to make connections between transit systems." Improved connectivity also will help achieve other Transportation 2030 goals, including Clean Air, Access to Mobility and Livable Communities.

Calls to Action

1. **Fully Implement the TransLink® System**
   Full regional rollout of the TransLink® program will give riders a single universal fare card valid on all Bay Area transit lines, and will greatly simplify the fare collection process for operators.

2. **Establish a Regional System of Hubs and Services**
   The Regional Measure 2 connectivity and rail plans provide an opportunity to create a coordinated, regional system of transfer stations at major rail and bus connections.

3. **Improve Customer Information and Assistance**
   MTC and the region are well poised to advance the recommended strategies emerging from the Regional Transit Connectivity Project by (a) improving regional signage, (b) expanding real-time transit information, (c) fully implementing the regional transit trip-planning system and (d) improving customer information telephone services. These support services are essential for attracting and retaining transit riders.

4. **Consolidate Transit Operators**
   Having some two dozen transit operators in the Bay Area is a barrier to a seamless transit trip. A smaller, more manageable number of agencies would make better transit connection easier to achieve.

System Efficiency:
Connecting Transportation and Land Use

Introduction

The Bay Area is expected to add more than a million more people and a million new jobs over the next 25 years. Our transportation system's ability to handle this growth depends on where these people will live and where the jobs will be located. The bottom line: the Bay Area must accommodate more of its future growth in existing urban and suburban areas.

In preparing the Transportation 2030 Plan, MTC found strong public support for better connecting transportation and land use, developing more convenient transportation options, and pursuing greater regional cooperation on issues surrounding transportation and land use.

Program Issues

1. Promoting transit-oriented development and implementing the regional Smart Growth Vision adopted in 2002 requires stronger partnerships and more collaborative planning among MTC, the Association of Bay Area Governments (ABAG), the Bay Area Air Quality Management District, Caltrans, other regional planning agencies, adjoining regions, public transit agencies, local governments and county congestion management agencies. While all these agencies share a critical interest in land-use decisions, it is local governments and the private sector that will ultimately determine land-use patterns and shape the design of communities and neighborhoods.

2. MTC continues to direct a majority of the transportation funds under its control toward public transit projects, including significant expansion of the region's transit network. These investments will be cost-effective only if sufficient numbers of people live and work near the new rail stations, bus stops and ferry terminals. How can MTC ensure that supportive land uses around future transit nodes will be planned for and built?

3. To boost transit ridership, conserve open space and create more walkable neighborhoods, the region must produce a broader array of housing types, more affordable to a wider range of incomes, and at higher densities than traditionally have been planned for. How can public agencies promote higher density developments that are livable, well designed and embraced by the public?

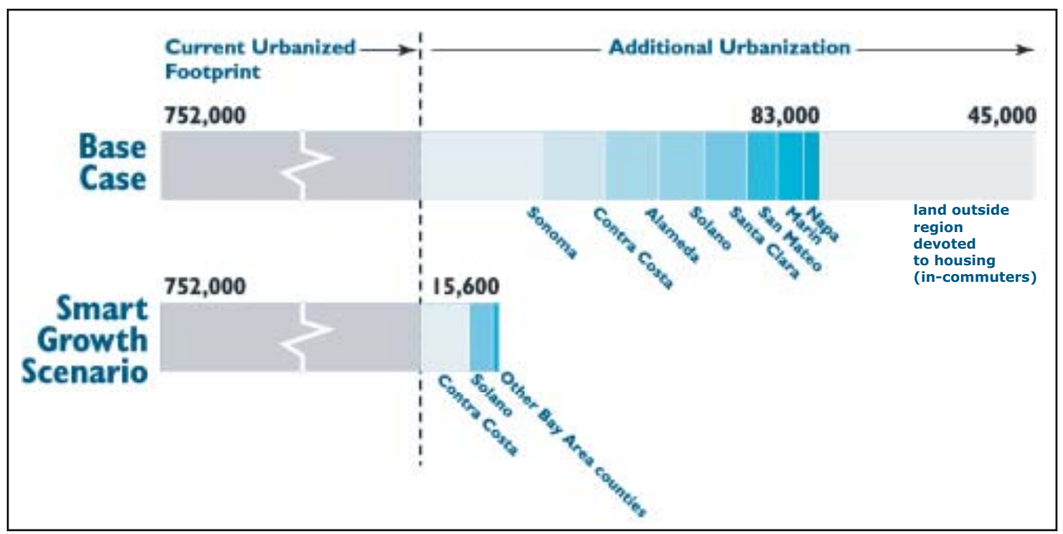
4. The strong demand for suburban living will continue. How can the Bay Area shape new suburban development patterns and retrofit existing suburbs to promote more walkable communities, reduce the number of single-occupant vehicle trips and coordinate transportation and land-use decisions?

