

Final Draft

San Mateo Countywide
Transportation Plan 2040
SMCTP 2040

Prepared by the

City/County Association of Governments of
San Mateo County

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Table of Contents

EXECUTIVE SUMMARY	1
Vision and Goals	1
Challenges and Opportunities	3
Approach	5
Major Initiatives	7
Implementation Process	9
1. INTRODUCTION & OVERVIEW	10
Background.....	10
Purpose of the San Mateo Countywide Transportation Plan 2040	10
Relationship of SMCTP 2040 to Other Transportation Plans	11
Short Range Transit Plans (SamTrans, Caltrain, and BART)	11
Strategic Plans (SamTrans, Caltrain, BART and the TA)	12
Congestion Management Program.....	12
Regional Transportation Plan and Sustainable Communities Strategy	12
Cities and County Capital Improvement Programs.....	12
Sales Tax Expenditure Plan (Measure A)	13
Comprehensive Bicycle and Pedestrian Plan	13
San Mateo County Congestion Relief Plan (Deficiency Plan).....	13
Community-Based Transportation Plans (East Palo Alto, Bayshore, North Central San Mateo).....	13
Core Capacity Transit Study.....	13
Organization of CTP 2040.....	14
2. SETTING	15
Background.....	15
Physical Setting.....	15
Socio-Economic Setting	15
Travel Characteristics	17
Transit Ridership.....	19
Forecasts of Growth and Travel	20
Population and Employment Growth	20
Growth in Travel	23
3. VISION & GOALS	25
Background.....	25
An Overarching Vision	25
Visions & Goals for Each SMCTP 2040 Element	25
Land Use and Transportation	25
Roadway System.....	25
Bicycles	25
Pedestrians	26
Public Transportation	26
Transportation System Management.....	26
Transportation Demand Management.....	26
Parking.....	26
Modal Connectivity.....	27
Goods Movement	27

4.	LAND USE AND TRANSPORTATION	28
	Background.....	28
	Issues	28
	Increased Land Use Densities	28
	Mixed Land Uses.....	29
	Transit Station Area Development	30
	Urban/Rural Boundary.....	31
	Jobs and Housing Balance.....	31
	Project Design Standards.....	31
	A Framework for Achieving Better Land Use and Transportation Linkage in San Mateo County	32
	Land Use and Transportation Linkage Vision, Goal, and Policies	32
	Land Use and Transportation Linkage Objectives.....	34
5.	ROADWAY SYSTEM	35
	Background.....	35
	Existing System	37
	Freeways.....	37
	Major Arterials.....	37
	Minor Arterials, Collectors and Local Roads.....	38
	Congestion Management Program Roadway System.....	38
	State Highway System Congestion and Safety Performance Assessment	38
	Planned Roadway System Improvements.....	39
	Issues	39
	Congestion	39
	Reliability	39
	Connectivity	39
	Complete Streets – Serving All Modes	40
	Maintenance.....	40
	Stormwater and Pollution Prevention.....	40
	A Framework for Optimizing the San Mateo County Roadway System.....	41
	Roadway System Vision, Goal, and Policies.....	41
	Roadway System Objectives	42
6.	BICYCLES	43
	Background.....	43
	Profile of Bicyclists	44
	Issues	45
	Bicycle Facilities	45
	Barriers	45
	Bicycle Access to Major Activity Centers	46
	Engineering, Education, Encouragement, Enforcement and Evaluation	46
	Safe Routes to School	46
	Complete Streets	47
	Improvement Plans and Programs	47
	A Framework for Achieving a Better Bicycling Environment in San Mateo County.....	47
	Bicycling Environment Vision, Goal, and Policies	47
	Bicycling Objectives	49
7.	PEDESTRIANS	50
	Background.....	50

Issues	51
Pedestrian Facilities	51
Neighborhoods	52
Shopping Districts and Malls	52
Schools.....	53
Bus Stops	53
Barriers to Pedestrian Access: Rail Lines and Freeways	53
BART Stations.....	54
Arterial Streets.....	54
Commercial/Industrial Areas	54
Safe Routes to School	54
Complete Streets	55
Improvement Plans and Programs	55
A Framework for Achieving a Better Pedestrian Environment in San Mateo County	55
Pedestrian Environment Vision, Goal, and Policies	56
Pedestrian Objectives	57
8. PUBLIC TRANSPORTATION.....	58
Background.....	58
Existing System	58
The Bay Area Rapid Transit District (BART).....	59
Peninsula Corridor Joint Powers Board (Caltrain)	62
San Mateo County Transit District (SamTrans).....	63
Shuttle Services	66
Ferry Service	66
Potential New Transit Services	66
Issues	67
Effective Public Transportation	67
A Framework for Optimizing the San Mateo County Public Transit System.....	68
Transit System Vision, Goal, and Policies	68
Public Transportation Objectives.....	70
9. TRANSPORTATION SYSTEM MANAGEMENT AND INTELLEAGENT TRANSPORTATION SYSTEMS	71
Background.....	71
Intelligent Transportation Systems.....	72
Issues	73
The Geographic Scope and Duration of TSM Benefits.....	73
TSM, Sustainable Transportation Systems, and Sustainable Communities.....	73
Interagency Cooperation and Coordination	74
Mainstreaming ITS	74
Funding	74
A Framework for Transportation Systems Management and ITS in San Mateo County	75
Transportation Systems Management and ITS Vision, Goal, and Policies.....	75
Transportation Systems Management Objectives.....	76
10. TRANSPORTATION DEMAND MANAGEMENT.....	78
Background.....	78
In addition the Bay Area Commuter Benefits Program (BACBP) requires employers with more than 50 or more employees in the Bay Area to provide additional commuter benefit to their employees.	79
Issues	79
Increased Complexity in Work Schedules and Locations.....	79

Resistance to Telecommuting.....	79
High Rates of Automobile Ownership	80
A Framework for Successful Transportation Demand Management in San Mateo County	80
Transportation Demand Management Vision, Goal, and Policies	80
Transportation Demand Management Objectives	81
11. PARKING	82
Background.....	82
Issues	84
Parking Management Plans	84
“Right-Sizing” Parking Provision	84
The Local Nature of the Parking System	85
A Framework for Optimizing Parking in San Mateo County Communities	85
Parking Vision, Goal, and Policies	85
Parking Objectives	87
12. MODAL CONNECTIVITY	88
Background.....	88
Issues	88
Access to Public Transportation Stations	88
Coordination of Intermodal Services	90
Dissemination of Information on Availability of Intermodal Services	90
A Framework for Intermodal Connectivity in San Mateo County.....	90
Modal Connectivity Vision, Goal, and Policies.....	90
Modal Connectivity Objectives	92
13. GOODS MOVEMENT	93
Background.....	93
Issues	94
Safe and Efficient Goods Movement	94
Air Quality Impacts of Motor Freight.....	95
A Framework for Goods Movement in San Mateo County.....	95
Good Movement Vision, Goal, and Policies.....	95
Goods Movement Objectives	96
14. FINANCIAL	97
Background.....	97
Issues	97
A Framework for Optimizing Transportation Funding in San Mateo County Communities	99
Financial Vision, Goal, and Policies.....	99
APPENDIX A PERFORMANCE MEASURES	102
Performance Measures	103
Chapter 4: Land Use and Transportation.....	103
Chapter 5: Roadway System	104
Chapter 6: Bicycles.....	104
Chapter 7: Pedestrians	105
Chapter 8: Public Transportation.....	105
Chapter 9: Transportation System Management and ITS	106
Chapter 10: Transportation Demand Management	107
Chapter 11: Parking	107

Chapter 12: Modal Connectivity	108
Chapter 13: Goods Movement	109
APPENDIX B PROPOSED RTP PROJECT LIST	110
Proposed RTP Project List.....	111
APPENDIX C MAJOR FUNDING SOURCES AND TRANSPORTATION NEEDS	115
Existing Fund Sources	116
Federal Funds	116
State Funds	117
Regional and Local Funds	120
Summary of Needs	121
Highway Improvements and Roadway Maintenance.....	121
Transit Capital/Operations	122
Bike and Pedestrian Improvements.....	122
Enhancement/Transit Oriented Development (TOD) Transportation for Livable Communities (TLC)/Congestion Management	122
Transportation Services for Seniors and People with Disabilities	122
APPENDIX D ABBREVIATIONS AND ACRONYMS	123
List of Abbreviations and Acronyms.....	124
APPENDIX E RESPONSES TO PUBLIC REVIEW COMMENTS	127
APPENDIX F EQUITY ANALYSIS	166
Background.....	167
A Framework for Analyzing Equity in the San Mateo Countywide Transportation Plan for 2040.....	167
Determining a Methodology	167
Defining Communities of Concern.....	167
Project Mapping Analysis	170
Analysis Results	170
Equity Analysis for Transit Agencies in San Mateo County	176
Community-Based Transportation Plans.....	178

List of Figures

Figure 1: Forecasted Travel Growth for Home-based Work Trips, 2015-2040.....	24
Figure 1: Roadway System in San Mateo County	36
Figure 2: BART and Caltrain Alignment and Stations in San Mateo County	61
Figure 3: Map of SamTrans Fixed-Route Network.....	64
Figure 4: Road Maintenance Need	98
Figure 5: Transportation Maintenance and Capital Revenues and Shortfall (millions)	99
Figure 6: Shortfall for Roadway Capital Projects	101

List of Tables

Table 1: Countywide Transportation Plan 2040 Statements of Vision and Goals	1
Table 2: Countywide Transportation Plan 2040 Statements of Vision and Goals - Continued	2
Table 3: San Mateo County Population	16
Table 4: Selected San Mateo County Population Characteristics, Comparison to California and the Nation.....	17
Table 5: Means of Travel to Work in San Mateo County.....	18
Table 6: Estimated Travel by Mode within San Mateo County	18
Table 7: Estimated Travel by Mode within, to, and from San Mateo County	18

Table 8: SamTrans Passenger Statistics	19
Table 9: Average Weekday BART Station Entries by San Mateo County Station	20
Table 10: Average Weekday Caltrain Ridership by San Mateo County Station	20
Table 11: Forecasted Population by County	21
Table 12: Forecasted Employed Residents by County	21
Table 13: Forecasted Jobs by County	22
Table 14: Forecasted Travel Growth by Mode for Home-based Work Trips, 2015-2040	23
Table 15: San Mateo County Roadway Network	37
Table 16: San Mateo County BART Station Access Attributes	60
Table 17: San Mateo County BART Station Average Weekday Entries	60
Table 18: Average Weekday Ridership at San Mateo County Caltrain Stations	62

EXECUTIVE SUMMARY

Vision and Goals

The San Mateo Countywide Transportation Plan for 2040 (SMCTP 2040) was conceived by San Mateo County leaders as a way to provide the county with a long-range, comprehensive transportation planning document that sets forth a coordinated planning framework and establishes a systematic transportation planning process for identifying and resolving transportation issues. SMCTP 2040 is intended to articulate clear transportation planning objectives and policies and to promote consistency and compatibility among all transportation plans and programs within the county. By doing so, SMCTP 2040 supports an integrated, system-wide approach to transportation planning that gives proper consideration to the countywide transportation network as a whole, not just in its constituent parts.

The central vision statement for the SMCTP 2040 is the following:

"Provide an economically, environmentally, and socially sustainable transportation system that offers practical travel choices, enhances public health through changes in the built environment, and fosters inter-jurisdictional cooperation."

The central vision is supported by more specific vision statements and goals for each element of the plan as indicated in **Table 1** and **Table 2**. These statements of vision and goals provide a framework for decision making that will guide countywide transportation investment, operation and management for the next two decades. The central theme of the statements is that a coordinated, multimodal approach that relies on advanced technologies and management practices will be required to meet the growing and changing transportation needs of San Mateo County.

Table 1: Countywide Transportation Plan 2040 Statements of Vision and Goals

Category	Vision	Goal
Land Use & Transportation	A San Mateo County transportation system that is safe and convenient for all people whether travelling on foot, by bicycle, via public transportation, or in an automobile, to reach places they wish to go.	Integrate transportation and land use plans and decisions in support of a more livable and sustainable San Mateo County.
Roadway System	A multimodal transportation network that contributes to the socio-economic and environmental health and safety of San Mateo County.	Enhance safety and efficiency on the countywide roadway system to foster comfortable, convenient, and multimodal mobility.
Bicycles	A San Mateo County in which bicycling for both transportation and recreation is safe, comfortable, and convenient.	Provide people with viable travel choices and encourage use of healthy, active transportation through a safe, continuous, convenient and comprehensive bicycling network that reduces reliance on the automobile for short trips.

Table 2: Countywide Transportation Plan 2040 Statements of Vision and Goals - Continued

Category	Vision	Goal
Pedestrians	A San Mateo County in which walking for both active transportation and recreation is safe, comfortable, and convenient.	Promote safe, convenient, and attractive pedestrian travel that promotes healthy, active communities while reducing reliance on the automobile for short trips.
Public Transportation	A public transportation system in San Mateo County that provides essential mobility for all, offers a competitive alternative to the automobile, and contributes to environmental and socio-economic well-being.	Develop and maintain a seamless, safe and convenient public transportation system in San Mateo County.
Transportation System Management and Intelligent Transportation System (ITS)	A San Mateo County in which the transportation system is safe, efficient, cost-effective, and environmentally responsible.	Manage travel efficiently through supply-side measures, including low-cost traffic operations improvements and use of technologies that reduce or eliminate the need for increases in physical capacity.
Transportation Demand Management (TDM)	A San Mateo County in which reliance on solo occupant motor vehicle travel is minimized.	Reduce and manage travel efficiently through demand-side measures, including land use planning and transportation demand management efforts at work sites.
Parking	Parking in San Mateo County that is a “right-sized” balance of supply and demand, supportive of Transit Oriented Development and Sustainable Communities Strategies, intuitive to use, and environmentally responsible.	Encourage innovations in parking policy and programs, including incentives for reduced parking requirements, and a comprehensive approach to parking management and pricing.
Modal Connectivity	Seamless travel within San Mateo County using different modes of transportation.	Integrate the roadway, public transit, and non-motorized transportation networks to advance system efficiency, effectiveness, and convenience.
Goods Movement	Goods movement that supports an economically and environmentally sustainable San Mateo County.	Foster safe and efficient goods movement on the San Mateo County transportation network compatible with countywide economic development and environmental policies.
Finance	Sustainable funding sources to maintain, operate, optimize, and expand all modes of the transportation networks in San Mateo County.	Seek and protect transportation revenues to maintain existing transportation infrastructure and investments, and to improve all modes of transportation systems within San Mateo County in a balanced fashion.

Challenges and Opportunities

As San Mateo County undertakes the adoption of SMCTP 2040, it faces a number of challenges and opportunities that influence and shape the plan's content. A summary of the most significant challenges is provided below.

Rapidly Growing Economy – Booming Technology Sector

One of San Mateo County's greatest challenges for the future is also one of its greatest strengths. San Mateo County is fortunate to have one of the most robust economies for technology research, development and production. Even during the difficult economic times of the recession of 2008-2010, San Mateo County fared better than the Bay Area as a whole and better than the rest of California. Unemployment in San Mateo County reached a high of 8.8% in January 2010, which was the second lowest of any county in California and well below the statewide unemployment rate of 12.6%. By February 2016, the unemployment rate in San Mateo County had fallen to 3.0% and was the lowest of any county in the state. The statewide unemployment rate in California was 5.7% in February 2016 and nationwide was 5.2%². With the expected growth of the technology sector in the county, it will be a major challenge for the transportation agencies of the county and the region to provide transportation services that keep up with the needs of these industries and their employees.

Trips into and out of the county – Requires Regional Approach

The combination of a robust economy and a limited housing supply has resulted in significant amount of commuting across county lines for San Mateo County residents and employees. In 2015, approximately 60 percent of home-based work trips crossed the county borders. The number of daily work trips into and out of the county is forecast to increase by 107,500, or 24 percent, between 2015 and 2040. Not only does the high level of cross-county commuting involve long commutes, but also serving the trips requires close coordination with the surrounding counties of San Francisco, Santa Clara and Alameda and the regional transportation agencies serving those counties.

Limited Right of Way for Major Freeway Corridors

The long commutes coupled with the highly dispersed employment locations within San Mateo County make commuting by private automobile a choice for many who live or work in the county. Growth in jobs within the region and particularly the counties along the peninsula will only increase the demand for private automobile use. For a largely built out urban county like San Mateo County, expanding freeways and other roadways to meet the growth demand is difficult because of limited right of way. Most heavily used roadways in the county are built out to the limits of the right of way with houses, businesses or other existing land uses bordering the state right of way. Expansion of the most congested roadways would require relocation of residences or businesses and produce potentially significant social or environmental impacts.

Aging Population – Large Increase in Working and Retired Seniors

Like in most urban counties in the U.S., the population in San Mateo County is aging. In 2040, there will be a significantly larger share of the population over 65 years old and a larger share of the population over 65

²Bureau of Labor Statistics, http://www.bls.gov/regions/west/news-release/unemployment_bayarea.htm.

still working. This will have an effect on the transportation needs of the county's residents and the behavior of the travelers. As the aging of the population occurs, many people will be unwilling or unable to drive themselves and become more reliant on public transportation or being driven by others. Because a larger share of the senior population will continue to work, this increasing demand for public transportation and ridesharing services will affect commute and non-commute travel.

Emerging Trends in Transportation Technology and Shared Mobility Options

Recent advancements in technology have already produced significant changes in how transportation services are being provided in the Bay Area, and many more advancements appear to be on the not-too-distant horizon. Significant advances have occurred in sensor-based infrastructure, communications, traveler information, shared mobility, connected and automated vehicles, urban automation, and electric vehicles. Many of these promising technologies have the potential to increase traveler safety, increase mobility, reduce congestion and provide transportation services more efficiently as well as reduce greenhouse gas and other pollutant emissions.

Increases in the availability of real-time information about transit services, shared-use services, parking availability and traffic conditions has significantly increased the level of information of transportation options for travelers and the geographic nature of transportation needs for service providers. These improvements have resulted from advances in Global Positioning System (GPS) and sensor-based technologies as well as advanced communications systems.

Communication technologies and smartphone apps have already made possible shared mobility options, such as Uber and Lyft, which allow private individuals to offer a variety of door-to-door and group-ride services using their private vehicles. This has produced a more ubiquitous mobility service in areas not easily served by public transportation and at a lower cost than conventional taxi service. These options are expected to reduce the demand for privately-owned vehicles by making more options available. Smart parking technologies, including variable and demand-responsive pricing, have the potential to reduce congestion and greenhouse gas (GHG) emissions by increasing the turnover and productivity of parking spaces.

Connected and Automated Vehicles (CV/AV) have the potential to almost immediately improve traveler safety by introducing collision-avoidance features and reducing congestion by reducing delay caused by collisions. Ultimately, the CV/AV technologies will produce efficiency in the use of street space once there is widespread adoption and thus reduce overall congestion. New cars with CV/AV technologies may also improve mobility for travelers with special needs if the CV/AV features allow drivers to overcome disabilities by using automation features.

Fully automated vehicles, though probably some years away in terms of high level of private or public use on public streets, will ultimately make possible driverless operations that will allow commuters to make more efficient use of their commute time. Driverless cars may also reduce parking needs by dropping off passengers and returning to a home location or proceeding with other pick-ups or drop-offs. If deployed for shared-use, automated transit vehicles have the potential for long-term cost savings. The rapidly increasing use of all-electric vehicles will also change the relationship between transportation and GHGs. Electric vehicles have the potential to significantly reduce GHG emissions and therefore reduce the impact of transportation on global climate change.

Increased Emphasis on Reducing Vehicle Miles Traveled and Greenhouse Gas Emissions and Less Emphasis on Traffic Delay

Over the past ten years, concern for global climate change has led to some transformative legislation in California. In 2008, Senate Bill (SB) 375, the “Sustainable Communities Act” was passed to ensure closer integration of land use and transportation planning with the aim of reducing greenhouse gas emissions in California. As instructed by the Act, the California Air Resources Board (CARB) set regional targets for greenhouse gas emissions reductions from passenger vehicle use. In 2010, CARB established these targets for 2020 and 2035 for each region covered by one of the State's metropolitan planning organizations (MPOs). In 2013, the Metropolitan Transportation Commission (MTC) adopted Plan Bay Area which identified how the Bay Area would meet its GHG emission reduction targets.

Senate Bill 743, adopted in September 2013, included elements designed to encourage the type of land-use development encouraged by SB 375 and MTC's Plan Bay Area. The act had three primary objectives:

1. No longer consider roadway Level of Service (LOS) as an environmental impact under California Environmental Quality Act (CEQA) – keep LOS concerns from discouraging efficient land use patterns and multimodal transportation services
2. Introduce changes in Vehicle Miles Traveled (VMT) or VMT per capita as a determinant of environmental impact
3. Use the consideration of VMT as an impact in CEQA as a mechanism for achieving state and regional GHG reduction goals

Under SB 743, vehicle delay-based measures will no longer be considered a significant impact under the CEQA; changes in VMT will be considered an environmental impact under CEQA if the increase in VMT exceeds a pre-specified threshold level.

On January 20, 2016 the Governor's Office of Planning and Research issued a revised proposal on updates to the CEQA Guidelines on evaluating transportation impacts in CEQA, and these guidelines will ultimately define how SB 743 will affect transportation planning in California. Initially, the updated Guidelines will be implemented in Transit Priority Areas (TPAs) only, or locations within a half mile of a transit station or along a high-quality transit corridor. Within two years after the Guidelines are formally adopted, LOS will no longer serve as a CEQA threshold, regardless of proximity to transit, and changes in VMT in excess of the threshold will be considered an environmental impact. Local jurisdictions, subarea agencies like the Regional Transportation Planning Committees (RTPCs), county agencies, regional agencies and state agencies will continue to have the option of evaluating consistency with formally stated policies regarding LOS, but the impact of a project exceeding the policy standard will not be considered an environmental impact. Furthermore, capacity-increasing measures that might be proposed to mitigate the exceedance of an LOS standard may themselves produce significant environmental impacts if they result in an increase in VMT in excess of an established threshold.

Approach

There is no single simple solution available to address current and future congestion, environmental, and energy issues that arise from the San Mateo County transportation system. Instead, a combination of multimodal transportation investments, application of advances in electronics and communications, enhanced participation of employers in transportation demand management, transportation facilities

pricing policy, local land use policy, and individual actions by those who live and/or work in San Mateo County will be necessary to create more beneficial outcomes from the San Mateo County transportation system.

Enhancing Transit Capacity, Service Frequency and Connectivity

A variety of coordinated programs designed to provide multimodal choices for travel for most trips will decrease reliance on the private automobile by 2040. Although a majority of trips in San Mateo County in 2040 are still expected to be by private automobile, public transit investment will carry a significantly increasing share of travel. Significant investment in public transportation will be required to ensure that there is adequate capacity to absorb this increasing share and to ensure that the transit services are connecting the appropriate origins and destinations with a competitive travel time. The most important markets for improved transit service will be commuters because of the potential to reduce peak period congestion and residents who have limited options because of age, disability or income. Both of these markets are expected to increase significantly by 2040. San Mateo County is one of the most dramatic growth markets for jobs because of the success of high technology industries in the county and in adjacent counties. Like all of the counties in the Bay Area, the population in San Mateo County is also aging. The Baby Boomer generation is approaching retirement age, and by 2040, this will result in a higher number of residents needing mobility options other than driving alone.

Getting the Most out of Existing Roadway Infrastructure – Managed Lanes, Intelligent Transportation Systems (ITS) and Transportation Systems Management (TSM)

Significant increases in roadway capacity are not feasible in San Mateo County because of funding limitations, constrained rights of way in many locations, and environmental concerns, including greenhouse gas emissions effects. Investments in advanced electronics and communications on the roadway system, such as managed lanes, ITS and TSM, can, however, improve motor vehicle traffic operations and moderate the effects of increased congestion. Automated collection and processing of traffic flow data is making possible new methods for optimizing traffic flow management and for informing travelers of traffic conditions that will allow them to make smarter choices for route, mode of travel or time of travel.



Managing Demand through Employer-Based Trip Reduction Programs, Parking Policy and Pricing

There is great scope for private action to reduce congestion, including increased availability of telecommuting and teleconferencing alternatives for workers, optimized travel route choice through use of on-board GPS navigation systems and smart phones, and transportation demand management efforts by employers. Changes to parking policies, such as reduced parking requirements for new development, is another potential tool for reducing drive-alone trips. There is also scope for wider application of pricing mechanisms, including congestion pricing on freeways and variable parking pricing in cities, as a means to moderate the growth of automobile travel within San Mateo County.

Improving Safety for Pedestrians and Bicyclists

Interest in walking and bicycling, whether as a mode of travel, as a means to get to transit, as a recreational activity or for health reasons, has increased dramatically in the past decade in San Mateo County as it has elsewhere in the Bay Area. Many more residents are walking and bicycling, but often on or along roads that were designed for automobile travel and not necessarily for pedestrians or bicyclists. Significant investments in pedestrian and bicycle facilities will enhance safety for non-motorized travel as well as contribute to healthier, more active communities.

Major Initiatives

Land Use and Transportation Integration

Local land use policy can be effective in fostering transit-oriented development and mixed-use urban and suburban villages, areas in which walking, cycling, and transit use are more convenient and more practical. Most of San Mateo County is characterized by comparatively low density and by separation of land use types. This low-density development pattern tends to support dependence on automobile use. Policies by local jurisdictions can promote development at higher densities in proximity to downtowns, public rail stations and along major bus transit service corridors. Local policies can also encourage greater mix of uses bringing housing, jobs and retail in closer proximity so that walking and bicycling becomes feasible travel options. These initiatives by jurisdictions within San Mateo County are consistent with the regional Sustainable Communities Strategy developed by the Metropolitan Transportation Commission and the Association of Bay Area Governments (ABAG) in response to SB 375 and incorporated in Plan Bay Area (the Regional Transportation Plan and Sustainable Communities Strategy for the San Francisco Bay Area 2013–2040, adopted July 18, 2013). The Sustainable Communities Strategy encourages the concentration of future development in the Priority Development Areas (PDAs), which have been identified as the best locations to increase densities and mix of uses near transit and existing urban services. Locations of particular importance are the PDAs at the Millbrae Intermodal Station, near other Caltrain and Bay Area Rapid Transit (BART) stations and along El Camino Real, where the Grand Boulevard Initiative is being implemented to increase mixed-use development and densities along the densest bus transit services in the county.



Implementing Managed Lanes on US 101

Implementing managed lanes on US 101 through the county will provide a significant new opportunity to enhance mobility through an increase in capacity and management of travel demand. By providing a travel-time advantage for higher occupancy vehicles, completion of the US 101 managed lanes will encourage commuters to carpool or to use the transit services that will make use of the lanes. In addition, managed lanes may be developed as Express Lanes to allow for pricing mechanisms to manage the performance of the lanes, including time periods outside the peak commuting times, and provide revenues for further improvement of the corridor.

Integration with BART, Caltrain and High Speed Rail

BART, Caltrain and ultimately High Speed Rail will provide high-capacity transit service to, from and within San Mateo County. These three services will be essential to meeting the projected growth of inter-county commuting by people living or working in San Mateo County. While these services will provide high capacity for moving commuters during the peak periods, they will not directly serve the locations where many of the commuters live or work. Effective use of BART, Caltrain and High Speed Rail will require an increase in local bus services or shuttles that link the stations on these services with trip origins and/or final destinations in the county. Improvements in bicycle and pedestrian access, integration of land use around transit stations and effective management of pick-up and drop-off activity will also enhance the first and last mile connections to transit stations.

Millbrae Intermodal Station is of particular importance in integrating transit modes and station access. The station has direct connections between BART, Caltrain, SamTrans, shuttles and San Francisco International Airport, is connected to bicycle and pedestrian networks, and is a planned High Speed Rail station.

Expanding SamTrans Express Bus and Commuter Services

With the significant growth of employment expected in San Mateo County by 2040, much of it in locations not directly served by BART, Caltrain and High Speed Rail, additional bus services with routing flexibility will be needed to capture some of the growth in commute trips. Continued growth in the number of commuter-oriented shuttle services as well as new or expanded express bus services will be needed to supplement the high-capacity rail services and the local bus services in the county.

Bus Rapid Transit or Transit Signal Priority

Continued travel growth in San Mateo County is expected, bringing with it additional congestion on the roadway system. Efficient and effective operation of bus and shuttle services within the county will become more difficult unless steps are taken to give priority to transit vehicles on the roadway system. This will include priority at traffic signals and priority use of special lanes where necessary to avoid congestion. These methods for giving priority to transit vehicles will save operating costs, increase the reliability of service and provide a greater travel-time advantage to transit with which to entice new riders. Full implementation of bus rapid transit, with frequent service, dedicated travel lanes and enhanced stations, has the potential to provide travel time savings of up to 25%.

Arterial Management

While the freeways in San Mateo County will be the backbone of the roadway system and will carry the greatest share of regional trips, the arterial system will also serve a critical role in regional mobility for movement of people and goods. The arterial system will continue to be the connection between the freeway system and local origins and destinations and will be the primary routes for bus transit services, goods pick up and deliveries and local travel within the county. Keeping all modes functioning efficiently and effectively will require management of the traffic flow on arterials through ITS elements for vehicle surveillance and advanced traffic signal systems that allow adaptation to changing conditions and priority to emergency or transit vehicles when appropriate.

Complete Streets

The Complete Streets Act of 2007 created by California Assembly Bill 1358 amended Government Code Sections related to General Plans and General Plan Guidelines. It required that commencing January 1, 2011, cities and counties modifying the Circulation Element of their General Plan must evaluate improvements that would provide a “balanced, multimodal transportation network that meets the needs of all users of the streets, roads, and highways for safe and convenient travel in a manner that is suitable to the rural, suburban, or urban context of the General Plan.” Each new update of the Circulation Element of a General Plan must document how this has been achieved in the plan update. MTC has developed guidance designed to ensure that all Bay Area projects that get federal funds through MTC are giving adequate attention to the needs of bicyclists and pedestrians. The guidance was designed to ensure that projects are consistent with area-wide bicycle and pedestrian master plans and will not adversely impact mobility for bicyclists and pedestrians. MTC and the ABAG have also required that local jurisdictions wishing to apply for grants under the One Bay Area Grant Program have an adopted Complete Streets section in the Circulation Element of their General Plan or have a Complete Streets Policy adopted by the governing body of the jurisdiction. All local jurisdictions in San Mateo County have met the MTC requirements of adopting Complete Streets Resolutions or policies in their General Plan, and as the jurisdictions implement the Complete Street policies, countywide coordination and funding of regional elements of the system will be necessary.

Implementation Process

The process for implementing the 2040 Countywide Transportation Plan for San Mateo County will require a continuing process of consensus building among the numerous local jurisdictions and regional agencies that have responsibility for planning or implementing transportation, housing and land use policy in the county. SMCTP 2040 has identified Statements of Vision, Goals, Policies and Objectives to cover the land use-transportation interactions and all modes of local and regional travel. The SMCTP 2040 also identifies major initiatives, the most significant of which are described in this Executive Summary. SMCTP 2040 provides a framework for establishing coherent and consistent policies that will affect transportation in the county, but it does not define the projects and programs needed to achieve those policies. The process of consensus building that follows adoption of the SMCTP will include achieving agreement on the initiatives that have been identified and programming of funds to implement the projects and programs of those initiatives.

1. INTRODUCTION & OVERVIEW

Background

The San Mateo Countywide Transportation Plan 2040 (SMCTP 2040) was developed in response to the many changes in San Mateo County's transportation system, public policies, and both demographic and land use trends since adoption of the Countywide Transportation Plan 2010 (CTP 2010) on January 18, 2001. SMCTP 2040 was prepared through a collaborative effort involving the City/County Association of Governments (C/CAG), the County of San Mateo and its municipalities, the San Mateo County Transit District, including SamTrans, the Peninsula Corridor Joint Powers Board (Caltrain), and the San Mateo County Transportation Authority (TA), and other stakeholders. SMCTP 2040 presents policies and programs that will guide the way in which the county's transportation network takes shape to the year 2040. The following sections present the purpose of the SMCTP 2040, the relationship of SMCTP 2040 to other transportation plans, and an outline of how the document is organized.

Purpose of the San Mateo Countywide Transportation Plan 2040

Transportation planning and programming in San Mateo County is undertaken by a multitude of agencies with sometimes overlapping jurisdictions and responsibilities. The San Mateo County Transit District oversees the County's bus transit system, Caltrain conducts planning and operations for the commuter rail system, and the Transportation Authority is responsible for administering the voter approved San Mateo County Measure A half-cent transportation sales tax, which was reauthorized in 2004 for an additional 25 years from calendar year 2009 through 2033. Per the Measure A Transportation Expenditure Plan (TEP), the program is estimated to generate \$1.5 billion (in 2004 dollars) for the categories of transit (30%), highways (27.5%), local streets and transportation (22.5%), grade separations (15%), pedestrian and bicycle (3%) and alternative congestions relief (1%) programs. In addition to funding numerous transportation projects in San Mateo County, the TA is also actively involved with its sponsors and partners in the planning of highway projects. Per the TEP, projects funded through Measure A are to be consistent with the San Mateo Countywide Transportation Plan.

SMCTP 2040 is intended to articulate clear transportation planning goals and objectives and to promote consistency and compatibility among all transportation plans and programs within the county.

C/CAG, as the county's Congestion Management Agency (CMA), is responsible for administering certain state-mandated programs related to transportation and air quality and certain federal and state transportation funding programs in San Mateo County. Commute.org, formerly known as the Peninsula Traffic Congestion Relief Alliance, collaborates with employers in San Mateo County to reduce solo occupant vehicle commuting. In addition, the County and the twenty cities within its boundaries each plan and implement improvements to local roadways within their own jurisdictions as well.

The California Department of Transportation (Caltrans) is an important partner to all of the above entities in regard to improving travel safety and efficiency on freeways and other State highways within San Mateo County. The Bay Area Rapid Transit District (BART) serves six stations in San Mateo County as part of its regional passenger rail system. The Metropolitan Transportation Commission (MTC) serves as the

metropolitan transportation planning and programming organization for the entire nine-county Bay Area region.

Each of these agencies participates in planning the County's transportation network. These fragmented, yet inter-related efforts require coordination of policies, plans, and projects on a countywide and a system-wide level. Such coordination fosters optimal performance of the County's transportation network and, in particular, the effectiveness of new transportation investments.

SMCTP 2040 was conceived, as was CTP 2010, by San Mateo County political leaders as a way to provide the County with a long-range, comprehensive transportation planning document that sets forth a coordinated planning framework and establishes a systematic transportation planning process for identifying and resolving transportation issues. SMCTP 2040 is intended to articulate clear transportation planning goals and objectives and to promote consistency and compatibility among all transportation plans and programs within the County. By doing so, SMCTP 2040 supports an integrated, system-wide approach to transportation planning that gives proper consideration to the countywide transportation network as a whole, not just in its constituent parts.

Relationship of SMCTP 2040 to Other Transportation Plans

A number of public agencies independently produce transportation plans in San Mateo County. Each plan considers only that portion of the County's transportation system for which the authoring agency is responsible. As a result, there is sometimes insufficient consideration of the potential synergy in coordinating individual plans to improve mobility throughout the entire county. The primary purpose of SMCTP 2040, as it was for its predecessor (CTP 2010), is to increase consistency and improve coordination among the various transportation plans. SMCTP 2040 will serve as a central coordinating document that provides overall policy and program direction for all transportation plans in the county. SMCTP 2040 is not intended to duplicate or replace other plans, but instead establish broad principles that should influence the preparation of other plans, promoting a high level of interdependence among them.

An important aspect of CTP 2040 is that it integrates all of the County's transportation modes and facilities, while other plans are typically concerned only with a single mode or facility type, such as public transit or highways.

An important aspect of SMCTP 2040 is that it integrates all of San Mateo County's transportation modes and facilities, while other plans are typically concerned only with a single mode or facility type, such as public transit or highways. The following summarizes the County's key transportation plans.

Short Range Transit Plans (SamTrans, Caltrain, and BART)

All transit agencies are required to prepare Short Range Transit Plans (SRTPs) in order to obtain federal funds. The SRTP establishes operating plans and provides the foundation for capital improvement programs and financial plans. The plans are updated annually and are reviewed by MTC for consistency with the Regional Transportation Plan.

Strategic Plans (SamTrans, Caltrain, BART and the TA)

Agency strategic plans provide policy level guidance on mission, vision, and both medium- and long-term direction. These documents and the process that leads up to them ensure that operational plans, programs, and projects all contribute to the strategic direction of the agency.

Congestion Management Program

State law requires that each county develop a Congestion Management Program (CMP) to qualify for State transportation funds. The CMPs must establish levels of service standards for roadways, set transit service standards, develop trip-reduction and travel demand management programs, perform land-use impact analyses, formulate capital improvement programs, and monitor conformance in the County with the CMP. SMCTP 2040 is intended to complement the CMP. The purpose of SMCTP 2040 is to provide a comprehensive, long-term perspective; the purpose of the CMP, through its project priority and programming function, is to be a vehicle for implementing SMCTP 2040 in the short term.

Support for congestion-relief initiatives improves mobility countywide and enhances economic and environmental vitality.

Regional Transportation Plan and Sustainable Communities Strategy

Plan Bay Area, adopted in 2013 by the Association of Bay Area Governments (ABAG) and the MTC, includes the region's 2040 Regional Transportation Plan and Sustainable Communities Strategy. The Regional Transportation Plan (RTP), prepared by the MTC and updated every four years, is the Bay Area's region-wide transportation planning document. The RTP is a blueprint for transportation funding twenty years into the future. According to State law, each county's CTP is intended to serve as the primary basis for its portion of the RTP. Upon review of CTPs, the MTC incorporates plan proposals and policies of regional significance. The MTC also reviews CMPs for consistency with the RTP.

The Sustainable Communities and Climate Protection Act of 2008, known as SB 375, was enacted to ensure closer integration of land use and transportation planning with the aim of reducing greenhouse gas emissions in California.

SMCTP 2040 will inform the RTP by presenting an overall vision for transportation in San Mateo County and setting a transportation planning framework for the county. Although new projects were not developed as part of the planning process, the plan does identify the projects for San Mateo County that are proposed for the most recent RTP update (see Appendix B). SMCTP 2040 will also reflect the integration of land use and transportation planning to align with the Sustainable Communities Strategy.

Cities and County Capital Improvement Programs

Local governments create Capital Improvement Programs (CIPs) to address their physical infrastructure needs. CIPs are sometimes "wish lists" of projects that the various departments of a jurisdiction request. While CIPs can include any kind of physical project, they tend to focus on road improvement and maintenance. Sometimes CIPs are created as part of a larger planning effort and address multimodal transportation improvements, but this is not always the case.

Sales Tax Expenditure Plan (Measure A)

In 2004, San Mateo County voters re-authorized Measure A, a one-half cent sales tax increase, to finance specific road and transit improvements throughout the county. The Sales Tax Expenditure Plan sets priorities for spending the tax revenues. The TA is responsible for putting together the expenditure plan.

The Sales Tax Expenditure Plan sets priorities for spending the one-half percent sales tax revenues generated for transportation by Measure A.

Comprehensive Bicycle and Pedestrian Plan

The San Mateo County Comprehensive Bicycle and Pedestrian Plan completed by C/CAG in 2011 envisions bicycle and pedestrian networks countywide that will support safe, comfortable, and convenient travel for walkers and cyclists of all skill levels. The Plan sets forth an integrated set of policies to support this vision.

San Mateo County Congestion Relief Plan (Deficiency Plan)

The Congestion Relief Plan formulates the county's strategy for reducing traffic congestion through transportation demand management (TDM), encouragement of transit-oriented development (TOD), and provision of additional capacity in the form of shuttle buses. Support for these initiatives improves mobility countywide without dampening economic vitality.

Community-Based Transportation Plans (East Palo Alto, Bayshore, North Central San Mateo)

Community-Based Transportation Plans (CBTPs) represent a focused, multimodal approach to addressing mobility needs across population segments. Emphasis is given to community participation in the planning process.

In addition to the above plans, there are many important transportation plans and studies, as well as plans and programs, from public policy sectors closely related to transportation that influence the direction of transportation planning in San Mateo County. These include the San Mateo County Intelligent Transportation

Community-Based Transportation Plans assess the mobility needs for low-income neighborhoods and provide strategies for overcoming transportation challenges.

Systems 20-Year Strategic Plan, the San Mateo County Smart Corridors Program, the 2020 Peninsula Corridor Study, the San Mateo – 101 Corridor Systems Management Plan, the San Mateo County Housing Needs Study, Airport Land Use Plans, and the San Mateo County Energy Strategy.

Core Capacity Transit Study

This study will identify investments and improvements to increase transit capacity to the San Francisco Core³. It is a joint effort of five transit operators: BART, Muni, AC Transit, Caltrain, and the Water Emergency Transportation Authority (WETA), in coordination with the San Francisco County Transportation Authority (SFCTA) and MTC. The study area includes two primary transit corridors: the Transbay Corridor and the San Francisco Metro Corridor. The Transbay Corridor focuses on investments to transport commuters on BART, AC Transit and WETA from the East Bay, and it explores potential new connections across the Bay. The San Francisco Metro Corridor focuses on Muni's light rail and bus

³<http://mtc.ca.gov/our-work/plans-projects/other-plans/core-capacity-transit-study>

network, Caltrain's peninsula service to San Francisco, and BART service through the southern neighborhoods of San Francisco. Because of the interconnected nature of the regional transit system, improvements to service, reliability and coordination would also benefit transit users in San Mateo County.

Organization of CTP 2040

CTP 2040 is organized into fourteen chapters, presented in the following four groupings:

- Context –Introduction & Overview, Setting, Vision & Goals
- Travel Determinants/Modes/Networks – Land Use and Transportation, Roadway System, Bicycles, Pedestrians, Public Transportation
- Travel Management – Transportation System Management and Intelligent Transportation Systems, Transportation Demand Management, Parking, Modal Connectivity, Goods Movement
- Transportation Funding - Financial

2. SETTING

Background

San Mateo County is the vibrant, dynamic heart of the San Francisco Peninsula. This chapter describes the county in geographical, socio-economic, and transportation terms. The information will illuminate existing conditions and trends that form the backdrop for CTP 2040.

Chapter 2 is organized in five parts, including this introductory section. The second and third sections describe the physical and socio-economic settings of San Mateo County, respectively. The fourth section describes current and future (2040) travel characteristics. The final section summarizes the material presented previously and points the way to further analysis, including the socio-economic and travel projections to be presented in Chapter 7.

Physical Setting

San Mateo County is located between San Francisco and San Jose on the San Francisco Peninsula. The county is 741 square miles in area, 449.1 square miles of which is land and the remaining 291.9 square miles is water.⁴ San Mateo County extends east to west from the San Francisco Bay to the Pacific Ocean with the Santa Cruz Mountains in between these two bodies of water. The urbanized portion of the county is located between The Bay to the east and I-280 to the west. The City and County of San Francisco forms the northern border and the County of Santa Clara the southern border of San Mateo County. Long Ridge, located in the Long Ridge Open Space Preserve near Highway 35, is the highest point of elevation in the county at 2,600 feet (792 meters).⁵ Much of the urbanized area alongside US 101 and El Camino Real is comparatively flat and low-lying, however. For example, downtown San Mateo and downtown Redwood City are both an average of 15 feet above sea level.^{6,7} While the lowlands are urbanized, the hill country between I-280 and the Coast side has a rural character, including extensive open space preserves and parklands. The Coast side is an area of beautiful beaches and small communities arrayed along Highway 1, the largest being Pacifica.