5. How can a shift towards more compact growth patterns and the implementation of the Smart Growth Vision avoid a litany of unintended consequences? For example, how can efforts to focus growth toward the inner Bay Area avoid displacing existing residents and business — including critical economic engines like warehousing and freight facilities?

Transportation 2030 Phase 1 Decision

The five-point Transportation/Land-Use Platform adopted by MTC in December 2003 includes tripling funding for the Transportation for Livable Communities (TLC) program to $27 million annually. The Commission asked staff to further develop and refine the platform and any supporting policies and programs — with input from a broad range of stakeholders (now represented through MTC's Transportation/Land Use Task Force) — for release in October 2004 as part of the draft Transportation 2030 Plan.

Greenfield Development (Acres converted in region by 2020)



Calls to Action

1. **Condition Transit Funds on Supportive Land Use**
   MTC will develop a new policy to ensure that the investment of regional discretionary dollars for major new transit projects will be matched by local land-use patterns, plans and policies supporting adequate housing and employment densities.

2. **Provide More Land-Use Planning Funds to Partners**
   MTC will continue to provide planning funds to the county Congestion Management Agencies (CMAs), as well as the Association of Bay Area Governments (ABAG), to support better transportation and land-use planning, and the implementation of the regional Smart Growth Vision. MTC also will develop a new grant program for local governments to support more comprehensive land-use planning around transit stations and corridors.

3. **Develop Joint Planning Projects with Regional Neighbors**
   MTC, ABAG, the Air District and other partners will build on ABAG's work with the Interregional Partnership to develop new joint planning projects with our regional neighbors.

4. **Create Smarter Suburbs**
   MTC and its regional partners will collaborate with local government and the private sector to develop new approaches to suburban design that offer a wider variety of travel options for shorter distance trips, particularly walking, bicycling, and smaller shuttle and jitney services.

5. **Evaluate Progress and Performance**
   We must quantify progress through specific performance measures to gauge success in meeting the Smart Growth Vision's goals. We also must clearly communicate both successes and failures to our partners and the general public. A recent review of the TLC/HIP programs led to significant changes to strengthen the programs.

6. **Make Transit-Oriented Development More Profitable for Local Government**
   A host of barriers stand in the way of making housing — particularly around transit stations — more attractive to local government. One of the major barriers is the current fiscal structure that requires cities to rely heavily on sales taxes for revenues. The state should reform local government finance to provide new financial incentives, in addition to allowing cities to capture additional revenues like property taxes, from housing built near public transit stations.

System Efficiency:
Getting There Safe and Sound

Introduction

Improved safety for all local travelers is a key consideration in all transportation investment decisions. Safety and security issues fall into three key areas:

1. Automobile accidents, including auto collisions with bicyclists and pedestrians.

2. Natural disasters, especially the seismic safety of the transportation infrastructure.

3. Security threats to personal safety stemming from individuals committing a crime or from acts of terror.

Program Issues

Automobile, Bicycle and Pedestrian Safety

1. Each generation of new vehicles — cars, buses and trains — builds in additional safety features, such as air bags and anti-lock brakes. Designs for new transportation facilities — bridges, freeway interchanges, pedestrian crossings, and the like — also build in the latest safety features.

2. There are several programs that focus on addressing safety issues, including the state's Hazard Elimination Safety and Safe Routes to Schools programs. Requests for this funding, however, are many times over the available revenues. More funding is needed to reduce the number of collisions and injuries.

3. Some agencies lack the staff expertise and time to regularly analyze data on collisions and their causes, and a few cities have reduced staff to the point that they no longer complete police reports on property-damage-only collisions.

Seismic Safety

4. The Bay Area and the state have made an immense investment to improve the seismic safety of key transportation facilities, including strengthening toll bridges to withstand a major earthquake. There has been considerable speculation in recent weeks, however, about the cost overrun on the toll bridge seismic retrofit program for state-owned spans (all but the Golden Gate). State law directs Caltrans to report to the Legislature and the public concerning these costs, but as yet they have not released new data. There will be an intense public debate on how to cover these cost overruns.

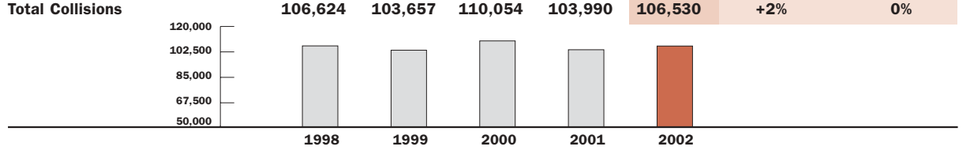
5. BART, likewise, needs considerable revenues to make the system earthquake safe. A property tax assessment proposal will appear on the November ballot in Alameda, Contra Costa and San Francisco counties to retrofit the transbay tube and other key facilities, but additional revenue will be needed to strengthen the entire BART system.

National Security/Terrorist Threats

6. The Bay Area's transportation system presents numerous potential targets for a terrorist attack. Affected agencies need to collectively define and respond with appropriate measures to protect travelers. Absent a greater financial commitment from the federal government for homeland security and transportation, the Bay Area will need to use local funds to pay for some of the more urgently needed protections.

Injury and Fatal Collisions on Bay Area Roadways, 1998–2002

	Collisions					Percent Change	
	1998	1999	2000	2001	2002	2001–2002	1998–2002
Injury Collisions	39,027	37,913	39,609	38,322	37,167	–3%	–5%
Fatal Collisions	433	405	444	449	451	0%	+4%
Total Injury and Fatal Collisions	**39,460**	**38,318**	**40,053**	**38,771**	**37,618**	**–3%**	**–5%**
Property Damage Only Collisions	67,164	65,339	70,001	65,219	68,912	+6%	+3%
Total Collisions	**106,624**	**103,657**	**110,054**	**103,990**	**106,530**	**+2%**	**0%**

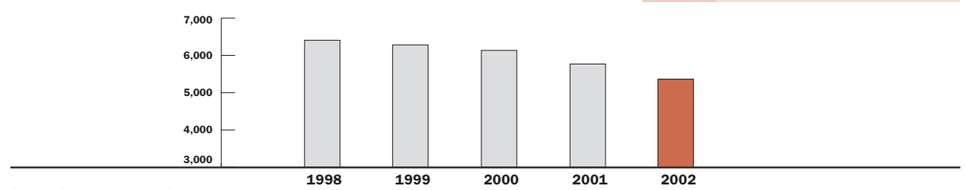


Source: California Highway Patrol

Joyce Benna

Injury and Fatality Motor Vehicle Collisions Involving Pedestrians or Bicyclists, 1998–2002