Socio-Economic Setting

The estimated population of the county in 2015 was 745,400.⁸ This represents an increase of 26,949 or 3.75%, from the 718,451 people counted in the 2010 Census. Unlike the City and County of San Francisco to the north or the County of Santa Clara to the south, San Mateo County does not have one dominant municipality in size. The two largest cities, Daly City and San Mateo each have approximately 14% of the population of San Mateo County. Redwood City is the third largest municipality in the county, with approximately 11% of the total population.

The estimated population of San Mateo County in 2015 was 745,400.

⁴ *California Statistical Abstract, 2008, Table A-1.*

⁵ <http://www.summitpost.org/long-ridge/261661>.

⁶ <http://www.city-data.com/city/San-Mateo-California.html>.

⁷ <http://www.city-data.com/city/Redwood-City-California.html>.

⁸ *US Census Bureau and Association of Bay Area Governments.*

The distribution of this population by jurisdiction is shown in **Table 3**. An estimated 6.2% of the population was under 5 years of age, 23.2% was 5 to 24 years of age, 56.6% was 24 to 64 years of age, and 14.1% was 65 years of age and over, according to 2010-2014 estimates from the American Community Survey. Approximately 27% of San Mateo County residents over 25 years of age hold a bachelor's degree, 18% a graduate or professional degree, and approximately 7.5% an associate's degree.⁹ The population of San Mateo County on the whole is older, better educated, and higher-earning than that of the state of California and the nation. **Table 4** displays a comparison of the population characteristics of San Mateo County with those of the State of California and the United States as a whole.

Table 3: San Mateo County Population

Jurisdiction	2010 (Census)	2015 (Estimated)	2040 (Estimated)
Atherton	6,914	7,100	7,900
Belmont	25,835	26,400	29,600
Brisbane	4,282	4,400	5,100
Burlingame	28,806	30,200	38,400
Colma	1,403	1,500	2,300
Daly City	101,123	104,000	121,400
East Palo Alto	28,155	29,200	35,500
Foster City	30,567	31,000	33,900
Half Moon Bay	11,324	11,400	12,400
Hillsborough	10,825	11,000	12,100
Menlo Park	32,026	32,900	38,100
Millbrae	21,532	22,800	30,300
Pacifica	37,234	37,600	40,300
Portola Valley	4,353	4,400	4,900
Redwood City	76,815	80,300	100,800
San Bruno	41,114	43,500	56,800
San Carlos	28,406	29,200	34,000
San Mateo	97,207	101,500	126,000
South San Francisco	63,632	67,200	87,700
Woodside	5,287	5,300	5,700
Unincorporated	61,611	64,500	81,200
County Total	718,451	745,500	904,400

Sources: US Census Bureau and Association of Bay Area Governments (ABAG), 2013

⁹ *US Census Bureau, 2010-2014 American Community Survey 5-Year Estimates.*

Table 4: Selected San Mateo County Population Characteristics, Comparison to California and the Nation

Population Characteristic	San Mateo County	California	United States
Population under 5 Years of Age	6.2%	6.6%	6.4%
Population 5 to 24	23.2%	28.1%	27.1%
Population 25 to 64	56.6%	53.2%	52.8
Population 65 Years & Over	14.0%	12.1%	13.7%
Median Age	39.4	35.6	37.4
Bachelor's Degree or Higher, Population 25 & Over	45.0%	31.0%	29.3%
Median Income, Population 25 & Over with Earnings	\$50,260	\$37,170	\$36,034

Source: US Census Bureau, 2010-2014 American Community Survey 5-Year Estimates (a rolling average of sampling data)

As of 2015, there were 541,792 licensed drivers and 710,094 motor vehicles (including autos, trucks and motorcycles) registered in San Mateo County.¹⁰ An estimated 63.4% of households in the county had two or more vehicles available and 30.9% had one vehicle available. An estimated 5.7% of households in did not own or have access to a motor vehicle.¹¹

As of 2015, there were 541,792 licensed drivers and 710,094 motor vehicles registered in San Mateo County.

Travel Characteristics

The travel characteristics for San Mateo are given based on type of trip as well as origin and destination. **Table 5** shows the mode share for those travelling to work in San Mateo County as measured in the American Community Survey 5-Year Estimates. **Table 6** shows the estimated mode share for trips that stay within the county, and **Table 7** shows the estimated mode share for all trips that start or end within San Mateo County. As shown on **Table 5**, just over 70% of San Mateo County residents 16 years of age and older drive alone to work. Compared with trips made for all purposes, work trips have a lower proportion of carpool use with 11% of the mode share, but are more likely to use public transit with 8.9% of the mode share.

As shown in **Table 6**, an estimated 47% of travel within San Mateo County for all trip purposes was by driving alone, 34% was by carpooling, 2% was by public transit, 2% was by bike, and 15% was by walking. As shown in **Table 7**, when trips crossing county boundaries are included, the mode share is higher for driving alone and public transit and lower for walking than trips staying within San Mateo County.

¹⁰ California Department of Motor Vehicles.

¹¹ US Census Bureau, Selected Housing Characteristics, 2010-2014 American Community Survey 5-Year Estimates.

Table 5: Means of Travel to Work in San Mateo County

Mode of Travel	Mode Share
Drive Alone	70.2%
Carpool	11.0%
Public Transit	8.9%
Walk	2.5%
Other (including Bicycle)	2.4%
Work at Home	5.0%

Source: US Census Bureau, 2010-2014 American Community Survey 5-Year Estimates

Table 6: Estimated Travel by Mode within San Mateo County

Mode of Travel	Mode Share (All Trip Purposes)
Drive Alone	47%
Carpool	34%
Public Transit	2%
Bicycle	2%
Walk	15%

Source: C/CAG-VTA Countywide Travel Demand Model, 2015

Table 7: Estimated Travel by Mode within, to, and from San Mateo County

Mode of Travel	Mode Share (All Trip Purposes)
Drive Alone	53%
Carpool	33%
Public Transit	4%
Bicycle	2%
Walk	9%

Source: C/CAG-VTA Countywide Travel Demand Model, 2015

Transit Ridership

The three major public transit providers in San Mateo County are the San Mateo County Transit District (SamTrans), BART, and Caltrain. SamTrans operates 76 routes, carrying more than 43,000 passengers each weekday and about 13 million riders per year.¹² **Table 8** shows SamTrans ridership data. As displayed in **Table 9**, BART serves six stations with 36,577 average weekday station entries in the County. Caltrain boards more than 18,000 passengers each weekday at 12 stations in the county. **Table 10** shows passenger boarding details for Caltrain.

San Mateo County's major transit providers are:

SamTrans – Operates 54 Routes
BART – Serves Six Stations
Caltrain – Serves 12 Stations

Table 8: SamTrans Passenger Statistics

Total Annual Bus Passengers	
Fixed Route	13,629,434
Redi-Wheels	326,706
Total Revenue Vehicle Hours	
Fixed Route	525,786
Redi-Wheels	185,026
Passengers per Revenue Hour	
Fixed Route	26.13
Redi-Wheels	1.67
Passengers per Revenue Mile	
Fixed Route	1.92
Redi-Wheels	0.11

Source: San Mateo County Transit District FY 2014-2023

¹² San Mateo County Transit District Short-Range Transit Plan, FY 2014-2023.

Table 9: Average Weekday BART Station Entries by San Mateo County Station

Station	Station Entries
Daly City	10,085
Colma	4,761
South San Francisco	3,681
San Bruno	3,975
San Francisco Airport	6,995
Millbrae	7,080
Total	36,577

Source: BART, 2015 Ridership by Station

Table 10: Average Weekday Caltrain Ridership by San Mateo County Station

Station	Boardings
Bayshore	254
South San Francisco	472
San Bruno	682
Millbrae	3,536
Burlingame	998
San Mateo	2,061
Hayward Park	367
Hillsdale	2,706
Belmont	699
San Carlos	1,435
Redwood City	3,233
Menlo Park	1,762
Total	18,205

Source: Caltrain, 2015 Annual Passenger Count

Forecasts of Growth and Travel

Population and Employment Growth

Table 11 gives existing and forecasted population values for San Mateo and surrounding counties. By 2040, San Mateo County is expected to experience an increase of 159,000 residents, a 21.3% increase in total population. San Francisco, Santa Clara County and Alameda County are expected to have larger increases in population, in terms of the total number and the percentage increase.

Table 11: Forecasted Population by County

County	Population			
	2015	2040	Growth	% Growth
San Mateo	745,400	904,400	159,000	21.3%
San Francisco	847,000	1,085,700	238,700	28.2%
Santa Clara	1,877,700	2,423,500	545,800	29.1%
Alameda	1,580,800	1,987,900	407,100	25.8%
Contra Costa	1,085,700	1,338,400	252,700	23.3%

Source: Association of Bay Area Governments (ABAG), Projections 2013

Table 12 gives the existing and forecasted number of employed residents for San Mateo and surrounding counties. San Mateo County is expected to have an increase of 69,980 employed residents, a 19% increase. San Francisco, Santa Clara County and Alameda County are expected to have larger increases in employed residents, in terms of the total number and the percentage increase.

Table 12: Forecasted Employed Residents by County

County	Employment			
	2015	2040	Growth	% Growth
San Mateo	368,790	438,770	69,980	19.0%
San Francisco	460,450	571,580	111,130	24.1%
Santa Clara	881,770	1,133,950	252,180	28.6%
Alameda	728,760	899,070	170,310	23.4%
Contra Costa	489,750	592,060	102,310	20.9%

Source: Association of Bay Area Governments (ABAG), Projections 2013

Table 13 gives the existing and forecasted number of jobs in San Mateo and surrounding counties. San Mateo is expected to add 70,130 jobs, an 18.7% increase. San Francisco, Santa Clara County and Alameda County are expected to have larger increases in jobs, in terms of the total number and the percentage increase.

Table 13: Forecasted Jobs by County

County	Jobs			
	2015	2040	Growth	% Growth
San Mateo	374,940	445,070	70,130	18.7%
San Francisco	617,420	759,500	142,080	23.0%
Santa Clara	1,003,780	1,229,520	225,740	22.5%
Alameda	757,010	947,650	190,640	25.2%
Contra Costa	374,610	467,390	92,780	24.8%

Source: Association of Bay Area Governments (ABAG), Projections 2013

Growth in Travel

Table 14 and **Figure 1** show the forecasted growth of home-based work trips for San Mateo County by destination and mode. By 2040, total travel in San Mateo is expected to increase by 22% from the level experienced in 2015. Travel by all modes is expected to increase, but the largest percentage increase will be in transit at 70%. By far, the largest increase in absolute terms will be in automobile (driving alone and ridesharing) – approximately 116,000 daily trips, compared to 37,000 for transit and 6,000 for bicycle and walking. Travel within the county is expected to increase less in percentage terms than travel into and out of the county, a 19% increase in internal trips compared to a 24% increase in trips into and out of the county. One of the areas of highest percentage growth is in transit trips into and out of San Mateo County, a 67% increase.

Table 14: Forecasted Travel Growth by Mode for Home-based Work Trips, 2015-2040

	Drive		Transit		Bike		Walk		All	
	Growth	%	Growth	%	Growth	%	Growth	%	Growth	%
Outbound and Inbound trips	73,098	19%	30,683	67%	3,365	64%	402	43%	107,547	24%
Internal trips	43,354	15%	6,551	87%	2,721	59%	6,045	38%	58,670	19%
Total trips	116,452	17%	37,233	70%	6,086	62%	6,447	39%	166,218	22%

Source: CCAG Travel Demand Model (2015 and 2040 PA Matrices by Trip Purpose & Mode Choice), DKS Associates 2016

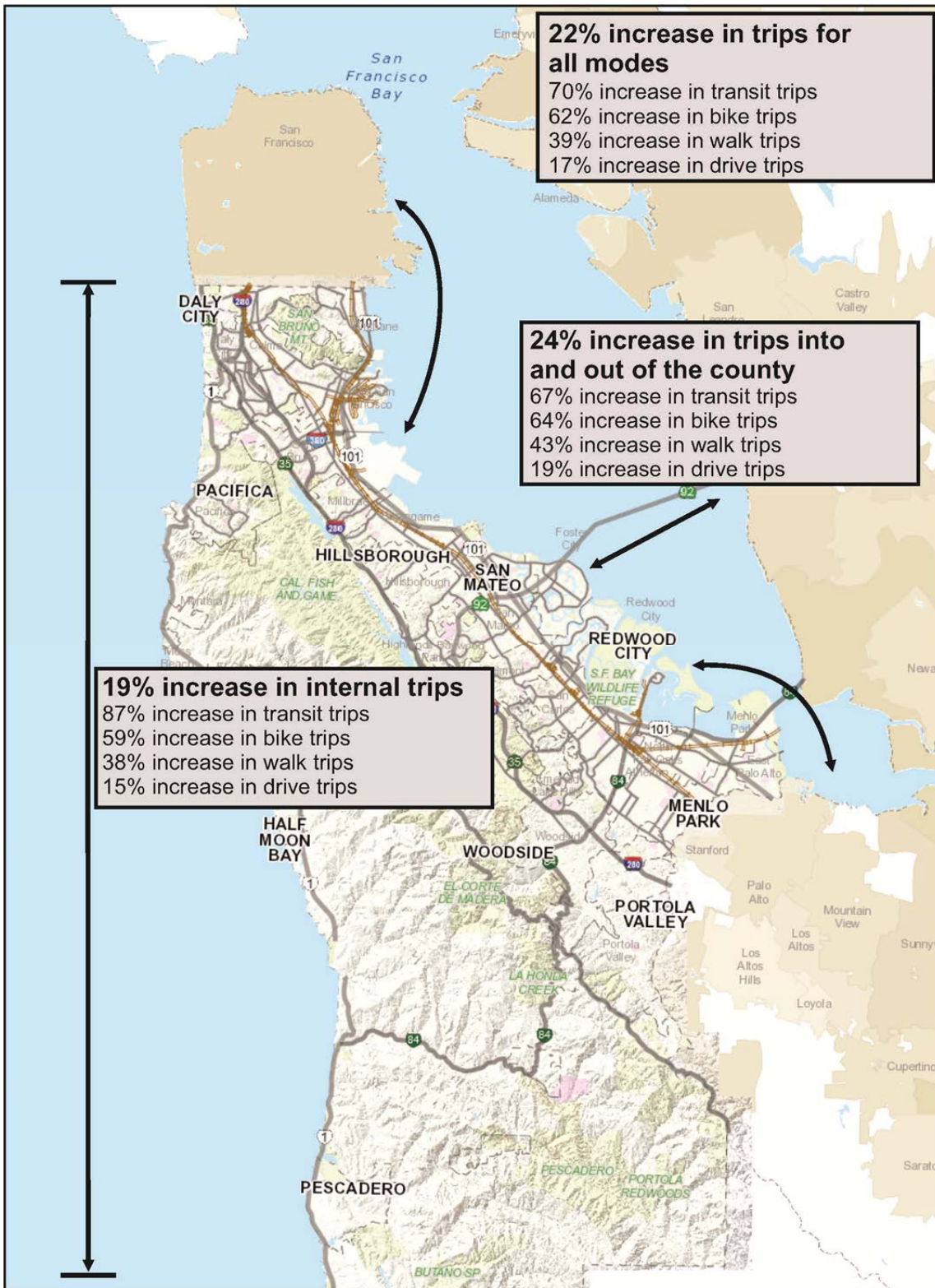


Figure 1: Forecasted Travel Growth for Home-based Work Trips, 2015-2040

3. VISION & GOALS

Background

SMCTP 2040 is guided by an overarching vision and a set of visions, goals, and objectives for each of its elements. These statements of desired ends were developed in collaboration among stakeholders and in consultation with the San Mateo County traveling public.

An Overarching Vision

"Provide an economically, environmentally, and socially sustainable transportation system that offers practical travel choices, enhances public health through changes in the built environment, and fosters inter-jurisdictional cooperation."

Visions & Goals for Each SMCTP 2040 Element

Land Use and Transportation

Vision:

A San Mateo County transportation system that is safe and convenient for all people whether travelling on foot, by bicycle, via public transportation, or in an automobile, to reach places they wish to go.

Goal:

Integrate transportation and land use plans and decisions in support of a more livable and sustainable San Mateo County.

Roadway System

Vision:

A multimodal transportation network that contributes to the socio-economic and environmental health and safety of San Mateo County.

Goal:

Enhance safety and efficiency on the countywide roadway network to foster comfortable, convenient, and multimodal mobility.

Bicycles

Vision:

A San Mateo County in which bicycling for both transportation and recreation is safe, comfortable, and convenient.

Goal:

Provide people with viable travel choices and encourage use of healthy, active transportation through a safe, continuous, convenient and comprehensive bicycling network that reduces reliance on the automobile for short trips.

Pedestrians

Vision:

A San Mateo County in which walking for both active transportation and recreation is safe, comfortable, and convenient.

Goal:

Promote safe, convenient, and attractive pedestrian travel that promotes healthy, active communities while reducing reliance on the automobile for short trips.

Public Transportation

Vision:

A public transportation system in San Mateo County that provides essential mobility for all, offers a competitive alternative to the automobile, and contributes to environmental and socio-economic well-being.

Goal:

Develop and maintain a seamless, safe and convenient public transportation system in San Mateo County focused on the customer.

Transportation System Management

Vision:

A San Mateo County in which the transportation system is safe, efficient, cost-effective, and environmentally responsible.

Goal:

Manage travel efficiently through supply-side measures, including low-cost traffic operations improvements and use of technologies that reduce or eliminate the need for increases in physical capacity.

Transportation Demand Management

Vision:

A San Mateo County in which reliance on solo occupant motor vehicle travel is minimized.

Goal:

Reduce and manage travel efficiently through demand-side measures, including land use planning and transportation demand management efforts at work sites.

Parking

Vision:

Parking in San Mateo County that is a “right-sized” balance of supply and demand, supportive of Transit Oriented Development and Sustainable Communities Strategies, intuitive to use, and environmentally responsible.

Goal:

Encourage innovations in parking policy and programs, including incentives for reduced parking requirements, and a comprehensive approach to parking management and pricing.

Modal Connectivity

Vision:

Seamless travel within San Mateo County using different modes of transportation.

Goal:

Integrate the roadway, public transit, and non-motorized transportation networks to advance system efficiency, effectiveness, and convenience.

Goods Movement

Vision:

Goods movement that supports an economically and environmentally sustainable San Mateo County.

Goal:

Foster safe and efficient goods movement on the San Mateo County transportation network compatible with countywide economic development and environmental policies.

These vision and goal elements are further elaborated in Chapters 4 through 15. Each element chapter will include these sections:

- Background
Information on the topic and a description of how it relates to San Mateo County.
- Issues
Current issues facing the county relevant to the chapter topic including specific examples.
- Framework
A brief description of the approach taken to address the issues presented in the previous section.
- Vision, Goal and Policies
An overall vision and goal pertaining to the future of the county within the topic of the chapter followed by specific policies to achieve those goals.
- Objectives
Specific results that the policies are intended to achieve toward the vision and goal defined for each of the plan elements.

Performance measures associated with each element are provided in Appendix A.

4. LAND USE AND TRANSPORTATION

Background

Much of San Mateo County is characterized by comparatively low land use densities and separation of land uses. Exceptions to this pattern include the older downtowns and the nearby neighborhoods that developed near the passenger rail stations arrayed along the San Francisco Peninsula. The prevailing pattern of low-density land development supports dependence on the automobile and makes transportation by alternative travel modes like public transit, bicycling, or walking in some areas infeasible or unattractive.

Many research studies have concluded that changes in land use patterns can encourage the use of alternative travel modes and may decrease traffic congestion.

Many research studies have concluded that changes in land use patterns can encourage the use of alternative travel modes and may decrease traffic congestion.¹³ The land use/transportation linkage factors that are the most influential towards transportation patterns are development density, land use mix, regional accessibility, degree of “centeredness” (or proportion of employment located in major activity centers), walking and bicycling conditions, transit quality and accessibility, parking supply and management, site design, and mobility management (or active encouragement of transportation alternatives).¹⁴



A concerted countywide effort to encourage land use patterns and supportive transportation practices that foster alternative transportation modes will yield many benefits. These benefits include increased travel choices, improved access to where people work, shop and recreate, and potential congestion relief. With a steady commitment, the County’s land use patterns can be transformed incrementally by making changes to the policies which govern land development, such as those contained in local jurisdictions’ general plans, specific plans, and zoning ordinances. Many San Mateo County jurisdictions have adopted or are in the process of adopting transit oriented development practices of increasing densities in proximity to public rail transit stations and along major bus transit service corridors, as well principles of mixing land uses to

bring jobs, housing and retail in closer proximity so that walking becomes a feasible travel option.

Issues

Increased Land Use Densities

Density refers to the amount of housing and employment within a given area.¹⁵ Increasing density results in decreased auto use and increased use of

Increasing density results in decreased auto use and increased use of alternative transportation modes.

¹³ A selection of these studies is listed in the References section of *Land Use Impacts on Transport: How Land Use Factors Affect Travel Behavior*, pp. 63-86.

¹⁴ From *Land Use Impacts on Transport: How Land Use Factors Affect Travel Behavior*, p. 45.

¹⁵ From *Land Use Impacts on Transport: How Land Use Factors Affect Travel Behavior*, p. 10.

alternative transportation modes (Holtzclaw, et al. 2002; Ewing, Pendall and Chen, 2002; Kuzmyak and Pratt, 2003; Ewing, 1997). In general, as densities increase, people need to travel shorter distances to reach their destinations, and are more likely to choose transportation modes other than the automobile. Further, higher densities improve the viability of transit as increases in ridership allow for improved public transportation service levels.

Employment densities have a particularly significant impact on travel behavior. Employment density has been cited as the primary land use factor determining transit use (Pushkarev and Zupan, 1982). Further, a study conducted in Seattle found that transit ridership increases significantly when employment density exceeds 50 employees per acre in centers that provide at least 10,000 jobs (California EPA, 1994).

Employment density has been cited as the primary land use factor determining transit use.

Residential density has significant effects on automobile use as well (Ewing, Haliyur & Page, 1994). A study comparing travel behaviors in several Bay Area neighborhoods concluded that for each doubling of residential density, the average annual vehicle miles traveled (VMT) per person is reduced 25 to 30 percent (Holtzclaw, 1991). A Bay Area region-wide travel survey also found that there is a strong relationship between overall population density and increased transit availability and use (California EPA, 1994).

Market forces and public policy together drive the land development process. Higher densities can be facilitated by: 1) urban areas- adopting newer zoning practices that are less prescriptive as to location of land uses and may foster more walkable, bicycle-friendly and transit-oriented communities, and 2) less developed rural areas- continuing to limit development and limit extension of urban services. Such measures will help channel and intensify new growth within urban areas while at the same time preserving valued open space.

Mixed Land Uses

Another effective way to reduce dependence on the automobile is by promoting a mix of land uses. In San Mateo County, zoning has often segregated land uses in order to keep incompatible uses, such as heavy industry and housing, from coming into close contact. This principle was extended over time to separate retail and other commercial uses from residential development. The result is development patterns marked by a separation of land uses, often requiring long trips (typically by automobile) to get from one use to another.

However, fundamental transformations in the economy have reduced the importance of separating land uses. Exemplifying this shift is the conversion from a manufacturing-based economy with its adverse environmental impacts, to an information-based economy, which has much lower impacts on neighboring land uses. Thus, a mixed-use development pattern is now more viable than in the past. Greater land use mixture can be achieved through 1) adding housing in commercial areas, particularly along transit stations, major bus transit service corridors, and in existing downtown areas and 2) creating new zoning frameworks that do not prescribe land uses but do establish clear design standards for new development.

Encouraging mixed-use development can reduce VMT and increase transit and pedestrian trips. For example, in single-use office parks, only about 3 to 8 percent of midday trips from work are walking trips, compared to about 20 to 30 percent in mixed-use areas (California EPA, 1994). Mixed-use development also improves mobility in residential areas because it creates more opportunities for residents to live closer to work and other key destinations such as shopping and child care.

Transit Station Area Development

Locating higher-density development near transit stations and along major bus transit corridors can reduce congestion and increase transit trips. The research indicates that people who live within walking distance of a transit station are much more likely to use transit, and locating employment centers within close proximity to regional rail stations increases the likelihood of employees commuting via public transportation. For example, in San Mateo, a study found that 26 percent of trips made by station area residents were by Caltrain, compared with only 3 percent of trips made by residents citywide¹⁶.

Locating around transit stations can also improve the market viability of higher density development, as people may generally be more willing to pay a premium for living near transit. This has been demonstrated over recent years by the many successful transit-oriented development¹⁷ projects that have been established throughout the Bay Area¹⁸ and California. Transit station areas can also serve as locations for affordable housing. In 2016, the BART Board adopted a new Transit-Oriented Development policy, which incorporates housing affordability as a goal¹⁹.

Transit-oriented development has particular promise in San Mateo County, which is served by thirteen Caltrain and six BART stations. A study found that demand for development in proximity to these transit stations will increase through the year 2030 (*San Mateo County Transit Oriented Development Opportunity Study*, 2007).²⁰ For example, the Millbrae Station Area Specific Plan provides for increased development density, including housing, adjacent to the station. Additional areas for TOD may be available in the future as bus rapid transit stations²¹ are being considered along El Camino Real in conjunction with the Grand Boulevard Initiative²² and C/CAG's TOD Incentive Program.

The “activity center” is a particularly promising concept, combining high density, mixed-use, and transit area development. In an activity center, a large variety of land uses are clustered in close proximity to one another and offer excellent transit, bicycle and pedestrian access. For example, the area surrounding the Bayshore Caltrain station is proposed to be developed with a mix of residential, commercial, and other uses with bicycle and pedestrian access, high-frequency bus service, and connections to light rail.



¹⁶ Cervero, R. 1994. *Transit-Based Housing in California: Evidence on Ridership Impacts*. *Transport Policy* 1, 3: 174-183.

¹⁷ For TOD “best practices” information, see <http://greatcommunities.org/resources/TOD-Best-Practices>.

¹⁸ For a description of Bay Area TOD, see <http://www.ulisf.org/docManager/1000000897/2008%20TOD%20MarketPlace%20FINAL%20small.pdf>.

¹⁹ <http://www.bart.gov/sites/default/files/docs/BART%20Board%20-%20TOD%20Policy%206-9-16%20Adopted%20FINAL.pdf>

²⁰ See http://www.co.sanmateo.ca.us/housingdepartment/PDFS/SamTrans%20TOD_Final_Report_073107.pdf.

²¹ For a discussion of Bus Rapid Transit in the US and in San Mateo and Santa Clara Counties, see <http://www.nctr.usf.edu/jpt/pdf/JPT12-2Galicia.pdf>,

http://transweb.sjsu.edu/MTIportal/research/publications/documents/BRT2006/BRT_06_02%20book.pdf and <http://www.path.berkeley.edu/PATH/Publications/PDF/PRR/2005/PRR-2005-32.pdf>.

²² For an overview of the Grand Boulevard Initiative, see <http://www.grandboulevard.net/>.

Urban/Rural Boundary

San Mateo County has established an urban/rural boundary in the Coastal Zone with the goal of channeling growth into defined urban areas while restricting growth in rural areas. In addition, increased densities can only be considered if there is adequate highway capacity, as well as other services that accommodate increased activity. Continued enforcement of this boundary should have the effect of increasing land use densities within the Coastsides urbanized areas, with a corresponding decrease in automobile use. However, it is unlikely that the urban/rural boundary will have significant effects on inter-county transportation patterns.

Jobs and Housing Balance

Jobs and housing balance exists when a geographic area has a housing supply that meets the needs of all of its workers. Ideally, not only should the region provide enough housing to accommodate its workers, but also just as importantly, housing prices should be compatible with worker incomes. Since housing prices have been bid up by relatively high incomes of San Mateo County residents, a portion of which work outside the County, the County's housing supply is not affordable for many people who work but do not reside in the County. This imbalance in housing prices and worker incomes has already contributed to some of the highest levels of in- and out-commuting in the Bay Area, which has resulted in increased traffic congestion. As discussed in Chapter 2 (Setting), the number of jobs in San Mateo County is projected to increase by 70,130, and the number of employed residents is expected to increase by 69,980 between 2015 and 2040. Given the severity of existing imbalances in jobs and housing in San Mateo County and the projected growth, achieving a better balance may yield transportation benefits.

This imbalance in housing prices and worker incomes has contributed to some of the highest levels of in- and out-commuting in the Bay Area.

To promote a jobs and housing balance as the County grows, it is recommended that the cities of San Mateo County continue to encourage production of housing units at a variety of prices to accommodate more workers who wish to live close to their jobs. Further, it is recommended that jurisdictions evaluate the adequacy of general plans to provide housing to accommodate a significant portion of job growth on a countywide level through the year 2040.

Project Design Standards

Automobile use can be discouraged through the project approval process by requiring developers to adhere to site design standards that promote alternative modes of transportation. Many of the design standards commonly used today focus too heavily on accommodating the automobile. For example, most zoning codes require a minimum number of parking spaces. Such requirements have contributed to an asphalt landscape dominated by the automobile and difficult to navigate by foot or bicycle.

Many of the design standards commonly used today focus too heavily on accommodating the automobile.

There are many ways site design can increase the use of alternative travel modes and reduce the attractiveness of the automobile. Designs such as bus turnouts and shelters near building entrances encourage transit use. Pedestrian and bicycle travel can be encouraged by providing amenities such as safe and attractive pedestrian and bicycle paths with convenient connections to nearby land uses, secure bicycle parking, and on-site amenities such as shower facilities. Further, designs can make ridesharing more attractive by providing preferential parking to

rideshare vehicles (e.g., carpools and vanpools), with parking spaces located close to building entrances and shuttle stops, sheltered parking, and exemptions from parking fees.

Design standards can reduce the attractiveness of the automobile by promoting on-site employee services such as cafeterias, gyms, and child care centers, which reduce the need for midday trips. Finally, development standards can reduce automobile use by relaxing minimum parking requirements, which are often set higher than actual demand, or establishing parking maxima instead of minima. Other important advances in parking management related to project and site design include “unbundling” (selling/leasing parking space separately from selling/leasing housing or commercial space) and “shared” parking (location of use with compatible parking demand, such as an office complex and a cinema, in close proximity so that parking supply is used more efficiently throughout the day and evening).²³ In addition, placing parking at the rear or to the side of commercial sites shortens the walking distance from the sidewalk to the front door of commercial establishments while also increasing the comfort and safety of the walk.

A Framework for Achieving Better Land Use and Transportation Linkage in San Mateo County

Progress toward improvement of the land use and transportation linkage in San Mateo County requires a planned approach. An overarching vision and a more specific goal to accompany it are needed to keep on course. A set of policies comprise the means to achieve the goal and realize the broad vision. Specific objectives and an associated set of performance measures are needed to chart the amount and pace of progress toward achievement of policies, goals, and vision.

Land Use and Transportation Linkage Vision, Goal, and Policies

Vision

A San Mateo County transportation system that is safe and convenient for all people whether travelling on foot, by bicycle, via public transportation, or in an automobile, to reach places they wish to go.

Goal

Integrate transportation and land use plans and decisions in support of a more livable and sustainable San Mateo County.

Policies

Integrate Land Use and Transportation Planning

- Integrate land use and transportation planning efforts at the local, county, and regional levels.
- Strengthen the pedestrian, bicycle, and shuttle bus circulation links among land uses, particularly, within TOD areas.

Concentrate Development

- Concentrate new development in urban areas, particularly, those designated as “Priority Development Areas.”

²³ For further information on parking management associated with site and project development, see http://www.vtpi.org/park_man.pdf.

- Promote higher density residential, employment, and mixed-use development near transit stations and along major bus transit corridors throughout the County to create pre-conditions for improved linkages between land use and transportation alternatives to the single occupant automobile.
- Support the redevelopment of cities along the Caltrain and BART systems as a balanced mix of retail, office, and residential centers at densities adequate to support transit service that is competitive with the private car.
- Emphasize transportation demand management in planning for more concentrated development.

Enhance Rural Communities

- Promote safe, convenient transportation links to activity centers and services in rural San Mateo County.
- Consider any potential growth-inducing impacts of transportation projects in Priority Conservation Areas.

Housing Supply

- Promote the development of a range of housing types along a spectrum of prices within the County, especially near transit stations and along major bus transit corridors.
- Support creation of “complete communities” for San Mateo County’s diverse population that contain an array of housing types affordable at different income levels and a range of community services.
- Encourage the preservation and improvement of existing affordable housing and avoid displacement of existing residents in new developments.

Jobs and Housing Balance

- Promote the creation of housing units to meet the needs of existing or potential households who work in the County.
- Encourage the construction of housing units in or near jurisdictions which have a high number of jobs compared to working residents.
- Encourage the creation of jobs in or near jurisdictions which have a high number of working residents compared to jobs.

Development Standards

- Give priority to development that encourages transit use, walking, and bicycling.
- Minimize motor vehicle traffic generated by new development, both within and adjacent to San Mateo County when the traffic impacts of such development spill out onto the San Mateo County highway network.
- Encourage the adoption of zoning codes and land use regulations to foster more walkable, bicycle-friendly, and transit-oriented land development patterns.
- Foster accessible design in housing, commercial properties, public areas and transportation facilities so that access is readily available to all who work and or live in San Mateo County.

Attractive and Engaging Public Places and Spaces

- Foster exemplary public places and spaces as focal points for the social, economic, and recreational life of communities.

Land Use and Transportation Linkage Objectives

1. Develop a “Multimodal Connections” Program to be included in San Mateo County’s portion of the Metropolitan Transportation Commission’s Transportation for Livable Communities Program.²⁴
2. Implement a “TOD Employment Incentive Program.”
3. Implement the Grand Boulevard Initiative vision of transit-oriented development along the El Camino Real corridor in proximity to Caltrain, BART, and prospective bus rapid transit stations.
4. Enhance the TOD Housing Incentive Program.
5. Enhance the quality of public places and spaces in San Mateo County.
6. Revise and enhance the Transportation Demand Management Guidelines.

²⁴ http://www.mtc.ca.gov/planning/smart_growth/tlc_grants.htm.

5. ROADWAY SYSTEM

Background

The roadway system plays an important role in San Mateo County. Travel by all modes relies on the roadway system in one way or another. Not only is the roadway system the infrastructure over which travel by cars, trucks, buses, motorcycles and bicycles occurs, but it also provides access for passengers using rail, water and air modes. While the role of the roadway system is supporting all modes of travel, its role in accommodating individuals driving their own automobiles is probably the most essential. Even with significant new transit investments, the private automobile will remain the dominant mode of travel within San Mateo County in the year 2040.

The roadway system in San Mateo County consists of five types of facilities:

- Freeways
- Major Arterials
- Minor Arterials
- Collectors
- Local Roads

Figure 2 shows the freeways, state highways and major arterials in San Mateo County. San Mateo County has nearly 2,100 centerline miles of public highways, streets, and roads. These roadways accommodated 18,680,360 daily vehicle miles of travel, or 25.5 miles per capita, in 2013.²⁵ Most of the roadways are owned and operated by cities, towns, and the County of San Mateo. Caltrans owns and operates approximately 10% of the centerline miles, including major facilities such as US 101, I-280, Highway 1, I-380, State Route (SR) 92, and SR 84. **Table 15** summarizes roadway mileage in San Mateo County.

San Mateo County has nearly 2,100 centerline miles of public highways, streets, and roads. These roadways accommodated 18,680,360 vehicle miles of travel each day in 2013.

The major roadways are generally oriented north-south due to the barrier formed by the Santa Cruz Mountains. Major north-south travel facilities include US 101, I-280, Highway 1, SR 82 (El Camino Real/Mission Street), SR 35, and both the Caltrain and BART corridors. East-west travel is by SR 84, SR 92, and I-380. Connections across the Bay are via SR 92 to the San Mateo Bridge and SR 84 to the Dumbarton Bridge.

²⁵ <http://www.vitalsigns.mtc.ca.gov/daily-miles-traveled>.

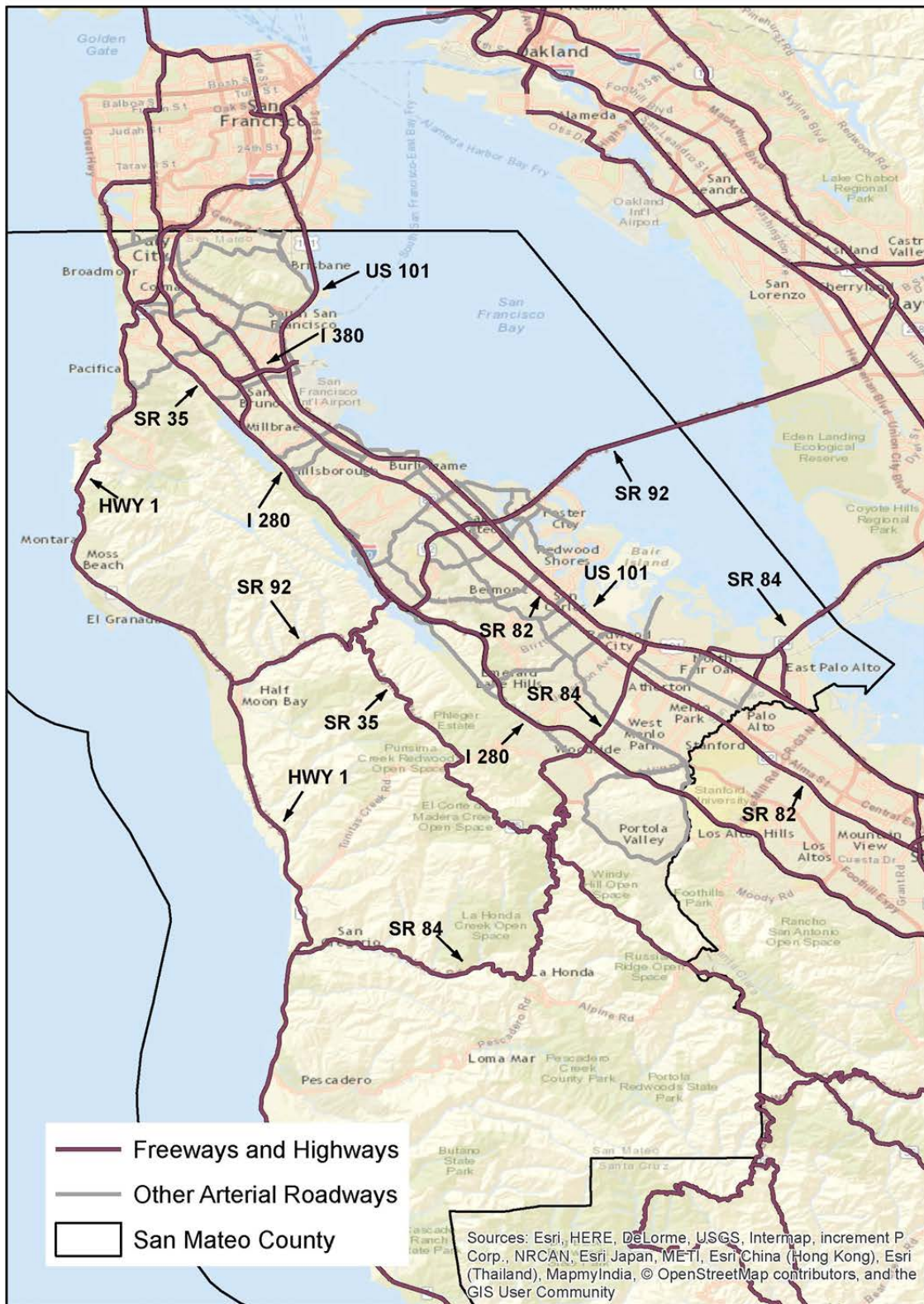


Figure 2: Roadway System in San Mateo County

Table 15: San Mateo County Roadway Network

Ownership	Mileage	Percent of Total
State Highways	213.13	10%
County Roads	316.5	15%
City Street & Roads	1,519.88	73%
Other Roads	34.94	2%
Total	2,090.28	100%

Source: California Public Road Data 2013, Caltrans

The roadway network has a variety of roles in San Mateo County:

- **Connectivity:** provides good points of access and egress and good connections between facilities
- **Safety:** designed to minimize conflicts and to minimize the extent of damage and injury when crashes occur
- **Travel Time:** allow reasonable travel times between major destinations
- **Reliability:** designed and operated in a way that minimizes the impacts of non-recurring events such as accidents and weather conditions on roadway level of service so that travel times are reasonable and predictable

The performance of the roadway system and its future needs are described in this chapter in relationship to these identified roles.

Existing System

Freeways

Six freeway routes provide high-capacity, limited-access roadway mobility within San Mateo County: US 101, I -280, I-380, and portions of Highway 1, SR 84 and SR 92. While I-380 is completely within San Mateo County, the other five routes link the county with other parts of the region. US 101 connects the county with San Francisco County to the north and Santa Clara County to the south. I-280 also connects the county with San Francisco and Santa Clara County but the route ends within those counties. SR 92 and SR 84 connect the county with Alameda County via the San Mateo-Hayward Bridge and the Dumbarton Bridge, respectively.

Major Arterials

There are six state routes providing major arterial access throughout San Mateo – SR 82, SR 114, SR 109 and portions of Highway 1, SR 35, SR 84 and SR 92. In general the major arterials are multilane divided roadways offering alternative routes to the freeways. SR 82, also known as El Camino Real, is a major arterial connecting Daly City to San Jose, running parallel and between US 101 and I-280. SR 114 and SR 109 are short arterials, completely within the county, connecting East Palo Alto with the Dumbarton Bridge. Highway 1 and SR 92 are the main roadways serving communities along the west coast of the county. Highway 1 is a major arterial between Pacifica and Half Moon Bay and SR 92 is a major arterial west of I-280. SR 35 is a major arterial in the north part of the county, joining with I-280 south of San Bruno. SR 84 is a major arterial between US 101 and I-280 in Redwood City and Woodside.

One of the major transportation initiatives in the county as it relates to major arterials has been the Grand Boulevard Initiative. This multi-year program has been a cooperative effort of 19 cities, 2 counties, and local and regional agencies to improve El Camino Real. The goal of the program is to improve the safety, performance, and attractiveness of the corridor.

Minor Arterials, Collectors and Local Roads

The state route roadway network in the county south of Half Moon Bay and west of I-280 is made up of two lane isolated roadways providing connections between the cities along the San Francisco Bay with the cities along Highway 1, Santa Clara County, and Santa Cruz County. Additionally, a system of minor arterials, collectors, and local roads connect the freeways and major arterials with the surrounding cities and communities.

Congestion Management Program Roadway System

Within the overall roadway network in San Mateo County, a portion deemed to be of greatest importance for regional connectivity and intra-county mobility has been designated as the Congestion Management Program Roadway System (CMP). This CMP network is the primary focus of the county-wide investment strategy. Other parts of the roadway system are considered to be the primary responsibility of local jurisdictions or Caltrans. As part of the Congestion Management Program for the county, the level of service on these roadway segments and intersections is monitored every two years and the results are compared to established standards and reported.

The specific roadways included in the CMP Roadway System and the reasons why these roadways were included are as follows:

SR 1, SR 35, SR 82, SR 84, SR 92, US 101, SR 109, SR 114, I-280, and I-380 are part of the California State Highway System. These are all the State Highways in San Mateo County.

Geneva Avenue, Mission Street and Bayshore Boulevard are not State Highways but are included because they connect to roadways included in the CMP of an adjacent county. These roadways were included in San Mateo County's CMP Roadway System to be consistent with San Francisco County's CMP Roadway System. (No roadways, in addition to the state highways already mentioned, needed to be added to be consistent with the CMP Roadway Systems of Alameda, Santa Clara, and Santa Cruz Counties).

In addition to the roadway segments on these 13 routes, there are 16 intersections on the routes that are designated CMP Intersection.

State Highway System Congestion and Safety Performance Assessment

A congestion and safety performance assessment for the state highway network in San Mateo County has recently been developed. The specific performance metrics considered for congestion include: Total Delay, Percent of Free-flow Speed, and Travel Time Reliability. For safety, crash data was used to identify fatality and injury collisions as well as crash rates accounting for all traffic collisions over a three-year period (2013-2015).

Planned Roadway System Improvements

A number of projects have focused on the roadway system in San Mateo County. Longer-term improvements are listed in the Metropolitan Transportation Commission's twenty-year Regional Transportation Plan. The proposed RTP project list for San Mateo County can be found in Appendix B.

Issues

Congestion

Congestion on the roadway system has multiple and compounding impacts. Congestion increases the time travelers have to devote to travel leaving less time for work, personal business, or social activities. Congestion also increases the likelihood of accidents and incidents and the resulting cost in property damage, injuries and potentially deaths. Additional accidents and incidents in turn result in additional delay and congestion. The CMP monitoring for San Mateo County indicates that there is serious congestion on almost all of the major commute routes with the county, and forecasts for 2040 indicate that the congestion on these facilities will increase substantially if there is no increase in capacity beyond what is already programmed, unless the travel demand decreases substantially or is shifted to other modes.

Reliability

Much of the congestion in San Mateo County, as in other urban counties, is the result of accidents, vehicle breakdowns, or other incidents that result in blockage of roadway lanes on major roadways. This unpredictable disruption in traffic flow tends to produce 40 to 50 percent of urban delay on major facilities. Because this type of collision or incident, produced delay is common but not predictable for a specific location or route; this affects the reliability of travel far more than average delay. This impact on reliability is likely to be greatest when the normal flow on a roadway is approaching capacity – without a collision or incident the roadway functions well, but with the collision or incident back-ups and delay result. When accidents and incidents occur during heavily congested times, the impact on delay may be exponential.

Connectivity

One of the major limiting characteristics of the roadway system in San Mateo County is the lack of adequate east-west roadway capacity. Because of the geography of the county and the history of its development, the major roadway capacity, freeway and arterial, is north-south. A consequence of the lack of east-west capacity is heavy congestion on the limited number of existing east-west routes such as I-380, SR 92 and SR 84, but also intrusion of traffic on arterials that traverse residential neighborhoods, such as Westborough Boulevard, Crystal Springs Avenue, Hillcrest Boulevard, Millbrae Avenue, Trousdale Drive, Crystal Springs Road, West Hillsdale Boulevard, Ralston Avenue, Brittan Avenue, Farm Hill Boulevard/Jefferson Avenue, and Woodside Road. This use of roadways not designed for high capacity operation, results in congestion and conflicts with local traffic, transit operations and pedestrian and bicycle traffic.

One of the major limiting characteristics of the roadway system in San Mateo County is the lack of adequate east-west roadway capacity.

Complete Streets – Serving All Modes

The transportation system in San Mateo County cannot serve all travel successfully with one mode. While the private automobile is the predominant mode of travel for all trip purposes in the County, many travelers do not have the option of travel by private automobile because of age, income, or disability. Nor would it be appropriate to try to serve all travel with private automobiles. The required land for additional roadways, parking and other automobile-serving facilities would be too great an impact on the economic production of the county and the environmental impacts on the lives of residents too great. Maintaining a high level of mobility with San Mateo County to support continued strong economic growth and high quality of life will require development of all modes and ensuring good access to these modes for the majority of travelers in the county. The roadway system in San Mateo County plays an important role in supporting all modes of travel because the roadway system either provides the facilities on which the modes travel or provides access to the facilities that they use. High capacity freeways and major arterials carry express buses in HOV lanes and general purpose lanes; local buses use local streets and arterials; bicyclists use local streets and bicycle lanes on arterials; pedestrians use sidewalks on local streets and arterial rights of way and crosswalks at intersections. In addition, roadways provide automobile access to BART and Caltrain stations as well as other park-and-ride opportunities that support transit and ridesharing in the county.

Maintenance

The performance of the roadway system requires substantial maintenance. Without maintenance, the condition of the roadway deteriorates resulting in poor operating conditions, reduced capacity and more accidents and other incidents that result in delay, property damage, injury and potential deaths. A recent assessment of the total maintenance needs for the local streets and roads in San Mateo County to keep the system in a state of “good repair” for the period 2017 to 2040 indicated a total cost of \$3 billion over the 24-year period of which only \$1.1 billion could be funded through existing, known sources. The remaining \$1.9 billion (63%) is unfunded.

Without maintenance, the condition of the roadway deteriorates, resulting in poor operating conditions, reduced capacity and more accidents and other incidents that result in delay, property damage, injury and potentially deaths.

Stormwater and Pollution Prevention

In addition to serving transportation functions, roadways also serve as part of the county's stormwater management system. Street design can influence the amount of runoff that enters the storm drain system, and improve the water quality of runoff. Use of pervious paving, bioswales, rain gardens and similar tools to capture and filter stormwater, ultimately reduces the pollution carried by stormwater into local creeks, the San Francisco Bay, and the Pacific Ocean. Under the Municipal Regional Permit, which outlines the state's requirements for municipal agencies in San Mateo County to address the water quality and flow-related impacts of stormwater runoff, jurisdictions are incorporating green infrastructure as part of street design.²⁶

²⁶ Green Streets is a vision for designing streets to integrate sustainable practices into complete streets design. The San Mateo Countywide Water Pollution Prevention Program developed the San Mateo County Sustainable Green Streets and Parking Lots Design Guidebook (2009), available at <http://www.flowstobay.org/greenstreets>

A Framework for Optimizing the San Mateo County Roadway System

The Countywide Transportation Plan should provide a structured approach to making the roadway system in San Mateo County as effective and efficient as possible and one that supports all modes of travel. This in turn requires a comprehensive vision accompanied by a more explicit goal and set of policies by which to achieve the goal. These policies are operationalized through a set of objectives. Progress toward achievement of these objectives is charted through performance measures.

Significant increases in roadway capacity are not feasible due to funding limitations, constrained right of way in many locations, and environmental concerns, including greenhouse gas emissions effects.

Investments in advanced technologies and communications on the roadway system can, however, improve motor vehicle traffic operations and moderate the effects of increased congestion.

There is also great scope for private action to reduce congestion, including increased availability of telecommuting and teleconferencing alternatives for workers, optimized travel route choice through use of on-board GPS navigation systems and smartphone apps, and transportation demand management efforts by employers.

Roadway System Vision, Goal, and Policies

Vision

A multimodal transportation network that contributes to the socio-economic and environmental health and safety of San Mateo County.

Goal

Enhance safety and efficiency on the countywide roadway network to foster comfortable, convenient, and multimodal mobility.

Policies

Improve the efficiency of the existing roadway system in San Mateo County

- Increase the connectivity of the roadway system to provide more direct routes between origins and destinations.
- Develop a more complete system of managed lanes to provide an incentive for ridesharing and to increase transit operating speeds.
- Improve freeway interchanges at key locations.

Focus capacity-increasing program on the most congested commute corridors

- Construct key highway projects that remove or reduce bottlenecks in the most congested commute corridors.
- Give consideration to the VMT-inducing impacts of roadway projects that increase capacity, consistent with state law.

Improve connections with regional transportation facilities

- Construct or improve roadways that connect major inter-county highway facilities and transit stations.

Enhance safety for travel by motorized modes

- Identify and eliminate roadway and intersection hazards.
- Improve the geometric design of roadways where current design is creating vehicle conflicts and crashes.
- Consider the use of roundabouts, where appropriate, to improve safety at intersections.
- Create separate lanes or facilities for non-motorized modes where feasible.
- Provide grade separation for Caltrain where feasible.

Maintain the roadway system

- Maintain an inventory of roadway facilities and maintenance needs.
- Provide adequate funding for roadway maintenance.

Roadway System Objectives

1. Improve the person throughput of the roadway system.
2. Reduce the number and severity of crashes on roadways in San Mateo County.
3. Reduce the rate of growth of roadway congestion.
4. Maintain the roadway system at an acceptable level.
5. Reduce the per capita vehicle miles travelled on the roadway system.

6. BICYCLES

Background

Bicycling has the greatest untapped potential of any travel mode in the United States. Only about 2% of local travel in the country is by bicycle, compared to 27% in the Netherlands, 18% in Denmark and 10% each in Germany and Sweden. These developed nations with much higher rates of bicycle travel than the US engage in a number of best practices that encourage cycling, including the following²⁷:

- Extensive systems of separate cycling facilities
- Intersection modifications and priority traffic signals
- Traffic calming
- Bike parking
- Coordination with public transport
- Traffic education and training
- Traffic laws that recognize the rights and responsibilities of cyclists

Bicycling is one of the most cost-effective, cleanest ways of reducing automobile use in San Mateo County. The bicycle emits no air pollution and is virtually silent. Cycling is both energy-efficient and space efficient. A cyclist requires only one-fifth the energy of a pedestrian to travel one kilometer. In one hour, 14,000 cyclists can theoretically use a typical travel lane compared to 2,000 people in private vehicles.²⁸ Bicycles offer other considerable personal and social benefits over the automobile, including substantially lower acquisition and maintenance costs, as well as health benefits.

Bicycling is one of the most cost-effective, cleanest ways of reducing automobile use in San Mateo County.

In addition, bicycling is often the swiftest form of transportation door-to-door in locations with high traffic congestion and a short supply of car parking. Bicycles, like automobiles, are convenient to use and are available on demand. For these reasons, bicycling can be a viable and attractive alternative to the automobile, particularly in areas that are not well served by public transit.

A major impediment to bicycle use in San Mateo County is that the road network has been principally designed for the automobile. At times and in some locations, this means reduced safety and comfort for bicyclists. Comparatively high auto speeds, inadequate shoulder widths, a lack of dedicated street space for cycling, poor signage or road markings, broken or uneven pavement, and difficult to maneuver freeway overpasses and interchanges all present potential safety hazards and discourage bicycle use. Another significant obstacle to bicycle use is that bicycle facilities have been created over time by the County and individual cities in a somewhat piecemeal and uncoordinated fashion, resulting in gaps and lack of continuity in the bikeway network. Addressing this concern is a key focus of the *San Mateo County*

²⁷ Pucher, John and Buehler, Ralph (2008), "Making Cycling Irresistible: Lessons for the Netherlands, Denmark and Germany." *Transport Reviews*, 28:4, pp. 495-528.

²⁸ Kurt, Van Hout (2008), "Annex I: Literature search bicycle use and influencing factors in Europe," *Universiteit Hasselt, Instituut Voor Mobiliteit, EIE-programme 05/016 Intelligent Energy Europe*.

*Comprehensive Bicycle and Pedestrian Plan.*²⁹ The *Countywide Transportation Plan 2040* presents a set of policies to encourage more bicycling to mirror the comprehensive approach taken in the *San Mateo County Comprehensive Bicycle Plan*.

Profile of Bicyclists

The County's major population and employment centers are located within a few miles to the east and west of the El Camino Real corridor, creating numerous opportunities for using bicycles to get to work or run errands.

In 2015, bicycling as a primary mode of travel represented an estimated 2% of all person trips that began and ended in San Mateo County. Bicycle use is most feasible when trips are relatively short (i.e., less than five miles), terrain is flat, traffic conditions are calm, and secure parking is available at the destination. San Mateo County offers several advantages for bicyclists. The county's major

population and employment centers are located within a few miles to the east and west of the El Camino Real corridor, creating numerous opportunities for using bicycles to get to work or run errands. Further, due to its location in the Bay plain, the topography in this part of the county is mostly flat. Moreover, bicycles can be brought aboard SamTrans buses and Caltrain commuter trains, which facilitate longer distance travel in the north-south direction.

Cyclists are a diverse group across a wide age range, who use the roads and paths for commuting to work and school, short trips around town, and recreation. In San Mateo County, as in the rest of the country, there are four categories to describe the varying attitudes toward bicycling³⁰:

1. "Strong and fearless" (less than 2% of the population old enough to bicycle)
2. "Enthusiastic and confident" (about 13% of the population old enough to bicycle)
3. "Interested but concerned" (about 60% of the population old enough to bicycle)
4. "No way no how" (about 25% of the population old enough to bicycle)

Addressing the concerns of the large group of "interested and concerned" people is an important task for public policy in support of bicycling.

Bicycling in San Mateo County is for utilitarian as well as recreational purposes. Typical bicyclists include school children commuting to school and adults commuting to work. Both children and adults enjoy cycling for recreation. Some San Mateo County residents use bicycles for short trips to the market, the public library, local parks, and other activity centers. Adventurous cyclists ride up to the hills and back down again or transport their bicycles by car for use in trail riding in the hills or along the Bay Trail. The bicycle is a versatile mode of transportation in San Mateo County, as it is elsewhere.

²⁹ As an example, one of the Project Ranking Criteria in the San Mateo Countywide Comprehensive Bicycle and Pedestrian Plan is "Gap Closure in Priority Corridor", p. 59.

³⁰ San Mateo Countywide Comprehensive Bicycle and Pedestrian Plan, pp. 25-36.

Issues

Bicycle Facilities

The *San Mateo Countywide Comprehensive Bicycle and Pedestrian Plan* describes three types of bicycle facilities in San Mateo County³¹: Multi-Use Path (Class I), Bike Lanes (Class II) and Bike Routes (Class III). Multi-use paths allow for two-way off-street use by bicycles and may also be suitable for shared use with pedestrians. Bike Lanes are a striped portion of road space for the preferential or exclusive use of bicyclists. Bike Routes are streets signed for shared bicycle and motor vehicle use, but without a dedicated space for bicyclists. Bike routes may incorporate Shared Roadway Bicycle Markings, sometimes referred to as “sharrows,” as an additional treatment. In December of 2015, Caltrans provided design guidance for Class IV bikeways, referred to as Separated Bikeways or Cycle Tracks. These on-street facilities are designed for the exclusive use of bicycles and include a separation between the bikeway and the through vehicular traffic. The separation may include grade separation (raising the level of the bikeway by several inches above the roadway, similar to a sidewalk), flexible posts, inflexible physical barriers, or on-street parking (so that parked cars provide physical barrier between cyclists and motorists).³²



A total of 54 off-street and 177 on-street bicycle facilities comprising a 231-mile network were identified in the San Mateo County in the 2000 San Mateo County Comprehensive Bicycle Route Plan. As of 2010, 141 miles (61%) of the network has been completed, including 42 miles of off-street facilities and 99 miles of on-street facilities. A map showing the countywide bikeway network, including existing and proposed facilities, is provided in the San Mateo Countywide Comprehensive Bicycle and Pedestrian Plan.

Bicyclists also need support facilities at the destination end of their trips. There should include bicycle parking in the form of racks and lockers, and both showers and lockers at the end of longer distance bike commutes. These support facilities are deficient in some areas within San Mateo County.

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Barriers

Only 15 of the 83 road crossings (fewer than one out of five) of Caltrain, US 101, I-280, and SR 1 in San Mateo County have bicycle lanes or sidewalks wide enough to accommodate bicycles. In addition, traversing on- and off-ramps with comparatively high speed entering (and at times exiting) motor vehicle traffic at freeway and urban arterial street interchanges (Woodside Road and El Camino Real in Redwood City, for example) can be a formidable challenge for even the most experienced bicyclist.

³¹ *San Mateo Countywide Comprehensive Bicycle and Pedestrian Plan*, p. 16.

³² *California Department of Transportation, Class IV Bikeway Guidance, Design Information Bulletin Number 89, Approved December 30, 2015.*

Bicycle Access to Major Activity Centers

Access to San Francisco International Airport and regional shopping malls is difficult for workers and customers who wish to reach these destinations by bicycle. In each environment, priority is given to facilitating efficient motor vehicle circulation.

Engineering, Education, Encouragement, Enforcement and Evaluation

Helping people who do not currently bicycle overcome their reluctance to do so on the roadway, as well as to make all bicyclists safer and more comfortable, requires a comprehensive set of measures.

Unlike walking, during which pedestrians spend most of their trip on a sidewalk or path separated from motor vehicle traffic, bicyclists spend much of their travel on roadways with motor vehicles. Helping people who do not currently bicycle overcome their reluctance to do so on the roadway, as well as to make all bicyclists safer and more comfortable,

requires a comprehensive set of measures. Engineering streets and roads so that they accommodate the needs of bicyclists, including space in which to ride, safe navigation through intersections, and lowering the speed differential between motor vehicles and bicycles, creates a safe operating environment for cycling. Education in safe cycling in traffic, as well as in rules of the road as they pertain to both cyclists and motorists is essential. Encouragement and cultural support in affirmation of bicycling as an accepted mode of everyday travel is needed from the wider community. Enforcement of traffic laws as they pertain both to motorists and cyclists provides legal sanctions to those who use either mode of travel in an imprudent way. Evaluation provides valuable feedback on the effectiveness of the improvements.

Education in safe cycling in traffic is essential.

All of these approaches are currently being used in San Mateo County to support bicycle travel. Engineering to develop bicycle overcrossings, bicycle lanes, shared use paths, as well as to calm motor vehicle traffic, is an on-going effort in San Mateo County. Safe Routes to School programs and cycling education programs in schools give children a good start toward safe, life-long cycling. Encouragement in the form of events like Bike to Work Day gives both visibility and credibility to bicycle commuting. Traffic law enforcement is also a continuing responsibility of public safety agencies in the county. In each case, however, much more could and should be done to create the physical and cultural conditions for safer, more comfortable cycling in San Mateo County and to evaluate these ongoing efforts.

Safe Routes to School

In 2011, C/CAG initiated the San Mateo County Safe Routes to School (SRTS) Program, which is primarily funded by a combination of federal funds received from the Metropolitan Transportation Commission's (MTC's) Regional SRTS Program and local Measure M (\$10 Vehicle Registration Fee) funding. The overall goal of the SRTS Program is to enable and encourage children to walk or bicycle to schools by implementing projects and activities to improve health and safety, and also reduce traffic congestion due to school-related travels. The Program provides student safety education, outreach, encouragement, and evaluation activities in addition to performing walk and bike audits to document factors and barriers that impact safe walking and bicycling for students. The program also addresses safety concerns by encouraging greater enforcement of traffic laws, educating the public, and exploring the ways to create safer streets. The San Mateo County Office of Education coordinates the SRTS Program for San Mateo County schools.

Complete Streets

There is increasing support nationally,³³ within California,³⁴ and in San Mateo County³⁵ and throughout the Bay Area for provision of “complete streets.” These are roadways that safely and comfortably accommodate pedestrians and cyclists as well as motor vehicles. Bicyclists in San Mateo County have a big stake in this policy since most cycling and nearly all cycling for utilitarian purposes takes place on streets and highways within the county.

Improvement Plans and Programs

There are many established transportation funding programs that can finance improvements to cycling facilities. At the local, regional, and state levels, these include San Mateo County’s Measure A, California’s Transportation Development Act and Safe Routes to Schools programs, and the Bay Area’s Transportation Fund for Clean Air, Livable Communities, and Safe Routes to Schools programs. On the federal level, there are a variety of other programs funded by the federal Fixing America’s Surface Transportation (FAST) Act, including Enhancements, Congestion Mitigation and Air Quality Improvement, Livable Communities, and Safe Routes to School. These federal funds are typically sub-vented to the Metropolitan Transportation Commission for distribution regionally.

A Framework for Achieving a Better Bicycling Environment in San Mateo County

Progress toward improvement of the cycling conditions in San Mateo County requires a planned approach. A broad vision and a more focused goal to accompany it are needed to keep on course. A set of policies represents the means to achieve the goal and bring the vision to life. Specific objectives, accompanied by a set of performance measures, are needed to chart the amount and pace of progress toward achievement of policies, goal, and vision.

Bicycling Environment Vision, Goal, and Policies

Vision

A San Mateo County in which bicycling for both transportation and recreation is safe, comfortable, and convenient.

Goal³⁶

Provide people with viable travel choices and encourage use of healthy, active transportation through a safe, continuous, convenient and comprehensive bicycling network that reduces reliance on the automobile for short trips.

³³ See <http://www.completestreets.org/>.

³⁴ See http://www.dot.ca.gov/hq/tpp/offices/ocp/complete_streets.html.

³⁵ See <http://www.grandboulevard.net/projects/complete-streets.html> and

http://www.mtc.ca.gov/planning/bicyclespedestrians/routine_accommodations.htm.

³⁶ A full set of bicycle goals was developed for the San Mateo County Comprehensive Bicycle and Pedestrian Plan, Adopted September 8, 2011.

Policies

A Convenient Travel Option

- Continue to develop a safe, reliable, comprehensive, and convenient bikeway system competitive in door-to-door with the automobile for many short distance trips.

Integration with Public Transit

- Encourage local agencies and transit operators, such as SamTrans, Caltrain and BART, to work cooperatively to encourage bicycling over transit by improving access to and through stations and stops, installing bicycle parking and maximizing opportunities for on-board bicycle access.

Encouragement, Education, and Incentives

- Work with local, county and regional agencies and organizations – including those with a focus on public health – to develop effective encouragement programs that promote bicycling as a safe, convenient and healthy mode of transportation.
- Provide funding for effective support programs and events that encourage bicycling among a broad range of potential users.
- Encourage local school districts to implement projects and activities that promote bicycling to school among students and staff, such as Safe Routes to School initiatives.
- Promote integration of bicycle-related services and activities into broader countywide transportation demand management and commute alternative programs.
- Provide support for programs that educate drivers and bicyclists about their rights and responsibilities, as well as traffic education and safety programs for adults and youth.

Safety

- Promote collaboration among the Sheriff's Office, local police departments and other county and local agencies to develop and administer effective safety, education and enforcement strategies related to bicycling.
- Provide support for programs that educate drivers and bicyclists about their rights and responsibilities, as well as traffic education and safety programs for adults and youth.

Complete Streets

- Comply with the complete streets policy requirements of Caltrans and the Metropolitan Transportation Commission concerning safe and convenient access for bicyclists, and assist local implementing agencies in meeting their responsibilities under the policy.
- For transportation projects funded by county or regional agencies, require that local implementing agencies incorporate "complete streets" principles as appropriate, provide at least equivalently safe and convenient alternatives if projects result in changes to bicycle access, and provide temporary accommodations for bicyclists during construction, if such accommodations can be reasonably made.
- Monitor countywide transportation projects to ensure that the needs of bicyclists are considered in programming, planning, design, construction, operation and maintenance, and encourage local agencies to do the same for their projects.

- Provide support to local agencies in adopting policies, guidelines and standards for complete streets and routine accommodation of bicyclists in all new transportation projects.
- Strongly encourage local agencies to adopt policies, guidelines, standards and regulations that result in truly bicycle-friendly land use developments, and provide them technical assistance and support in this area.

Traffic Calming

Support efforts to calm motor vehicle traffic to enhance travel conditions for bicyclists.

Barriers to Bicycle Access and Circulation

Reduce barriers to bicycle access and circulation, including those caused by gaps in the bicycle facilities network and the severance effect on bicycle travel due to rail lines, freeways, and major arterial streets.

Bike Sharing

Encourage efforts to establish bike-sharing programs in communities throughout the county.

Bicycling Objectives

1. Increase the number of miles of Class I, II, III and IV bikeways as part of a comprehensive network of bicycle facilities in San Mateo County.
2. Increase the number of bicycle lockers and racks in San Mateo County.
3. Increase bicycle safety education and training in San Mateo County.
4. Establish bike sharing programs in San Mateo County.
5. Increase bicycle mode share for all trips originating in San Mateo County over both a ten-year and twenty-five-year horizon
6. Increase bicycle mode share for trips to work over both a ten-year and twenty-five-year horizon

7. PEDESTRIANS

Background



Before the advent of trains, streetcars, and automobiles, walking was the principal form of transportation for most people. Because walking trips are inherently limited to a few miles, cities had to be smaller and much more compact than today, and housing was closely interspersed with industrial and commercial areas. Even after the advent of streetcars, walking remained a primary mode of transport in cities.

The importance of walking in traditional cities and towns was

Walking in traditional cities and towns was an important part not only of transportation but also of social life and recreation.

reflected in urban design. Wide sidewalks were common, and stores took advantage of pedestrian traffic with ground-level window displays. Walking was an important part not only of transportation but also of social life and recreation.

The extent of walking diminished as automobiles became widespread. The automobile was a convenient, readily-accessible transportation mode from home to workplace, and allowed commuters to live much farther from their jobs than in the past. As automobiles became more affordable, people increasingly chose to live in lower-density suburbs designed for the automobile.

Because walking trips are inherently limited to a few miles, cities had to be smaller and much more compact than today, and housing was closely interspersed with industrial and commercial areas.

Automobiles had significant impacts on urban design. Stores were moved back from the street to make space for parking. Neighborhoods were sometimes built with limited provision for pedestrians. Sidewalks were at times narrowed to increase roadway capacity. Homes and businesses were oriented around the garage and the parking lot rather than the street front and sidewalk. These changes often diminished the safety, ease, and pleasure of walking.

Development in San Mateo County over the past seven decades of the post-World War II era has often been auto-oriented. While there are fine examples of compact, pedestrian-friendly development (mainly around Caltrain stations) and new transit-oriented projects being planned and built, much of the county's urbanized area comprises single-use districts accessible most conveniently by car. Consequently, urban design focuses on accommodating the needs of the automobile.

Yet walking holds great promise as an alternative to short automobile trips in San Mateo County. The average annual temperature in the county is a comfortable 68 degrees, ice and snow are nowhere to be seen, and average annual rainfall is only 20 inches.³⁷ In addition, the terrain is relatively flat in much of the urbanized portion of the county. Furthermore, public policy in San Mateo County increasingly supports

³⁷ <http://www.sanmateocountycvb.com/film/about/weather.html>.

changes in the built environment that support active transportation on foot and by bicycle.³⁸ County residents are environmentally conscious and increasingly interested in the health benefits of active transportation. Although rail lines, freeways, and wide arterial streets can be barriers to pedestrian access in some parts of San Mateo County, many trip origin and destinations are in comparatively close proximity. Examples include the many residential neighborhoods in proximity to downtowns and to businesses along arterial street corridors in the county.

Profile of Pedestrians

In 2015 an estimated 15% of all person trips that began and ended within San Mateo County were on foot. An estimated 9% of all person trips originating in San Mateo County, including both those with a destination in the county and those outside of the county, were by walking. However, only an estimated 2.5% of people travelling to work in San Mateo County commuted by foot.

While most County residents rely on the automobile for their daily transportation needs, some residents have no other option but to walk. Children often walk to and from school, if the school is nearby, or to a transit stop. Elderly residents with impaired vision or other limitations may not be able to drive, but may still desire to independently fulfill their shopping or recreational needs by walking. Persons with disabilities that do not preclude travel on foot represent another group for whom walking, or walking combined with transit, may be the only mobility option. Furthermore, an estimated 5.7% of households in San Mateo County did not own or have access to an automobile.³⁹ People in these zero-vehicle households have to rely on alternatives to the automobile, beginning with travel on foot.

While most County residents rely on the automobile for their daily transportation needs, some residents have no other option but to walk.

Walking is a part of almost every trip, even if the walk portion is to and from a private automobile. As such, most people who reside and/or work in San Mateo County have a practical stake in the safety, convenience, quality, and comfort of the walking environment.

Issues

Pedestrian Facilities

The pedestrian infrastructure is comprised of the physical links between origins and destinations of walking trips and the supporting devices that facilitate travel on foot. This section describes the elements of this infrastructure and explains how land use decisions and practices encourage or discourage its use.

Sidewalks are the staple element of the pedestrian infrastructure. Off-street paths, typically shared with bicyclists, supplement the sidewalk network. Pedestrian under- and over-crossings of freeways and rail lines provide essential links that overcome barriers to pedestrian travel.

Sidewalks are the staple element of the pedestrian infrastructure.

³⁸ For example, see *San Mateo County Health System, Health Policy and Planning, Building Health into San Mateo County Cities: Resources and Case Studies, Winter 2010*.

³⁹ *US Census Bureau, Selected Housing Characteristics, 2010-2014 American Community Survey 5-Year Estimates*.

Most walking trips involve crossing a street. Therefore, crossing signals, marked crosswalks, and signs alerting automobiles of the presence of pedestrians are ancillary parts of the pedestrian infrastructure. In San Mateo County, as elsewhere in the Bay Area, many pedestrian crossings are equipped with pedestrian signal heads. These are sometimes supplemented by countdown signals that display the time remaining for safely crossing the street. For school children, human crossing guards give added protection against car traffic. At some street crossings, audible signals for the visually impaired provide an important support for pedestrian travel. Another provision for persons with disabilities is the curb cut or ramp, a portion of the sidewalk that slopes to the level of the roadway to facilitate crossing.

Land use has a major influence on use of the pedestrian network. Some areas of San Mateo County have no nearby destinations convenient for walking, such as parks or local markets. There are residential, office, and industrial areas that either have no sidewalks or lack a continuous connection to a wider sidewalk network. Such areas contribute to regional congestion and air pollution by inducing more automobile use. In addition, they also isolate those residents who cannot drive as well as those employees who may desire an alternative to the automobile for either commuting to and from work or for short trips during the work day. While some of San Mateo County fits this description, there are also good examples of pedestrian-friendly neighborhoods and commercial districts, for example the environs of downtown areas in San Mateo County.

Some areas of San Mateo County have no nearby destinations convenient for walking, such as parks or local markets.

Neighborhoods

In general, the county's oldest residential neighborhoods are well suited for walking. Such neighborhoods are generally located close to El Camino Real and Caltrain stations, where commercial activities, public buildings and other important locations are concentrated. Although El Camino Real can present a noisy, intimidating barrier to pedestrian movement, it also serves as a destination for those living on nearby residential streets. The residential areas that surround the downtowns of Burlingame, San Mateo, San Carlos, Menlo Park, Redwood City, and other San Mateo County cities offer low-traffic, tree-lined streets that invite walking to nearby destinations.

Shopping Districts and Malls

Commercial areas that developed before the automobile became the primary mode of transportation in San Mateo County and are better suited for walking than those that have developed in more recent decades. These traditional downtown and neighborhood commercial districts have buildings that are sited close to the sidewalk and the street to invite the pedestrian to look in display windows, as well as provide a sense of enclosure, shelter and protection. Their streetscape often features trees for visual amenity and shade, as well as other amenities such as pedestrian seating and pedestrian scale lighting. These traditional streets are narrower than suburban arterials and thus induce drivers to slow down. Slower car speeds in turn make them safer and more comfortable to cross.

These traditional downtown and neighborhood commercial districts have buildings that are sited close to the sidewalk and the street to invite the pedestrian to look in display windows, as well as provide a sense of enclosure, shelter and protection.

In contrast, auto-oriented commercial locations are less pedestrian-friendly. Shopping malls, for example, are typically surrounded by large expanses of parking lot which the pedestrian must cross (all the while

keeping a wary eye out for parking and un-parking motor vehicles) in order to reach the mall itself. Both regional shopping malls and strip malls on arterial streets are set back from the street and its sidewalk, hence less accessible to pedestrians and transit patrons who board and alight at curbside. Being set back from the street also means that shopping malls and strip malls do not contribute to the sense of enclosure along the street front that characterizes traditional main streets.

Schools

While school sites in San Mateo County are not typically located on busy arterial streets, some students commuting on foot or by bicycle are required to cross these streets in order to reach their campus. Crosswalks with raised center medians, crosswalk pedestrian signal heads and countdown signals, and crossing guards can serve to address safety concerns at these locations. Even in the calmer street environs of schools in residential areas, traffic congestion and potential traffic safety hazards in the vicinity of school sites during drop-off and pick-up times can present challenges for students bicycling or walking to school. Comprehensive Safe Routes to School programs can effectively address many of these challenges.

Bus Stops

Although bus stops are generally accessible by sidewalk, pedestrian amenities such as lighting, benches and shelters are sometimes inadequate. These conditions can discourage transit use, or at minimum detract from the transit user's experience. Provision of safe, convenient, comfortable, and direct pedestrian routes to transit stops is important to encourage use of public transit.

Barriers to Pedestrian Access: Rail Lines and Freeways

In recent years, Caltrain has substantially improved pedestrian access and safety at Caltrain stations, grade crossings, and right of way in the county. These improvements include pedestrian and vehicle crossing gates at stations and at-grade crossings, as well as climb-proof mesh fencing along sections of the right of way.

Since Caltrain is not grade-separated in most locations, long walking distances between crossings make walk trips to destinations on the other side of the tracks much less convenient.

Despite these impressive improvements, the Caltrain tracks at times present a barrier to pedestrian travel that is analogous to the barrier effect of the US 101, I-280, and I-380 freeways. Since Caltrain is not grade-separated in most locations, long walking distances between crossings makes walk trips to destinations on the other side of the tracks much less convenient, and

thus, may discourage walking as an alternative to driving for otherwise short trips.

The extent of the highway and rail line barrier effect on pedestrian travel continues to be an important issue in San Mateo County. Of the 83 road crossings over I-280, US 101, Highway 1, and Caltrain, for example, 17 (or 20%) had no sidewalk on either side and another 13 (or 16%) had a sidewalk on only one side of the crossing.⁴⁰

Pedestrian access to Caltrain stations, as well as to bus stops and BART stations, can be impeded by uncomfortable, inconvenient, and at times unsafe intersection crossing conditions in the vicinity of and en route to these transit facilities. In some cases, inadequate sidewalk conditions and poor lighting along access routes to transit can also discourage walking to transit stops.

⁴⁰ *San Mateo County Comprehensive Bicycle and Pedestrian Plan, Adopted September 8, 2011, p. 15.*

BART Stations

BART has promulgated and is implementing an excellent set of station access guidelines that include attention to pedestrian safety and convenience, as well as to accessibility for persons with disabilities.⁴¹ Since all BART tracks are grade separated, they do not usually act as barriers to pedestrian movement.

Arterial Streets

The San Mateo County Comprehensive Bicycle and Pedestrian Plan has identified major roadways like El Camino Real, Woodside Road, and Highway 1 in San Mateo County as having “high traffic volumes and infrequent crossings,” along with limited pedestrian amenities, and auto-oriented street frontage that in combination “act as pedestrian barriers.”⁴² The innovative Grand Boulevard Multimodal Transportation Plan presents solutions to some of the challenges facing pedestrians who wish to safely and comfortably cross as well as walk along such streets. This important and highly promising initiative to change the pedestrian environment for the better on El Camino Real advocates more pedestrian-friendly intersections, more compact development at increased densities near transit stations, better enclosure of the street front, and increased landscape and urban design amenity.⁴³ These improvements to El Camino Real may become a model for other arterial streets in San Mateo County.

Sophisticated tools for planning and engineering more pedestrian-friendly arterial streets in San Mateo County and elsewhere have emerged in recent years. These include guidance for pedestrian level of service analysis provided in *NCHRP Report 16: Multimodal Level of Service Analysis for Urban Arterial Streets*⁴⁴ and *Designing Walkable Urban Thoroughfares: A Context Sensitive Approach*,⁴⁵ a set of street design guidelines published under the auspices of the Institute of Transportation Engineers and the Congress for the New Urbanism. The Caltrans Complete Streets Program,⁴⁶ which emphasizes provision of pedestrian and bicycle facilities into street design as a matter of course, provides powerful support for efforts to accommodate pedestrian needs. The Grand Boulevard Plan offers the opportunity to put all of this guidance into practice in San Mateo County as an example of best practices in arterial street design.

Commercial/Industrial Areas

Many large employment sites in San Mateo County are located near US 101, in facilities with at times limited pedestrian access. They are typically set back far from the street, surrounded by parking, in some places lack continuous sidewalk connections to housing and shopping, and are located far from residential areas. Consequently, these areas are often heavily reliant on private auto trips for access.

Safe Routes to School

In 2011, C/CAG initiated the San Mateo County Safe Routes to School (SRTS) Program, which is primarily funded by a combination of federal funds received from the Metropolitan Transportation Commission’s (MTC’s) Regional SRTS Program and local Measure M (\$10 Vehicle Registration Fee) funding. The overall goal of the SRTS Program is to enable and encourage children to walk or bicycle to schools by

⁴¹ See http://www.bart.gov/docs/planning/access_guidelines.pdf.

⁴² *San Mateo County Comprehensive Bicycle and Pedestrian Plan*,.

⁴³ http://www.grandboulevard.net/images/stories/documents/DraftCorridorPlan/gbi_corridor_plan_low_res.pdf.

⁴⁴ http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_616.pdf.

⁴⁵ *Institute of Transportation Engineers and the Congress for the New Urbanism, 2010.*

⁴⁶ http://www.dot.ca.gov/hq/tpp/offices/ocp/complete_streets.html.

implementing projects and activities to improve health and safety, and also reduce traffic congestion due to school-related travels. The Program provides student safety education, outreach, encouragement, and evaluation activities in addition to performing walk and bike audits to document factors and barriers that impacts safe walking and bicycling for students. The program also addresses safety concerns by encouraging greater enforcement of traffic laws, educating the public, and exploring the ways to create safer streets. The San Mateo County Office of Education coordinates the SRTS Program for San Mateo County schools.

Complete Streets

There is increasing support nationally,⁴⁷ within California,⁴⁸ and in San Mateo County⁴⁹ and throughout the Bay Area for provision of “complete streets.” These are roadways that safely and comfortably accommodate pedestrians and cyclists as well as motor vehicles. Bicyclists in San Mateo County have a big stake in this policy since most cycling and nearly all cycling for utilitarian purposes takes place on streets and highways within the county.

Improvement Plans and Programs

There are many established transportation funding programs that can finance improvements to pedestrian facilities. On the local, regional, and state levels, these include San Mateo County’s Measure A, California’s Transportation Development Act and Safe Routes to

These federal funds are typically sub-vented to the Metropolitan Transportation Commission for distribution regionally.

Schools programs, and the Bay Area’s Transportation Fund for Clean Air, Livable Communities, and Safe Routes to Schools programs. On the federal level there are a variety of other programs funded by the federal Fixing America’s Surface Transportation (FAST) Act, including Enhancements, Congestion Mitigation and Air Quality Improvement, Livable Communities, and Safe Routes to School. These federal funds are typically sub-vented to the Metropolitan Transportation Commission for distribution regionally. C/CAG’s Transit-Oriented Development program encourages multi-use, higher-density development located close to transit, and therefore encourages planning for pedestrian and circulation within the specific projects.

A Framework for Achieving a Better Pedestrian Environment in San Mateo County

Progress toward improvement of the pedestrian environment in San Mateo County requires a planned approach. An overarching vision and a more specific goal to accompany it are needed to keep on course. A set of policies comprises the means to achieve the goal and realize the broad vision. Specific objectives and an associated set of performance measures are needed to chart the amount and pace of progress toward achievement of policies, goal, and vision.

⁴⁷ See <http://www.completestreets.org/>.

⁴⁸ See http://www.dot.ca.gov/hq/tpp/offices/ocp/complete_streets.html.

⁴⁹ See <http://www.grandboulevard.net/projects/complete-streets.html> and http://www.mtc.ca.gov/planning/bicyclespedestrians/routine_accommodations.htm.

Pedestrian Environment Vision, Goal, and Policies

Vision

A San Mateo County in which walking for both active transportation and recreation is safe, comfortable, and convenient.

Goal⁵⁰

Promote safe, convenient, and attractive pedestrian travel in support of healthy, active communities while reducing reliance on the automobile for short trips.

Policies

Integration with Public Transit

- Encourage local agencies and transit operators, such as SamTrans, Caltrain and BART, to work cooperatively to promote walking to transit by improving access to and through stations and stops, installing adequate pedestrian seating, and ensuring opportunities for access by people with disabilities.

Encouragement, Education, and Incentives

- Work with local, county and regional agencies and organizations – including those with a focus on public health – to develop effective encouragement programs that promote walking as a safe, convenient and healthy mode of transportation.
- Provide funding for effective support programs and events that facilitate mobility among a broad range of potential users, including pedestrians and people with disabilities.
- Encourage local school districts to implement projects and activities that promote walking to school among students and staff, such as Safe Routes to School initiatives.
- Promote integration of pedestrian-related services and activities into broader countywide transportation demand management and commute alternatives programs.
- Provide support for programs that educate drivers and pedestrians about their rights and responsibilities, as well as traffic education and safety programs for adults and youth.

Safety

- Promote collaboration among the Sheriff's Office, local police departments and other county and local agencies to develop and administer effective safety, education and enforcement strategies related to pedestrians.

Complete Streets

- Comply with the complete streets policy requirements of Caltrans and the Metropolitan Transportation Commission concerning safe and convenient access for pedestrians, and assist local implementing agencies in meeting their responsibilities under the policy.
- For transportation projects funded by county or regional agencies, require that local implementing agencies incorporate "complete streets" principles as appropriate, provide at least equivalently

⁵⁰ A full set of pedestrian goals was developed for the San Mateo County Comprehensive Bicycle and Pedestrian Plan, Adopted September 8, 2011.

safe and convenient alternatives if projects result in changes to pedestrian access, and provide temporary accommodations for pedestrians during construction, if such accommodations can be reasonably made.

- Monitor countywide transportation projects to ensure that the needs of pedestrians are considered in programming, planning, design, construction, operation and maintenance, and encourage local agencies to do the same for their projects.
- Provide support to local agencies in adopting policies, guidelines and standards for complete streets and routine accommodation of pedestrians in all new transportation projects.
- Strongly encourage local agencies to adopt policies, guidelines, standards and regulations that result in truly pedestrian-friendly land use developments, and provide them technical assistance and support in this area.

Traffic Calming

In areas with high levels of pedestrian traffic, encourage cities to implement appropriate traffic calming measures to slow approaching car speeds and thus lengthen reaction time available to both drivers and pedestrians in the event of a potential conflict.

Barriers to Pedestrian Access and Circulation

Reduce barriers to pedestrian access and circulation, including those caused by gaps in the pedestrian facilities network and the severance effect on pedestrian travel due to rail lines, freeways, and major arterial streets.

Pedestrian Objectives

1. Increase the number of pedestrian signal heads, countdown signals and accessible pedestrian push buttons in San Mateo County.
2. Increase the number of intersections with enhanced treatments for pedestrian safety and comfort, such as raised center medians, in-pavement lights, pedestrian-activated crossing signals, and raised crosswalks appropriate to the location.
3. Increase the sidewalk network in San Mateo County, where supported locally, by closing gaps, restoring deteriorated sidewalks, adding accessible curb ramps and providing adequate maintenance.
4. Increase pedestrian mode share for all trips originating in San Mateo County over both a ten-year and twenty-five-year horizon.
5. Increase pedestrian mode share for trips to work over both a ten-year and twenty-five-year horizon.