	Collisions					Percent Change	
	1998	1999	2000	2001	2002	2001–2002	1998–2002
Collisions Involving Pedestrians							
Injury Collisions	3,258	3,099	3,173	3,080	2,910	–6%	–11%
Fatal Collisions	125	97	134	103	111	+8%	–11%
Subtotal	3,383	3,196	3,307	3,183	3,021	–5%	–11%
Collisions Involving Bicyclists							
Injury Collisions	3,004	3,066	2,810	2,566	2,321	–10%	–23%
Fatal Collisions	18	19	17	20	19	–5%	+6%
Subtotal	3,022	3,085	2,827	2,586	2,340	–10%	–23%
Total Involving Bicyclists or Pedestrians	**6,405**	**6,281**	**6,134**	**5,769**	**5,361**	**–7%**	**–16%**



Source: California Highway Patrol

Calls to Action

1. **Complete Seismic Retrofit of Key Transportation Facilities**
   Nearing the 15-year anniversary of the 1989 Loma Prieta earthquake, the time has long since passed to make our key transportation facilities earthquake safe. The Bay Area transportation community will need to work with state and federal lawmakers on a plan to pay for the urgently needed strengthening of key facilities.

2. **New Vehicle Registration Fee for Safety and Security**
   An additional assessment on vehicle registrations could provide critical funding to increase safety for motorists, pedestrians and bicyclists, as well as for security programs. Funding should be linked to annual analyses of collision or other appropriate data.

3. **Analyze Traffic Collision Data**
   The Bay Area transportation community should implement a program to ensure thorough analysis of collision data to identify problem locations and the primary factors contributing to accidents, then identify and implement needed low-cost safety improvements.

4. **Coordinate Security Efforts**
   Many Bay Area transportation agencies are implementing projects to improve the safety and security of their own systems, and training their employees to watch for, and respond to, terrorist acts. Defining levels and standards for security, and to coordinating a quick and effective regional response by affected agencies, must be a regional priority supported by federal funds.

5. **Increase Federal Homeland Security Funding for Transportation**
   While the region has benefited from some congressional earmarks for protecting our ports and transit systems from terrorist attacks, far more investment is needed. We urge Congress to increase funding, and — as the 9/11 Commission has recommended — direct a larger portion to urban areas, where the need is greatest.

Strategic Expansion:
HOT Network Delivers Congestion Insurance

Introduction

The traditional recipe for freeway congestion relief is simply to add capacity by adding lanes. But this supply-side approach does not satisfy the demand for scarce roadway space. To help balance supply and demand, a system of high-occupancy toll (HOT) lanes would introduce a pricing element into highway use by giving solo drivers a choice of paying to travel in high-occupancy vehicle (HOV) lanes, while carpools and buses would still travel free of charge. Think of it as "congestion insurance," with premiums paid only by drivers who use it. Premium revenue could then used to build and operate new lanes to fill gaps in the existing HOV lane network. Filling these gaps is critical to the regional express bus system and ridesharing programs.

Pricing concepts on HOV lanes already are being proven on freeways in Orange and San Diego counties — giving motorists the choice of traveling in buses, carpools or vanpools; paying a variable toll to drive in an HOV lane; or driving free of charge on existing mixed-use lanes. In the Bay Area, existing HOV lanes would be converted to HOT lanes, with the new toll revenue used to finance the construction of new HOV/HOT lanes, and to operate additional express bus and rideshare services. MTC needs state and federal legislative permission to implement a comprehensive HOT network.

Program Issues

1. Express buses depend on HOV lanes to zip passengers around the Bay Area. Filling existing gaps in the region's HOV system would create a seamless network of unobstructed lanes, deliver faster commutes and improve overall efficiency. But the work of filling these gaps cannot be financed with traditional sources. HOT lane tolls would generate new funds to fill the gaps in the HOV network, buy and operate new express buses, and influence demand for scarce roadway capacity.

2. Though the concept of converting HOV lanes to HOT lanes has gained some support, there are concerns that HOT lanes would only benefit the affluent. A California Polytechnic University, San Luis Obispo study of Orange County's State Route 91 toll lanes found that only about one-quarter of the motorists in toll lanes at a given time are higher-income motorists. The majority are low- and moderate-income motorists. HOT lanes give all drivers, regardless of income, the freedom of choice.