8. PUBLIC TRANSPORTATION

Background

Public transportation is an important component of the *mobility* (the movement of people and goods) and *accessibility* (the ease of reaching desired goods, services, and activities) strategies of urban areas, particularly, those experiencing substantial traffic congestion. A comprehensive approach to planning public transit services and facilities, however, takes into account many factors beyond congestion. Todd Litman of the Victoria (B.C.) Transportation Policy Institute describes this more comprehensive approach in the following terms:

“Modern planning ... tends to give more consideration to other planning objectives besides congestion reduction, and to a wider range of accessibility improvement strategies, including various mobility management strategies and smart growth land use policies. More comprehensive planning tends to place a higher value on public transit investments, particularly when implemented in conjunction with supportive policies such as road and parking pricing, commute trip reduction programs, and transit oriented land use development.”⁵¹

Public transportation has a variety of roles in San Mateo County and other urban areas. Transit vehicles carry people to and from work, serve those who have no alternative means of travel, provide an important alternative for those who do have other travel choices, and complements other transportation modes. This complementary function includes connection to other surface transit services (bus and rail), to pedestrians and bicyclists, to air passenger terminals, and to the automobile as an access mode to transit.⁵² Transit service quality factors include the following⁵³:

- Coverage: the route network is in close proximity to major destinations
- Comfort: vehicles and facilities are safe, clean, well-lit, accessible
- Travel Time: services are frequent and direct; transit priority measures are used
- Reliability: vehicle breakdowns are minimized; transfer connections are made; services are on time
- Convenience: good pedestrian access to transit stops; stops and platforms are well-designed and well-maintained; accessible vehicles are used
- Courtesy: passengers are treated with politeness and respect; staff provides reliable information to customers; complaints are investigated and corrective action is taken promptly

Existing System

There are three primary public transit operators in San Mateo County: BART, Caltrain, and SamTrans. This section gives a brief description of the county's existing transit system and summarizes the most significant changes to the public transportation system since the Countywide Transportation Plan 2010.

⁵¹ Litman, Todd, *Smart Congestion Reduction II: Re-Evaluating the Role of Public Transit for Improving Urban Transportation*, p.2. See http://www.vtpi.org/cong_reliefII.pdf.

⁵² Vuchic, Vukan, *Transportation for Livable Cities*, p. 37.

⁵³ Litman, Todd, *Valuing Transit Service Quality Improvements*, p. 3. See <http://www.vtpi.org/traveltime.pdf>.

The Bay Area Rapid Transit District (BART)

BART operates electrified, grade-separated heavy-rail trains between the East Bay and Millbrae via downtown San Francisco. BART service was extended in 2003 from Colma to both the San Francisco International Airport and Millbrae, where a direct transfer to Caltrain is provided. There are six BART stations in San Mateo County: Daly City, Colma, South San Francisco, San Bruno, Millbrae, and the San Francisco International Airport. Each weekday over a twenty-hour service day, there are 292 trains serving Daly City and 151 serving Millbrae.⁵⁴ In 2015, the average weekday BART station entries in San Mateo County, in numerical order, were Daly City (10,085), Millbrae (7,080), San Francisco International Airport (6,995), Colma (4,761),

There are six BART Stations in San Mateo County with a combined daily average of 36,577 station entries.

San Bruno (3,975), and South San Francisco (3,681).⁵⁵ **Table 16** displays BART station access attributes in San Mateo County. **Table 17** lists average weekday station entries in 2015. **Figure 3** shows the BART alignment and BART station locations in San Mateo County.



Currently BART's service across its network has capacity constraints, including the number of revenue vehicles it operates and its train control system. In 2013 BART completed its Sustainable Communities Operations Analysis, identifying capital and service improvements required to meet expanding demand through 2050. Consistent with this, BART is making investments that will lead to an expansion of its core capacity, including a new fleet of rail cars, additional train storage, a modernized train control system, and expansion of its Hayward Maintenance facility. While future service plans have not been confirmed yet, these new capital investments will allow for an increase of BART service between San Mateo County stations and regional destinations over current levels.

⁵⁴ <http://www.bart.gov/schedules/byline>.

⁵⁵ <http://www.bart.gov/about/reports/profile>.

Table 16: San Mateo County BART Station Access Attributes⁵⁶

Station	Access Mode from Home to BART					
	Median Distance (All Modes)	Walk	Bicycle	Transit	Drive Alone/ Carpool	Drop off/taxi/ other
Daly City	1.36 miles	31%	3%	16%	24%	26%
Colma	1.19 miles	25%	3%	8%	44%	19%
South San Francisco	1.46 miles	34%	4%	5%	34%	24
San Bruno	1.54 miles	29%	5%	3%	42%	21%
Millbrae	4.58 miles	15%	3%	16%	48%	19%

Note: Total percentages by station may not equal 100% due to rounding

Table 17: San Mateo County BART Station Average Weekday Entries⁵⁷

Station	Station Entries
Daly City	10,085
Colma	4,761
South San Francisco	3,681
San Bruno	3,975
San Francisco Airport	6,995
Millbrae	7,080
Total	36,577

Source: BART, 2015 Ridership by Station

⁵⁶ <http://www.bart.gov/about/reports/profile>.



Figure 3: BART and Caltrain Alignment and Stations in San Mateo County

Peninsula Corridor Joint Powers Board (Caltrain)

Caltrain is a commuter rail service that operates diesel-powered trains between downtown San Francisco and Gilroy, with fourteen stations along the urban bayside corridor of San Mateo County. Weekend-only service is provided to two stations, Broadway in Burlingame and Atherton. As of 2016, Caltrain operated 46 northbound and 46 southbound trains in San Mateo County each weekday, 18 trains in each direction on Saturday, and 16 trains in each direction on Sunday.⁵⁸ As of 2015, an average of 18,205 passengers boarded Caltrain stations in San Mateo County each weekday.⁵⁹ **Table 18** shows average weekday boardings for each of the twelve Caltrain stations in San Mateo County with weekday service. **Figure 42** displays the Caltrain alignment and Caltrain stations in San Mateo County.

Table 18: Average Weekday Ridership at San Mateo County Caltrain Stations

Station	Boardings
Bayshore	254
South San Francisco	472
San Bruno	682
Millbrae	3,536
Burlingame	998
San Mateo	2,061
Hayward Park	367
Hillsdale	2,706
Belmont	699
San Carlos	1,435
Redwood City	3,233
Menlo Park	1,762
Total	18,205

Source: Caltrain, 2015 Annual Passenger Count

Caltrain is owned and operated by the Peninsula Corridor Joint Powers Board (JPB), which is comprised of three members from each of the JPB partners: San Francisco, San Mateo, and Santa Clara Counties.⁶⁰ The Caltrain system has been substantially upgraded since adoption of the Countywide Transportation Plan in 2001. These improvements have included new track, rolling stock, signal systems, and station improvements. In 2004, Caltrain inaugurated express “Baby Bullet” service, which reduced travel time between San Francisco and San Jose to less than one hour.

More recently, Caltrain has undertaken the Caltrain Modernization program, a nearly \$2 billion investment that will upgrade the signal system for increased safety and performance and replace the

⁵⁸ <http://www.caltrain.com/schedules.html>.

⁵⁹ http://www.caltrain.com/Assets/_Marketing/pdf/2015+Annual+Passenger+Counts.pdf.

⁶⁰ *Caltrain Strategic Plan 2004/2023*, p. 7.

diesel-powered trains with electric multiple unit trains.⁶¹ The improvements are expected to be complete in 2020 and will result in significantly lower emissions, reduced noise, improved frequency and speed, and increased ridership. The Caltrain corridor will also be used in the planned California High Speed Rail system (see Potential New Transit Services below). The California High-Speed Rail Authority (CHSRA) has approved nearly \$800 million to electrify the Caltrain line and provide three new grade separations in San Mateo, \$713 million for the Peninsula Corridor Electrification Project and \$84 million to the City of San Mateo, respectively. Caltrain and the High-Speed Rail Authority will share approximately 50 miles of tracks between San Jose and San Francisco once the high-speed rail service begins operation, as early as 2025.

San Mateo County Transit District (SamTrans)

The San Mateo County Transit District (SamTrans), which was formed through the consolidation of eleven different city bus systems, began operating fixed-route public bus transit service throughout the San Mateo County in 1976. A year later, SamTrans began mainline service from Palo Alto in Santa Clara County to downtown San Francisco, with intermediate stops throughout San Mateo County. Also in 1977, SamTrans inaugurated paratransit service to the mobility-impaired through the Redi-Wheels service. In addition, SamTrans offers free community shuttle in Brisbane/Bayshore and East Palo Alto, an extensive array of employer shuttles, as well as free shuttles to BART and Caltrain stations.

SamTrans fixed-route service comprises 76 routes, including the KX express route to downtown San Francisco via the San Francisco International Airport. In the fiscal year ending June 30, 2015, SamTrans fixed-route buses carried 13,158,700 passenger trips.⁶² Ridership on SamTrans paratransit services in the same period was 329,040.⁶³ In 2013, SamTrans implemented recommendations from the SamTrans Service Plan, which included modifications to fixed-route service to more efficiently serve its customers and support long-term, financially viable bus service.⁶⁴ **Figure 4** displays the SamTrans fixed-route network available for download on the SamTrans website.

⁶¹ <http://www.caltrain.com/projectsplans/CaltrainModernization/Modernization.html>.

⁶² http://www.samtrans.com/about/Bus_Operations_Information/Ridership.html.

⁶³ http://www.samtrans.com/about/Bus_Operations_Information/Ridership.html.

⁶⁴ http://www.samtrans.com/Planning/Planning_and_Research/SamTransServicePlan.html.



Figure 4: Map of SamTrans Fixed-Route Network

Shuttle Services

Shuttle service can be classified as commuter or community shuttles. Commuter shuttles provide the first/last mile connection to and from regional transit services, such as BART and Caltrain. Shuttles also provide first/last mile service to residential neighborhoods that are located near or along the routes that serve employment centers. Commuter shuttles typically operate on weekdays during peak hours and provide access to employment centers. Community shuttles typically provide mid-day and/or weekend service for shopping, medical appointments, dining and other purposes. Community shuttles are generally used for shorter trips within a community and often provide lifeline transportation mobility to low income populations and seniors. Other shuttles represent a mixture of both commuter and community shuttles.

Lead agencies for the shuttles include, but are not limited to Caltrain, municipalities, Commute.org, SamTrans, and the private sector. Staff from C/CAG, Commute.org, SamTrans, and the San Mateo County Transportation Authority have been working together to better coordinate and improve the shuttle program in the county. Together they developed a Shuttle Business Practices Guidebook (2012) and are currently implementing the near term recommendations.

Ferry Service

The revival of passenger ferry in San Mateo County began on October 19, 2009 with groundbreaking ceremonies for a new passenger ferry service at Oyster Point in South San Francisco. Ferry service between the South San Francisco and the East Bay began in June 2012. The San Francisco Bay Ferry provides weekday-only, commuter service between Oakland's Jack London Square or Alameda Main Street terminals in the East Bay and South San Francisco's Oyster Point Marina terminal.⁶⁵ The service operates three departures from Oakland and Alameda during the morning commute period and three departures from South San Francisco to Oakland/Alameda during the evening commute period.

The San Francisco Bay Area Water Emergency Transportation Authority (WETA) 2016 Strategic Plan envisions potential ferry service from Redwood City as early as 2022. The service would be part of an overall expansion in service and infrastructure to expand the Bay Area system of ferries and provide critical emergency response.⁶⁶

Potential New Transit Services

Work is currently underway to enhance transit services in San Mateo County. Caltrain is implementing the Caltrain Modernization Program that will upgrade the performance, operating efficiency, capacity, safety and reliability of Caltrans's commuter rail service, while also providing infrastructure that will help prepare the Peninsula Corridor to accommodate the California High-Speed Rail service. Caltrain and high-speed trains will primarily share Caltrans's existing tracks providing service that remains substantially within the existing Caltrain corridor creating a "blended" system of operation as early as 2025.⁶⁷ Caltrain has future plans for capital projects, including Caltrain Modernization Phase 2, which consists of conversion to a fully-electrified fleet with 8-car train sets, platform extensions or modifications to support 8-car trains, and level boarding at all Caltrain stations.

Phase 1 of the California High-Speed Rail system will connect the New Transbay Terminal in downtown San Francisco to the Los Angeles Basin via the Diridon Station in San Jose and the Central Valley, with

⁶⁵ <http://sanfranciscobayferry.com/route/oakland/ssf>.

⁶⁶ <http://sanfranciscobayferry.com/sites/default/files/weta/strategicplan/WETAstrategicPlanFinal.pdf>

⁶⁷ <http://www.caltrain.com/projectsplans/CaltrainModernization/BlendedSystem.html>.

extensions to Sacramento and San Diego in Phase 2. The primary goal of high-speed rail is to serve as an alternative to airplane and long-distance automobile travel by connecting major population and multimodal transit centers throughout the state, including the Peninsula corridor. The California High-Speed Rail Authority's 2016 Business Plan describes the sequencing to initiate service between the Central Valley and Silicon Valley by 2025.⁶⁸ The initial service would be between San Jose and an interim station north of Bakersfield. Pending funding, the initial service would include service to San Francisco via the Caltrain corridor, with an intermediate station in Millbrae, and extensions to Merced and Bakersfield. The Authority is studying the option for an additional station in Redwood City.

SamTrans completed the El Camino Corridor Bus Rapid Transit Phasing Study in 2014 and is in the process of evaluating options to implement enhanced transit service on El Camino Real. SamTrans, C/CAG and VTA prepared the Grand Boulevard Multimodal Corridor Plan (2010), which looked at the potential market for enhanced transit services on El Camino Real and developed some qualitative goals for future transit service.⁶⁹ The SamTrans Service Plan (2013) includes a comprehensive review of fixed route bus service in the county and makes near-term recommendations to consolidate existing bus service on El Camino Real to improve reliability and frequency.⁷⁰ SamTrans will build upon the work from these plans to determine the near- and long-term transit vision for El Camino Real.

In addition, the Grand Boulevard Initiative is a collaboration of 19 cities, counties, local and regional agencies united to improve the performance, safety and aesthetics of El Camino Real. The Grand Boulevard vision is for El Camino Real to "achieve its full potential as a place for residents to work, live, shop and play, creating links between communities that promote walking and transit and an improved and meaningful quality of life." C/CAG, Joint Venture: Silicon Valley Network, SamCEDA, SamTrans, and VTA work in collaboration to coordinate the local planning efforts along El Camino Real.⁷¹

Other potential future public transit improvements in San Mateo County include the possible introduction of commuter rail service across the Dumbarton Rail Bridge from Alameda County to Redwood City. In addition, other options for increasing the transit capacity of the Transbay corridor are under study.⁷³ One such option is a second Transbay rail crossing (using BART or standard-gauge rail) that would be closely integrated with existing rail stations.⁷⁴

Issues

Effective Public Transportation

Increased use and effectiveness of public transportation requires a comprehensive strategy. Elements of such a strategy include the following⁷⁵:

Enhanced Service – faster travel times (competitive with the automobile), increased frequency, service coverage, operating hours

⁶⁸ http://www.hsr.ca.gov/docs/about/business_plans/2016_BusinessPlan.pdf.

⁶⁹ <http://www.grandboulevard.net/projects/multi-modal-corridor-plan>.

⁷⁰ http://www.samtrans.com/Planning/Planning_and_Research/SamTransServicePlan.html.

⁷¹ <http://www.grandboulevard.net/>.

⁷³ <http://mtc.ca.gov/our-work/plans-projects/other-plans/core-capacity-transit-study>.

⁷⁴ See

http://www.spur.org/sites/default/files/publications_pdfs/SPUR_Designing_the_Bay_Area%27s_Second_Transbay_Rail_Crossing.pdf.

⁷⁵ See <http://www.vtpi.org/tdm/tdm47.htm>.

Improved Connections – customer-focused and coordinated schedules between bus, rail, and ferry services; prepaid fare zones; integrated fare media

Transit Priority – dedicated bus lanes, “queue jump” lanes, bus priority at traffic signals

Reallocation of Street Space to Pedestrians and Transit Vehicles – wider sidewalks for access and egress from transit stops and stations, bus bay or pullover space, dedicated transit lanes within the street right of way

Improved Stops and Stations – shelters (enclosed waiting areas), seating, lighting, way finding signs and service information, washrooms, refreshments, Internet services, and other convenience and comfort features

Improved Rider Information and Marketing Programs – real-time information on transit vehicle arrival

Transit-Oriented Development – increased densities and land use mixes around transit stations, improved pedestrian and bicycle access to and egress from stations

Enhanced Security and Safety for Transit Patrons – on transit vehicles and at transit stops and stations

Bicycle and Transit Integration – bicycle access to and from transit facilities, bike-sharing near transit stops

Improved Access to and Egress from Transit Stops and Stations – sidewalks, bicycle lanes, paved walking and cycling paths, safe street crossing opportunities, balanced with passenger drop-off areas and managed/shared parking supply

A Framework for Optimizing the San Mateo County Public Transit System

There needs to be a structured approach to making the public transit system in San Mateo County as effective and efficient as possible. This in turn requires a comprehensive vision accompanied by a more explicit goal and set of policies by which to achieve the goal. These policies are operationalized through a set of objectives. Progress toward achievement of these objectives is charted through performance measures. BART, SamTrans and Caltrain have each developed Strategic Plans and will be updating their respective plans over time. These Strategic Plans outline the goals, policies and objectives for their systems as well as performance metrics. C/CAG’s Vision, Goal, Policies and Objectives for public transit listed here are consistent with those of the Strategic Plans of BART, SamTrans, and Caltrain. Each organization is responsible for developing its policies related to these principles. Performance measures that can be useful in tracking progress toward meeting the objectives or in defining needs and gaps in transit serve in future planning and programming efforts are provided in Appendix A.

Transit System Vision, Goal, and Policies

Vision

A public transportation system in San Mateo County that provides essential mobility for all, offers a competitive alternative to the automobile, and contributes to environmental and socio-economic well-being.

Goal

Develop and maintain a seamless, safe and convenient public transportation system in San Mateo County focused on the customer.

Policies

Develop Improved Service Efficiency and Cost-effectiveness to Increase the Utility of Public Transportation

- Continue to tailor public transportation service in response to the needs of the traveling public.
- Provide coordinated transit services within target markets of the San Mateo County public transportation system.
- Reduce where possible conflicts between modes or services that are resulting in congestion and higher operating costs.
- Identify ways to reduce operating cost through the application of new or different technologies for propulsion, communication, system operation and management.
- Explore ways to emphasize the role of transit hubs of regional importance to improve service coordination.

Enhance Access to Public Transit

- Work cooperatively with local law enforcement agencies to improve the safety of passengers while on public transportation vehicles and while getting to and from the service.
- Examine ways to cost-effectively improve the east-west connectivity of public transportation services.
- Continue to research the needs of all transit users including seniors, persons with disabilities, low income and transit-dependent riders, and those with limited English proficiency and explore ways to meet their needs.
- Continue to explore and evaluate amenities to enhance the transit experience and reduce travel times.
- Advocate for funding opportunities to create a more stable, predictable financial base for public transportation in San Mateo County.

Encourage a Customer-friendly Public Transportation System that is Logical, Intuitive, and Easy to Use

- Continue to explore ways to improve the coordination and interface of transit services, schedules, and information among multiple providers within San Mateo County with the goal of developing a seamless network for the user.
- Continue to explore ways, including partnerships with private sector stakeholders, to provide easily understood bus and train service information at transit stations and other stops to reduce customer anxiety about accessing transit service.

Public Transportation Objectives

1. Improve the competitiveness of public transit relative to private transportation for key trips as measured by travel time, reliability and customer satisfaction
2. Lower the cost per passenger, mile and hour for public transit service in the county, discounting for inflation
3. Improve system productivity as measured by passengers per hour and passengers per mile of service provided
4. Increase the public transit mode share of travel to, from and within San Mateo County over both a ten-year and twenty-five-year horizon

9. TRANSPORTATION SYSTEM MANAGEMENT AND INTELLEAGENT TRANSPORTATION SYSTEMS

Background

Transportation Systems Management and Operations (TSM) and Intelligent Transportation Systems (ITS) focus on efficiency improvements to existing transportation infrastructure rather than major investments in system capacity. This approach is often cost-effective, particularly in largely built out areas such as much of San Mateo County to the east of I-280. In these areas, land and construction costs, along with the impacts of major new infrastructure projects, make provision of significant increases in transportation capacity exceedingly difficult. TSM measures comprise a wide array of projects and strategies, including the following⁷⁶:

- Intersection and traffic signal improvements
- Traffic signal timing optimization
- Controller/cabinet/traffic signal head upgrades
- Turning lanes
- Lane assignment changes
- Pavement striping
- Signage and lighting
- Real-time systems operations information
- Incident prevention and response
- Vehicle detectors repair/replacement
- Data collection to monitor system performance



TSM measures such as these are often comparatively low-cost, have limited negative impacts during construction, and can be implemented in a shorter period of time than construction of new transportation system physical capacity elements such as new travel lanes or whole new roadways.

TSM tactics and strategies are an important part of the San Mateo County Congestion Management Program (CMP).⁷⁷ The CMP emphasizes removing traffic congestion bottlenecks at the 53 intersections and 16 roadway links that comprise San Mateo County's Congestion Management System. Local jurisdictions within the county also undertake TSM on the network of local street sections and intersections. The CMP and local jurisdictions rely on the metrics of level-of-service (largely a function of

⁷⁶ Adapted from *Transportation Systems management (TSM) in* <http://www.nctcoq.org/trans/tsm/> and *Operations and Management in* <http://www.vtpi.org/tdm/tdm111.htm>

⁷⁷ See http://www.ccag.ca.gov/pdf/tac/2009/FINAL_SMC_2009_CMP.pdf

travel delay), and travel time to identify the need for and measure the effectiveness of TSM improvements.

Intelligent Transportation Systems

Intelligent Transportation Systems is the collective term for an array of applications of electronics and communications technologies used to solve transportation problems. Examples include systems for automated traffic control at intersections, dissemination of real-time information about traffic congestion, weather conditions and transit services, transit fleet management, automated counting of passenger boarding, and electronic fare payment, electronic bridge and highway toll payment, and both parking electronic payment service and information dissemination about availability of parking spaces.

In 2005, C/CAG and the San Mateo County Transportation Authority completed an *ITS Strategic Plan for San Mateo County*.⁷⁸ The Plan was comprised of seven elements, as follows:

- Freeway/highway management
- Arterial management
- Transit management
- Traveler information
- Parking management
- Emergency/incident management
- Supporting elements

The ITS Strategic Plan emphasized the importance of integrating ITS technologies into the mainstream transportation planning and engineering process. The Plan called for bringing the ITS components that were already deployed in San Mateo County “into full and stable operation”; upgrading existing traffic signal systems with new technology; implementing automated vehicle location on the Caltrain system; providing electronic information signs on transit vehicles and at transit stations; installation of changeable message signs at key locations on freeways and other highways in the county; deployment of closed circuit television (CCTV) cameras at



selected spots along the roadway system to provide emergency response agencies with real-time views on traffic incidents; and an upgrade to the communications infrastructure, including fiber optic networks, that are essential to the functioning of ITS components.

There is a growing array of ITS deployments in San Mateo County. These include traffic adaptive signalization along El Camino Real in Menlo Park, ramp metering at US 101 on-ramps, electronic information signs disseminating transit service information at Caltrain and BART stations in San Mateo

⁷⁸ *San Mateo County ITS Strategic Plan: Final Report.*
http://www.ccag.ca.gov/pdf/documents/San%20Mateo%20County%20ITS%20Strategic%20Plan_A.pdf.

County, changeable information signs at several locations on US 101, electronic fare payment at Caltrain and Bart stations, and smart parking meters in downtown Redwood City, among other examples. These advances in electronics and communications technology in the transportation system have been accompanied by the growing proliferation of smart phones and in-vehicle navigation systems that provide systems users ready access to information about travel conditions in San Mateo County.

The San Mateo County Smart Corridor Project⁷⁹ is one example for advanced ITS deployment in San Mateo County. The ITS deployments envisioned in the Smart Corridor deployment include enhanced transit signal system control on arterial streets interchanging with or parallel to US 101, digital guidance signs for motorists in the event of an incident on US 101, and a prospective traffic management center in San Mateo County.

Issues

The Geographic Scope and Duration of TSM Benefits

TSM not only provides interim solutions to system capacity problems, it can be a continuous approach to optimizing available capacity anywhere in the transportation system.

Since their effects are limited in geographic scope, TSM actions tend to provide short- to medium-range benefits. They are not intended to address longer-term problems at a citywide or countywide scale. Nevertheless, TSM can provide near-term efficiency and safety benefits while a broader approach that integrates land use and multimodal transportation facilities and services is implemented. It is important to

emphasize that TSM cannot by itself solve a community or region's transportation access and mobility problems, but it can reduce their effects for a time in specific locations. Some TSM measures, such as improved information about roadway and transit fleet operations, can have enduring benefits over a wide area.

TSM, Sustainable Transportation Systems, and Sustainable Communities

TSM by itself does not have a substantial impact on community quality of life, as would a major public transit or highway facility, nor does TSM influence population and economic growth as would a transportation system capacity increase. Despite these limitations, there are sustainability benefits in linking TSM and operations to more comprehensive transportation systems planning efforts.⁸⁰ TSM not only provides interim solutions to system capacity problems, it can be a continuous approach to optimizing available capacity anywhere in the transportation system. In fulfilling this role, TSM can contribute to "right-sizing" transportation facilities and potentially reduce transportation's fiscal, social, and environmental impacts. In this sense, TSM is one of the tools in the toolkit for sustainable transportation in San Mateo County and elsewhere.

⁷⁹ See http://www.ccag.ca.gov/smart_corridor.html.

⁸⁰ For a good discussion of linkage opportunities, see *Getting More by Working Together — Opportunities for Linking Planning and Operations*, http://www.ops.fhwa.dot.gov/publications/lpo_ref_guide/prim0403.htm.

Interagency Cooperation and Coordination

To be effective, TSM requires collaboration among state, regional, and local agencies, as well as between those charged with highway and public transit operations. Roadway corridors as well as transit routes readily cross jurisdictional boundaries. Information sharing and coordination among traffic engineers, public works officials, public transport operations planners, and public safety officers is essential for realizing the benefits of TSM. The epitome of this interagency, inter-disciplinary collaboration is the transportation management center, the nerve center for video and data on the highway and public transit systems.⁸¹ C/CAG and the other Bay Area congestion management agencies serve an essential interagency coordination function for TSM. Examples of C/CAG's role in countywide TSM coordination in San Mateo County include development of the biennial Congestion Management Program and the Smart Corridor Project.⁸²

ITS, like the transportation system itself, crosses jurisdictional boundaries. For San Mateo County, this means that all twenty-one cities and the County, as well as Caltrans, C/CAG, the San Mateo County Transportation Authority, SamTrans, Caltrain, and BART need to coordinate on ITS planning, design, and deployments. Other entities, including the Federal Highway and Federal Transit Administration also need to be kept informed and involved as appropriate in ITS implementation within San Mateo County. The ITS Strategic Plan has given strong impetus toward close coordination among these entities. Nevertheless, a continuing emphasis on collaboration across jurisdiction is needed due to the connected nature of ITS technology and the complex institutional context in which ITS is deployed.

Mainstreaming ITS

The San Mateo County ITS Strategic Plan and the Smart Corridor project have given strong impetus toward close coordination among transportation providers within the County.

ITS projects can both enhance the operation of the existing transportation infrastructure and substitute “virtual” capacity for new physical capacity in the transportation system. The latter is most clearly seen in deployment of advanced traffic signal control systems at intersections along arterial street corridors to increase the efficiency of traffic operations. Since ITS is still an emerging field in transportation planning

and engineering, it is sometimes considered to be in a category by itself. In reality, ITS can and should be seen as a potential component of many transportation highway and transit projects, rather than a stand-alone investment competing with more traditional solutions to transportation problems. Thus it is essential to mainstream ITS into the transportation planning, funding, design, and implementation programs throughout San Mateo County.

Funding

ITS technology can be expensive if deployed extensively. Like other infrastructures, the fiber optic networks, traffic signal system controllers, arrays of changeable message signs, and other ITS components require front-end investment in order to realize long-term benefits. The big advantage of ITS investments

⁸¹ For an excellent overview of the eight Caltrans transportation management centers statewide, see *Caltrans TMC Coordination*, <http://leonard.csusb.edu/research/documents/1017FinalReport.pdf>.

⁸² For a description, see *San Mateo County Smart Corridors Program: Concept of Operations* <http://www.ccag.ca.gov/pdf/incident%20management/docs/San%20Mateo%20County%20Smart%20Corridors%20Program102908.pdf>.

is that they often add great value to existing transportation infrastructure, and thus, can yield a high benefit to cost ratio. The potential rewards of investing in ITS should attract the funding needed for ITS deployment. In reality, however, the transportation system in San Mateo County as elsewhere has many other pressing needs, including repair, rehabilitation, and replacement of existing highway and transit infrastructure and equipment. These pressing needs should be met to the extent feasible, but not to the exclusion of productive investments in ITS throughout San Mateo County.

A Framework for Transportation Systems Management and ITS in San Mateo County

The 2005 ITS Strategic Plan for San Mateo County provides a good framework for ITS deployment. The San Mateo County Congestion Relief Plan commits seed funding annually for ITS projects. C/CAG will work with the San Mateo County Transportation Authority (SMCTA), the Metropolitan Transportation Commission (MTC), and the California Transportation Commission (CTC) to develop funding for ITS deployment.

Transportation Systems Management and ITS Vision, Goal, and Policies

Vision

A San Mateo County in which the transportation system is safe, efficient, cost-effective, and environmentally responsible.

Goal

Manage travel efficiently through supply-side measures, including low-cost traffic operations improvements and use of technologies that reduce or eliminate the need for increases in physical capacity.

Policies

Increase Efficiency on Existing Facilities Before Adding New Capacity

- Invest in enhanced traffic signal system capabilities, provision of center left turn pockets, improved incident detection and management, and similar traffic management measures to reduce vehicle delay on San Mateo County roadways before investment in new through lane capacity.

Deploy Advanced Information and Communications Technology to Manage and Reduce Vehicular Travel

- Continue investment in initiatives such as the Smart Corridor project and public transit traveler information systems that disseminate information about real time travel conditions and options to San Mateo County travelers, as well as enhance roadway efficiency.

Deploy Intelligent Transportation System Technologies to Improve Traffic Incident Management

- Traffic incidents on the roadway cause extensive delays and congestion. Deployment of ITS equipment can reduce or minimize those delays and congestion by providing first responders, traffic management personnel, and the traveling public with real-time information and tools. The San Mateo County Smart Corridor project aims at doing that. As funding becomes available, such

projects can be expanded to cover a larger geographic area and major arterials. This allows signal timing to be optimized to flush traffic caused by an incident.

Encourage Deployment of Intelligent Transportation Systems within San Mateo County for Traffic Management, Public Transportation Management, Parking Management, and Traveler Information Applications

- Support investments in advanced traffic detection, traffic signal systems, transit fleet tracking, real time transit, traffic, and parking conditions information dissemination, and travel route guidance throughout the transportation system in San Mateo County.

Foster ITS Innovation through Deployment of Pilot Projects

- Introduce innovative communications and information technology into the San Mateo County transportation system by means of pilot projects where possible in order to increase the chances of successful larger scale deployment.

Share Resources, Risks, and Benefits of ITS Deployment

- Create partnership among agencies to deploy ITS projects in travel corridors, geographic areas, and across travel modes and jurisdictional boundaries to reduce risk, share benefits, and optimize chances for successful ITS deployment.

Deploy Advanced Information and Communications Technology to Manage and Reduce Vehicular Travel

- Continue investment in initiatives such as the Smart Corridor project and public transit traveler information systems that disseminate information about real time travel conditions and options to San Mateo County travelers.

Consider ITS Deployments as both a Complement and an Alternative to new Roadway Capacity

- Identify and prioritize ITS deployments that can enhance existing or planned roadway capacity or substitute for some or all new physical capacity, especially when doing so reduces impacts on non-motorized modes of travel and/or is more cost-effective than new roadway capacity by itself.

Continuously Evaluate New Technical Solutions and Policy Approaches to Reducing Peak Period Congestion on San Mateo County Transportation System

- Advances in provision and application of information of routes, congestion, and pricing to transportation systems users will assist in travel decision-making and optimize travel choices.

Transportation Systems Management Objectives

1. Develop a “Multimodal Connections” Program to be included in San Mateo County’s portion of the Metropolitan Transportation Commission’s Transportation for Livable Communities Program.⁸³
2. Where feasible, implement managed lanes on freeways in San Mateo County.
3. Before consideration of new through lanes, implement improved traffic signal timing, new turn lanes, and other traffic operations measures along streets and highways in San Mateo County.
4. Provide ramp-metering on the freeway system including US 101 and Interstate 280.

⁸³ http://www.mtc.ca.gov/planning/smart_growth/tlc_grants.htm.

5. Increase the number of route miles covered by the San Mateo County “Smart Corridors” Program.
6. Increase the number of intersections in San Mateo County equipped to operate in traffic adaptive mode.
7. Increase the number of corridors in San Mateo County equipped with traffic signal interconnections.
8. Increase the number of intersections in San Mateo County equipped with emergency vehicle pre-emption.
9. Increase the number of intersections in San Mateo County equipped with public transit traffic signal priority.
10. Provide improved traveler information to the motoring public.
11. Increase the number of public transit stops and stations in San Mateo County equipped with real-time transit service information.

10. TRANSPORTATION DEMAND MANAGEMENT

Background

Transportation Demand Management (TDM) is focused on influencing travel behavior as well as informing travelers about available mobility choices.⁸⁴ The purpose of TDM is to reduce traffic congestion and associated air emissions. TDM measures cover a broad spectrum, including subsidies for use of alternatives to the solo occupant vehicle, parking and road pricing, disseminating information about travel alternatives, work scheduling alternatives, car sharing programs, guaranteed ride home programs, and many others.⁸⁵ Transportation demand management strategies, like those discussed in the previous chapter on managing transportation systems or supply, tend to be much lower cost than adding new system capacity. Representative TDM measures are as follows:

- Commuter benefit programs to subsidize transit use, bicycling, and walking to work⁸⁶
- Rideshare matching programs
- Vanpool subsidies
- Personalized travel planning for environmentally-friendly commuting⁸⁷
- Preferential parking for carpools and vanpools
- Car sharing⁸⁸
- Demand-based (congestion) bridge and road pricing
- Marketing alternatives to the solo occupant vehicle
- Bicycle parking
- Showers and lockers at work
- Telecommuting
- Compressed work weeks (e.g. longer work days with alternating Fridays off)
- Flexible work hours (e.g. later workday start and end times)



⁸⁴ Meyer, Michael, *Demand Management as an Element of Transportation Policy: Using Carrots and Sticks to Influence Travel Behavior*, Transportation Research Part A 33 (1999), p. 576.

⁸⁵ For a comprehensive treatment of TDM, see <http://www.vtpi.org/tdm/index.php#strategies>.

⁸⁶ For more information on commute benefits programs nationally, see <http://www.nctr.usf.edu/programs/clearinghouse/commutebenefits/> and http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_87.pdf.

⁸⁷ For detail on personalized travel planning in support of alternatives modes use, see <http://www.itsbenefits.its.dot.gov/its/benecost.nsf/SummID/B2010-00644?OpenDocument&Query=Home>.

⁸⁸ For a description of car sharing programs, see <http://www.vtpi.org/tdm/tdm7.htm>.

In San Mateo County, Commute.org, which offers a wide array of commuter incentives, provides Countywide TDM services to both employers and employees.⁸⁹ Commute.org sponsors carpool matching, carpool and vanpool incentives, commuter shuttles, bicycle parking subsidies, bicycle and pedestrian safety workshops, and more. The *Commute.org Strategic Plan Update 2015*⁹¹ identified four principal program areas as follows:

- Working with employers to develop and manage innovative partnerships to reduce peak period commute trips
- Working with commuters to explore and utilize alternative transportation for peak period commute trips
- Working with public and private partners to collaboratively develop new resources and tools to expand transportation alternatives
- Strengthening the organizational capacity of the Agency to achieve its goals



In addition the Bay Area Commuter Benefits Program (BACBP) requires employers with more than 50 or more employees in the Bay Area to provide additional commuter benefit to their employees.⁹²

Issues

Increased Complexity in Work Schedules and Locations

Efforts to implement TDM programs in San Mateo County, as elsewhere, face the challenges of the contemporary world of work.⁹³ Compared to the era in which most employees worked regular shifts at a single location, today's workforce increasingly works less regular hours. Many workers must hold more than one part-time job or one full-time and one part-time job to make ends meet. In San Mateo County, as elsewhere, workplaces are no longer concentrated solely in downtowns, but scattered widely in office and industrial parks. Many workers have or wish to combine trips to or from work with other activities, including child care drop-off and pick-up, as well as trips to the coffee shop, grocery store, health club, dry cleaners, etc. In combination, these factors create many distinct commuter market niches for TDM. No single TDM program could possibly serve the needs or fit the commuter profile of all workers in San Mateo County. Instead, a menu of inducements, such as that provided by Commute.org, is needed to encourage commuting by modes of travel other than the solo occupant automobile. In addition, personalized commute travel planning assistance is emerging as an important tool in the TDM toolkit.⁹⁴

Resistance to Telecommuting

Despite advances in telecommunications, telecommuting has yet to fulfill the expectation that it offers an effective way to reduce commuter peak period traffic congestion. One reason for these disappointed

⁸⁹ <http://www.commute.org/>.

⁹¹ http://www.commute.org/files/documents/Strategic_Plan_Update_6-2015.pdf

⁹² https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB1128

⁹³ For a discussion of the challenges facing rideshare, one of the most important TDM initiatives, see http://www.nytimes.com/2011/01/29/us/29carpool.html?_r=2&hp=&pagewanted=all.

⁹⁴ For example, the personalized commuter travel planning offered to employees at Stanford University.

expectations is employer resistance, especially at the middle management level, to having employees work out of the office on a regular basis.⁹⁵ The proliferation of videoconferencing and electronic file sharing programs, as well as continuing education and outreach efforts to employers by organizations such as Commute.org, will likely reduce the resistance to telecommuting in the future.

High Rates of Automobile Ownership

Since 1960, motor vehicle ownership has risen almost four times faster than population in the United States.⁹⁶ As of 2015, San Mateo County households owned an average of 2.7 motor vehicles and there were almost as many motor vehicles (710,094) as residents (745,400).⁹⁷ The fixed costs of car ownership

As of 2015, San Mateo County households owned an average of 2.7 motor vehicles and there were almost as many motor vehicles (710,094) as residents (745,400).

(e.g. depreciation and insurance), which have to be paid whether or not the vehicle is used, is a built-in incentive to motor vehicle use. Nevertheless, improvements in both travel alternatives to solo occupant driving in San Mateo County and information about these alternatives can help reduce reliance on motor vehicle travel as the sole or primary form of mobility for many households. The environmental consciousness of San Mateo County residents is another potent force that may contribute to the success of TDM initiatives in the years ahead. An important expression of the consciousness is the adoption of local Climate Action Plans in San Mateo County communities, including Menlo Park⁹⁸ and Redwood City.⁹⁹ These factors may contribute to a future decrease in the rate of automobile ownership.

A Framework for Successful Transportation Demand Management in San Mateo County

Success in managing transportation demand in San Mateo County requires a strategic approach. This begins with a clear, broad vision. A more defined goal to achieve the vision helps bring focus. Policies comprise the means to attain the goal and bring the vision to life. Specific objectives and an associated set of performance measures are the navigational tools used to monitor progress toward realization of policies, goal, and vision.

Transportation Demand Management Vision, Goal, and Policies

Vision

A San Mateo County in which reliance on solo occupant motor vehicle travel is minimized.

Goal

Reduce and manage travel efficiently through demand-side measures, including land use planning and transportation demand management efforts at work sites.

⁹⁵ See http://www.businessweek.com/debateroom/archives/2007/03/telecommuting_n.html.

⁹⁶ US Department of Transportation, Highway Statistics, <http://www.fhwa.dot.gov/policyinformation/statistics.cfm> and US Census Bureau Census of Population and Housing <http://www.census.gov/prod/www/decennial.html/>.

⁹⁷ California Department of Motor Vehicles and US Census Bureau.

⁹⁸ <http://www.menlopark.org/departments/env/cap.html>.

⁹⁹ http://www.redwoodcity.org/manager/initiatives/climate%20protection/Verde/Final%20CCAP%20Documents/CCAP_Final_3-25-10.pdf.

Policies

Focus on Reducing the Need to Travel and the Distance of Travel

- Encourage telecommute programs, satellite work centers, teleconferences, and other substitutes for travel within San Mateo County.
- Support local jurisdictions in setting transportation demand management goals.

Involve Private and Public Sector Employers in Efforts to Reduce the Amount of Vehicular Travel

- Support reduction of solo occupant vehicle use through employer-based commute alternatives incentive programs in San Mateo County. Include employee transportation coordinators and transportation management associations (TMAs) as key components of this effort.
- Support incentive programs to reward commuters who use commute alternatives to driving alone.

Improve Access to Destinations by Means of Non-Motorized Modes and Local Transit to Reduce the Need to Travel by Private Vehicle

- Promote transit-oriented development, traditional neighborhood design, improved bicycle, pedestrian and local transit connections to activity centers and similar efforts to reduce the need to travel by private motor vehicle to, from, and within San Mateo County.

Transportation Demand Management Objectives

1. Increase the number of employers and employees within the geographic limits of San Mateo County who have access to a commute alternatives program at work.
2. Increase the participation in telecommuting by employees who work in San Mateo County.
3. Expand participation in the commuter pre-tax benefit program San Mateo County.

11. PARKING

Background

There has been a substantial increase in public policy focus on parking in recent years. This rising interest is best exemplified in such influential books on the subject as *The High Cost of Free Parking*,¹⁰⁰ by UCLA Professor Donald Shupe, and *Parking Management: Best Practices*,¹⁰¹ by Todd Litman of the Victoria Transport Policy Institute. Long considered the most prosaic aspect of urban transportation policy, parking has come to the forefront as a potential tool for transportation demand management. Close to home, Redwood City has been a pioneer in California and the nation in implementing a downtown parking management plan that combines differential parking prices and “smart” parking meters.¹⁰²

Parking management is comprised of three elements. The first is regulation and pricing (including zero price) of both on-street and off-street parking. The second is setting parking ratios, or amount of parking required for residential and commercial development. The third is the infrastructure and technology used in the parking system. Each will be discussed in turn below.

No matter what type of parking or who owns and operates the parking, regulation of who may park where, for how long, and for how much are important management decisions.

Parking can be provided curbside on both commercial and residential streets, as well as off-street in surface lots or parking structures. Parking capacity can be managed by the public sector, as in curbside spaces and publicly owned parking facilities, or by the private sector as in lots and structures serving commercial and residential uses, as well as in private parking facilities provided for general public use in downtowns. In some hybrid cases, parking facilities are publicly owned but privately operated. No matter what type of parking or who owns and operates the parking, regulation of who may park where, for how long, and for how much are important management decisions. Parking may be available to all on a first come, first serve basis, or to specific categories of users (e.g. those with disabled person parking placards, taxicabs, commercial loading vehicles, residential parking permits, etc.). Parking spaces may be available for use all day or for specific time increments. Parking may be disallowed all together for safety reasons (across driveways, near fire hydrants, or curbside close to intersections, for example) or disallowed part of the day (such as during peak commute times on arterial streets).