3. Implementation of a HOT network in the Bay Area could take place over the next five to 10 years. MTC will need federal and state legislative permission — and cooperation from Caltrans and the CHP — to implement a comprehensive HOT network. Legislation is now pending to allow HOT lanes to be built on Interstate 680 over the Sunol Grade and in Santa Clara County.

4. HOT lanes will lead to an increase in traffic volumes in these lanes. To maintain premium service levels, the threshold for carpool designation in some corridors may have to rise to three or more people. The required number of passengers for free or reduced toll travel already has been raised on HOT lanes introduced in Houston, Texas.

5. Implementation of a HOT network would mark a turn away from traditional highway expansion financing, by relying on user fees generated directly by the HOT lanes themselves rather than gasoline taxes or sales taxes.

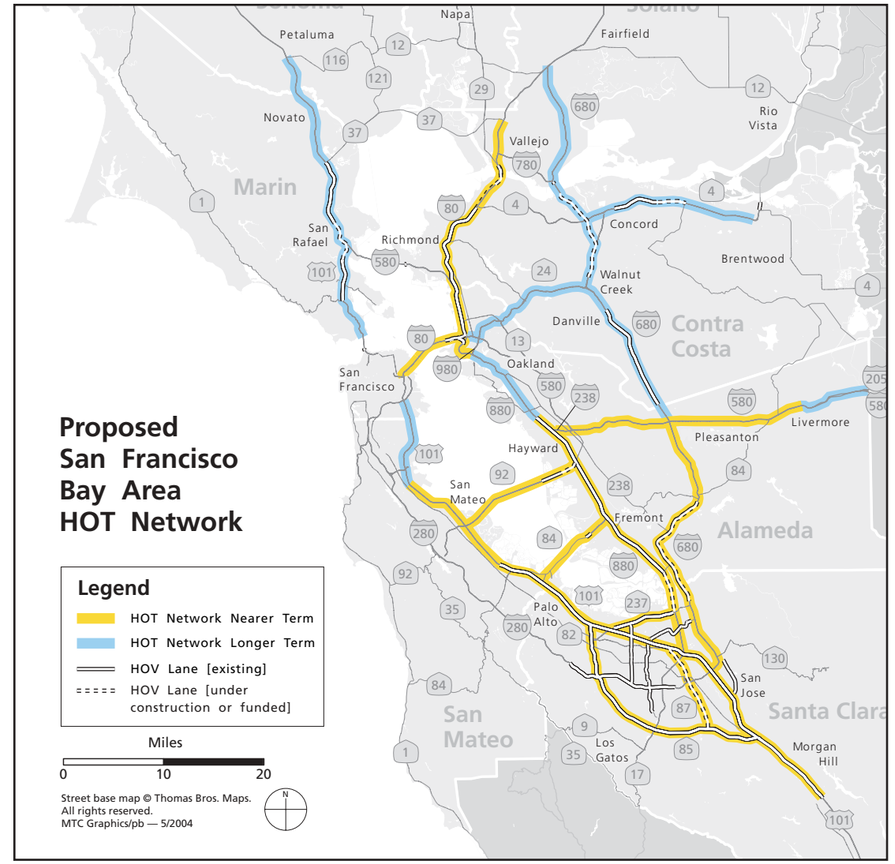
6. Solo drivers would be required to use FasTrak™ electronic toll collection transponders to pay for travel in HOT lanes.