The regulation of parking time and price affects parking space turnover, which in turn has both economic and traffic implications.

The regulation of parking time and price affects parking space turnover, which in turn has both economic and traffic implications. Curbside parking space occupied all day by store employees rather than short-term by customers, for example, can reduce turnover in a desirable location near storefronts. This

in turn can induce traffic congestion as drivers circulate around the block or wider environs in search of

¹⁰⁰ Shupe, Donald, *The High Cost of Free Parking*, Planners Press, American Planning Association, 2005.

¹⁰¹ Litman, Todd, *Parking Management: Best Practices*, Planners Press, American Planning Association, 2006.

¹⁰² See <http://shoup.bol.ucla.edu/Downtown%20Redwood%20City%20Parking%20Plan.pdf>.

available parking. Limiting the time of use of parking spaces and/or setting parking prices so that the more desirable spaces cost more to use, can increase turnover and reduce the searching done by motorists (along with the attendant traffic congestion) seeking a parking space.

Setting parking prices so that the more desirable spaces cost more to use, can increase turnover and reduce the searching done by motorists seeking a parking space.

The second element is setting parking ratios. Zoning ordinances typically stipulate the amount of parking required for a given number of new residential units or per 1,000 square feet of commercial development. These ratios are often derived from national standards based on parking generation studies in suburban settings.¹⁰³ These standards can over-prescribe parking required in downtown settings and in the vicinity of public transit stations, however. Downtowns are by nature mixed use and, as such, consist of land uses with differing parking demand profiles or peaks. This synergy produced in a downtown environment means that needed parking supply is less than the sum of the peak parking demand for each individual land use. In the case of public transit stations, the availability of public transit provides an alternative to private motor vehicle use and increases the probability that some people living and/or working nearby will not need to store their vehicles (or, in the case of households, may not need as many vehicles) in parking spaces. This effect is typically not captured in national parking ratio standards and the zoning ordinances derived from them.



The third element, infrastructure and technology, entails the physical facilities and equipment used in the parking system. The facilities can either be simple marked parking space curbside, surface parking lots, or parking structures above and/or below ground. Equipment ranges from traditional coin-operated parking meters to use of advanced electronics and communications in parking meters, as well in occupancy detection (and dissemination to users) in parking structures and other parking facilities. Additional advances in parking technology include detection of occupancy, length of stay, and payment (if applicable) pertaining to individual parking spaces, both on-street and off-street. Parking enforcement officers can now easily review on a hand-held device the status of cars parked on-street, for example, without chalking tires and making a return check to the vehicle later to see if the chalk mark is still visible. These advances

Additional advances in parking technology include detection of occupancy, length of stay, and payment (if applicable) pertaining to individual parking spaces, both on-street and off-street.

make parking payment easier, parking enforcement more efficient, and improve overall management of the parking system through provision of accurate information on parking demand by location and time of day. Taken together, these capabilities create the opportunity to optimize parking systems throughout an area such as a downtown.

¹⁰³ See the *Parking Generation, 4th Edition: An ITE Information Report* (Institute of Transportation Engineers, 2010) for a comprehensive set of such studies.

Issues

Parking Management Plans

Parking is an area-wide rather than a single block phenomenon. Motorists who cannot find a parking space (or a parking space at a price that they are willing to pay or for the time they may need) on one block or in one parking structure will move to another, then another until they find a space at an acceptable location and price (if applicable). Motorists who cannot find the parking they seek in a commercial street or district may well try to park in an adjoining residential area. People who drive to a rail station in order to access transit, but who cannot find a place to park at the station may decide to park in a commercial or residential area in the station environs – or may instead simply continue to drive to their destination rather than take the train. These circumstances underline the importance of creating parking management plans for whole districts rather than for only a single street or parking facility.

San Mateo County has some outstanding examples of parking management plans, including those prepared by Redwood City, Burlingame, and other jurisdictions. To be most effective, parking management plans should address the complete access trip to destinations. This may include the walk trip after parking, as well as shuttle bus connections between the parking facility and the destination. These plans need to provide appropriate amounts of parking for both shorter-term and longer-term parkers, induce the desired amount of parking turnover through a combination of time regulation and pricing, minimize spillover of parking demand from commercial to residential areas, and ensure efficient, effective, and fair parking enforcement. If all of these parking management objectives are met, the parking system can contribute to both a balanced transportation system and economic vitality in communities.

To be most effective, parking management plans should address the complete access trip to destinations.

Typically, however, parking management is done on a limited spatial scale and without reference to multimodal connections, spillover into residential areas, or optimization of parking resources. Funding is needed to create parking management plans that take a broader view. Done right, parking management plans can make an important contribution to a community's transportation demand management efforts. If all or most communities in San Mateo County developed and implemented comprehensive parking management plans, the beneficial effects would be county-wide and beyond.

“Right-Sizing” Parking Provision

Matching parking supply with parking demand through investment, time regulation, pricing, and technology may create an optimal parking system. Such a system does not generate spill-over parking demand from commercial to residential areas, does not either encourage more driving or discourage transit use, takes account of and is linked to multimodal transportation services and facilities, and contributes to the economic health of communities.

Providing or requiring too much parking wastes resources and incentivizes more auto use than would otherwise take place. Providing too little and/or ill-located parking frustrates drivers and the merchants who rely on them for trade, generates traffic congestion as drivers search for better parking spots, and can even dampen demand for public transit if train station parking is insufficient. Zoning codes that require

Zoning codes that require more parking than is needed in downtown locations or near transit stations impose unnecessary costs on property developers and can discourage desirable growth, including provision of affordable housing and transit-oriented development.

more parking than is needed in downtown locations or near transit stations impose unnecessary costs on property developers and can discourage desirable growth, including provision of affordable housing and transit-oriented development.

As a result, public policy should focus on right-sizing parking resources. The tools for doing this include revisions to parking requirements in local zoning codes; development of parking management plans; appropriate time regulation, pricing, and deployment of new technology; investment in new capacity as needed; and integration of parking into the multimodal transportation system.

The Local Nature of the Parking System

Parking is above all a local issue, best considered on a district by district, community by community basis. Decisions about parking regulation, pricing, and investment are likely to be most successful if made locally. Nevertheless, the cumulative effect of parking management at the local level throughout San Mateo County is felt county-wide and beyond. C/CAG can and should encourage parking management plans, appropriate revisions to zoning code parking requirements, and investment in new parking technologies. This encouragement can take place both through policies in the Countywide Transportation Plan 2040 and through funding studies, plans, and investments needed to optimize the parking system county-wide, community by community.

A Framework for Optimizing Parking in San Mateo County Communities

Optimizing the San Mateo County parking system in San Mateo County communities needs to take place in a planned, structured way. A broad vision and a more explicit goal to accompany it are needed to help chart progress. A set of policies constitutes the means to achieve the goal and realize the broad vision. Specific objectives and an associated set of performance measures indicate how much progress is being made in attaining the policies, goal, and vision.

Parking Vision, Goal, and Policies

Vision

Parking in San Mateo County that is a “right-sized” balance of supply and demand, supportive of Transit Oriented Development and Sustainable Communities Strategies, intuitive to use, and environmentally responsible.

Goal

Encourage innovations in parking policy and programs, including incentives for reduced parking requirements, and a comprehensive approach to parking management and pricing.

Policies

Support Reduction of Parking Supply

- Encourage adoption of parking reforms including reduced parking requirements (or setting parking maximums) for residential and commercial developments, “unbundling”¹⁰⁴ parking costs from the cost of housing and commercial space, and use of “shared” parking.

¹⁰⁴ “Unbundling” parking refers to parking that is sold or rented separately from unit/building purchases or leases.

- Support comprehensive parking management programs to optimize all parking resources, both off-street and on-street.
- Support the sharing of effective practices for parking policy and parking management among local jurisdictions.
- Use technology to minimize the land area needed for parking.
- Encourage improved transit access to minimize the land area needed for parking.

Facilitate Shared Parking Arrangements to Increase the Efficiency of Parking Provision and Reduce the Costs of Parking Provision

- Support shared parking arrangements when and where feasible.
- Encourage dedicated space for shared mobility programs, such as carsharing, bikesharing and ridesharing, in public and private parking areas.

Encourage Implementation of “Green” Parking Lot Initiatives That Serve to Reduce Storm Water Runoff

- Promote the San Mateo County “Green Streets and Parking Lots Program” approach of using swales, permeable pavements, “rain gardens,” and landscaping to capture storm water runoff, enhance aesthetics, and mitigate the urban and suburban “heat island” effect.

Install Solar Panels on Parking Lots and Structures to Conserve Energy

- Encourage projects like the County of San Mateo “Solar Genesis” project to create new sources of renewable energy above parking structures and parking lots, increasing the utility of these facilities without hampering their parking function.

Install Electric Vehicle Charging Stations

- Encourage installation of charging stations in public and private parking areas, including commercial, residential and mixed-use sites.

Promote Installation of “Smart” Parking Meters and Real-Time Parking Information Dissemination in San Mateo County Public Parking Facilities

- Foster implementation of “smart” meter projects to increase parking customer convenience and create opportunities for demand-responsive pricing for on-street and off-street public parking facilities.

Ensure Adequate Wayfinding to Parking Facilities in San Mateo County

- Promote implementation of programs to enhance public information about parking availability, thus decreasing the amount of traffic congestion caused by motorists searching for parking and increasing the convenience of parking customers.

Encourage Placement of Parking Facilities in Locations That Do Not Disrupt Pedestrian Travel or Create a Hazard for Pedestrians

- Discourage location of parking structure and lot entrances on streets that have or are planned to have a substantial flow of pedestrian traffic in order to minimize a potential safety hazard for pedestrians, increase parker convenience, and avoid creating “dead” spaces on shopping streets.

Promote Adequate, Secure, and Safe Bicycle Parking at San Mateo County Shops, Store, and Offices

- Ensure that clean, energy-efficient, and healthful transportation by bicycle is not frustrated by lack of safe, secure parking at the destination end of the cycling trip.

Encourage Development of Master Parking Management Plans for Downtowns and Other Activity Centers in San Mateo County

- Support local government efforts to prepare parking master plans that optimize parking capacity by managing parking demand and “right-sizing” parking capacity.

Reduce On-street Parking along Key Transit Corridors and Downtown Areas

- Encourage the preservation of street capacity for transit, bicycles and other transportation modes while maintaining access to local business.

Encourage Development of Effective Park-and-Ride Facilities

- Explore additional opportunities to support travel by all modes through park-and-ride facilities.

Parking Objectives

1. Increase the number of San Mateo County communities that reduce parking requirements in the case of affordable housing projects, transit-oriented development, and proposed shared-parking arrangements.
2. Increase the number of “green” parking lot projects in San Mateo County.
3. Increase the number of solar panel installations on top of parking facilities in San Mateo County.
4. Increase the number of “smart” parking meters in San Mateo County.
5. Increase the number of bicycle lockers and racks at offices, shops, stores, parking lots and structures, and transit stations in San Mateo County.
6. Increase the number of communities with parking management master plans in San Mateo County.
7. Provide C/CAG incentives for parking standards reform.
8. Develop a “Multimodal Connections” Program to be included in San Mateo County’s portion of the Metropolitan Transportation Commission’s Transportation for Livable Communities Program.¹⁰⁵
9. Implement a “TOD Employment Incentive Program.”

¹⁰⁵ http://www.mtc.ca.gov/planning/smart_growth/tlc_grants.htm.

12. MODAL CONNECTIVITY

Background

There is an increasing recognition that urban and regional transportation along corridors as well as city and region-wide must be multimodal to be most effective.¹⁰⁶ An important success factor for multimodal transportation is that it links the various travel modes together as seamlessly as possible. Seamless

An important success factor for multimodal transportation is that it links the various travel modes together as seamlessly as possible.

connections are facilitated by integration of transit service schedules, electronic fare payment usable across transit modes, bicycle storage on buses or in trains, convenient pedestrian and bicycle access to transit stations and stops, and “right-sized” car parking at rail passenger stations.

Modal connectivity is an important concern in San Mateo County. The Millbrae Transit Center, served by BART, Caltrain, SamTrans, corporate shuttles, and private taxis, is one of the Bay Area’s most important intermodal transit hubs. The Millbrae Intermodal Station is also a planned High Speed Rail station. Each of the other BART and Caltrain stations in San Mateo County are also multimodal in that pedestrians, bus patrons, bicyclists, taxicabs, as well as automobile drivers and their passengers all require access to trains and their passengers. The San Francisco International Airport (SFO) is one of the country’s major transportation hubs, a locus for connections between air travel and a spectrum of land transport, including private automobiles, taxis, airport shuttles, public transit buses, BART trains, and SFO’s automated people mover, AirTrain. There is also an increased focus in San Mateo County, as elsewhere, on affording good pedestrian and bicycle access to local bus stops, an important day-to-day form of multimodal connectivity.

Issues

Access to Public Transportation Stations

An important success factor for public transportation in San Mateo County, as elsewhere, is safe, direct, and comfortable access to transit stations and stops. Ensuring that good “last mile” connections are in place for those who wish to access public transit by bicycle, on foot, or by shuttle bus can also have important air quality benefits.¹⁰⁷ There have been improvements in access to San Mateo County transit stops and stations in recent years, as well as innovative plans like the “Last Mile Connections” project in Redwood City featuring bicycle sharing and car sharing programs.¹⁰⁸ Nevertheless, much remains to be done. Many potential access improvements to public transit stations and stops involve the basics of good traffic engineering and street design, including:



¹⁰⁶ For an excellent overview of multimodal transportation planning, see http://www.vtpi.org/multimodal_planning.pdf.

¹⁰⁷ See <http://www.ca-ilg.org/node/3216>.

¹⁰⁸ See <http://redwoodcity.patch.com/topics/last+mile+connection+program>.

- Unobstructed sidewalks, ideally wide enough for two wheelchairs to pass in opposite directions
- Adequate pedestrian crossing time at signalized intersections
- Minimizing pedestrian crossing distance where feasible through use of curb extensions or bulb-outs
- Protecting pedestrian crossing with raised center median islands that include wide channels for passage by those on foot or in a wheelchair
- Curb ramps at pedestrian crossings to facilitate movement by those who have difficulty mounting a curb
- Bicycle lanes to and from transit stations
- Adequate bicycle storage at transit stations and aboard transit vehicles

The Grand Boulevard Multimodal Transportation Corridor Plan¹⁰⁹ features many of these elements of enhanced access to public transit stations and stops in along and near El Camino Real.

In addition, the Bayshore Multimodal Facility Study represents a major potential development in the bi-county area of Brisbane and San Francisco. The area, centered on the Bayshore Caltrain station, is proposed to be developed with a mix of residential, commercial, and other uses with bicycle and pedestrian access, high-frequency bus service, and connections to light rail. Another example of improved access to a transit station is the planned relocation of the Hillsdale Caltrain station in the City of San Mateo. The station is planned to be developed as an intermodal facility, with connections to the bus network, improved east-west connections to surrounding neighborhoods and transit oriented development with a variety of housing choices and commercial spaces.



Other types of improvements for transit access include removal of fences and other barriers to direct access by pedestrians and cyclists; provision of over- and under-crossings of rail lines and roadways that sever direct access to transit; and support of commuter vanpools, shuttle buses, and both bikeshare and carshare services at, to, and from public transit stations. Bus access to public transit stations is greatly enhanced by location of passenger loading bays in close proximity to rail passenger station platforms, such as in Redwood City Caltrain station and the Millbrae Transit Center. In recent years, shared mobility options such as carsharing,¹¹⁰ bike-sharing,¹¹¹ ridesharing, and ride sourcing have blossomed in the Bay Area. The Redwood City “Last Mile Connections” project features both forms of on-demand transportation for passengers accessing the Redwood City Caltrain station.

Despite the focus on improving access by alternative transportation modes to public transit stops and stations, many rail and some bus passengers drive to access public transit. As a result, “right-sizing” parking for private motor vehicles at transit stations is an important part of planning for modal

¹⁰⁹ See <http://ccag.ca.gov/pdf/Studies/Grand%20Boulevard%20Multimodal%20Transportation%20Corridor%20Plan.htm>.

¹¹⁰ For research results on the car-sharing programs, see the Transit Cooperative Research Program (TCRP) Report 108, *Car-Sharing: Where and How It Succeeds* http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_108.pdf.

¹¹¹ For an update on bicycle-sharing programs around the nation, see http://www.pedbikeinfo.org/programs/promote_bikeshare.cfm.

connectivity. Not enough motor vehicle parking at stations may discourage use of passenger rail service. On the other hand, too much parking is not only uneconomic, but can provide an unintended incentive to access public transit by private motor vehicle rather than by shuttle bus, bicycle, or on foot.

Coordination of Intermodal Services

The synchronization of intermodal and inter-line transit services is an important attribute of good public transit service. Passengers who experience the frustration of missing a transit connection because a bus or train was scheduled to arrive just after the departure of a connecting bus or train will find other travel alternatives. The same is true for transit services that are chronically behind scheduled arrival, thus causing passengers to miss a connecting bus or train.

Coordination of transit schedules has at times been a challenge in San Mateo County, in part due to the scheduling imperatives of the Caltrain and BART systems. One of the most difficult challenges in synchronization of these two passenger rail services has been at the Millbrae Transit Center.

Dissemination of Information on Availability of Intermodal Services

Public transit passengers need timely, accurate information about transfer opportunities, service schedules, and fares. While provision of this information has increased dramatically in recent years via smart phones and web sites like Google Transit¹¹² and Transit 511,¹¹³ such information at the transit stop and station level has been less readily available in San Mateo County.

A Framework for Intermodal Connectivity in San Mateo County

Enhancing intermodal connections in San Mateo County requires a policy framework that includes an overall vision and a clear goal to guide policy development and implementation. A suite of policies should link directly back to the goal and vision. Objectives define policy aims and performance measures operationalize them so that progress in achieving the objectives can be measured.

Modal Connectivity Vision, Goal, and Policies

Vision

Seamless travel within San Mateo County using different modes of transportation.

Goal

Integrate the roadway, public transit, and non-motorized transportation networks to advance system efficiency, effectiveness, and convenience.

¹¹² See <http://www.google.com/intl/en/landing/transit/#mdy>.

¹¹³ See http://tripplanner.transit.511.org/mtc/XSLT_TRIP_REQUEST2?language=en.

Policies

Promote Interagency Co-ordination in Planning, Design, and Operation of Services at Public Transit Stations in San Mateo County

- Customers should be afforded as convenient and stress-free experience as feasible in accessing public transit services, including transfers from one mode and/or operator to another.

Enhance Dissemination of Information on Intermodal Travel Opportunities within and to/from San Mateo County

- Provide timely information on connections between and among bus, rail, private automobile, and non-motorized modes of travel.
- Improve wayfinding to and service information dissemination at public transit station platforms through electronic changeable signage and more traditional static signage.

Remove the Physical Barriers to Intermodal Travel, including Difficult Intersection Crossing Conditions Leading to San Mateo County Transit Stations and Stops

- Encourage clean, efficient intermodal travel by making access to public transit stations safe, convenient, and comfortable for pedestrians and bicyclists. Promote bicycle and pedestrian safety at intersections in the environs of public transit stations and stops.

Encourage Efficient Intermodal Transit Service Scheduling at Public Transit Stations and Other Transit Transfer Locations

- Decrease waiting time for public transit passengers and increase convenience of public transit travel through improved integration of bus and rail transit service schedules.

Consider Satellite Transit Transfer Hubs When and Where Feasible

- Transfer facilities in satellite locations for passenger interchange among line haul bus service routes, as well as between line haul transit services and community, and employer shuttle buses may increase customer convenience while at the same time reduce congestion at major public transit hubs.

Ensure Adequate Bicycle Parking Conveniently Located at Public Transit Stations in San Mateo County

- Promote the clean, energy efficient access to public transit that the bicycle provides by making bicycle parking an important priority at San Mateo County transit stations and other stops.

Support “Right-sized” Auto Parking at San Mateo County Public Transit Stations Through Development of Transit Station Area Parking Management Plans

- Promote “right-sized” parking provision for private autos at transit stations so that there is sufficient parking for patrons. Station area parking management plans should include consideration of pricing policy for station parking facilities and either or both time zoning and nominal cost pricing for nearby on-street parking.

Support On-Demand and Shared Mobility Travel Options

- Encourage the integration of “first/last mile” mobility services to connect with the fixed-route transit system and reduce the need for parking at transit stations and along transit corridors.

Modal Connectivity Objectives

1. Improve intermodal travel information dissemination to San Mateo County transportation system users.
2. Increase the number of intermodal transit service hubs.
3. Implement bicycle and pedestrian access improvements at public transit stations and stops in San Mateo County.
4. Enhance shuttle bus services connecting work sites and public transit stations and stops.

13. GOODS MOVEMENT

Background

Even in an increasingly knowledge-based, service economy, communities depend on the movement by road and rail of goods¹¹⁴ destined for shops, stores, and warehouses. This movement in turn depends on safe, efficient travel routes on both the highway and rail networks. Responsibility for goods movement is in both the public and the private sectors. The highway network in San Mateo County, as in nearly all of the country, is a public responsibility. On the other hand, trucks and truck freight terminals are overwhelmingly in the private sector. Freight rail track, equipment, and yards are all in the private sector.

Even in an increasingly knowledge-based, service economy, communities depend on the movement by road and rail of goods destined for shops, stores, and warehouses.

Domestic freight flows that take place entirely within the region represent approximately one-quarter of the dollar value of Bay Area goods movement. Another two-fifths is domestic freight that either begins or ends within California but outside of the Bay Area. Domestic freight with an origin or destination outside of California accounts for the remaining 35% of the dollar value of total Bay Area goods movement.¹¹⁵

The San Francisco International Airport and the Port of Redwood City are important intermodal freight hubs in San Mateo County. In 2008, there were 3,210 airline cargo departures carrying a total of 492,195 metric tons of freight from San Francisco International Airport.¹¹⁶ The Port of Redwood City imported and exported a total of 1,715,633 metric tons of cargo during fiscal year 2015.¹¹⁷ The port has an important role in supporting the construction industry in San Mateo and Santa Clara counties through its handling of dry bulk cargo for concrete. Without this service, these materials would need to be moved by rail or freight into San Mateo and Santa Clara Counties, thereby dramatically increasing conflicts on the overtaxed rail corridor and freeways.



US 101 in San Mateo County has been designated the key “North Peninsula Goods Movement Corridor” because of its importance as a motor freight route.¹¹⁸ The San Francisco Peninsula, including San Mateo County, is served by local freight trains operated by Union Pacific. The market position of rail freight is circumscribed, however, due to “the Bay

Area’s location on the western edge of a sparsely populated region” and the fact that “most markets in California are too close for rail service to establish a strong competitive position” with respect to

¹¹⁴ Defined as “articles of trade; wares; merchandise”, see <http://dictionary.reference.com/browse/good>.

¹¹⁵ Regional Goods Movement Study for the San Francisco Bay Area: Final Summary Report.

¹¹⁶ Draft Final Comprehensive Airport Land Use Compatibility Plan for the Environs of the San Francisco International Airport, Ricondo & Associates for the City/County Association of Governments of San Mateo County (C/CAG), November 2011.

¹¹⁷ Annual Report to the Community, Port of Redwood City, September 2015.

¹¹⁸ Goods Movement Land Use Study, 2006.

trucking.¹¹⁹ As of 2009, there were 147 motor freight haulers in San Mateo County, just over half of which were firms with four or fewer employees. Only five trucking firms in the county had 50 or more employees.¹²⁰

Issues

Safe and Efficient Goods Movement

Time is money in freight operations, especially with “just-in-time” inventory practices adopted by shippers and receivers all across the country. Efficient freight operations depend on the availability of rail and road links suitable for freight operations. Since motor freight must rely on highway facilities open to all other motor vehicles, highway congestion can have a deleterious impact on goods movement efficiency. Both goods movement efficiency and safety require roadway facilities designed to accommodate tractor trailers. A truck route network comprising limited access highways like US 101, along with connecting arterial streets, each segment designed with adequate vertical clearances and turning radii for trucks, is essential. Diurnal traffic congestion, exacerbated by crashes and other incidents on roadways, affects all road users, including motor freight haulers. By the same token, improvements to traffic operations on freeways and arterial streets are beneficial to private automobile users as well as to truckers. Best practices for safe, efficient goods movement include the following:



- Adequate vertical clearances, lane widths, and turning radii to accommodate trucks;
- Sufficient freeway and arterial street capacity;
- Efficient traffic signal system operations at intersections and along arterial street corridors;
- Freeway service patrols to assist motorists, and if needed, to clear motor vehicles from the roadway; and
- Greater market penetration for electronic toll payment at bridges.

The San Mateo County Smart Corridor project will significantly upgrade traffic signal systems on arterial streets connecting to and parallel with US 101.¹²³ The Peninsula Ramp Metering Project in San Mateo County has already made an important contribution to traffic operations efficiency.¹²⁴ The suite of physical improvements and investments in intelligent transportation systems proposed in the 2020 Peninsula Gate Way Corridor Study hold much promise to increase motor vehicle efficiency in US 101 corridor in South San Mateo County.¹²⁵

¹¹⁹ *Goods Movement Industry Cluster Analysis (Task 3), Cambridge Systematics for the Metropolitan Transportation Commission, October 2003.*

¹²⁰ *2009 County Business Patterns. US Department of Commerce.*

¹²³ *San Mateo County Smart Corridors Program Concept of Operations, Kimley-Horn and Associates, Inc. for the City/County Association of Governments of San Mateo County (C/CAG) and the San Mateo County Transportation Authority, 2008.*

¹²⁴ See http://www.mtc.ca.gov/news/transactions/ta_fall_2010/metering.htm.

¹²⁵ See <http://www.ccag.ca.gov/pdf/gateway%20pac/draft%20assessment%20-%20universe%20of%20projects.pdf>.

Air Quality Impacts of Motor Freight

Between 1990 and 2005 greenhouse gas emissions from motor freight operations grew by nearly 70%, far outpacing the growth rate of greenhouse gas emissions from other classes of motor vehicles.¹²⁶ Diesel particulates emitted by trucks and trains pose a health concern.¹²⁷ While zero-emission freight rigs have

While zero-emission freight rigs have entered in goods movement industry, both truck and rail freight operations continue to produce substantial air emissions.

entered in goods movement industry, both truck and rail freight operations continue to produce substantial air emissions.¹²⁸ Advanced diesel engine technologies can dramatically reduce air emissions, but these have not yet achieved a significant market share in the motor freight industry.¹²⁹ While neither C/CAG nor any other agency in San Mateo County has regulatory authority over motor freight emissions, public agencies as well as private citizens can encourage regulators to promote the use of low-emission technologies in the freight industry through mandates, incentives, or a combination of the two. Since motor freight carriage in San Mateo County is concentrated along the US 101 corridor, a roadway with a residential population in the environs of much of its reach, cleaner motor freight operations will have a direct benefit to many residents of San Mateo County.

A Framework for Goods Movement in San Mateo County

An overall policy framework needed to encourage safer, more efficient, and cleaner freight movement in San Mateo County includes an overarching vision and a compelling goal to guide policy development and implementation. A set of policies should connect directly back to the goal and vision. Objectives define policy aims and performance measures operationalize them so that progress in achieving the objectives can be measured.

Good Movement Vision, Goal, and Policies

Vision

Goods movement that supports a sustainable San Mateo County.

Goal

Foster safe and efficient goods movement on the San Mateo County transportation network compatible with countywide economic development and environmental policies.

Policies

Enhance safety and capacity on truck routes within San Mateo County

- Ensure adequate turning radii, lane widths, vertical and horizontal clearances, and operational improvements at freeway interchange bottlenecks on designated truck routes to promote safe, efficient goods movement.

¹²⁶ See http://www.epa.gov/ttnchie1/conference/ei16/session5/davies_pres.pdf.

¹²⁷ See <http://www.epa.gov/ttn/atw/diesel/final.pdf>.

¹²⁸ See <http://articles.latimes.com/2011/jul/23/business/la-fi-0723-hydrogen-truck-20110723>.

¹²⁹ See <http://articles.latimes.com/2011/jul/23/business/la-fi-0723-hydrogen-truck-20110723>.

Promote Use of Low and Zero Emissions Technologies for Truck Freight in San Mateo County

- Support use of cleaner motor power in goods movement to protect the San Mateo County environment.

Goods Movement Objectives

1. Minimize motor freight travel delay increases on the San Mateo County roadway network.
2. Reduce the number of crashes involving motor freight haulers on the San Mateo County roadway network.
3. Conserve road capacity for goods movement on truck routes in San Mateo County.
4. Support rail and road grade separation in San Mateo County.

14. FINANCIAL

Background

This chapter contains an overview of high level estimated revenues and expected expenditures traditionally available to fund transportation projects in San Mateo County. It should be noted that this plan and this chapter in particular, is not a programming document. It does not include schedules for specific project implementation nor imply funding any specific project.

Funding projections for the county are estimated with the disclaimer that future funding levels are not always predictable. Some fund sources appear to be fairly stable for planning purposes while others fluctuate greatly with the financial conditions of the state or the country. In general transportation funding comes from three major levels: federal, state, and local levels. Often funds come with restrictions and constraints which dictate how those funds must be spent. Appendix C provides a description of the major funding sources available and the types of transportation needs they are intended to address.

C/CAG has primary responsibility for programming county discretionary share of federal and state transportation funds allocated to this county. Based on historic projections, it is estimated that Federal STBG (superseded Surface Transportation Program (STP))/CMAQ revenues to the county over the next 25 years (to FY 2040) will be approximately \$73 million. It is estimated that the state STIP revenues will be approximately \$800 million over the next 25 years.

Federal FTA funds and state STA funds are estimated at approximately \$1.2 billion over 25 years, are distributed to the transit agencies by formula, and have transit restricted use.

The San Mateo County Transportation Authority (SMCTA) has primary control over the allocation of local sales tax (Measure A) transportation funds, which is estimated to be approximately \$1.79 billion over the 16 year period from FY2017-2033. SMCTA has established their funding policy in their *2009-2033 Transportation Expenditure Plan*.

Issues

Shortfall of funds for the SHOPP

In April 2015, the California Department of Transportation (Caltrans) prepared the 2015 Ten-Year State Highway Operation and Protection Program (SHOPP) Plan for fiscal years 2016/2017 through 2025/2026.¹³⁰ SHOPP projects are limited to capital improvements relative to maintenance, safety and rehabilitation of State highways and bridges that do not add new capacity lanes to the system.

The SHOPP is funded by the State Highway Account (SHA); however, SHA funding is declining as a result of reduced fuel consumption, funding shortfalls in the Federal Highway Trust Fund, and the redirection of funding for highway maintenance. Projected funding available for the SHOPP is \$8 billion a year.

Caltrans has focused its limited resources on the most critical categories of safety, bridge, and pavement preservation. Even with this focus, the state highway system will continue to deteriorate. A cited example illustrates that the percentage of lane miles of highway pavement in a distressed condition is projected to increase from 26 percent to 40 percent during the next ten years.

¹³⁰ http://www.dot.ca.gov/docs/2015_Ten-Year_SHOPP.pdf.

Shortfall of funds for Local Streets and Roads and Highway Improvements

A recent assessment by the MTC estimates that \$30 billion is needed to maintain the existing pavement conditions, and \$36 billion is needed to reach a state of good repair. **Figure 5** shows the estimated local streets and roads maintenance shortfall identified for San Mateo County until 2040. For San Mateo County, approximately \$2.9 billion is needed to maintain the existing pavement conditions, and more than \$3 billion is needed to reach a state of good repair.

**Local Streets and Roads
Total Maintenance Need: \$3.04 Billion**

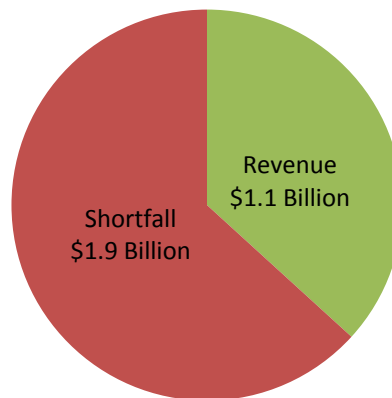


Figure 5: Road Maintenance Need

Roadways and highways continue to experience deterioration and higher congestion along with a significant shortfall in capital revenue. The limited revenue sources supports continuing the C/CAG policy of directing the State Transportation Improvement Program (STIP) funds towards major highway improvement projects of regional significance, by leveraging the San Mateo County Transportation Authority Highway Program funds.

Although C/CAG is responsible for programing the federal STBG/CMAQ funds received by the county, MTC dictates how C/CAG directs those funds, through the adoption of funding and programming policies. Historically, C/CAG was instructed to direct its share of STBG towards local streets and roads maintenance and CMAQ towards bicycle/pedestrian improvements and Transportation for Livable Communities (TLC) projects. In the future, it is anticipated that the direction of MTC will be to direct most of the county's flexible funding towards Priority Development Area (PDA) growth as well as improvements in urban transit corridors. Overall STBG/CMAQ funding levels are expected to remain somewhat stable in the future but the direction of funds at the regional level for specific programs is expected to vary over time.

Shortfall of funds for Capital Projects

Figure 6 shows the estimated revenues and shortfalls estimated for the broad categories of transportation networks in San Mateo County. Transportation funding needs and transit revenues were estimated from the information provided to the region for their 25-year Plan Bay Area plan which covers the time period through 2040. It includes maintenance and capital improvements. Highway improvement and local streets

and roads revenues were extrapolated from the SMCTA 2004 Transportation Expenditure Plan and historical distributions of federal funds and state funds.

Given that all modes of transportation face significant shortfalls, it is clear that the biggest challenge facing our aging transportation infrastructure is that current funding levels cannot meet the needs of this County's transportation systems.

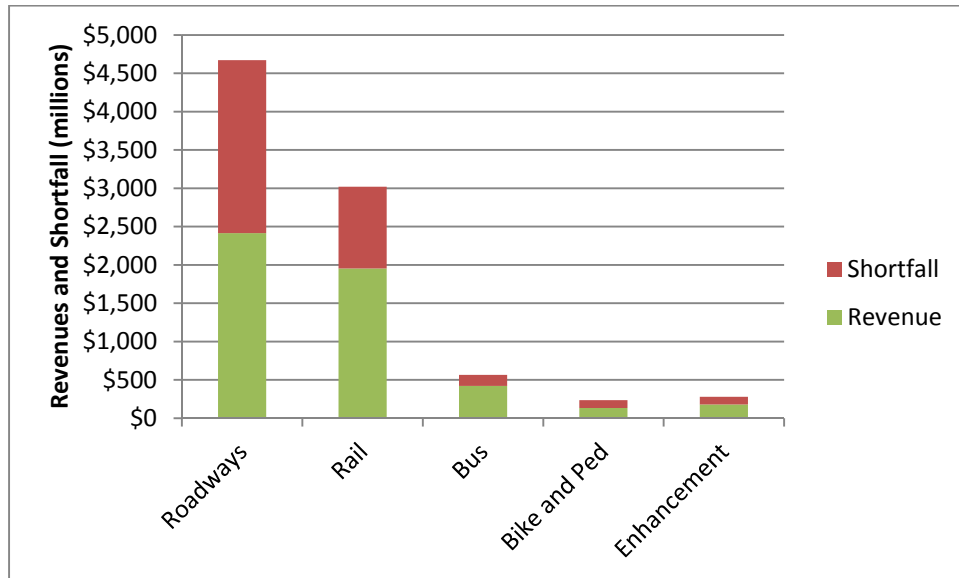


Figure 6: Transportation Maintenance and Capital Revenues and Shortfall (millions)

A Framework for Optimizing Transportation Funding in San Mateo County Communities

C/CAG will work with the San Mateo County Transportation Authority (SMCTA), The California Department of Transportation (Caltrans), the Metropolitan Transportation Commission (MTC), and the California Transportation Commission (CTC) to develop funding plans and priorities.

Financial Vision, Goal, and Policies

Vision

Sustainable funding sources to maintain, operate, optimize, and expand all modes of the transportation networks in San Mateo County.

Goal

Seek and protect transportation revenues to maintain existing transportation infrastructure and investments, and to improve all modes of transportation systems within San Mateo County in a balanced fashion.

Policies

It is already known that existing and projected funding levels will not be able to address all of the needs within this County. Decisions must be made to prioritize and direct available and applicable funds to high priority programs and projects in San Mateo County as well as to leverage other funding where possible.

Support the Protection of the Existing Infrastructure

- C/CAG supports a “fix-it-first” approach to transportation funding in general due to the limited revenue dedicated to roadway and transit rehabilitation. The maintenance and restoration of existing structures and facilities is a cost-effective use of limited funds. For example, a city that spends \$1 on timely maintenance to keep a section of roadway in good condition can avoid spending \$5 to restore the same road that is allowed to deteriorate to the point where major rehabilitation is necessary. The “fix-it-first” approach also extends to support state funding for the State Highway Operation and Protection Program, which would help Caltrans maintain mobility throughout the state highway system and support continued funding of the federal formula funds for transit rehabilitation."

Support Increasing the Operational Efficiency of the Existing Transportation Network

- San Mateo County is built out especially along the El Camino Real and US 101 corridors. Given that most of the transportation corridor rights of way are built out and cannot easily be expanded, it makes sense to seek to optimize the operational efficiency of the existing transportation network where appropriate. Examples of optimizing the existing system include but are not limited to the use of intelligent transportation systems and ramp metering. Increasing the efficiency of the existing transit system should also be supported, such as providing support for Caltrain enhancements as well as development of rapid transit corridors, e.g., preserve capacity on major arterial roadways to facilitate Bus Rapid Transit (BRT).

Support a Dedicated Source of Funds for Caltrain

- Caltrain is managed through a joint powers agreement among the transit agencies San Francisco Municipal Transportation Agency (SFMTA), San Mateo County Transit District (SamTrans), and Santa Clara Valley Transportation Authority (VTA) and does not currently have a dedicated source of funds. Caltrain is unlike other bay area transit agencies that are funded with dedicated taxes, but must rely heavily on member agency contributions. Caltrain makes yearly funding requests from its member agencies. Member agency contribution levels are not compulsory and tend to fluctuate with the economic conditions of its member agencies. Caltrain needs a steady source of revenue for continued reliable operations.

Support Expansion Projects When and Where it is Appropriate

- Certain appropriate expansion projects could greatly improve the operational efficiency of the overall system. There are also cases where expansion projects can show high user benefit in terms of travel time savings or safety improvements. Detailed traffic analysis would have to show that clear benefits can be gained where expansion projects are proposed. Example projects considered might be the reconfiguration of intersections and interchanges or the inclusion of high occupancy vehicle lanes (HOV) where it is warranted and appropriate.

Priority of the STIP towards State Highway Improvement Projects

- As shown on **Figure 7**, the total shortfalls for roadway and highway projects are approximately \$2.36 billion. Directing STIP funds towards roads and highways will address a portion of the

shortfall. In addition, the funds may be used to leverage other funding sources, including federal grants, to further reduce the funding gap.

Roads/Highways
Total Need: \$4.95 Billion

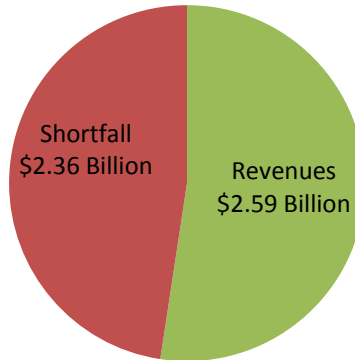


Figure 7: Shortfall for Roadway Capital Projects

Support a Balanced Integrated Approach to Finance a Variety of Transportation Modes

- It is understood that there is no individual project that can solve the congestion problems within the county. Solutions have to come from a variety of projects ranging from technological solutions like ITS installations, operational infrastructure improvements such as reconfiguring intersections, transportation demand management, and alternative mode accommodations.

Appendix A

Performance Measures

Performance Measures

Chapter 4: Land Use and Transportation

Develop a “Multimodal Connections” Program to be included in San Mateo County’s portion of the Metropolitan Transportation Commission’s Transportation for Livable Communities Program.¹³¹

Performance measure: Adoption by the C/CAG Board and implementation of the “Multimodal Connections Program”

Performance measure: Number of projects funded and implemented in furtherance of the “Multimodal Connections Program”

Implement a “TOD Employment Incentive Program.”

Performance measure: Adoption by the C/CAG Board and implementation of the “TOD Employment Incentives Program”

Performance measures: Number of projects, amount of commercial space, and amount of funding provided in furtherance of the “TOD Employment Incentives Program”

Implement the Grand Boulevard Initiative vision of transit-oriented development along the El Camino Real corridor in proximity to Caltrain, BART, and prospective bus rapid transit stations.

Performance measure: Implementation of an enhanced C/CAG El Camino Real Incentive Program

Performance measures: Number of TOD projects, number of housing units, and amount of funding provided in furtherance of C/CAG’s El Camino Real Incentive Program

Enhance the TOD Housing Incentive Program.

Performance measure: Adoption by the C/CAG Board and implementation of an enhanced C/CAG TOD Housing Incentive Program

Performance measures: Number of projects, number of housing units, and amount of funding provided in furtherance of C/CAG’s TOD Housing Incentive Program

Enhance the quality of public places and spaces in San Mateo County.

Performance measure: Adoption by the C/CAG Board and implementation of the “Places for People Planning and Design Program” to fund urban design for exemplary improvements to the public realm that foster walking as well as community livability

Performance measures: Number of public place and space design amenity projects and amount of funding provided

Revise and enhance the Transportation Demand Management (TDM) Guidelines.

Performance measure: Adoption by the C/CAG Board and implementation of a revised and enhanced set of C/CAG TDM Guidelines

¹³¹ http://www.mtc.ca.gov/planning/smart_growth/tlc_grants.htm.

Chapter 5: Roadway System

Improve the person throughput of the roadway system.

Performance measure: Peak-period person throughput of major roadway facilities

Performance measure: Average peak-period vehicle occupancy of major roadway facilities

Performance measure: Peak-period vehicle throughput of major roadway facilities

Reduce the number and severity of crashes on roadways in San Mateo County.

Performance measures: Annual traffic fatalities and injuries within San Mateo County

Performance measures: Annual rate of traffic fatalities and serious injuries (per million vehicle miles and/or by roadway segment) within San Mateo County

Performance measure: Annual rate of total traffic crashes within San Mateo County

Reduce the rate of growth of roadway congestion.

Performance measure: Average peak period delay as a percent of total peak-period travel time

Performance measure: Percent of peak period travel at level of service D or better

Performance measure: Peak-period vehicle hours of delay

Maintain the roadway system at an acceptable level.

Performance measure: Percentage of roadway miles at acceptable level of maintenance

Chapter 6: Bicycles

Increase the number of miles of Class I, II, III and IV bicycle facilities added in San Mateo County.

Performance measure: Number of miles of Class I, II, III and IV bicycle facilities added in San Mateo County

Increase the number of bicycle lockers and racks in San Mateo County.

Performance measure: Number of bicycle lockers and racks added in San Mateo County

Increase bicycle safety education and training in San Mateo County.