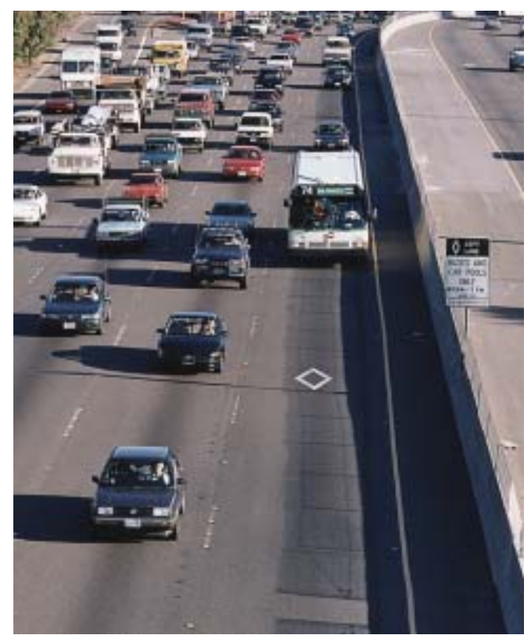
Calls to Action

1. Try Before We Buy
We'll never know if HOT lanes can be an effective solution to congestion problems unless we give them a try. A pilot HOT lane program on Interstate 680 should get underway as quickly as feasible.

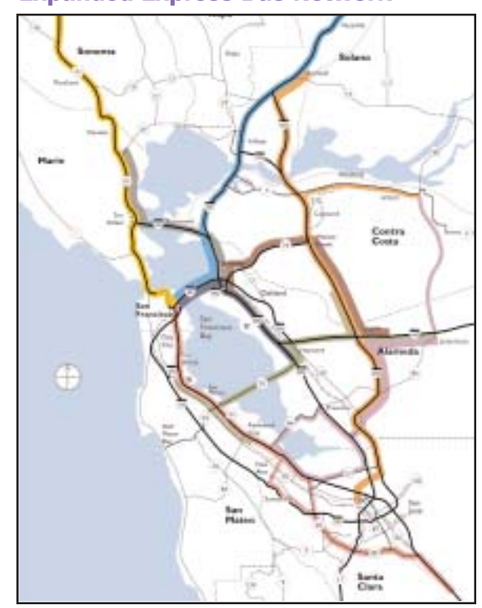
2. Put Legislation in the Fast Lane
MTC must get permission from Congress and the state Legislature to implement tolls on the state highway system. Two pilot programs to experiment with tolls on the Interstate system indicate the federal government is supportive of tolling. Bay Area transportation agencies must work collectively to build support for HOT lanes and other innovative pricing programs as reauthorization of TEA21 unfolds.

3. Get a Little Help From Our Friends
Implementation of a HOT network will require extensive cooperation with Caltrans — which may need to adopt more flexible rules for roadway design and operations — and the CHP, which will have to rigorously enforce HOT lane eligibility laws.





Expanded Express Bus Network



Strategic Expansion:
MTC Resolution 3434: the Bay Area's Vision for Transit Expansion

Introduction

MTC's Regional Transit Expansion Program, adopted in 2001 as Resolution 3434, identifies nine new rail extensions, significant service expansions to existing rail lines and a comprehensive regional bus program, new ferry service, plus eight enhancement programs to existing rail and bus corridors. (See corresponding map.) When fully implemented, this next generation of transit expansion projects will make key transit network connections between southern Alameda County and the Silicon Valley, provide a new southern transbay link, enhance the Bay Area's central transit hub in San Francisco, and extend the reach of rail to the North Bay and the outer East Bay.

Transportation 2030 Plan Issues

1. **Financing**
   Central to the Transportation 2030 Plan update is a review of the financial assumptions that went into developing the Regional Transit Expansion Program. This review will focus not only on capital investments, but also on identifying a stable revenue stream to maintain and operate the new services.

2. **Smart Growth**
   A key element of MTC's Transportation/Land Use Platform, to be incorporated into the Transportation 2030 Plan, is the directive to condition MTC Res. 3434 funds on projects that promote transit-oriented development. A task force is assisting in developing recommendations on how best to leverage transit expansion investments.

3. **High-Speed Rail**
   A statewide high-speed rail service currently is being planned. How should this service be integrated with our regional transit system?

Calls to Action

1. **Condition Transit Expansion Upon Appropriate Land Uses**
   Transit should be expanded only in those areas where there are existing or planned land uses with development intensities to support the transit service.

2. **Seek Robust Federal New Starts Earmark**
   Continue the region's aggressive strategy to capture significant discretionary New Starts revenues and Federal Transit Administration discretionary funding.

3. **Secure Federal Funding for Rapid Bus Expansion**
   MTC supports federal Section 5309 discretionary funding or funding from the High Priority Projects Program for new AC Transit Rapid Bus projects in the Berkeley/Oakland/San Leandro and other enhancement priority corridors.

4. **Increase Federal Funding for Ferries**
   MTC joins the American Public Transportation Association in seeking increased funding in the federal Ferryboat Discretionary Program.

5. **Support Retention of Traffic Congestion Relief Program Earmarks**
   Proposition 42, which passed with 69 percent of the vote in March 2002, permanently dedicated gasoline sales tax revenues to transportation. It is expected to generate over $1 billion each year for transportation, including $678 million annually for the statewide Traffic Congestion Relief Program (TCRP), which provides a total of $850 million for Resolution 3434 transit expansion projects. California's continuing budget troubles, however, have threatened cancellation of the TCRP.

6. **Support Passage of County Sales Taxes**
   Local transportation sales taxes are an increasingly important source of transit funding in the Bay Area, and have been a critical source of local funding for Resolution 3434 projects. These funds can be used as a match to qualify for state and federal funds.

7. **Seek Approval for HOT Lane Demonstration**
   Revenues from the proposed network of high-occupancy toll (HOT) lanes could be used to expand the Regional Express Bus network.

Resolution 3434: Map of Projects

Strategic Expansion:
Haulin' Freight

Introduction

Goods movement is critical to the Bay Area's economy. Bay Area businesses and residents could not function without a robust goods-movement system. Measured in terms of tonnage, nearly half of all goods moved into, out of, or within the Bay Area have both an origin and a destination within the region. Commodities such as food, construction materials and merchandise for retail stores account for most of the freight that travels in the region.

Over 37 percent of Bay Area economic output is in manufacturing, freight transportation, and warehouse and distribution businesses. Collectively, these businesses spend approximately $6.6 billion on transportation services. The businesses providing these services also play a critical role as generators of jobs and economic activity in their own right. Bay Area goods-movement businesses provided almost six percent of the region's jobs in 1997. Since these estimates do not include employment in private warehouses, it is likely that goods-movement businesses provide almost twice as much employment as indicated in these figures. Some of these jobs are entry-level jobs, which have been declining in other sectors of the manufacturing economy.

Program Issues

1. **Highways:** More than 80 percent of the goods movement in the Bay Area involves trucking in several major corridors: Interstate 880, U.S. 101, I-580, and I-80. In these corridors which rank among the most congested in the Bay Area, trucks compete for scarce freeway capacity.