Performance measures: Number of bicycle safety education programs in San Mateo County and number of participants

Establish bike sharing programs in San Mateo County.

Performance measures: Number of bicycle sharing programs and number of bicycles in these programs implemented in San Mateo County

Increase the bicycle market share in San Mateo County.

Performance measures: A rise in the percentage of people biking for all trip purposes in San Mateo County from an estimated 1.7% in 2006 to 3.0% in 2020 and to 5.0% in 2040 and for trips to work from an estimated 0.75% in 2006 to 1.5% in 2020 and to 3.0% in 2040.¹³²

Chapter 7: Pedestrians

Increase the number of pedestrian signal heads and countdown signals in San Mateo County.

Performance measure: Number of pedestrian signal heads added in San Mateo County

Increase the number of intersections with enhanced treatments for pedestrian safety and comfort, such as raised center medians, in-pavement lights, pedestrian-activated crossing signals, and raised crosswalks appropriate to the location.

Performance measure: Number of intersections with enhanced pedestrian treatments added in San Mateo County

Increase the sidewalk network in San Mateo County.

Performance measure: Linear feet of sidewalk added in San Mateo County

Increase the pedestrian market share in San Mateo County.

Performance measure: Increase the percentage of people walking for all trip purposes in San Mateo County.

Increase walking for all trip purposes in San Mateo County.

Performance measure: A rise in the percentage of people walking for all trip purposes from an estimated 8.9 % in 2006 to 12.5% in 2020 and to 15.0% in 2040 and for trips to work from an estimated 2.0% in 2006 to 3.5% in 2020 and 5.0% in 2040.¹³³

Chapter 8: Public Transportation

Improve the competitiveness of public transit to private transportation for key trips as measured by travel time, reliability and customer satisfaction.

Performance measure: Point to point travel times for public transportation and private automobiles

Performance measure: On-time performance for bus and rail

Performance measure: Customer satisfaction measured in customer surveys

Lower the cost per passenger, mile and hour for the aggregate of public transit service in the county, discounting for inflation.

Performance measures: Transit service costs (2016 \$) per passenger, passenger mile, and per bus or train hour

¹³² 2006 estimates from http://www.mtc.ca.gov/planning/2035_plan/Supplementary/T2035-Travel_Forecast_Data_Summary.pdf.

¹³³ 2006 estimates from http://www.mtc.ca.gov/planning/2035_plan/Supplementary/T2035-Travel_Forecast_Data_Summary.pdf.

Improve system productivity as measured by passengers per hour and passengers per mile of service provided.

Performance measure: Passengers per service hour and passengers per service mile

Increase the public transit mode share of travel to, from and within San Mateo County over both a ten-year and twenty-five horizon.

Performance measures: A rise in the percentage of people using public transportation for all trip purposes to, from and within San Mateo County from an estimated 3.1% in 2006 to 5.0% in 2020 and to 7.5% in 2040. Increase the percentage of people using public transportation for work trips to, from and within San Mateo County from an estimated 10.7% in 2006 to 12.5% in 2020 and to 15.0% in 2040.¹³⁴

Chapter 9: Transportation System Management and ITS

Develop a new C/CAG “Multimodal Connections” Program to be included in San Mateo County’s portion of the Metropolitan Transportation Commission’s Transportation for Livable Communities Program.¹³⁵

Performance measure: Adoption by the C/CAG Board and implementation of the “Multimodal Connections Program”

Performance measure: Number of projects funded and implemented in furtherance of the “Multimodal Connections Program”

Where feasible, implement high occupancy vehicle (HOV) lanes on freeways in San Mateo County.

Performance measure: Number of miles of high occupancy vehicle lanes in San Mateo County

Deploy traffic adaptive signal control at intersections along streets and highways in San Mateo County.

Performance measure: Number of intersections equipped with traffic adaptive signal control in San Mateo County

Before consideration of new through lanes, implement improved traffic signal timing, new turn lanes, and other traffic operations measures along streets and highways in San Mateo County.

Performance measure: Number of intersection improvements completed without the addition of new through lanes

Provide ramp-metering on the freeway system including US 101 and Interstate 280.

Performance measure: Number of miles equipped and operated with ramp meters

Increase the number of route miles covered by the San Mateo County “Smart Corridors” Program.

Performance measure: Number of route miles covered by the San Mateo County “Smart Corridors” Program

¹³⁴ 2006 estimates from http://www.mtc.ca.gov/planning/2035_plan/Supplementary/T2035-Travel_Forecast_Data_Summary.pdf.

¹³⁵ 2006 estimates from http://www.mtc.ca.gov/planning/2035_plan/Supplementary/T2035-Travel_Forecast_Data_Summary.pdf.

Increase the number of intersections in San Mateo County equipped to operate in traffic adaptive mode.

Performance measure: Number of intersections in San Mateo County equipped to operate in traffic adaptive mode

Increase the number of corridors in San Mateo County equipped with traffic signal interconnections.

Performance measure: Number of corridors in San Mateo County equipped with traffic signal interconnections

Increase the number of intersections in San Mateo County equipped with emergency vehicle priority.

Performance measure: Number of intersections in San Mateo County equipped with emergency vehicle priority

Increase the number of intersections in San Mateo County equipped with public transit traffic signal pre-emption.

Performance measure: Number of corridors in San Mateo County equipped with public transit traffic signal pre-emption

Provide improved traveler information to the motoring public.

Performance measure: Number of dynamic message signs on the roadway system

Increase the number of public transit stops and stations in San Mateo County equipped with real-time transit service information.

Performance measure: Number of public transit stops and stations in San Mateo County equipped with real-time transit service information

Chapter 10: Transportation Demand Management

Increase the number of employers and employees within the geographic limits of San Mateo County who have access to a commute alternatives program at work.

Performance measures: Number of Commute Alternative Programs in San Mateo County and number of employees participating in these programs

Increase the participation in telecommuting by employees who work in San Mateo County.

Performance measures: Number of employers with telecommute programs in San Mateo County and number of employees participating in these programs

Expand participation in the commuter pre-tax benefit program San Mateo County.

Performance measures: Number of employers participating in commuter pre-tax benefit programs in San Mateo County and number of employees in these programs

Chapter 11: Parking

Increase the number of San Mateo County communities that reduce parking requirements in the case of affordable housing projects, transit-oriented development, and proposed shared-parking arrangements.

Performance measure: Number of communities with zoning code provisions for reduced parking requirements

Increase the number of “green” parking lot projects in San Mateo County.

Performance measure: Number of “green” parking lot projects in San Mateo County

Increase the number of solar panel installations on top of parking facilities in San Mateo County.

Performance measure: Number of solar panel installation projects above parking facilities in San Mateo County

Increase the number of “smart” parking meters in San Mateo County.

Performance measure: Number of “smart” parking meters in San Mateo County

Increase the number of bicycle lockers and racks at offices, shops, stores, parking lots and structures, and transit stations in San Mateo County.

Performance measure: Number of bicycle racks and lockers installed in San Mateo County

Increase the number of communities with parking management master plans in San Mateo County.

Performance measure: Number of parking master plans

Provide C/CAG incentives for parking standards reform.

Performance measure: Adoption by the C/CAG Board and implementation of the “Parking Reduction Incentive Program” which considers improvements to transit services to help offset reductions in parking infrastructure.

Performance measures: Number of projects and amount of funding provided by C/CAG’s prospective “Parking Reduction Incentive Program”

Develop a new C/CAG “Multimodal Connections” Program to be included in San Mateo County’s portion of the Metropolitan Transportation Commission’s Transportation for Livable Communities Program. ¹³⁶

Performance measure: Adoption by the C/CAG Board and implementation of the “Multimodal Connections Program”

Performance measure: Number of projects funded and implemented in furtherance of the “Multimodal Connections Program”

Implement a new C/CAG “TOD Employment Incentive Program.”

Performance measure: Adoption by the C/CAG Board and implementation of the “TOD Employment Parking Incentives Program”

Performance measures: Number of projects, amount of commercial space, and amount of funding provided in furtherance of the “TOD Employment Parking Incentives Program”

Chapter 12: Modal Connectivity

Improve intermodal travel information dissemination to San Mateo County transportation system users.

¹³⁶ 2006 estimates from http://www.mtc.ca.gov/planning/2035_plan/Supplementary/T2035-Travel_Forecast_Data_Summary.pdf.

Performance measure: Proportion of respondents to a survey of San Mateo County transportation system users who rate electronic information availability on intermodal travel “Very Good” or “Excellent”

Increase the number of intermodal transit service hubs.

Performance measure: Number of public transit intermodal service hubs in San Mateo County

Implement bicycle and pedestrian access improvements at public transit stations and stops in San Mateo County.

Performance measure: Number of pedestrian access improvement projects implemented at public transit stations and stops

Performance measure: Number of bicycle access improvement projects implemented at public transit stations and stops

Enhance shuttle bus services connecting work sites and public transit stations and stops.

Performance measure: Number of shuttle bus service hours connecting work sites to public transit stations and stops

Chapter 13: Goods Movement

Minimize motor freight travel delay increases on the San Mateo County roadway network.

Performance measure: Motor freight travel delay

Reduce the number of crashes involving motor freight haulers on the San Mateo County roadway network.

Performance measure: Number of crashes involving motor freight haulers

Conserve road capacity for goods movement on truck routes in San Mateo County.

Performance measure: Miles of truck routes in San Mateo County designed to accommodate safe and efficient goods movement

Support rail and road grade separation in San Mateo County

Performance measure: Number of road and rail grade separation projects

Appendix B

Proposed RTP Project List

Proposed RTP Project List

Sponsor Agency	Project Title
Belmont	Ralston Avenue Corridor Improvements - Phased
Belmont	Alameda de las Pulgas Corridor Study and Improvements
Brisbane	Reconstruct U.S. 101/Candlestick Point interchange to full all-directional interchange - Environmental phase
Brisbane	Construct a 6-lane arterial from Geneva Avenue/Bayshore Boulevard intersection to U.S. 101/Candlestick Point interchange - Environmental phase
Brisbane	Reconstruct U.S. 101/Sierra Point Parkway interchange (includes extension of Lagoon Way to U.S. 101)
Burlingame	Reconstruct U.S. 101/Broadway interchange
Caltrans	Construct auxiliary lanes (one in each direction) on U.S. 101 from Marsh Road to Embarcadero Road
Daly City	Construct streetscape improvements on Mission Street (Route 82) and Geneva Avenue - Phase
Daly City	Provide overcrossing at I-280/John Daly Boulevard
Daly City	I-280 improvements near D Street exit
East Palo Alto	US 101/University Ave. Interchange Improvements
East Palo Alto	Bay Road Improvement Phase II & III
East Palo Alto	University Avenue Complete Streets Pilot Project
Half Moon Bay	Widen Route 92 between SR 1 and Pilarcitos Creek alignment, includes widening of travel lanes and shoulders
Half Moon Bay	Route 1 Improvements in Half Moon Bay
Menlo Park	Reconstruct U.S. 101/Willow Road interchange
Metropolitan Transportation Commission (MTC)	San Mateo Countywide Program: Local Road - Preservation/Rehabilitation
Metropolitan Transportation Commission (MTC)	SamTrans Program: Public Transit - Preservation/Rehabilitation
Metropolitan Transportation Commission (MTC)	SamTrans Program: Public Transit - Routine Operations and Maintenance
Millbrae	Construct new multi-purpose pedestrian/bicycle overcrossing across U.S. 101, north of and adjacent to existing Millbrae Avenue Bridge across U.S. 101
Millbrae	Extend California Drive north to the intersection of Victoria Avenue and El Camino Real in Millbrae

Millbrae	Widen Millbrae Avenue between Rollins Road and U.S. 101 southbound on-ramp and resurface intersection of Millbrae Avenue and Rollins Road
Pacifica	The Manor Drive Overcrossing Improvement and Milagra On-Ramp Project
Pacifica	Route 1 San Pedro Creek Bridge Replacement and Creek Widening Project
Pacifica	Palmetto Avenue Streetscape Project
Pacifica	Construct Route 1 (Calera Parkway) northbound and southbound lanes from Fassler Avenue to Westport Drive in Pacifica
Peninsula Corridor Joint Powers Board (Caltrain)	Peninsula Corridor Electrification Project
Peninsula Corridor Joint Powers Board (Caltrain)	Caltrain At-Grade Crossing Improvements
Peninsula Corridor Joint Powers Board (Caltrain)	Caltrain Terminal Improvements
Peninsula Corridor Joint Powers Board (Caltrain)	Systemwide Access and Station Improvements
Peninsula Corridor Joint Powers Board (Caltrain)	Caltrain Modernization Phase 2
Peninsula Corridor Joint Powers Board (Caltrain)	New Control Points
Peninsula Corridor Joint Powers Board (Caltrain)	San Mateo County Grade Separation Program
Redwood City	Extend Blomquist Street over Redwood Creek to East Bayshore and Bair Island Road
Redwood City	Implement Redwood City Street Car - Planning Phase
Redwood City	Improve U.S. 101/Woodside Road interchange
Redwood City	Middlefield Road Streetscape
San Bruno	Widen Skyline Boulevard (Route 35) to 4-lane roadway from I-280 to Sneath Lane - Phased
San Bruno	Improve local access at I-280/I-380 from Sneath Lane to San Bruno Avenue to I-380 - Environmental only
San Carlos	Route 101/Holly St Interchange Access Improvements
San Mateo (City)	U.S. 101 Interchange at Peninsula Avenue
San Mateo (City)	25th Avenue Grade Separations
San Mateo (City)	Hillsdale/US101 Ped/Bike Bridge
San Mateo (City)	State Route 92-82 (El Camino) Interchange Improvement
San Mateo City/County Association of Governments (CCAG)	County-wide Implementation of bicycle/pedestrian enhancements

San Mateo City/County Association of Governments (CCAG)	Implement incentive programs to support transit-oriented development
San Mateo City/County Association of Governments (CCAG)	County-wide Local streets and roads operations and maintenance
San Mateo City/County Association of Governments (CCAG)	Improve operations at U.S. 101 near Route 92 - Phased
San Mateo City/County Association of Governments (CCAG)	County-wide Implementation of the Safe Routes to Schools Program
San Mateo City/County Association of Governments (CCAG)	County-wide Implementation of Transportation for Livable Communities Program
San Mateo City/County Association of Governments (CCAG)	County-wide Implementation of Transportation Environmental Enhancements
San Mateo City/County Association of Governments (CCAG)	County-wide Implementation of non-capacity Increasing local road Intersection modifications and channelization countywide
San Mateo City/County Association of Governments (CCAG)	Implement a complete streets design for Mission Street/El Camino Real as part of Grand Boulevard Initiative - Phased
San Mateo City/County Association of Governments (CCAG)	County-wide implementation of local circulation improvements and traffic management programs countywide
San Mateo City/County Association of Governments (CCAG)	Modify existing lanes on U.S. 101 to accommodate HOV/T lane
San Mateo City/County Association of Governments (CCAG)	Add northbound and southbound modified auxiliary lanes and/ or implementation of HOT lanes on U.S. 101 from Oyster Point to San Francisco County line
San Mateo City/County Association of Governments (CCAG)	County-wide Intelligent Transportation System (ITS) and Traffic Operation System Improvements
San Mateo City/County Association of Governments (CCAG)	Improve access to and from the west side of Dumbarton Bridge on Route 84 connecting to U.S. 101 per Gateway 2020 Study - Phased
San Mateo County	Westbound slow vehicle lane on Route 92 between Route 35 and I-280 - Environmental Phase

San Mateo County	Hwy 1 operational & safety improvements in County Midcoast (acceleration/deceleration lanes; turn lanes; bike lanes; pedestrian crossings; and trails)
San Mateo County	Middlefield Road Streetscape Improvement Project
San Mateo County Transit District (SamTrans)	Make incremental increase in SamTrans paratransit service - Phase
San Mateo County Transit District (SamTrans)	Add new rolling stock and infrastructure to support SamTrans bus rapid transit along El Camino Real- Phase
San Mateo County Transit District (SamTrans)	Implement supporting infrastructure and Automated Transit Signal Priority to support SamTrans express rapid bus service along El Camino Real
South San Francisco	US 101 Produce Avenue Interchange
South San Francisco	Railroad Avenue Extension
South San Francisco	SSF Sidewalk Gap Closure
Water Emergency Transportation Authority (WETA)/ Redwood City	Redwood City/South Bay Ferry Terminal for Private Ferry Service

Appendix C

Major Funding Sources and Transportation Needs

Existing Fund Sources

The following section contains a description of transportation fund sources that have historically been used to fund transportation projects in San Mateo County. It includes constraints associated with the funding sources and whether or not the source is controlled at the federal, state, regional, or local level.

Federal Funds

Congress has historically passed multiyear acts that fund transportation at the federal level. These acts are typically six-year acts, which are often, extend until new acts are passed. Federal-aid funds are typically distributed through the state (Caltrans) and the region (Metropolitan Transportation Commission (MTC)) before allocations are made to the counties. MTC sets priorities and controls flow of dollars to the region from federal funding programs and often dictates the direction of those Federal funds.

Fixing America's Surface Transportation Act (FAST)

The current act Fixing America's Surface Transportation Act (FAST) supersedes and builds upon the Moving Ahead for Progress in the 21st Century Act (MAP-21) and is the first long-term (five-year) surface transportation authorization enacted in a decade that provides funding certainty for surface transportation. It supplies funding at the federal level to improve the surface transportation infrastructure, including roads, bridges, transit systems, and passenger rail network, as well as to improve federal safety programs for highways and public transportation. Its goals are to improve mobility on highways, including easing congestion and facilitating the movement of freight, create jobs and support economic growth, and accelerate project delivery and promote innovation.

Surface Transportation Block Grant Program (STBG) and Congestion Mitigation Air Quality (CMAQ)

STBG, which supersedes Surface Transportation Program (STP), and CMAQ are flexible funds because they are not restricted to particular modes of transportation. STBG funds can be used for almost all types of transportation capital improvement projects. CMAQ funds are limited to new or expanded transportation projects that support efforts to meet requirements under the Clean Air Act in nonattainment or maintenance areas. Examples of CMAQ eligible projects include non-recreational bicycle and pedestrian facilities, transit projects, rideshare and telecommuting activities, and signal coordination. The FAST Act added eligibility for verified technologies for non-road vehicles and non-road engines that are used in port-related freight operations, the installation of vehicle-to-infrastructure communications equipment, and electric vehicle and natural gas vehicle infrastructure. Both STBG and CMAQ projects follow the federal-aid process.

Federal STBG/CMAQ funds are considered flexible. Historically, the County directed its share of the former STP funds toward local streets and roads maintenance and CMAQ funds toward bicycle and Transportation for Livable Communities (TLC) projects, which are directed toward facility improvements in transit and multimodal corridors.

The FAST Act has also replaced the Transportation Alternative (TA) Program with a set-aside of funds under the STBG, called the TA Set-Aside. The TA Set-Aside authorizes funding for programs and projects defined as transportation alternatives, such as provision of facilities for pedestrians and bicycles, historic preservation, safe routes to school, and environmental mitigation to address mitigation of water pollution

due to highway runoff. These funds are combined with other state funds as part of the Active Transportation Program.

Federal Transit Administration (FTA) Grant Programs

The Federal Transit Administration provides funding to state, regional, and local governments to provide mass transportation services to the public. These funds include:

- FTA Section 5303, 5304, and 5305 for metropolitan and statewide planning and nonmetropolitan transportation planning
- FTA Section 5307 for urbanized area formula grants

FTA Section 5309 for capital investment grants FTA Section 5310 enhanced mobility of seniors and individuals with disabilities

- FTA Section 5311 for formula grants for rural areas
- FTA Section 5339 for buses and bus facilities grants program.

In San Mateo County, these funds are directed primarily to SamTrans and Caltrain for transit planning, operation, and capital projects.

Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grant Program

The highly competitive TIGER grant program provides funding for road, rail, transit, bicycle and pedestrian, planning, and port projects that have a significant impact on the Nation, a region, or a metropolitan area. It supports innovative projects, including multimodal and multi-jurisdictional projects, which are difficult to fund through traditional federal programs. Projects funded by TIGER

State Funds

Transportation Development Act (TDA)

TDA revenues are derived from a statewide sales tax on gasoline and diesel. TDA funds are primarily used to fund transit operation, maintenance, and capital projects. Historically, San Mateo County has been allocated an approximate average of 24 million in TDA funds. Most of the TDA is allocated directly to the transit operators. Approximately 1 million per year has been made available for Bicycle and Pedestrian projects through the TDA Article 3. TDA Article 3 funds are administered by C/CAG for bicycle and pedestrian improvement projects.

Gas Tax Subvention

Portions of State sales tax on gasoline are returned to the cities and counties for local streets and roads maintenance. Allocations of these funds are distributed on a formula established by the State Legislature.

Gasoline Excise Tax

In 2010, Proposition 42, which imposed a five percent sales tax on gasoline, was eliminated and replaced by an excise tax, also known as the fuel tax swap. The fuel tax swap legislation adjusts the rates of the sales and excise tax on gasoline and is designed to be revenue neutral. The legislation mandates the Board of Equalization (BOE) to adjust the excise tax rate every year by March 1. The revenue effects of this

“swap” on the State Highway Account fluctuate with gas prices. The State Highway Account funds STIP, SHOPP, and Local Streets and Roads.

Traffic Congestion Relief Program (TCRP)

A list of specific projects, established by the Senate, is entitled to TCRP funds. Funding levels are dependent on the state budget. When TCRP funds are not available, existing projects that have been allocated TCRP funds may become inactive, receive alternative funding, or have their schedules amended until funds become available.

State Transportation Improvement Program (STIP)

The STIP is a multi-year capital improvement program of transportation projects on and off the State Highway System, funded with revenues from the Transportation Investment Fund, State Highway Account (SHA), and other funding sources. Formula funding is provided to counties for transportation projects that relieve congestion and expand and improve the state’s transportation system (mainly state highways). Caltrans administers 25% of the entire STIP and directs funds towards state/ interstate highway projects, while the remaining 75% of the STIP is administered locally and is distributed to counties on a formula basis. San Mateo’s portion of the STIP is controlled and administered by C/CAG. Projects are nominated and programmed by C/CAG. Historically, C/CAG directed most of the STIP towards highway improvement projects administered by Caltrans or the San Mateo County Transportation Authority (SMCTA).. In previous years, the STIP allocations were entirely State funded. Starting in 2010, all STIP allocations over \$1 million are federalized, requiring all large STIP funded projects to meet both Federal and State requirements.

State Transit Assistance (STA) Program

STA is a state budget item that provides funding to local transit agencies for mass transportation. STA funds may be used for transit capital projects, transit operations, and regional transit coordination. MTC administers the funds and STA funds are claimed directly by the public transit operators.

Active Transportation Program (ATP)

ATP combines state and federal funds into a program that funds infrastructure, educational programs and Safe Routes to School projects, to increase the use of active transportation modes. Examples of infrastructure project include bikeways and walkways, recreational trails, bike parking, and traffic control devices. In addition to increasing biking and walking trips, ATP is intended to improve safety for non-motorized users, reduce greenhouse gas emissions, enhance public health, and ensure that disadvantaged communities fully share in the benefits of the program.

Greenhouse Gas Reduction Fund (GGRF)

GGRF is funded through auction proceeds from the state Cap-and Trade program. These funds are allocated to several programs, including Transportation and Sustainable Communities Funding. Examples of projects and programs funded thorough GGRG include High Speed Rail, the Transit and Intercity Rail Capital Program (TIRCP), the Low Carbon Transit Operations Program (LCTOP), and the Active Transportation Program.

Proposition 1A - Safe, Reliable High-Speed Passenger Train Bond Act

Proposition 1A bond funding was passed in 2008, to fund pre-construction activities and construction of a high-speed passenger train system in California and capital improvements to passenger rail systems that expand capacity, improve safety, or enable train riders to connect to the high-speed train system. Caltrain is receiving a portion of those funds for grade separation projects and electrification that benefits both Caltrain and high-speed rail.

Proposition 1B – the Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act

Proposition 1B funds are designated to fund approximately ten transportation sub programs associated with mobility, safety, and air quality improvements for ten years, starting in 2006. These funds are fully allocated as of 2016. A portion of Proposition 1B funds are used to fund transportation projects in San Mateo County under one or more of the following seven sub programs.

Corridor Mobility Improvement Account (CMIA) - Funds are for performance improvements on the state highway system or major access routes to the state highway system.

Public Transportation Modernization Improvement and Services Enhancement Account (PTMISEA) - Funds are for rehabilitation, safety or modernization improvements, capital service enhancements or expansions, new capital projects, bus rapid transit improvements, or for rolling stock procurement, rehabilitation, or replacement.

State Transportation Improvement Program (STIP) - Funds augment the STIP program.

Highway-Railroad Crossing Safety Account - Funds are available to Caltrans for the completion of high-priority grade separation and railroad crossing safety improvements.

Traffic Light Synchronization Program (TLSP) - Funds are for traffic light synchronization projects or other technology-based improvements to improve safety, operations, and the effective capacity of local streets and roads.

Local Streets and Road, Congestion Relief, and Traffic Safety Account of 2006 - Funds shall be used for transportation facility improvements that reduces local traffic congestion and deterioration, improve traffic flow, or increase traffic safety. Funds are allocated to Cities and the County directly by formula. Examples of projects include:

- Street and highway pavement rehabilitation
- Drainage installation and rehabilitation
- Traffic control installations
- Maintenance, rehabilitation, installation, construction and reconstruction of facilities that expand rider ship on transit systems
- Safety projects to reduce fatalities
- Local match to obtain state or federal transportation funds for similar purposes

Transit System Safety, Security & Disaster Response Account (TSSS-DRA) - Funds are for capital projects that provide increased protection against a security and safety threat, and for capital expenditures to

increase the capacity of transit operators, to develop disaster response transportation systems that can move people, goods, and emergency personnel and equipment in the aftermath of a disaster.

State-Local Partnership Program (SLPP) Account - Funds are available to eligible transportation projects nominated by an applicant transportation agency. A dollar for dollar match of local funds is required for an applicant transportation agency to receive state funds under this program.

Regional and Local Funds

Measure A

Measure A is a countywide half-cent sales tax intended to fund transportation projects and programs in San Mateo County. The San Mateo County Transportation Authority (SMCTA) administers Measure A funds and directs funding toward six categories projects including, transit; highways, local streets and transportation, grade separation, pedestrian and bicycles and alternative congestion relief. A Strategic Plan has been developed to guide the evaluation of projects that apply for funding. A capital improvement plan based on forecasts of revenues and projects to be undertaken is being developed and will be refined each year.

AB 664 Net Toll Revenue Reserves

Funds are collected from the Dumbarton, San Mateo-Hayward and San Francisco-Oakland Bay bridges and are used to fund capital projects that further the development of public transit in the vicinity of the bridges. AB 664 funding is programmed to transit agencies as a match for federal funds to cover the cost of replacing buses and improving capital facilities.

Transportation Funds for Clean Air (TFCA)

Transportation Fund for Clean Air (TFCA) is funded by a \$4 surcharge on motor vehicles registered in the Bay Area. TFCA funds are controlled by the Bay Area Air Quality Management District (BAAQMD) which oversees regional and local programs. TFCA funds are available to implement projects that decrease motor vehicle emissions, and improve air quality. Examples of TFCA projects include, the purchase or lease of clean air vehicles; shuttle and feeder bus service to train stations; ridesharing programs to encourage carpool and transit use; bicycle facility improvements such as bike lanes, bicycle parking; arterial management applications to improve traffic flow on major arterials; and transit information projects. BAAQMD has delegated C/CAG to administer San Mateo County's allocation of TFCA revenues for implementation of a shuttle program and a transportation demand management (TDM) program.

Transportation/Development Impact Fees

Funds are collected from land developers directly by the Cities or County of San Mateo. Developer funds are controlled entirely by the local jurisdiction and are sometimes used to fund transportation improvements to offset impacts caused by the development.

Measure M San Mateo County Vehicle License Fee

San Mateo currently levies ten dollars for every vehicle registered in San Mateo County. C/CAG administers these funds, and 50% of the funds are returned to the member jurisdictions via reimbursement for specific congestion management activities and implementation of water pollution control measures. The remaining 50% of funds are used by C/CAG for countywide congestion management projects and programs, and water pollution control activities.

Congestion Relief Plan (C/CAG Member Agency Dues)

Per Proposition 111 requirements, local agencies whose developments negatively impact the Congestion Management Plan (CMP) system by causing the level of service on a “non-exempt” segment of the highway to fall to a level of service (LOS) “F” must prepare deficiency plans. C/CAG receives funds from its member agencies for the purpose of comprehensively addressing CMP deficiencies on behalf of its member agencies. Funds must be used for congestion relief planning and implementation activities.

Peninsula Corridor Joint Powers Board (JPB) Member Fees

JPB is the governing body for the Caltrain Peninsula commuter rail transit service between San Francisco, San Jose, and Gilroy and consists of three representatives from each of the three counties (San Francisco, San Mateo County, and Santa Clara County) served by Caltrain. The member agencies make annual funding contributions to operate the Caltrain service and support the capital budget.

Summary of Needs

The following section contains a listing of current and planned transportation improvement projects identified in regional and local level planning documents in San Mateo County. These projects are segregated into the following categories:

- Highway Improvements/Roadway Maintenance
- Transit Capital/Operations
- Bicycle and Pedestrian Improvements
- Enhancement/Transit Oriented Development/Transportation for Livable Communities/Congestion

The estimated cost of each category is matched with the most applicable potential source of funds in an effort to assess the shortfall in each category of projects.

Highway Improvements and Roadway Maintenance

Highway improvement projects are typically located on state highways or interstate freeways. Projects can expand a facility or modify the configuration of a facility. Example projects include the construction of auxiliary lanes, construction of a new interchange, reconfiguration an existing interchange, and lane additions. These projects are often costly project.

Operational improvements enhance the capacity of a facility without necessarily changing the configuration of a facility. Example projects include Intelligent Transportation System projects, signal interconnects, and ramp modifications, which do not require extensive right of way acquisition.

Roadway Maintenance, also known as “Local Streets and Roads” projects, includes reconstruction and/or capital maintenance projects on local roadways. Example projects include reconstruction or rehabilitation of existing roadways, installation or repair of storm drains, curb and gutters, and sidewalks, installation and repair of traffic signals and streetlights.

Eligible fund sources for these types of projects listed above are STBG, STIP, Proposition 1B CMIA, and Measure A.

Transit Capital/Operations

Transit capital projects include Caltrain, SamTrans, BART, Water Emergency Transportation Authority (WETA), and other transit agency capital improvements within San Mateo County. These projects include station, track and guideway, safety, signal, and communication improvement projects. This also includes rolling stock purchases, and grade separation projects. Typical fund sources for these types of projects include FTA Section 5307 and 5309, STBG, CMAQ, Proposition 1B (PTMISEA, TSSS-DRA, SLPP), STIP, Interregional Transportation Improvement Program (ITIP), AB 664, and Measure A funds.

Transit Operations includes labor, fuel, vehicle parts, utilities, and other consumable expenses needed to run the transit system. Fund sources for transit operations include farebox funds, STA funds, Measure A funds, other state and local revenues, and member fees.

Bike and Pedestrian Improvements

Bicycle and pedestrian improvement projects include the installation of bicycle trails/ lanes, bicycle and pedestrian directional signs, bicycle parking facilities, sidewalks, crossings, and bicycle pedestrian outreach and safety programs. Fund sources for these projects include STBG, CMAQ, TDA Article 3, and Measure A.

Enhancement/Transit Oriented Development (TOD) Transportation for Livable Communities (TLC)/Congestion Management

Transportation enhancement and TOD projects are generally capital improvement projects that include streetscape and landscape installations that encourage walking and/or development near transit stations and the use of transit. TLC projects promote compact, mixed-use development in urban locations near transit hubs by bringing vibrancy to downtown areas, commercial cores, neighborhoods, and transit corridors; enhancing their amenities and ambiance and making them places where people want to live, work and visit.

Congestion Management programs are operational projects such as intelligent transportation systems (ITS) improvements, ramp metering, operational improvements, shuttle programs, educational programs, Safe Routes to School (non-capital), or incentive programs with the goal of encouraging people to use alternative modes of transportation. Fund sources available for these programs are CMAQ, TFCA, Measure A, AB 1546, and Congestion Relief Plan funds.

Transportation Services for Seniors and People with Disabilities

A Regional Transit Connection (RTC) Discount ID Card is available to qualified persons with disabilities and senior citizens. Seniors (age 65 and older) and persons with disabilities who possess a Regional Transit Connection Discount Card, Medicare Card, or Department of Motor Vehicles Disabled Person Placard Identification Card are eligible for discounted fares on SamTrans, Caltrain, and all other Bay Area public transit systems.

Paratransit is provided for persons with disabilities who cannot independently use regular SamTrans bus service some of the time or all of the time. All paratransit participants are screened for eligibility and trips must be prearranged. The San Mateo County Transit District provides paratransit services through Redi-Wheels on the bayside of the county and RediCoast on the coast side.

Paratransit services are funded by fare box funds, STA funds, TDA funds, and Measure A funds.

Appendix D

Abbreviations and Acronyms

List of Abbreviations and Acronyms

AB – Assembly Bill
ABAG – Association of Bay Area Governments
ATP – Active Transportation Program
BAAQMD - Bay Area Air Quality Management District
BART – Bay Area Rapid Transit
BOE – Board of Equalization
BRT – Bus Rapid Transit
CARB – California Air Resources Board
Caltrans – California Department of Transportation
C/CAG –City/ County Association of Governments
CBTP – Community Based Transportation Plan
CCTV – Closed- Circuit Television
CEQA – California Environmental Quality Act
CHSRA – California High-Speed Rail Authority
CIP – Capital Improvement Programs
CMAQ – Congestion Mitigation Air Quality Program
CMIA – Corridor Mobility Improvement Account
CMP – Congestion Management Program
CTC – California Transportation Commission
CTP – Countywide Transportation Plan
SMCTP 2040 – San Mateo Countywide Transportation Plan for 2040
CV/AV – Connected and Automated Vehicles
EPA – Environmental Protection Agency
FAST – Fixing America’s Surface Transportation Act
FTA – Federal Transit Administration
GGRF – Greenhouse Gas Reduction Fund
GPS – Global Positioning Systems
HOT – High Occupancy Toll Lanes
HOV – High Occupancy Vehicle Lanes
ITIP – Interregional Transportation Improvement Program

ITS – Intelligent Transportation Systems
JPB – Peninsula Corridor Joint Powers Board/Caltrain
LCTOP – Low Carbon Transit Operations Program
LOS – Level of Service
MPO – Metropolitan Planning Organization
MTC – Metropolitan Transportation Commission
NCHRP – The Transportation Research Board’s National Cooperative Highway Research Program
PDA – Priority Development Area
PTMISEA – Public Transportation Modernization Improvement and Services Enhancement Account
RTC – Regional Transit Connection
RTP – Regional Transportation Plan
RTPC – Regional Transportation Planning Committee
SAMCEDA – San Mateo County Economic Development Association
Samtrans – San Mateo County Transit District
SB – Senate Bill
SFO – San Francisco International Airport
SHA – State Highway Account
SHOPP – State Highway Operation and Protection Program
SLPP – State-Local Partnership Program
SMCTA – San Mateo County Transportation Authority
SR – State Route
SRTP – Short Range Transit Plan
STA – State Transportation Agency
STBG – Surface Transportation Block Grant Program
STIP – State Transportation Improvement Program
STP – State Transportation Program
TA – Transportation Alternative Program
TCRP – Traffic Congestion Relief Program
TDA – Transportation Development Act
TDM – Transportation Demand Management
TEP – Measure A Transportation Expenditure Plan
TFCA – Transportation Funds for Clean Air

TIGER – Transportation Investment Generating Economic Recovery Discretionary Grant Program

TIRCP – Transit and Intercity Rail Capital Program

TLC – Transportation for Livable Communities

TLSP – Traffic Light Synchronization Program

TOD – Transit Oriented Development

TPA – Transit Priority Area

TSM – Transportation Systems Management

TSSS-DRA - Transit System Safety, Security & Disaster Response Account

US – United States

VMT – Vehicle Miles Traveled

VTA – Santa Clara Valley Transportation Authority

WETA – Water Emergency Transportation Authority

Appendix E

Responses to Public Review Comments

Table 1: Comments on Projects and Initiatives in Development

Comment	Response to Comment
The San Mateo Plan would have the ability to plug into long range regional and peninsula transportation plans which will likely evolve over the next few years. This will include an emphasis on rail and light rail and ferry options in addition to various road related systems.	The CTP establishes a coordinated transportation planning framework for the county over the next 20+ years. Additional information on specific projects, corridor improvements, and new initiatives can be considered in future updates of the CTP.
Page 62, New Transit Services: add “ Caltrain has future plans for capital projects including Caltrain Modernization Phase 2, which consists of conversion to a fully electrified 8-car fleet; platform extensions or modifications to support the 8-car electric fleet; and level boarding at all Caltrain stations”.	The requested revisions were made to the extent possible.
List of Projects Appendix: Include JPB/Caltrain projects, there are several that were submitted to MTC.	The requested revisions were made to the extent possible.
Page 75: TDM section includes a reference/footnote to our Strategic Plan – there is an updated Strategic Plan as of June 2015.	The requested revisions were made to the extent possible.
Directly address the transbay transit rail crossing constraint (details provided in letter)	The requested revisions were made to the extent possible.
Plan for dedicated bus and shuttle access from the East Bay (details provided in letter)	The CTP establishes a coordinated transportation planning framework for the county over the next 20+ years. Additional information on specific projects, corridor improvements, and new initiatives can be considered in future updates of the CTP.
Page 7-8: Smart growth decisions lacks involvement of public safety first responders (ie. Electrification of Caltrain)	The CTP establishes a coordinated transportation planning framework for the county over the next 20+ years. Additional information on specific projects, corridor improvements, and new initiatives can be considered in future updates of the CTP.

Managed Lanes on the 101: Supports managed lanes but feels that it sacrifices roadway shoulders for motorists to safely pull over in an emergency.	The CTP establishes a coordinated transportation planning framework for the county over the next 20+ years. Additional information on specific projects, corridor improvements, and new initiatives can be considered in future updates of the CTP.
Complete Streets - Grand Blvd: Lacks emergency first responder partners and lacks participation from public safety professionals (information tool box). (details provided in letter)	The CTP establishes a coordinated transportation planning framework for the county over the next 20+ years. Additional information on specific projects, corridor improvements, and new initiatives can be considered in future updates of the CTP.
CTP 2040 does not adequately describe existing traffic conditions, building boom nor the projected build out plans on/near the SR 92/101 corridor.	The CTP establishes a coordinated transportation planning framework for the county over the next 20+ years. Additional information on specific projects, corridor improvements, and new initiatives can be considered in future updates of the CTP.
The plan does not consider traffic mitigation via Bay Ferry Service at Werder Pier in Foster City, or the urgent need for emergency transportation. Request for a Foster City Ferry Terminal to be included with the Redwood City terminal project and include disaster/safety elements.	The CTP establishes a coordinated transportation planning framework for the county over the next 20+ years. Additional information on specific projects, corridor improvements, and new initiatives can be considered in future updates of the CTP.
There are no specifics related to the goal of, or discussion, supporting any projects that would enhance or improve the county public transportation system. Include info on/refer to the new Hillsdale Train Station in CTP.	The requested revisions were made to the extent possible.
The Draft Plan does not include discussion on the Geneva-Harney BRT & multi-modal integration at the Bayshore Caltrain Station	The CTP establishes a coordinated transportation planning framework for the county over the next 20+ years. Additional information on specific projects, corridor improvements, and new initiatives can be considered in future updates of the CTP.

The Draft Plan should recognize capacity enhancements and rail expansion in the Transbay Corridor as one of the lynchpins to improving access to SMC and improving conditions in key corridors of concern to the County (ie. The 101 corridor).	The requested revisions were made to the extent possible.
The 19th Ave Corridor/Daly City BART Connections is a congested corridor that is of major bi-county importance and should be included in the Draft Plan.	The CTP establishes a coordinated transportation planning framework for the county over the next 20+ years. Additional information on specific projects, corridor improvements, and new initiatives can be considered in future updates of the CTP.
The SMCTP should recognize and take advantage of the fact that SFO is a major transportation hub and economic driver for both the County and the Greater Bay Area. The Plan addresses the need for better connections including future pedestrian and cycling networks to/from the Airport, it falls short of the deliverables of achieving these connections, which according to the goals should be provided as part of the detailed framework to resolve transportation issues.	The CTP establishes a coordinated transportation planning framework for the county over the next 20+ years. Additional information on specific projects, corridor improvements, and new initiatives can be considered in future updates of the CTP.
I am concerned about the enduring impacts on the quality of life and business impacts of this plan. The automotive mode of transportation is inefficient, expensive, and dangerous. Building extra capacity will simply breed more demand and we'll end up the same congestion problems passed on to future generations but at a larger scale. Why not instead invest in more efficient, less expensive, and safer modes of transportation? Those modes not only scale much better by using less space for transportation, but they also create a safer and more healthy community. I realize that this is a harder sell to your customers but hope you realize that it will create a better future for the county.	The CTP establishes a coordinated transportation planning framework for the county over the next 20+ years. Additional information on specific projects, corridor improvements, and new initiatives can be considered in future updates of the CTP.
Need to address the Dumbarton Rail Corridor.	The requested revisions were made to the extent possible.

Need to address the south connection of Dumbarton bridge to embarcadero/Santa Clara county US 101 to alleviate traffic on University Avenue and Willow Road.	The CTP establishes a coordinated transportation planning framework for the county over the next 20+ years. Additional information on specific projects, corridor improvements, and new initiatives can be considered in future updates of the CTP.
As a resident of San Mateo county I am very disappointed in the lack of emphasis given to public transit, bicycle and pedestrian projects. It is not sustainable for a growing region to continuously increase the size of its roadways. This enables more and more people to drive, likely in single-occupancy automobiles and does little to improve the environmental, economical and social sustainability of the county and region. If residents are to truly have multi-modal, practical travel choices as described in the vision statement, a majority of funds SHOULD NOT be put towards increases the size of roads and highways. Transit, bicycle and pedestrian projects need to be prioritized. Create protected bikeways that enable rides of all ages and abilities to ride to their destinations. Support the electrification of Caltrain and further improvements to the corridor to make service more reliable. Collaborate extensively with Bart and Muni to enable additional service into San Mateo County. Consolidate fragmented transit providers in San Mateo County under one department of transportation. These are just a couple of examples of what could be the focus of the plan.	The CTP establishes a coordinated transportation planning framework for the county over the next 20+ years. Additional information on specific projects, corridor improvements, and new initiatives can be considered in future updates of the CTP.