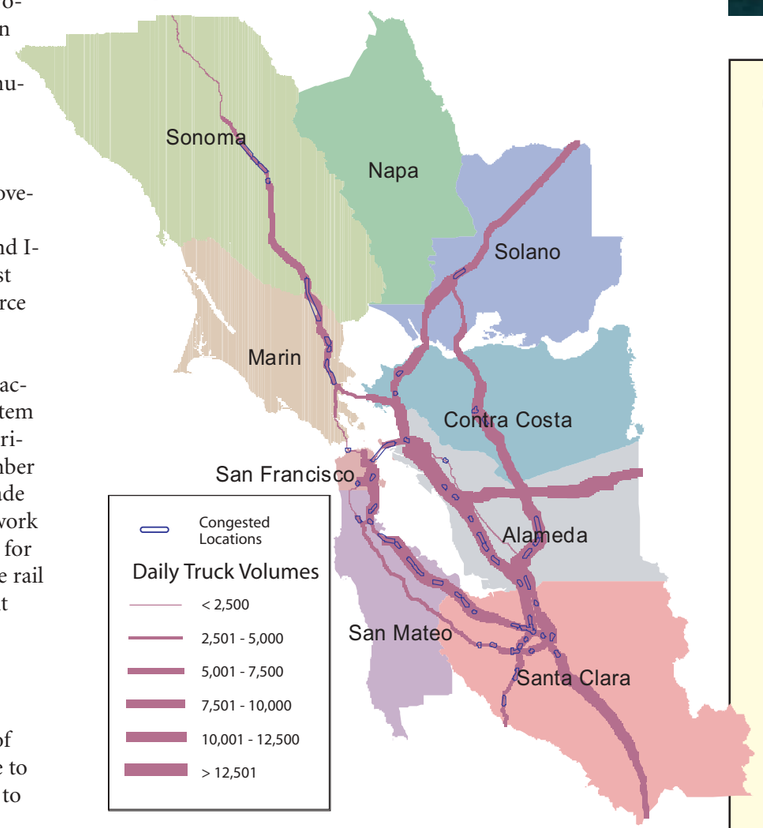
2. **Rail:** After trucking, rail carries the next largest fraction of Bay Area goods. For the most part, the system in the Bay Area is functioning effectively for the primary markets it serves. There are, however, a number of locations throughout the East Bay where at-grade rail crossings pose problems for both the rail network (slowing rail traffic and creating bottlenecks) and for truck and auto traffic. Another problem facing the rail system is the growing competition between freight rail needs and passenger rail needs in the Capitol Corridor linking Sacramento and the Bay Area.

3. **Maritime:** Peak-period congestion problems are becoming an important access issue for the Port of Oakland. As warehouse and freight facilities move to outlying areas, trucks must be on the road longer to access the port.

4. **Air Cargo:** Air cargo is the fastest growing segment of the Bay Area goods-movement system. Air cargo volume is forecast to triple between 1998 and 2020, with a whopping 125 percent increase in all-cargo flights. Peak-period congestion on freeways leading to the airports is becoming more of an issue for expedited delivery shipments needing access to the airport. Lastly, landside capacity for support facilities is a growing problem. The lack of availability of air cargo storage and sort facilities constrains future growth in international cargo shipments from the San Francisco International Airport.

5. **Land Use:** One of the biggest constraints on goods movement is the lack of suitable land for supporting businesses.

Major Truck Routes



Tom Tracy

Calls to Action

1. I-880 Corridor Improvements

- Improve incident management, and fund centrally controlled ramp metering and traveler information systems.
- Eliminate operational deficiencies impacting trucks via interchange improvements, auxiliary lane improvements, truck lane continuity improvements, and spot-capacity increases to improve safety and flow conditions along freeway segments with high truck volumes.
- Provide viable alternatives to the freeway for trucks serving the major industrial corridor along I-880, such as parallel arterials and rail or inland barge options.

2. Consider Options for Expanding Capacity in the I-580 Corridor:
Potential options to explore include truck climbing lanes over the Altamont Pass, an inland rail or barge shuttle system, or a truck-only toll facility.

3. Rail Projects
The opportunities and justifications for public investment in the private rail freight system are more limited than for most other freight transportation modes. Address rail grade crossing issues that affect highway operations and safety, and encourage rail systems as a modal alternative in congested highway corridors.

4. Maritime Projects
Improve access to the Port of Oakland through a series of investments on arterial access routes and I-880 interchanges and the integration of public and private information systems.

5. Air Cargo Projects
Develop a land use/industrial land preservation plan for the region's major commercial airports in San Francisco, Oakland and San Jose. Improve cross-bay connections among the airports and between shippers concentrated in the South Bay/East Bay and the international and domestic air cargo facilities.

6. Land Use
The Bay Area transportation community must develop regional strategies and incentives to encourage local communities to preserve land for freight-related uses.