USAREI has formed Bay Marinas, LLC to pursue the development of mixed-use marinas including public ferry service on two of its sites, the first in Burlingame at 101/Broadway, the other to follow in Foster City at the base of the San Mateo Bridge. Burlingame Pier is a privately sponsored \$2.5b public benefit project, where such public benefits include economic (Commerce), transportation (Navigation) and environmental (Fisheries). Its location adjacent SFO and proximate Millbrae Station allows linking expanded ferry service to rail and air so one can access the region and the world without the need of a car, thereby promising to remove 20m cars or more from the Peninsula each year benefitting the environment and the economy with the public gathering place that is Burlingame Pier.	The CTP establishes a coordinated transportation planning framework for the county over the next 20+ years. Additional information on specific projects, corridor improvements, and new initiatives can be considered in future updates of the CTP.
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Table 2: Comments on Investment in BART in San Mateo County

Comment	Response to Comment
Support funding of BART Rehabilitation Projects: BART requests that San Mateo support funding of BART rehabilitation projects over the coming decades, and this should be reflected in the Countywide Transportation Plan.	The projects listed in Appendix B of the CTP are the result of the Regional Transportation Plan (RTP) update process. There were no projects identified for the RTP update specific to rehabilitation of BART facilities in San Mateo County, however, these could be considered in future updates to the CTP and RTP.
Include a new section in Chapter 1 under the subheading of "Challenges and Opportunities" entitled "Core Capacity Transit".	The requested revisions were made to the extent possible.
Add illustrations to Page 21, <i>"Travel within the county is expected to increase less in percentage terms than travel into and out of the county, a 19% increase in internal trips compared to a 24% increase in trips into and out of the county. One of the areas of highest percentage growth is in transit trips into and out of San Mateo County, a 67% increase."</i>	The requested revisions were made to the extent possible.

We recommend the inclusion of Contra Costa County in Tables 11-13 on page 20.	The requested revisions were made to the extent possible.
On page 8, it should also mention improved bike and pedestrian access, change of land use (TOD), and TNCs as access solutions.	The requested revisions were made to the extent possible.
Revise TOD language on Page 29. Refer to BART's TOD Policy.	The requested revisions were made to the extent possible.
Page 29: the plan should stress the importance of locating planned San Mateo job growth within close proximity to regional rail stations to increase the likelihood of employees commuting via public transportation.	The requested revisions were made to the extent possible.
In Chapter 8, BART's planned capital investments that will allow for improved service should also be mentioned.	The requested revisions were made to the extent possible.
Page 63: Increased travel times and frequency are on the horizon for both BART and Caltrain. However, we need to do better with establishing customer-focused schedules and integrated fare media. A countywide policy statement on coordinated rail schedules is important.	The requested revisions were made to the extent possible.
Chp 14's "Fix-it-First Policy" paragraph: The first sentence in this paragraph should be changed, "dedicated to roadway and transit rehabilitation." Also add change to last sentence of paragraph, "state highway system and support continued funding of the federal formula funds for transit rehabilitation."	The requested revisions were made to the extent possible.
<p>Page 108, proposed RTP Project List: "Widen Millbrae Avenue between Rollins Road and U.S. 101 southbound onramp and resurface intersection of Millbrae Avenue and Rollins Road", the need road widening in this area is questionable and appears to contradict the goals of the Millbrae Station Area Specific Plan Area, by making this intersection more automobile-oriented; BART advises this project be reconsidered.</p> <p>Also on page 108, there should be a BART Program: Public Transit Preservation/Rehabilitation, similar to the MTC, SamTrans Program.</p>	The projects listed in Appendix B of the CTP are the result of the Regional Transportation Plan (RTP) update process. There were no projects identified for the RTP update specific to rehabilitation of BART facilities in San Mateo County, however, these could be considered in future updates to the CTP and RTP.

Page 117, Transit Capital/Operations, BART should be listed in the first sentence where transit capital projects are listed. Second sentence should include track and guideway where types of projects are listed.	The requested revisions were made to the extent possible.
Commit to fully funding BART infrastructure, operations and new rail cars (details provided in letter)	The projects listed in Appendix B of the CTP are the result of the Regional Transportation Plan (RTP) update process. There were no projects identified for the RTP update specific to rehabilitation of BART facilities in San Mateo County, however, these could be considered in future updates to the CTP and RTP.
Need to address extension of BART to San Mateo county.	The projects listed in Appendix B of the CTP are the result of the Regional Transportation Plan (RTP) update process. There were no projects identified for the RTP update specific to rehabilitation of BART facilities in San Mateo County, however, these could be considered in future updates to the CTP and RTP.

Table 3: Comments on Investment in BART in San Mateo County

Comment	Response to Comment
We support the increased use of VMT and VMT per capita for determining environmental impact	Goals to reduce to per-capita VMT and CO2 emissions are part of the Regional Transportation Plan (RTP) and calculated on a regional basis. The CTP does not set specific reduction targets for the county or analyze individual projects. The projects listed in Appendix B of the CTP were submitted to MTC for inclusion in the RTP update.
The plan seems to justify some projects on the basis of LOS which is an outdated metric. Two problems with it are that it ignores non-automobile modes of transportation and also that it considers only peak traffic.	The need to improve multimodal transportation is a major theme of the CTP. Mode shift targets are not established in the plan, but the forecast growth trips by mode for 2040 (see chapter 2) reflects the transportation investments proposed in the RTP and the CTP.
The plan's goals lack SMART performance objectives. C/CAG should set measureable goals and objectives, focus its investments to reach those goals and objectives, and report their progress to the public.	The need to improve multimodal transportation is a major theme of the CTP. Mode shift targets are not established in the plan, but the forecast growth trips by mode for 2040 (see chapter 2) reflects the transportation investments proposed in the RTP and the CTP.
We recommend creating quantitative goals and timelines to reduce VMT and GHGs per capita in order to meet the goals of SB32. Use VMT/GHG reduction as a goal in setting priorities within the budget, ensuring the most return on investments. (details provided in letter)	Goals to reduce to per-capita VMT and CO2 emissions are part of the Regional Transportation Plan (RTP) and calculated on a regional basis. The CTP does not set specific reduction targets for the county or analyze individual projects. The projects listed in Appendix B of the CTP were submitted to MTC for inclusion in the RTP update.

Planning & Building Dept: The CTP would benefit from a vision related to greenhouse gas reduction and objectives to meet it. The CTP discussed the regional sustainable communities strategy Plan Bay Area (PBA), but not in terms of the County's contribution to meeting greenhouse gas reduction targets in PBA, or whether the CTP is consistent with PBA, in conflict or supportive of initiatives in that regional vision. Since PBA integrates land use and transportation, it seems it would be helpful if we at the county level were working towards the same objective.	Goals to reduce to per-capita VMT and CO2 emissions are part of the Regional Transportation Plan (RTP) and calculated on a regional basis. The CTP does not set specific reduction targets for the county or analyze individual projects. The projects listed in Appendix B of the CTP were submitted to MTC for inclusion in the RTP update.
Please work towards a truly environmental sustainable and equitable transportation plan. The current drafts and trajectory point towards a "business as usual" approach to more road building which has been proven time and time again as ineffective in solving the regions mobility issues. Set greenhouse gas reduction targets, mode share targets and incentivize land uses which meet the states new VMT CEQA laws. The current draft of the plan essentially states "lots of people drive and continue to drive, therefore we need to plan for more driving." This is not planning.	Goals to reduce to per-capita VMT and CO2 emissions are part of the Regional Transportation Plan (RTP) and calculated on a regional basis. The CTP does not set specific reduction targets for the county or analyze individual projects. The projects listed in Appendix B of the CTP were submitted to MTC for inclusion in the RTP update.
2) Doesn't calculate the plan's VMT increases or show how it meets the region's GHG reduction goals through the Sustainable Communities strategy	Goals to reduce to per-capita VMT and CO2 emissions are part of the Regional Transportation Plan (RTP) and calculated on a regional basis. The CTP does not set specific reduction targets for the county or analyze individual projects. The projects listed in Appendix B of the CTP were submitted to MTC for inclusion in the RTP update.

<p>VTM only addresses GHG emissions while traveling, not the multiple impacts of congestion, including idling motors and lost time. Even a significant shift to EVs will not reduce driving and cars on the road.</p>	<p>Goals to reduce to per-capita VMT and CO2 emissions are part of the Regional Transportation Plan (RTP) and calculated on a regional basis. The CTP does not set specific reduction targets for the county or analyze individual projects. The projects listed in Appendix B of the CTP were submitted to MTC for inclusion in the RTP update.</p>
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Table 4: Comments on Performance measures

Comment	Response to Comment
<p>In order to improve mobility in a space-efficient and climate-friendly way, the plan needs more specific goals and metrics. (details provided in letter)</p>	<p>Appendix A includes performance measures for the objectives included in the CTP. Additional measures can be considered in future updates of the CTP.</p>
<p>To improve access, the plan needs:</p> <ul style="list-style-type: none"> • Metrics and targets to assess and improve access - e.g jobs accessible within 45 minute transit commute (p. 31) • Quantitative targets for bringing housing closer to jobs and services (p. 31) • Quantitative targets for improving jobs/housing fit so that the burden of long-distance commuting falls less disproportionately on low-income residents of the region 	<p>Appendix A includes performance measures for the objectives included in the CTP. Additional measures can be considered in future updates of the CTP.</p>
<p>Improve performance metrics around reduced automobile dependence, TOD and sustainable transportation (details provided in letter)</p>	<p>Appendix A includes performance measures for the objectives included in the CTP. Additional measures can be considered in future updates of the CTP.</p>

Health Systems Dept: We encourage your team to build out your central vision statement more directly through the imagery you use and concrete metrics. For example, the cover photo could support the multi-modal vision of connected and healthy neighborhoods identified in the Plan. Also consider providing more specific measures to share how the Plan will be implemented to meet the goals laid out in the vision you describe.	Appendix A includes performance measures for the objectives included in the CTP. Additional measures can be considered in future updates of the CTP.
<p>The Draft Plan should be strengthened in several ways to reflect these principles in the Plan's implementation components, as well as in the detailed discussion of the specific issues, performance measures and investment opportunities.</p> <ul style="list-style-type: none"> • The Draft Plan should more strongly and explicitly tie transportation investment to performance in production of housing and transit-supportive TOD development. • The Draft Plan should include more substantial and explicit discussion and inclusion of project proposals and studies of mutual bi-county benefit. • The Plan's performance measures and metrics should more closely align the Plan's goals for reducing VMT, facilitating multi-modal mobility (particularly related to transit and non-single occupancy auto), roadway safety for pedestrians and cyclists, and coordinating land use with transportation. • We support a strengthening of the Plan's commitment to improving the efficiency of the highway system over expansion, particularly the conversion of an existing lane on US-101 to a HOV/ T lane. 	Appendix A includes performance measures for the objectives included in the CTP. Additional measures can be considered in future updates of the CTP.
Use of VMT solely as a metric overlooks the human aspects of what happens when there is too much congestion and not enough alternatives (transit, bike/ped facilities). It is important to still monitor congestion with some traditional metrics.	Appendix A includes performance measures for the objectives included in the CTP. Additional measures can be considered in future updates of the CTP.
There is a lack of quantifiable performance measures for most of the goals. If we don't measure, we won't know how we are doing. It's also not clear how the funds spent will improve the climate, or other values.	Appendix A includes performance measures for the objectives included in the CTP. Additional measures can be considered in future updates of the CTP.

Table 5: Comments on Public input and approval process

Comment	Response to Comment
<p>The public process for obtaining input on the plan was insufficient. The three poorly publicized, poorly attended public input meetings were all held within the same week once the draft plan was already developed. The meetings were announced with only two weeks notice and none of the meetings were held in communities of concern.</p>	<p>In addition to the public meetings, comments were accepted through the C/CAG website and via email to C/CAG staff. The plan will follow a process for adoption through the CMP Technical Advisory Committee and CMEQ Committee, with final approval by the C/CAG Board. These meetings are public and notices of upcoming meetings are posted on the C/CAG website.</p>
<p>What is the best way for me to stay aware of developments? This is such an important and impactful plan that will affect all residents.</p>	<p>In addition to the public meetings, comments were accepted through the C/CAG website and via email to C/CAG staff. The plan will follow a process for adoption through the CMP Technical Advisory Committee and CMEQ Committee, with final approval by the C/CAG Board. These meetings are public and notices of upcoming meetings are posted on the C/CAG website.</p>
<p>Did not like that Appedix D was not included. Requested for the public review period to be extended.</p>	<p>In addition to the public meetings, comments were accepted through the C/CAG website and via email to C/CAG staff. The plan will follow a process for adoption through the CMP Technical Advisory Committee and CMEQ Committee, with final approval by the C/CAG Board. These meetings are public and notices of upcoming meetings are posted on the C/CAG website.</p>

wish the workshops were spread across time with more notice. Bad week for some of us.	In addition to the public meetings, comments were accepted through the C/CAG website and via email to C/CAG staff. The plan will follow a process for adoption through the CMP Technical Advisory Committee and CMEQ Committee, with final approval by the C/CAG Board. These meetings are public and notices of upcoming meetings are posted on the C/CAG website.
Were there any public meetings?	In addition to the public meetings, comments were accepted through the C/CAG website and via email to C/CAG staff. The plan will follow a process for adoption through the CMP Technical Advisory Committee and CMEQ Committee, with final approval by the C/CAG Board. These meetings are public and notices of upcoming meetings are posted on the C/CAG website.

Table 6: Comments on Projects and funding to achieve modal balance objectives

Comment	Response to Comment
There's a mismatch between the stated vision, CTP goals, and the proposed spending in Chp 14 and Appendix B.	The projects listed in Appendix B of the CTP are the result of the Regional Transportation Plan (RTP) update process. New projects were not developed as part of the CTP, but can be considered in future updates to the RTP and CTP.
Public Works Dept: Individual locations often have unique circumstances and that site specific plans must consider those circumstances in order to ensure that communities are able to retain or develop a dynamic character. Consult with dept for traffic related data within its jurisdictional limits and should be consulted with respect to those sites before local modifications are contemplated to ensure that the overarching goals of community vibrancy are achieved (details provided in letter).	The requested revisions were made to the extent possible.
The new plan is not reporting and learning from the major failures of the old plan. The new plan does not have solutions to the problems inherent in the old plan- the same old fixes are being implemented with an expectation of different results. There are three areas where the new plan needs to address the outcomes of the goals of the old plan: Congestion, Criteria Pollutants, and Safety. (details provided in letter)	The CTP establishes a coordinated transportation planning framework for the county over the next 20+ years. Additional information on specific projects, corridor improvements, and new initiatives can be considered in future updates of the CTP.
The proposed funding massively favors cars, and has hardly anything for bicycles. I really don't see enough detail on how spending the money will reduce our carbon emissions.	The projects listed in Appendix B of the CTP are the result of the Regional Transportation Plan (RTP) update process. New projects were not developed as part of the CTP, but can be considered in future updates to the RTP and CTP.

Table 7: Comments on Financial analysis

Comment	Response to Comment
<p>There is no data or discussion about what the proposed spending allocation and the types of projects proposed will mean for climate, health, safety, or congestion levels in San Mateo County. There are no dollar figures for how much the transportation projects in Appendix B will cost nor any discussion about the cost effectiveness or performance indicators of the selected projects in meeting the vision and goals of the plan. It is difficult to determine what the spending priorities are in regards to mode within the text of the plan. Spending in the plan should be broken down by category, such as transit capital, transit operations and maintenance (O&M), roadway capacity increases, roadway maintenance, TDM, bicycle, and pedestrian funding.</p>	<p>The discussion of transportation funding and finances in the CTP is based on high-level information. Additional financial analysis can be considered in future updates of the CTP.</p>
<p>Is there someone that can explain the process, timeline, and how this plan interacts (influences?) the planning on bus and rail resources? Also, is this plan the basis for a funding measure? If so, what is the timing for the funding measure?</p>	<p>The discussion of transportation funding and finances in the CTP is based on high-level information. Additional financial analysis can be considered in future updates of the CTP.</p>
<p>Add measureable and timebound goals to each section (ie. Reducing traffic collisions, deaths & major injuries).</p>	<p>Appendix A includes performance measures for the objectives included in the CTP. Additional measures can be considered in future updates of the CTP.</p>
<p>Adjust goals and funding policies as there is a disconnect between the stated vision and goals of the plan and the spending priorities.</p>	<p>The discussion of transportation funding and finances in the CTP is based on high-level information. Additional financial analysis can be considered in future updates of the CTP.</p>

Table 8: Comments on Safe Routes to School

Comment	Response to Comment
<p>The CTP needs to prioritize SRTS, accommodate for bicyclists and pedestrians on local roads, incorporate multi-jurisdictional cooperation (fix roads in cross multiple jurisdictions ie. Colman Ave), bicycle objectives should be included in SRTS maps for each public school in SMC, pedestrian objectives should include crossing guards at every dangerous intersection near a school, public transportation objectives should include increased busing of children at school, TSM objectives should include SRTS and complete street elements, and set up a grant program that covers crossing guards.</p>	<p>Additional information on Safe Routes to School was added to the discussion of Bicycles and Pedestrians and their policies.</p>
<p>Didn't see much detail on regulatory changes necessary to improve Engineering options for SR2S.</p>	<p>Additional information on Safe Routes to School was added to the discussion of Bicycles and Pedestrians and their policies.</p>

The plan needs to explicitly prioritize Safe Routes to Schools. The plan should be read and edited with a Safe Routes lens to incorporate child safety in each area. On a global level, any transportation planning within 1/4 mile of every school should consider Safe Routes (39% of pedestrian/bicycle collisions in SM County happen within 1/4 mile of schools, per Jessica Garner at Get Healthy San Mateo). In addition, there should be something in there that discusses the needs of the many vs. the needs of the few. For example, the Menlo Oaks neighborhood (Unincorporated San Mateo County) has approximately 285 homes. There are over 3000 cars that travel down Coleman Avenue every day (not to mention walkers and bikers). The rights of those that use roads should be valued along with those who live near or on roads. There should also be something in the plan that addresses multi-jurisdictional cooperation. My kids' school is in Atherton, my home is in Menlo Park and we have to travel on Coleman Avenue (Unincorporated San Mateo County). There must be protocol for agencies to work together to fix multi-jurisdictional issues. Someone must take ownership of issues. Specifically, the Bicycles objectives should include Safe Routes to School maps for each public school in SM County. These maps should show true Safe Routes. For example, my kids' school, Laurel in Menlo Park, currently shows a route, and then has a warning that says that Coleman isn't really safe. This is unacceptable. The Pedestrian objectives should include crossing guards at each dangerous intersection near a school. Many kids need to cross Willow Road and neither the schools nor the cities will pay for crossing guards (due to the multi-jurisdictional nature of where we live). This is unacceptable. The Public Transportation objectives should include increased busing of children to school. In many communities kids get to school on yellow school buses. There should be funding to put school buses on our local streets. More kids on school buses means fewer cars on the roads and this makes it even safer for others to walk and bike (also bus drivers adhere to very high driving standards). The Transportation Systems and Management Objectives should

Additional information on Safe Routes to School was added to the discussion of Bicycles and Pedestrians and their policies.

again include Safe Routes to Schools. Bike and pedestrian signaling, turning lanes that consider biking and true evaluations of sharrows vs. proper bike lanes should be considered from the perspective of Safe Routes.

Table 9: Comments on Incorporation of shared, electric, connected and automated vehicle technologies

Comment	Response to Comment
Technology is at the core of advancements in TDM strategies and Commute.org is embracing that technology and promoting its adoption by employers and commuters in San Mateo County	The CTP is supportive of technologies, policies and initiatives that improve safety and efficiency for all users of the transportation system. Information on new technologies and initiatives can be considered in future updates of the CTP.
We believe that electric bicycles (EBs) will significantly increase the use of bicycles for commute trips as the technology improves and the pricing for EBs drops.	The CTP is supportive of technologies, policies and initiatives that improve safety and efficiency for all users of the transportation system. Information on new technologies and initiatives can be considered in future updates of the CTP.
One sentence on bike sharing? This doesn't feel very multi modal to me.	The CTP is supportive of technologies, policies and initiatives that improve safety and efficiency for all users of the transportation system. Information on new technologies and initiatives can be considered in future updates of the CTP.

Table 10: Comments on Information on climate change and sea level rise

Comment	Response to Comment
Can the plan include projections of risks/adaptions required and funding needed to address [climate change and sea level rise] starting in 2020 and onward?	Information and policies related to climate change and sea level rise can be considered in future updates of the CTP.
Office of Sustainability and other departments: The document is missing the following components: 1. Sea Level Rise (not mentioned at all), 2. Flooding (not mentioned at all), 3. The County (or City) Hazard Mitigation Plan(s) (not mentioned at all), 4. Storm water (mentioned very lightly).	Information and policies related to climate change and sea level rise can be considered in future updates of the CTP.
Future sea level rise will also impact the transportation networks within the County, especially the lower lying Highway 101 Corridor, where most of the existing arterial connections exist. The Plan should review San Mateo County's efforts to address climate change and sea level rise, through the County's Sea Change program.	Information and policies related to climate change and sea level rise can be considered in future updates of the CTP.

Table 11: Comments on Equity analysis

Comment	Response to Comment
The plan should include an equity analysis, equity strategy (include priorities in CBTPs and fully fund them), conduct a more inclusive public engagement process.	An Equity Analysis was developed as a supplement to the CTP.
1) Plan does not meet MTC's revised guidelines for Countywide transportation plans (ex. doesn't show how it will address needs identified in the community based transportation plans).	An Equity Analysis was developed as a supplement to the CTP.

Table 12: Comments on Other suggestions, comments and corrections

Comment	Response to Comment
<ul style="list-style-type: none"> • Adopt a target modal mix for 2040 reflecting increased bicycle and pedestrian usage and reduced single occupancy automobile usage 	<p>The need to improve multimodal transportation is a major theme of the CTP. Mode shift targets are not established in the plan, but the forecast growth trips by mode for 2040 (see chapter 2) reflects the transportation investments proposed in the RTP and the CTP.</p>
<p>Set a Vision Zero goal and policies, set complete street goals (incorporate green stormwater infrastructure into complete street goals), set specific goals for housing near transit and services</p>	<p>The CTP establishes a coordinated transportation planning framework for the county over the next 20+ years. Additional information on specific projects, corridor improvements, and new initiatives can be considered in future updates of the CTP.</p>
<p>In response to the Municipal Regional Permit's mandate that permittees incorporate green infrastructure language into relevant planning documents, including transportation plans, enclosed is a marked up version of the draft CTP incorporating comments and suggested edits to help address our needs on the stormwater side. (details provided in letter)</p>	<p>The requested revisions were made to the extent possible.</p>
<p>Can there be more explicit treatment of recreational bicyclists in the plan who jam the hills and small roads on weekends?</p>	<p>The CTP establishes a coordinated transportation planning framework for the county over the next 20+ years. Additional information on specific projects, corridor improvements, and new initiatives can be considered in future updates of the CTP.</p>
<p>Can the plan explicitly encourage or include best practices for one-way roads, street “furniture”, and wide crossings at places like transit malls to encourage even more pedestrian friendly communities?</p>	<p>Thank you for your suggestion. This can be considered in future updates of the CTP.</p>
<p>We strongly encourage the use of person throughput as the primary measure of roadway effectiveness rather than vehicle throughput – e.g. a bus carrying 40</p>	<p>Thank you for your suggestion. This can be considered in future updates of the CTP.</p>

passengers is perhaps 40X more effective than a SOV	
San Mateo County should take a leadership role in adopting/accepting the impact of connected and automated vehicles (CV/AV) as it becomes commercially viable and safe	The CTP establishes a coordinated transportation planning framework for the county over the next 20+ years. Additional information on specific projects, corridor improvements, and new initiatives can be considered in future updates of the CTP.
Page 77: TDM Objectives could include: Support, track and reward commuters who opt for alternatives to driving solo (e.g. implementing rewards based incentives like we are doing with the tools on my.commute.org); Make significant and lasting changes to the percentage of solo occupant vehicle commute trips to, through, or from San Mateo County (important to recognize that our TDM efforts cannot ignore those who commute “through” our county – e.g. SF to Silicon Valley – reaching those commuters and employers is challenging given the limitations of our county specific program)	The requested revisions were made to the extent possible.
Identify specific policies that will deliver TODs at the County's major transit nodes (details provided in letter)	The requested revisions were made to the extent possible.
Page 3, 6-7: Include language on public safety and emergency services/response	Thank you for your suggestion. This can be considered in future updates of the CTP.
Bus Rapid Transit or Transit Signal Priority: Traffic pre-emption should be looked at from a public safety benefit. We anticipate spending \$60,000 on pre-emption devices to all traffic signals in Atherton & Menlo Park.	Thank you for your suggestion. This can be considered in future updates of the CTP.

<p>Pg 38-39 (Issues - Congestion): Traffic Congestion, as it relates to first responders and the delivery of essential emergency services, that then creates delays that increases critical response times that could threaten public safety and acceptable incident outcomes. This needs to be factored into actual decision making as it applies to our roadways and transportation challenges.</p> <p>Reliability: Reliability is directly related to congestion which is often compounded by vehicle accidents that cause 40 – 50% of the disruptions. Emergency first responders are directly involved with the response to, and mitigation of, these types of incidents, yet they are not mentioned anywhere in this document.</p>	<p>The CTP establishes a coordinated transportation planning framework for the county over the next 20+ years. Additional information on specific projects, corridor improvements, and new initiatives can be considered in future updates of the CTP.</p>
<p>Pg 54-55 (Pedestrian Environment Vision, Goals & Policies): This section should be expanded to include both the Fire Service and public/private ambulance transportation elements. It should also include strategies on yielding to first responders when driving, bicycle safety and survival and proper and acceptable roadway designs for emergency first responders needed to protect the health and safety of the community.</p>	<p>Thank you for your suggestion. This can be considered in future updates of the CTP.</p>
<p>The CTP 2040 has failed to properly assess and describe the significance of the Millbrae Intermodal Station ("Station"), nor has it mentioned the significant planning effort the City has made in updating the Millbrae Station Area Specific Plan to provide for increased development density (including housing) adjacent to the Station. the Station and th e development planned adjacent to it is grossly undervalued and understated. There is a single reference to the Station (on page 85 of the draft), but it fails to mention the future arrival of High Speed Rail. Therefore, Millbrae is requesting that C/CAG re-evaluate and reassess the treatment of the Station and the adjacent Millbrae Station Area Specific Plan (MSASP) Area in CTP 2040 in order to properly reflect the importance and value of th e Station to the entire San Mateo County transportation system.</p>	<p>The requested revisions were made to the extent possible.</p>

CTP 2040 is inadequate because it does not address the urgent transportation standards needed as described in Government Code Section 66540-66540.9 and 67500.	The CTP establishes a coordinated transportation planning framework for the county over the next 20+ years. Additional information on specific projects, corridor improvements, and new initiatives can be considered in future updates of the CTP.
The Water Emergency Transportation Authority (WETA) proposed south bay expansion plan of bay ferry service to the Port of Redwood City is not projected the meet WETA minimum ridership models until after 2035.	The requested revisions were made to the extent possible.
Change cover photo to display multi-modal transportation more, revise/expand on pages 12, 24, 39, 46, 54, 63, 65, 73, 76, 95, Appendix A & C (details provided in letter)	The requested revisions were made to the extent possible.
We strongly encourage you to build on four key areas in the near and long term: TSM and ITS, "Right-Sizing" parking provisions and zoning codes, expanded public and ferry service between SF, the Peninsula and the East Bay, and dedicated funding sources for Caltrain and Samtrans.	Thank you for your suggestions. These can be considered in future updates of the CTP.
Make it a priority to collaborate and work with regional partners to work on projects such as bus rapid transit on the 101, connecting BART and Caltrain, etc.	Thank you for your suggestion. This can be considered in future updates of the CTP.
Make changes/add revisions to: 1. Highway 101, Managed Lanes & Express Buses, 2. Caltrain & High Speed Rail, 3. Core Capacity/Transbay Corridor, 4. Geneva Harney BRT & Bi-County Transportation, 5. Housing, Affordability & Displacement, 6. Late Night/Early Morning Transit Service, 7. TDM & Performance Goals	The CTP establishes a coordinated transportation planning framework for the county over the next 20+ years. Additional information on specific projects, corridor improvements, and new initiatives can be considered in future updates of the CTP.

<ul style="list-style-type: none"> • Seek to create bicycle and pedestrian safe facilities for every freeways and major roadways overpass • Address challenges of bike access and create bicycle repair and access programs for underserved communities • Set specific goals for cities adopting compatible bike share programs • Encourage employer-driven walking and biking programs • Create an educational “cyclist empathy” program to assist countywide law enforcement in accepting cyclists as legitimate roadway users • Educational outreach to general public to promote safety and prevent collisions 	<p>The CTP establishes a coordinated transportation planning framework for the county over the next 20+ years. Additional information on specific projects, corridor improvements, and new initiatives can be considered in future updates of the CTP.</p>
<p>We are concerned about the lack of an economic prosperity framework and analysis in the CTP. The absence of this analysis may result in transportation investments and land use patterns that exacerbate the growing economic insecurity that low and moderate income workers are experiencing. According to the Economic Policy Institute, San Mateo County has the highest income disparity in California. Given this fact, we would like the CTP to be intentional about furthering economic inclusion in the outline goals, policies, and performance measures.</p>	<p>The CTP establishes a coordinated transportation planning framework for the county over the next 20+ years. Additional information on specific projects, corridor improvements, and new initiatives can be considered in future updates of the CTP.</p>
<p>Add Policy regarding Complete Streets for all components of the Roadway System.</p>	<p>Thank you for your suggestion. This can be considered in future updates of the CTP.</p>
<p>Revisions/Additions to Public Engagement, Safety, Bicycles, and Other Sections (details provided in letter)</p>	<p>Thank you for your suggestions. These can be considered in future updates of the CTP.</p>
<p>We have concerns that the current effort to update SMCTP 2040 is, both in terms of public process and policy, fails to meets the real mobility and access needs of the vast majority of San Mateo County residents and does not contribute to the larger vision of Plan Bay Area and the region’s Sustainable Community Strategy.</p>	<p>The CTP establishes a coordinated transportation planning framework for the county over the next 20+ years. Additional information on specific projects, corridor improvements, and new initiatives can be considered in future updates of the CTP.</p>
<p>Changes would like to be made on the process, equitable investments, climate, land use, & MTC guidelines (details provided in letter)</p>	<p>Thank you for your suggestions. These can be considered in future updates of the CTP.</p>

Expansion of community shuttle hours of service as well as frequency of service so they can be used for medical and dental appointments.	Thank you for your suggestion. This can be considered in future updates of the CTP.
The placement of quieter audible pedestrian signals, such as the polara, is an important pedestrian safety measure for people with limited vision. Their placement should be routine on busy roads such as El Camino Real and Woodside Road. Some cities have been uncooperative sense coordination with Caltrans is required.	The requested revisions were made to the extent possible.
The information displayed on public transportation electronic boards should be made available to the blind either with a phone app or with audio. Smart phone apps should be accessible to everyone including the blind.	The requested revisions were made to the extent possible.
The land use connection is critical. As long as there is a severe housing shortage, we will have horrific traffic problems and bigger demand for transit. C/CAG cannot keep promoting, even allowing, so much jobs growth. It is so high that jobs are being moved from other places to here. The rate is not natural or sustainable. Don't support it. There must be more emphasis on production of TOD housing, and fulfillment of regional allocations. My town Menlo Park is planning to worsen the housing shortage with 50% growth by 2040 and 70% jobs growth by 2040. If typical, the housing growth won't happen so the shortage will worsen. That shouldn't happen. Don't promote TOD development that doesn't reduce the shortage.	Thank you for your suggestion. This can be considered in future updates of the CTP.
Should have more vision about long-term improvements connecting to the East Bay, particularly via the Transbay corridor.	The CTP establishes a coordinated transportation planning framework for the county over the next 20+ years. Additional information on specific projects, corridor improvements, and new initiatives can be considered in future updates of the CTP.
I feel that the document does not talk about specific of what SMC will be do to improve specific roadways.	The CTP establishes a coordinated transportation planning framework for the county over the next 20+ years. Additional information on specific projects, corridor improvements, and new initiatives

	can be considered in future updates of the CTP.
I don't see the teeth in the document to force changes on standards necessary to widen streets. Menlo Oaks District has no drainage and heritage trees growing in the easement the conflict of environmental carbon tradeoffs are not discussed in document. Do encourage regrading streets and cutting streets to provide sidewalks and bike lanes only to widen streets and increase speeds, or leave things the way they are without adding to drainage to the bay? Resulting in habitat and native tree loss.	The CTP establishes a coordinated transportation planning framework for the county over the next 20+ years. Additional information on specific projects, corridor improvements, and new initiatives can be considered in future updates of the CTP.
Need to address high speed rail project through San Mateo county.	The requested revisions were made to the extent possible.
Werder Pier is an existing, abandoned fishing pier that extends from Foster City into the deep water shipping channel beneath the high-rise section of the San Mateo-Hayward Bridge, and is owned by the County of San Mateo. There are existing plans to expand San Francisco Bay ferry service to Redwood City, and this proposed south bay ferry service does not include ferry service to Werder Pier, thus bi-passing the San Mateo-Hayward Bridge location by a mere 100 feet. This makes absolutely no sense. A Foster City Ferry terminal will help the proposed Redwood City terminal project meet their minimum ridership requirements, and thereby increase the likelihood that the San Francisco Water Transportation Authority will implement this sorely needed service to our community.	Thank you for your suggestion. This can be considered in future updates of the CTP.
It is a good start, but we need to think strategically as funding is so low to avoid duplication of agencies and routes for transportation and to have much more housing closer to jobs-more walkability and transit and far less reliance on automobiles.	The CTP establishes a coordinated transportation planning framework for the county over the next 20+ years. Additional information on specific projects, corridor improvements, and new initiatives can be considered in future updates of the CTP.

I was amazed that rail was not mentioned. With the change to electric, greater frequencies are possible.	The CTP establishes a coordinated transportation planning framework for the county over the next 20+ years. Additional information on specific projects, corridor improvements, and new initiatives can be considered in future updates of the CTP.
Please invest in eliminating grade crossings for Caltrain. Redwood City, San Mateo City - are examples of places that should eliminate them.	The CTP establishes a coordinated transportation planning framework for the county over the next 20+ years. Additional information on specific projects, corridor improvements, and new initiatives can be considered in future updates of the CTP.
We don't need BRT on El Camino, rather we need better east-west bus connections at Caltrain stations.	The requested revisions were made to the extent possible.
I am most concerned about integrating public (and non-public) transport so that the system as a whole is improved. Increasing roadways supports increased vehicle use. Please look at improving train, bus, shuttle bus, biking and using incentives and deterrents so that the population learns to consider alternatives to driving alone.	Thank you for your suggestions. These can be considered in future updates of the CTP.
The idea of express bus (double decker hopefully) lanes is fabulous. I think the same across the bridges is needed even more. The beauty of the idea is that satellite pick ups and drop offs makes it even better as you don't have everyone piling into just a few locations. I'm not sold on the 'pay lanes' though, but I'll listen. thanks	The CTP establishes a coordinated transportation planning framework for the county over the next 20+ years. Additional information on specific projects, corridor improvements, and new initiatives can be considered in future updates of the CTP.
3) Doesn't meaningfully address barriers (frequency, reliability, cost) of being transit dependent in San Mateo County.	The CTP establishes a coordinated transportation planning framework for the county over the next 20+ years. Additional information on specific projects, corridor improvements, and new initiatives can be considered in future updates of the CTP.

<p>I feel like Caltrain should be a major priority because it seems like the best way to get cars off of 101. Right now, it's extremely overcrowded during commute times, which is a wonderful problem to have because it means there's plenty of demand. Here are the things that I think would make it even more utilized:</p> <ul style="list-style-type: none"> - An official Caltrain app that tells riders if their trains are running late and why (right now twitter and third party apps are the only way to get information about these things, and they're spotty and often inaccurate). It would be extremely easy and cheap to have GPS units in each train and map their progress on an app. - Never run smaller Caltrains during the rush hour. Most of the trains are already the bigger variety, but it's not infrequent that a smaller train will run during commute hours and be completely packed with no room to even stand. - Run limited/express service later into the evenings. People currently can't really use Caltrain if they're traveling to the city for dinner or evening activities which adds lots of cars to 101. 	<p>Thank you for your suggestions. These can be considered in future updates of the CTP.</p>
<p>I support more spending for bike infrastructure, especially along El Camino. Providing safe alternatives to cars for local users is a key way to cut down on congestion on city streets.</p>	<p>Thank you for your suggestions. These can be considered in future updates of the CTP.</p>
<p>It is ambitious, and all Caltrain road crossings should be grade-separated in San Mateo county.</p>	<p>Thank you for your suggestion. This can be considered in future updates of the CTP.</p>
<p>For the large cover photo, please consider a photo that reflects the goals/visions of the Plan and that shows bicyclists, pedestrians, transit users, and motorists, including facilities for all (bikeways, sidewalks, bus stops, lighted crosswalks, etc.) I don't see any sidewalks, pedestrians, bicyclists, or even any people in the main cover photo. Thank you.</p>	<p>Thank you for your suggestion. This can be considered in future updates of the CTP.</p>
<p>Change "Peninsula Traffic Congestion Relief Alliance" to "Commute.org". Similarly, references to the shortened name "Alliance" should be changed to "Commute.org".</p>	<p>The requested revisions were made to the extent possible.</p>
<p>Page 75: Photo of Commute.org shuttle should be updated with the most current shuttle design (contact us if you need photos)</p>	<p>The requested revisions were made to the extent possible.</p>

The Bay Area Commuter Benefits Program (BACBP) has recently been signed into law permanently (SB1128).	The requested revisions were made to the extent possible.
Shuttle Services: It warrants mentioning that the shuttles also provide first/last mile service to residential neighborhoods that are located near or along the routes that serve employment centers	The requested revisions were made to the extent possible.
Dense buildup of area changes topography of landscape.	Thank you for your comment.
US 101 must be widened to accommodate overcrowding, reduce the danger, more importantly, reduce Point pollution, and even more importantly reduce that wasting of fuel. A least one lane each direction, though 2 would be better. The only restrictions are cost and lack of willingness. Thank you	Thank you for your comment.
All around the Bay Area there are more aptmnts and condos but no matching infrastructure. We need better public transportation. In case you haven't notices, it's a nightmare out there on 101 and 280, etc.	Thank you for your comment.
Idea of for pay lanes is bad. I moved from the east bay to avoid the havoc caused by the tolls put up near the Altamont	Thank you for your comment.

Public Comment Form Question 1: Do you share the vision and goals of the Countywide Transportation Plan for 2040?

Q1: On a general level, yes. Improvements are definitely needed. Streamlining the county's goals is a move in a good direction; no matter if it takes some time.	Thank you for your comment.
Q1: I need to study more. I love to see the ITS on the charts!	Thank you for your comment.
Q1: Yes, please add "Vision Zero" to your policies	The CTP is supportive of policies and initiatives that improve safety for all users of the transportation system. Information on vision zero policies can be considered in future updates of the CTP.
Q1: The need to improve and expand public transportation.	Thank you for your comment.
Q1: Yes, we need a broad, strategic, multi-modal approach.	Thank you for your comment.
Q1: Need a more robust focus on active and public transportation modes. Tie climate, health, and active mode goals together with funding.	The CTP establishes a coordinated transportation planning framework for the county over the next 20+ years. Additional information on specific projects, corridor improvements, and new initiatives can be considered in future updates of the CTP.
Q1: Add specific active transportation initiatives. The goal should be to get people out of their cars, not to make driving easier.	Thank you for your suggestion. This can be considered in future updates of the CTP.
Q1: Need clear GHG reduction targets and modeshift targets and discrete reduction in SOVs of VMT per capita.	Goals to reduce to per-capita VMT and CO2 emissions are part of the Regional Transportation Plan (RTP) and calculated on a regional basis. The CTP does not set specific reduction targets for the county or analyze individual projects. The projects listed in Appendix B of the CTP were submitted to MTC for inclusion in the RTP update.
Q1: Goals for bike share.	Thank you for your suggestion. This can be considered in future updates of the CTP.

Q1: Need goals for climate, mode shift (focused on dense areas).	The need to improve multimodal transportation is a major theme of the CTP. Mode shift targets are not established in the plan, but the forecast growth trips by mode for 2040 (see chapter 2) reflects the transportation investments proposed in the RTP and the CTP.
Q1: 1) San Mateo County cannot develop a transportation plan without including neighboring counties. 2) Restore and activate existing railroad from cities over Dumbarton Bridge IMMEDIATELY.	The CTP establishes a coordinated transportation planning framework for the county over the next 20+ years. Additional information on specific projects, corridor improvements, and new initiatives can be considered in future updates of the CTP.
Q1: Integrate San Mateo's plan into regional efforts in a more meaningful way. County by county approaches are not going to be successful in the long run, especially with housing prices being what they are.	Thank you for your suggestion. This can be considered in future updates of the CTP.
Public Comment Form Question 2: Which area of transportation should be the highest priority for the county and for your community?	
Q2: For our community, improving congestion, where there was none or much less. Unfortunately changing infrastructure is a major task. So looking at improving alternative modes to be more efficient and attractive will help. For the county, the above applies, but of course on a larger magnitude.	Thank you for your comment.
Q2: ITS to enable vehicles and pedestrians to move at reasonable rates vs. waiting for a light change. Funding to make it "all" happen. All = public transportation that covers our entire city and connections to regional public transit and last mile opportunities.	The CTP is supportive of policies and initiatives that improve multimodal transportation options.
Q2: Sidewalks and main street crossing need attention for those with mobility devices to access public transit.	The CTP is supportive of policies and initiatives that improve safety for all users of the transportation system.
Q2: Pedestrian and cyclist safety.	The CTP is supportive of policies and initiatives that improve safety for all users of the transportation

	system.
Q2: Reducing new office space development; we cannot solve the traffic problem until we stop making it worse.	Thank you for your suggestion. This can be considered in future updates of the CTP.
Q2: Bicycling, walking, and public transportation.	The CTP is supportive of policies and initiatives that improve safety for all users of the transportation system.
Q2: Increase public transportation options by having more routes available and longer times.	Thank you for your comment.
Q2: Land-use density near transit. Expand SamTrans toward Last Mile solutions. User-friendly connectivity of transportation services . Integrate lyft/uber, etc., with public transit. Encourage dramatic increase in carpooling. Aggressively pilot implementation of autonomous vehicle network.	Thank you for your suggestion. This can be considered in future updates of the CTP.
Q2: Safety- need Vision Zero for no deaths/serious injuries on roads, driver/ped/bike.	The CTP is supportive of policies and initiatives that improve safety for all users of the transportation system. Information on vision zero policies can be considered in future updates of the CTP.
Q2: Improving mobility and reducing GHGs.	The CTP is supportive of policies and initiatives that improve multimodal transportation options.
Q2: Regional integration of public and active transportation modes. Safe routes to school and Vision Zero top priority.	The CTP is supportive of policies and initiatives that improve safety for all users of the transportation system. Information on vision zero policies can be considered in future updates of the CTP.
Q2: Make El Camino real safe for bicycling and walking. Set a % goal for bicycle increase.	The CTP is supportive of policies and initiatives that improve safety for all users of the transportation system.

Q2: 1) Appropriate signals for Willow Rd between 101 and 84. 2) DO NOT change 101/Willow interchange. A decades old plan will only make the situation worse.	The CTP establishes a coordinated transportation planning framework for the county over the next 20+ years. Additional information on specific projects, corridor improvements, and new initiatives can be considered in future updates of the CTP.
Q2: (Above comment) This is right about the planned change to Willow/101. \$70M to make things worse is a misallocation of resources.	The CTP establishes a coordinated transportation planning framework for the county over the next 20+ years. Additional information on specific projects, corridor improvements, and new initiatives can be considered in future updates of the CTP.
Q2: Set specific bike mode shift targets, as in the ped objectives. The bike objectives now read like a means to an end rather than a true objective.	The need to improve multimodal transportation is a major theme of the CTP. Mode shift targets are not established in the plan, but the forecast growth trips by mode for 2040 (see chapter 2) reflects the transportation investments proposed in the RTP and the CTP.
Q2: Improve public transit options for seniors. Reduce the need to drive our cars.	The CTP is supportive of policies and initiatives that improve multimodal transportation options.
Q2: Walk/bike/transit with carpool bikeshare/rideshare supplement.	The CTP is supportive of policies and initiatives that improve multimodal transportation options.
Q2: Housing to reduce need to commute.	Thank you for your suggestion. This can be considered in future updates of the CTP.
Public Comment Form Question 3: What are the biggest challenges for traveling in the county as motorist, bicyclist, pedestrian, and/or transit user?	
Q3: motorist- congestion; bicyclist- availability, safety; pedestrian- safety; transit user- lack of ease, accessibility, time-effectiveness, cost-effectiveness	Thank you for your comment.

Q3: Ability to connect to Bart, Caltrain and bus service - last mile. Ability to have bicycle- carry it or have areas where bicycles can be rented.	The CTP is supportive of policies and initiatives that improve multimodal transportation options.
Q3: Lack of safety, lack of connectivity, lack of protection and awareness. Almost complete auto dependency for most households, terrible sidewalks.	The CTP is supportive of policies and initiatives that improve safety for all users of the transportation system.
Q3: Not having a smooth public transportation route that connects the peninsula to the east bay (around the bay area).	The CTP is supportive of policies and initiatives that improve multimodal transportation options.
Q3: Shortage of the above (Q2).	Thank you for your comment.
Q3: Adopt Vision Zero as part of the roadway system goals.	The CTP is supportive of policies and initiatives that improve safety for all users of the transportation system. Information on vision zero policies can be considered in future updates of the CTP.
Q3: No bike swarms. Bikers need to respect rules of road. Use Alameda as alternative to El Camino no left turns.	Thank you for your comment.
Q3: More protection needed for bicyclists and peds. Start with El Camino!	The CTP is supportive of policies and initiatives that improve safety for all users of the transportation system.
Q3: More frequent Caltrain service, integrated transit fares and schedules.	The CTP is supportive of policies and initiatives that improve multimodal transportation options.
Q3: Mandate work hours to off peak. Bart, Bart, Bart.	Thank you for your comment.
Q3: Bike safety- need for protected intersections, more traffic-separated bike lanes and green paint for bike/car conflict zones.	The CTP is supportive of policies and initiatives that improve safety for all users of the transportation system.

Q3: No SAFE routes identified. 1)Children need additional signage for their safety. 2)Pedestrians need safe walking area not shared with hi-speed cyclists. 3)Transit stops must be more frequent. 4) Willow and University need overpasses to 84.	The CTP is supportive of policies and initiatives that improve safety for all users of the transportation system.
Q3: El Camino is not safe for bicycles. This needs to change.	The CTP is supportive of policies and initiatives that improve safety for all users of the transportation system.
Q3: Public transportation options are soul crushing. Those running the agencies need to use the services and actually ride bikes to experience.	Thank you for your comment.

Public Comment Form Question 4: Which projects, programs, or policies would you like to see implemented the most?

Q4: Complete streets- consider drainage improvements/effects and utility coordination and improvements. Something not metioned at the presentation, so curious how much these are considered.	Additional information on Stormwater and Pollution Prevention was added to the discussion of Roadways and is addressed in the Parking policies.
Q4: ITS- "full connected car" abilities. I am told even older cars can become "connected."	The CTP is supportive of technologies, policies and initiatives that improve safety and efficiency for all users of the transportation system. Information on new technologies and initiatives can be considered in future updates of the CTP.
Q4: Burlingame 101 Exchange now adds time to commuters and residents in Lyon Hoag neighborhood to Rollins Ave need 3 signal lights as opposed to 1 to get off freeway and get to Rollins Ave, also signals for left turning onto street before RR tracks isn't signed to train closings	The CTP establishes a coordinated transportation planning framework for the county over the next 20+ years. Additional information on specific projects, corridor improvements, and new initiatives can be considered in future updates of the CTP.
Q4: Use of green technology: pavers, pervious concrete, porous asphalt on streets or specific lanes on streets (parking lanes, dedicated bike paths).	Additional information on Stormwater and Pollution Prevention was added to the discussion of Roadways and is addressed in the Parking policies.
Q4: Convert carpool lanes to mass transit lanes with mass transit 4 or more people per vehicle, this allows lyft and uber to provide door to door service.	Thank you for your suggestion. This can be considered in future updates of the CTP.

Q4: Build the 880/580 bridge run Bart across it and connect Milbrae and Castro Valley Bart stations.	Thank you for your suggestion. This can be considered in future updates of the CTP.
Q4: Build Expressway from South 101 to Dumbarton Bridge that bypasses downtown East Palo Alto.	Thank you for your suggestion. This can be considered in future updates of the CTP.
Q4: Convert Woodside Rd into a freeway from 101 to El Camino; close Bay St intersection; convert Spring St into a 20' wide bike pedestrian overpass.	Thank you for your suggestion. This can be considered in future updates of the CTP.
Q4: (CCAG improvements) Focus on implementing robust bicycle and ped infrastructure improvements and prioritize safe routes to school to set the tone. Collaborate and coordinate with transit agencies. We should have world class public transit systems in the region.	The CTP is supportive of policies and initiatives that improve multimodal transportation options.
Q4: Need to look at local streets that bottleneck during traffic hours and work with the cities to come up with solutions. They should be required to address traffic issues, i.e., El Camino between Encinal and Middle Ave.	Thank you for your suggestion. This can be considered in future updates of the CTP.
Q4: We urgently need ALL of Q2.	Thank you for your comment.
Q4: Protected bike lanes on ECR as the GBI project. Vision Zero. Nimble, electric fleet of bus routes.	The CTP is supportive of policies and initiatives that improve safety for all users of the transportation system. Information on vision zero policies can be considered in future updates of the CTP.
Q4: Menlo Park: reconstruct US 101 Willow interchange.	Thank you for your suggestion. This can be considered in future updates of the CTP.
Q4: Mobility as a Service (MaaS) and transportation alternatives (to SOVs).	The CTP is supportive of policies and initiatives that improve multimodal transportation options.
Q4: We need BRT orthogonal to Caltrain stations, not parallel. People select travel route based upon how much time it takes to get from A to B.	The CTP is supportive of policies and initiatives that improve multimodal transportation options.
Q4: Protected bike lanes on ECR.	The CTP is supportive of policies and initiatives that improve safety for all users of the transportation system.

Q4: More grade separations/Caltrain corridor. Caltrain capacity increase.	The CTP is supportive of policies and initiatives that improve multimodal transportation options.
Q4: Railroad.	The CTP is supportive of policies and initiatives that improve multimodal transportation options.
Q4: Dumbarton Rail.	The CTP is supportive of policies and initiatives that improve multimodal transportation options.
Q4: Make ECR safe for pedestrians and bicyclists.	The CTP is supportive of policies and initiatives that improve safety for all users of the transportation system.
Q4: Less road widening-> induced demand-> more traffic and pollution/GHG.	Thank you for your comment.
Q4: Increase the number of grade separation between vehicle and road.	Thank you for your suggestion. This can be considered in future updates of the CTP.

Public Comment Form Question 5: Do you have any other comments or questions?

Q5: HOV or managed lanes, where real estate of lanes is lacking. Have you considered time-restraints, i.e., HOV lane during hour only to rush?	Thank you for your suggestion. This can be considered in future updates of the CTP.
Q5: Funding. Thank you for being here, listening, taking public input throughout. I am sure people are very interested.	Thank you for your comment.
Q5: need more \$ for paratranist especially as County ages; need more options for those who need both paratransit and fixed route transportation depending on weather and disability good or bad days	Thank you for your suggestion. This can be considered in future updates of the CTP.
Q5: Since most new housing for SM County will be in the Central Valley, we need high speed mass transit from SMC all the way to the Central Valley.	Thank you for your suggestion. This can be considered in future updates of the CTP.
Q5: Encourage lyft/uber to provide last mile mass tranist driver and 3 passenger (car)/5 passenger (minvan) shared rides.	The CTP is supportive of technologies, policies and initiatives that improve safety and efficiency for all users of the transportation system. Information on new technologies and initiatives can be considered in future updates of the CTP.

Q5: I use bike train bike to commute and I love it; the problem is not enough bike space on the trains, we need to scale bike space on trains with growth of bike train bike ridership.	The CTP is supportive of policies and initiatives that improve multimodal transportation options.
Q5: Add equity to the "E's". Do a data driven approach to making our environment safer for multimodal options that put people first.	Thank you for your suggestion. This can be considered in future updates of the CTP.
Q5: This is a Bay Area issue- all the counties should be working together to find solutions. Traffic crosses county borders. Ideally Bart should run all around the Bay Area.	Thank you for your suggestion. This can be considered in future updates of the CTP.
Q5: Educate the public about how the real costs of private vehicle usage already far outweigh cost of existing and planned transit options. We don't need to "make transit cost-competitive with private vehicle use"- we need to understand and embrace the fact that it already is. We can't pave our way out of this- don't try to!	The CTP is supportive of policies and initiatives that improve multimodal transportation options.
Q5: The planned projects are mostly around roadway expansion, which is out of step with the goals to increase alternatives to driving.	The projects listed in Appendix B of the CTP are the result of the Regional Transportation Plan (RTP) update process. New projects were not developed as part of the CTP, but can be considered in future updates to the RTP and CTP.
Q5: Please adopt a GHG reduction goal for County transportation.	Goals to reduce to per-capita VMT and CO2 emissions are part of the Regional Transportation Plan (RTP) and calculated on a regional basis. The CTP does not set specific reduction targets for the county or analyze individual projects. The projects listed in Appendix B of the CTP were submitted to MTC for inclusion in the RTP update.
Q5: Please have CCAG fund robust, systematic SRTs in SMC and work with cities to make it comprehensive and consistent.	The CTP is supportive of policies and initiatives that improve safety for all users of the transportation system.

Q5: 101 and 280 cannot be easily widened. For N-S travel, improving Caltrain is the only physical improvement. Encouraging more shuttles on 101 and 280 is a time efficient solution to improving throughput.	The CTP establishes a coordinated transportation planning framework for the county over the next 20+ years. Additional information on specific projects, corridor improvements, and new initiatives can be considered in future updates of the CTP.
Q5: Next time, please give a presentation on this information before you ask feedback from people. Having to ask officials individually for clarity is a poor way to effectively distribute information.	In addition to the public meetings, comments were accepted through the C/CAG website and via email to C/CAG staff. The plan will follow a process for adoption through the CMP Technical Advisory Committee and CMEQ Committee, with final approval by the C/CAG Board. These meetings are public and notices of upcoming meetings are posted on the C/CAG website.
Q5: On revenue: please distinguish between \$ for new projects vs. maintenance.	The discussion of transportation funding and finances in the CTP is based on high-level information. Additional financial analysis can be considered in future updates of the CTP.
Q5: All developments should consider LOS traffic impacts and be assessed TIFs sufficient to pay for mitigations. Expand park and ride lots, transit parking lots for cars and bikes and encourage carpooling.	The CTP is supportive of policies and initiatives that improve multimodal transportation options.
Q5: Menlo park, like many others, is allowing traffic congestion to worsen without attempting to mitigate it. It can and should. 81% of commuters drive. This can be done without harming biking and public transit.	The CTP establishes a coordinated transportation planning framework for the county over the next 20+ years. Additional information on specific projects, corridor improvements, and new initiatives can be considered in future updates of the CTP.
Q5: TDM should be for resident not just employment (see Bay Meadows City of San Mateo).	Thank you for your suggestion. This can be considered in future updates of the CTP.

Appendix F

Equity Analysis

Background

This supplement is intended to assess the equity implications of the transportation projects included in the San Mateo Countywide Transportation Plan for 2040. It serves to help understand the effect on disadvantaged communities as a result of implementing the Plan. Specifically, it addresses whether or not the plan is equitable in its distribution of benefits between communities of concern and the rest of the county.

The equity analysis documented in this supplement supports the goals of a fair and equitable transportation system for San Mateo County. It also supports the goals of the Title VI nondiscrimination requirement for federally funded transportation projects. The analysis outlines designation criteria for identifying communities of concern and minority communities within the county. Following a methodology put forth by the Metropolitan Transportation Commission (MTC) for Plan Bay Area, the Regional Transportation Plan, the equity analysis evaluates the plan's investment program as it relates to serving these communities. While this analysis takes a holistic approach to considering equity, individual projects in the plan are subject to and undergo their own Title VI and environmental justice review as required under NEPA and CEQA regulations.

A Framework for Analyzing Equity in the San Mateo Countywide Transportation Plan for 2040

Determining a Methodology

The method used in this analysis pulls from the regional equity work completed by the MTC, providing an analysis consistent with what can be found at the regional level. To evaluate the implications of its Regional Transportation Plan (RTP), MTC employed three techniques for analyzing equity. The first method used a set of technical performance measures, such as average commute time, to assess the impact and benefit of the plan's alternative scenarios on communities of concern. The second method compared the percent of investment in low-income and minority populations to the percent of their use of the transportation system. The third method was a mapping analysis, overlaying plan investments with the location of disadvantaged communities. The first two techniques relied on regional travel model outputs as the basis of their calculations. Since the regional analysis raised no large equity concerns, the analysis was considered sufficient for the purposes of this plan, without the need to do additional modeling work for San Mateo County. For CTP 2040, the project mapping analysis was applied to examine the distribution of projects between communities of concern and the rest of the county, and a perspective for considering the equity implications of the Countywide Transportation Plan.

Defining Communities of Concern

In order to assess the impact of the CTP 2040 on communities that may be considered disadvantaged, it was necessary to establish conditions for identifying communities of concern. Using census tracts as the level of geography, MTC specified criteria for distinguishing among census tracts within the county. Additionally, each criterion has an associated concentration threshold used to determine whether it is met

or not. The definition states that any census tract exhibiting either of the following be identified as a community of concern:

1. Significant concentrations of both low-income and minority residents
2. Significant concentrations of any four or more of the following:
 - a. Minority persons (70%)
 - b. Low-income persons below 200% of the federal poverty level (about \$44,000 per year for a family of four) (30%)
 - c. Persons with Limited English Proficiency (20%)
 - d. Zero-vehicle households (10%)
 - e. Seniors aged 75 and over (10%)
 - f. Persons with a disability (25%)
 - g. Single-parent families (20%)
 - h. Housing units occupied by renters paying more than 50% of household income on rent (15%)

Based on this definition, 21 communities of concern were identified within the county, amounting to 14% of the county's 155 census tracts. Figure 1 maps the location of all communities of concern in San Mateo County. The proportion of the county's population residing in communities of concern amounts to 17% of the overall population.

A second metric is defined as another approach to recognizing disadvantaged communities. A minority community is one whose minority population concentration is above the regional average, found to be 54% in the Bay Area. This plan will consider minority residents as those of any of the following groups as defined by the Census Bureau: Black or African-American, Asian, American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander, some other race, two or more races, or Hispanic/Latino of any race. Apart from providing a second equity perspective, this metric dually works to address a requirement of Metropolitan Planning Organizations by the Federal Transit Administration's (FTA's) Title VI program for nondiscrimination which necessitates "Demographic maps that overlay the percent minority and non-minority population as identified by Census or ACS data." As shown in **Table 1**, half of San Mateo County residents live in census tracts with minority populations above the regional average.

Table 1: Population in Communities of Concern and Above-average Minority Communities

	Population	Percent of County Population
Communities of Concern	120,891	17%
Census tracts with above-average minority population	349,023	50%

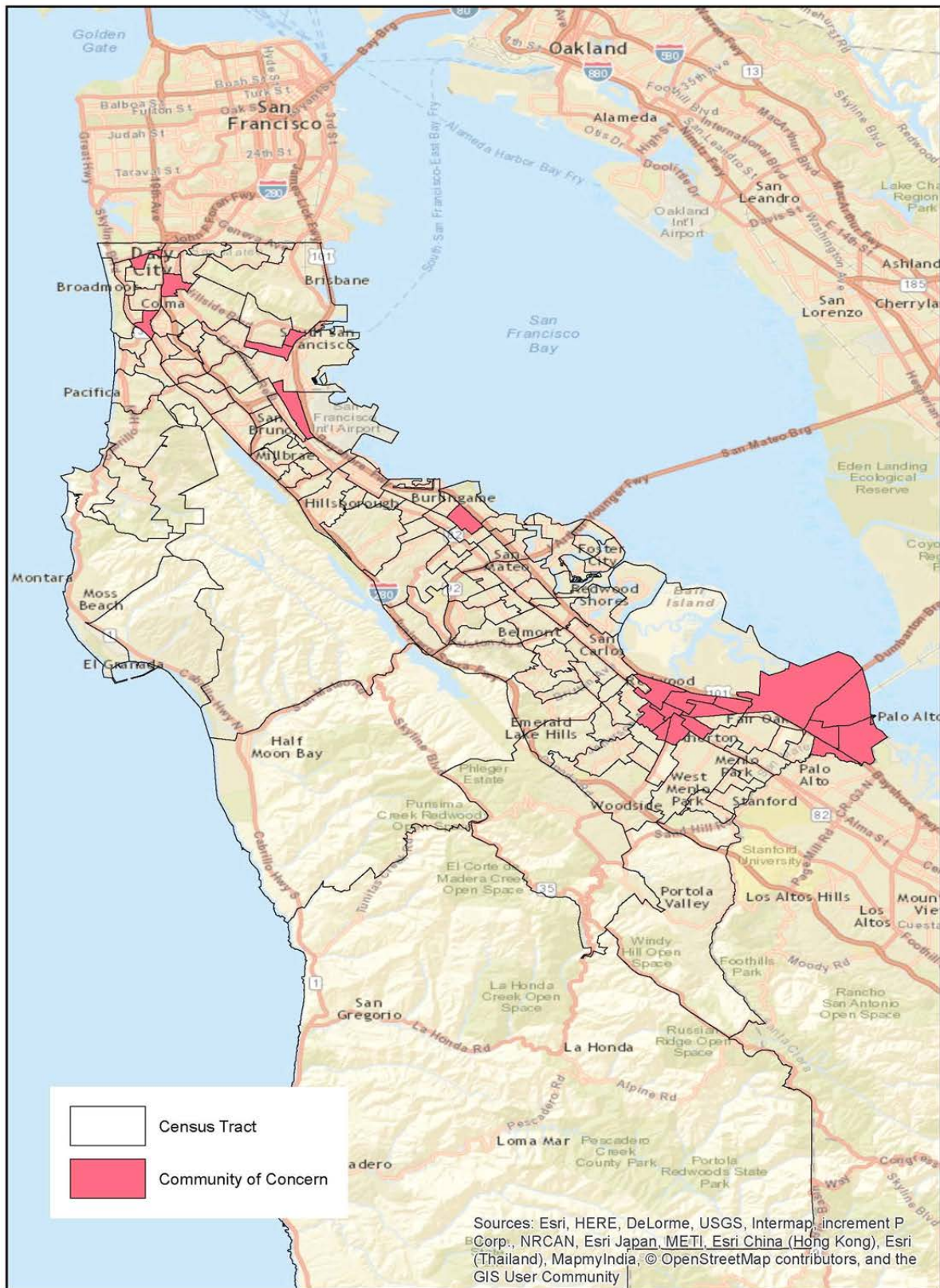


Figure 1: Communities of Concern in San Mateo County

Project Mapping Analysis

The project mapping analysis is applied to San Mateo County as a method for analyzing the nature of the investments in the CTP 2040. The analysis seeks to ensure that equitable access is provided by assessing the spatial distribution of its transportation projects. It accomplishes this by overlaying the plan's projects with identified communities of concern and minority communities in the region, as defined in the previous section.

The method allows for a comparison of how projects included in the plan would provide investments to communities of concern relative to the rest of the county. Rather than attempt to quantify the level of benefit a specific community receives from a transportation project, for which no consensus at the regional level was found, the resulting equity determination uses a qualitative approach. An analysis of the projects is completed to observe the presence of 1) any apparent systematic exclusion of communities of concern or minority communities in the spatial distribution of benefits, 2) any apparent systematic imbalances in the distribution of projects between communities of concern and the remainder of the region or 3) between minority and non-minority communities.

The equity analysis uses this technique to analyze the distribution of transportation projects in San Mateo County; however, the mapping analysis is not without limitations. The spatial analysis approach requires that a project is able to be mapped in order to be evaluated. It includes capital projects, but is unable to include projects that cannot be represented as locations within specific communities. For example, funding dedicated to countywide programs or transit operations and maintenance are not represented within the bounds of the mapping analysis. A separate equity analysis for these types of investments should be done as they proceed through planning and implementation.

Even given this condition, of the investments included in the plan, the mapping analysis is able to capture 47 of the 61 projects, or 77%. While the large majority of the projects are fully planned, some of projects included in the plan are in earlier project stages. These projects, which include planning phases, environmental phases, and general multi-phased projects, are acknowledged as such in the project mapping. Since this equity analysis serves as a mechanism for opening discussion around the plan's projects and their impacts, it is useful to identify those projects which are in their initial stages as they hold greater opportunity for discussion.

Analysis Results

Figure 2 and Figure 3 present the outcome of the project mapping analysis. The maps show the spatial distribution of projects, making visible that from a countywide perspective, there is no apparent systematic exclusion of communities of concern or minority communities in the location of projects. Furthermore, it can be seen that no apparent systematic imbalances exist in the distribution of projects between communities of concern or minority communities and the remainder of the county.

Table 2 groups the plan's projects based on the community type they are located in, extending the analysis to the types of projects that are to take place in communities of concern and their counterparts. US-101 auxiliary lanes (Marsh Road to Embarcadero Road), Bay Road improvements, and University Avenue complete streets projects all exist fully within census tracts deemed communities of concern, increasing access in these areas as well as multimodal usage. A large number of projects also exist completely within the remainder of the region, while several projects, including large scale infrastructure projects, run through both community types. It is important to note that although some projects do not extend to within the boundaries of communities of concern, they are located relatively nearby. This

proximity means that they will also have impacts on access to the adjacent communities of concern. Given that transportation projects do not have exclusively local but rather farther-reaching effects, these communities may too be impacted by those projects nearby, as well as other large scale or county projects. Overall, the project mapping analysis provides a representation of a transportation project list with reasonable coverage of the populous portions of San Mateo County.

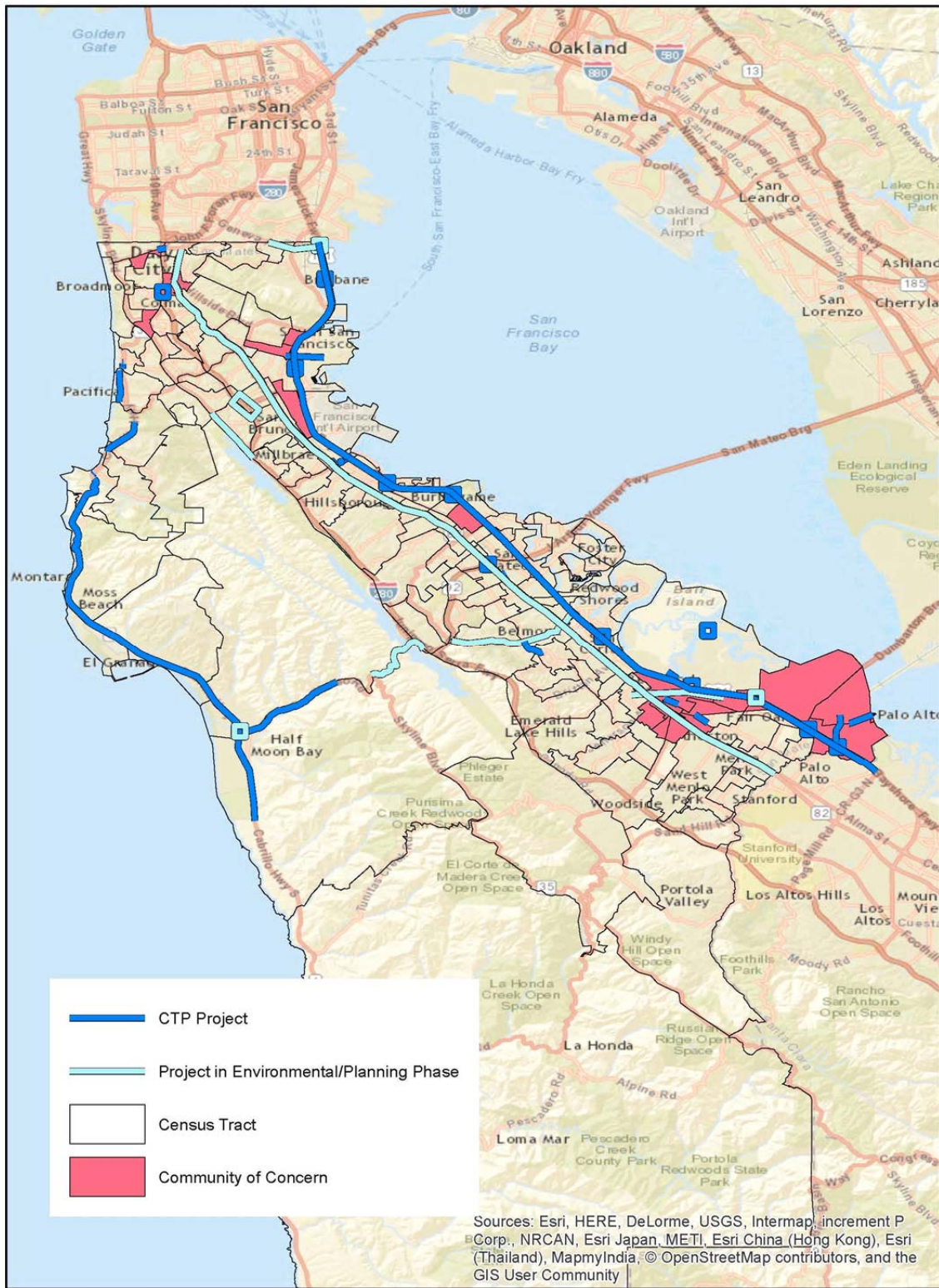


Figure 2: Communities of Concern and CTP 2040 Projects

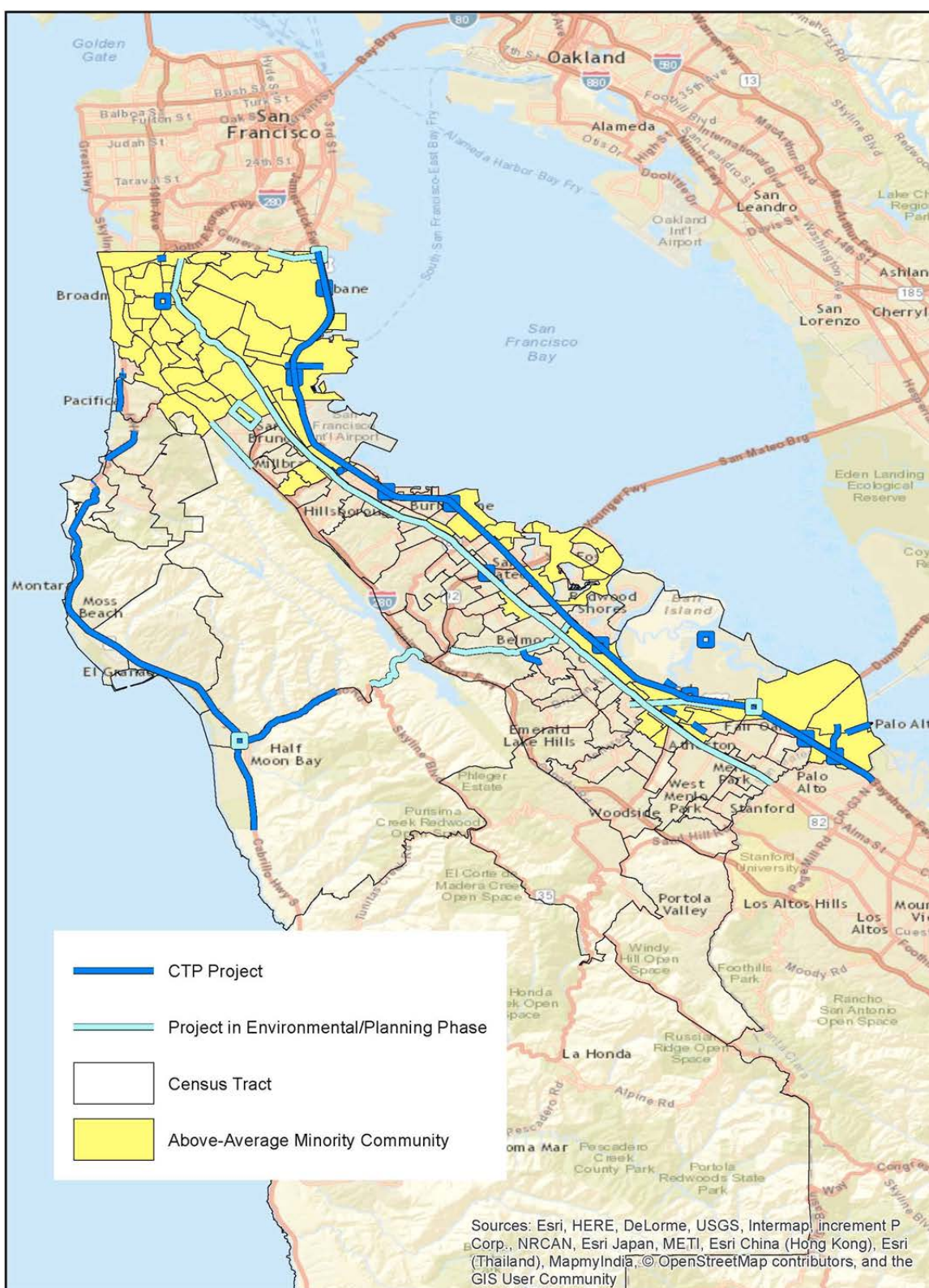


Figure 3: Above-Average Minority Communities and CTP 2040 Projects

Table 2: Proposed Project List by Community Location

Sponsor Agency	Project Title	Phase
Projects in a Community of Concern		
Caltrans	Construct auxiliary lanes (one in each direction) on U.S. 101 from Marsh Road to Embarcadero Road	
East Palo Alto	Bay Road Improvement Phase II & III	
East Palo Alto	University Avenue Complete Streets Pilot Project	
Projects not in a Community of Concern		
Belmont	Ralston Avenue Corridor Improvements	Phased
Belmont	Alameda de las Pulgas Corridor Study and Improvements	
Brisbane	Reconstruct U.S. 101/Candlestick Point interchange to full all-directional interchange	Environmental
Brisbane	Construct a 6-lane arterial from Geneva Avenue/Bayshore Boulevard intersection to U.S. 101/Candlestick Point interchange	Environmental
Brisbane	Reconstruct U.S. 101/Sierra Point Parkway interchange (includes extension of Lagoon Way to U.S. 101)	
Burlingame	Reconstruct U.S. 101/Broadway interchange	
Daly City	Construct streetscape improvements on Mission Street (Route 82) and Geneva Avenue	Phased
Half Moon Bay	Widen Route 92 between SR 1 and Pilarcitos Creek alignment, includes widening of travel lanes and shoulders	
Half Moon Bay	Route 1 Improvements in Half Moon Bay	
Millbrae	Construct new multi-purpose pedestrian/bicycle overcrossing across U.S. 101, north of and adjacent to existing Millbrae Avenue Bridge across U.S. 101	
Millbrae	Extend California Drive north to the intersection of Victoria Avenue and El Camino Real in Millbrae	
Millbrae	Widen Millbrae Avenue between Rollins Road and U.S. 101 southbound on-ramp and resurface intersection of Millbrae Avenue and Rollins Road	
Pacifica	The Manor Drive Overcrossing Improvement and Milagra On-Ramp Project	
Pacifica	Route 1 San Pedro Creek Bridge Replacement and Creek Widening Project	
Pacifica	Palmetto Avenue Streetscape Project	
Pacifica	Construct Route 1 (Calera Parkway) northbound and southbound lanes from Fassler Avenue to Westport Drive in Pacifica	
Redwood City	Middlefield Road Streetscape	
San Bruno	Widen Skyline Boulevard (Route 35) to 4-lane roadway from I-280 to Sneath Lane	Phased

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San Bruno	Improve local access at I-280/I-380 from Sneath Lane to San Bruno Avenue to I-380	Environmental
San Carlos	Route 101/Holly St Interchange Access Improvements	
San Mateo (City)	U.S. 101 Interchange at Peninsula Avenue	
San Mateo (City)	25th Avenue Grade Separations	
San Mateo (City)	Hillsdale/US101 Ped/Bike Bridge	
San Mateo (City)	State Route 92-82 (El Camino) Interchange Improvement	
San Mateo City/County Association of Governments (CCAG)	Improve operations at U.S. 101 near Route 92	Phased
San Mateo City/County Association of Governments (CCAG)	Add northbound and southbound modified auxiliary lanes and/ or implementation of HOT lanes on U.S. 101 from Oyster Point to San Francisco County line	
San Mateo County	Westbound slow vehicle lane on Route 92 between Route 35 and I-280	Environmental
San Mateo County	Hwy 1 operational & safety improvements in County Midcoast (acceleration/deceleration lanes; turn lanes; bike lanes; pedestrian crossings; and trails)	
South San Francisco	US 101 Produce Avenue Interchange	
Water Emergency Transportation Authority (WETA)/ Redwood City	Redwood City/South Bay Ferry Terminal for Private Ferry Service	
Projects in both a Community of Concern and Non-Community of Concern		
Daly City	Provide overcrossing at I-280/John Daly Boulevard	
Daly City	I-280 improvements near D Street exit	
East Palo Alto	US 101/University Ave. Interchange Improvements	
Menlo Park	Reconstruct U.S. 101/Willow Road interchange	
Redwood City	Extend Blomquist Street over Redwood Creek to East Bayshore and Bair Island Road	
Redwood City	Implement Redwood City Street Car	Planning
Redwood City	Improve U.S. 101/Woodside Road interchange	

San Mateo City/County Association of Governments (CCAG)	Implement a complete streets design for Mission Street/El Camino Real as part of Grand Boulevard Initiative	Phased
San Mateo City/County Association of Governments (CCAG)	Modify existing lanes on U.S. 101 to accommodate HOV/T lane	
San Mateo City/County Association of Governments (CCAG)	Improve access to and from the west side of Dumbarton Bridge on Route 84 connecting to U.S. 101 per Gateway 2020 Study	Phased
San Mateo County	Middlefield Road Streetscape Improvement Project	
San Mateo County Transit District (SamTrans)	Add new rolling stock and infrastructure to support SamTrans bus rapid transit along El Camino Real	Phased
San Mateo County Transit District (SamTrans)	Implement supporting infrastructure and Automated Transit Signal Priority to support SamTrans express rapid bus service along El Camino Real	
South San Francisco	Railroad Avenue Extension	

Equity Analysis for Transit Agencies in San Mateo County

An assessment of equity for transit agencies in San Mateo County is based on data from MTC surveys from 2012 to 2015 surveys. Figure 4 compares the transit boardings by household income for BART, Caltrain and SamTrans. For BART, boardings were mostly evenly distributed among the income categories, the majority being in the mid-income bracket between \$50,000 and \$74,999. A majority of Caltrain riders were from the highest income bracket of greater than \$150,000, whereas, for SamTrans, a majority was from the lowest income brackets of less than \$50,000.

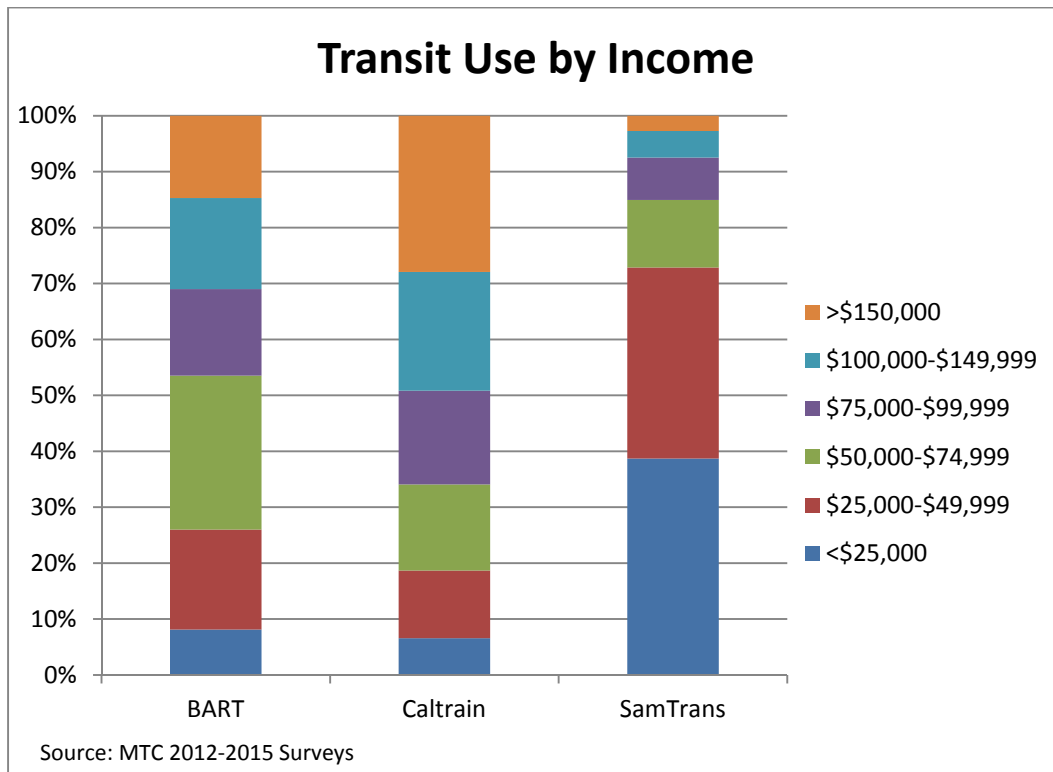


Figure 4: Transit Use by Income

Race statistics from the US Census Bureau show that the population in San Mateo County who identified as “white alone” made up 62% of the population, and approximately 38% of the population is considered in the minority and other categories. For these three transit agencies together, survey results show that about 41% of riders identify as white and 59% identified in the minority categories. Figure 5 displays transit boardings by race and transit provider. The results show that 43% of BART riders and 47% of Caltrain riders identified as white, while 79% of the SamTrans riders identified in the Black, Asian, Hispanic and other categories.

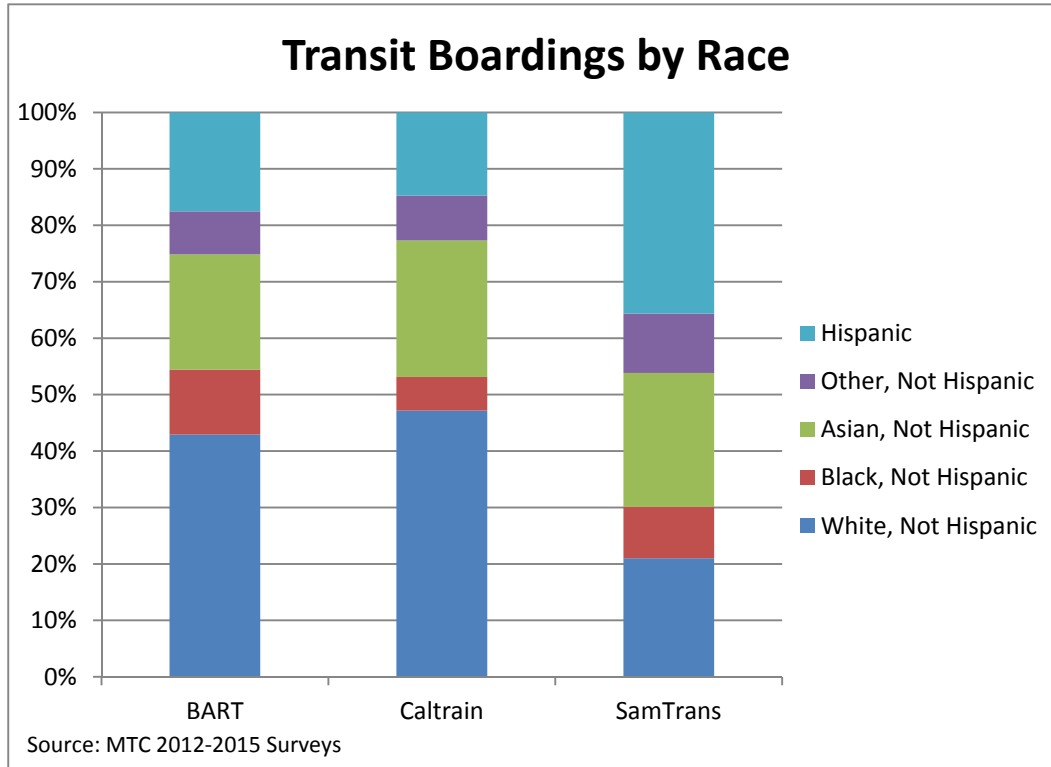


Figure 5: Transit Boardings by Race and Transit Provider

Community-Based Transportation Plans

The MTC Community-Based Transportation Planning Program provides funding for the development of community-based transportation plans (CBTPs), which examine the transportation needs in low income communities in the region. Several plans have been developed in San Mateo County, including CBTPs for San Bruno/South San Francisco, North Central San Mateo, Bayshore, East Palo Alto, and Low-income Populations.¹³⁷ The planning process for CBTPs involve analyzing existing conditions, doing community outreach, developing transportation strategies, and creating action plans.

In the *San Mateo County Transportation Plan for Low-income Populations*, there were eight transportation strategies developed based on the community outreach results and input from the Project Oversight

¹³⁷ <http://ccag.ca.gov/programs/transportation-plans/>.

Committee and Steering Committee, with potential lead agencies including SamTrans, BART, and local jurisdictions.¹³⁸

1. Improve transit stop amenities
2. Increase public understanding of how to use transit
3. Provide free or discounted fares for low-income transit users
4. Improve SamTrans connections and service
5. Improve pedestrian safety and amenities
6. Improve bicycle safety and amenities
7. Provide free or discounted bicycles to low-income persons
- 8A. Create a volunteer driver program
- 8B. Reinststate the emergency taxi voucher program
- 8C. Create additional shuttle services and vanpools
- 8D. Supplement auto loan and repair assistance programs

Some of these strategies may address the equity concerns related to transit use, such as providing free or discounted fares for low-income transit users.

Each CBTP describes a plan of action to establish an implementation process and timeline, secure commitments by lead agencies and project partners, and pursue funding. Funding may come from a variety of sources, including federal, state, local and regional sources. These projects take place over the short, mid, and long-term, and depend on availability of funding as well as action of the lead agency. Performance measures to evaluate the improved mobility of county residents for each strategy are recommended once the strategies reach the project level.

¹³⁸ CCAG, http://ccag.ca.gov/wp-content/uploads/2014/05/FINAL_CountywideLowIncomeTransportationPlan.pdf, 2012.