RESOLUTION ADOPTING THE 2015 SAN FRANCISCO CONGESTION MANAGEMENT PROGRAM (CMP) AND ISSUING AN OFFICIAL FINDING THAT THE CITY AND COUNTY OF SAN FRANCISCO IS IN CONFORMANCE WITH THE CMP

WHEREAS, As the Congestion Management Agency (CMA) for San Francisco, the Transportation Authority is required by state law to update the CMP on a biennial basis; and

WHEREAS, The legislative intent of state congestion management law is to tie transportation project funding decisions to measurable improvements in mobility and access, while taking into account the impacts of land use decisions on local and regional transportation systems; and

WHEREAS, The CMP has several required elements, including a designated congestion management roadway network, biennial monitoring of automobile level of service on this network, a multimodal performance element, a uniform transportation analysis database, travel demand management provisions, a land use impacts analysis program, and a seven-year multimodal capital improvement program; and

WHEREAS, The proposed 2015 CMP update reflects developments pertaining to the Transportation Authority's CMA activities since 2013, including system performance data collection and analysis, transportation policy changes and initiatives at the regional and state levels, and progress of the Transportation Authority's planning and project oversight efforts; and

WHEREAS, The 2015 CMP was prepared to comply with all pertinent requirements of State law, including relevant amendments, and, by agreement with the Metropolitan Transportation Commission, to comply with implementation of portions of Federal surface transportation law; and

WHEREAS, Adoption of the 2015 CMP is essential to achieve compliance with state congestion management mandates, as well as to ensure the City's continued eligibility for various state and federal transportation funding sources; and

WHEREAS, The 2015 CMP needs to be submitted to the Metropolitan Transportation Commission (MTC) for adoption; and

WHEREAS, At its December 2, 2015 meeting, the Citizens Advisory Committee was briefed on the 2015 CMP and unanimously adopted a motion of support for its adoption; and

WHEREAS, At its December 8, 2015 meeting, the Plans and Programs Committee reviewed and unanimously recommended adoption of the 2015 CMP; now, therefore, be it

RESOLVED, That the Transportation Authority hereby adopts the 2015 San Francisco CMP; and be it further

RESOLVED, That the Transportation Authority hereby finds that the City and County of San Francisco is in conformance with the requirements of the CMP, pursuant to Section 65089 of the California Government Code; and be it further

RESOLVED, That the Executive Director is hereby authorized to prepare the document for final publication and distribute the document to the MTC for adoption and to all other relevant agencies and interested parties.

Attachment:
1. CMP Executive Summary

Enclosures (2):
- A. 2015 San Francisco Congestion Management Program
- B. Appendices

The foregoing Resolution was approved and adopted by the San Francisco County Transportation Authority at a regularly scheduled meeting thereof, this 15th day of December, 2015, by the following votes:

Ayes: Commissioners Avalos, Breed, Campos, Cohen, Farrell, Kim, Mar, Peskin, Tang, Wiener and Yee (11)

Nays: (0)

Absent: (0)

Scott Wiener 12/17/15

Scott Wiener Date
Chair

ATTEST: TChang 12/23/15

Tilly Chang Date
Executive Director

EXECUTIVE SUMMARY

A. Introduction

The San Francisco Congestion Management Program (CMP) is a biennial program conducted in accordance with state law to monitor congestion and adopt plans for mitigating traffic congestion that falls below certain thresholds. By statute, the CMP legislation originally focused its requirements on measuring traffic congestion, specifically through Level-of-Service (LOS), which grades roadway facilities by vehicle delay. In the years since, the Transportation Authority has opted out of LOS monitoring[1] (although it still reports LOS for planning purposes). The agency has evolved its CMP to include multimodal, time of day, and other system performance monitoring, in recognition that automobile-focused metrics such as LOS result in a limited view of transportation issues, which can result in inefficient, modally biased, and often, unintentionally, counter-productive solutions.[2] In November 2013, the state passed SB 743, which specifically repeals automobile delay as measured by LOS or other similar measures as a measure of significant impact in environmental review, and tasks the Office of Planning and Research (OPR) with preparing guidance on appropriate alternative metrics.

The CMP legislation aims to increase the productivity of existing transportation infrastructure and encourage more efficient use of scarce new dollars for transportation investments, in order to effectively manage congestion, improve air quality, and facilitate sustainable development. In order to achieve this, the CMP law is based on five mandates:

- Require more coordination between federal, state, regional, and local agencies involved in the planning, programming, and delivery of transportation projects and services;
- Favor transportation investments that provide measurable and quick congestion relief;
- Link local land use decisions with their effect on the transportation system;
- Favor multimodal transportation solutions that improve air quality; and
- Emphasize local responsibility by requiring a Congestion Management Agency (CMA) in each urban county in the state.

The purpose of the 2015 San Francisco Congestion Management Program (CMP), prepared by the San Francisco County Transportation Authority, (the Transportation Authority) is to:

- Comply with state law by adopting a biennial CMP and submitting it to the Metropolitan Transportation Commission (MTC) for a conformance finding.
- Report the status of key inter-agency and SFCTA congestion management initiatives as identified in the 2013 San Francisco Transportation Plan and;
- Outline the congestion management work program for fiscal years 2015/16 and 2016/17; and
- Set forth policies and technical tools to implement the CMP work program.

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[1] See 2010 SB1636 Infill Opportunity Zone legislation and SFCTA Resolution XX-XX

[2] In order to reduce vehicle delay and improve LOS, without considering strategies that encourage shifts to other modes, the increased roadway capacity is the implied solution, which, in turn, has been shown to lead to more driving (induced demand).

B. State of Transportation

B.1 | What are the causes of congestion in San Francisco and how are we managing it?

San Francisco is an employment hub for a region with booming jobs and population growth. Population growth in the Bay Area, and San Francisco in particular, is outpacing projections. San Francisco's estimated 2014 population is over 850,000 (with a daytime population near 1 million[3]), about 10,000 more residents than ABAG projected for 2015.[4,5] Similarly, the region realized population growth in 2014 that was about 1% higher than projections for 2015. At the same time, employment is growing faster than population: between September 2009 and April 2015, San Francisco's workforce has increased by 140,000, while the population increased by around 50,000.[6] Housing production, on the other hand, is lagging. This means that people are coming to San Francisco for work but live elsewhere and commute into the city.

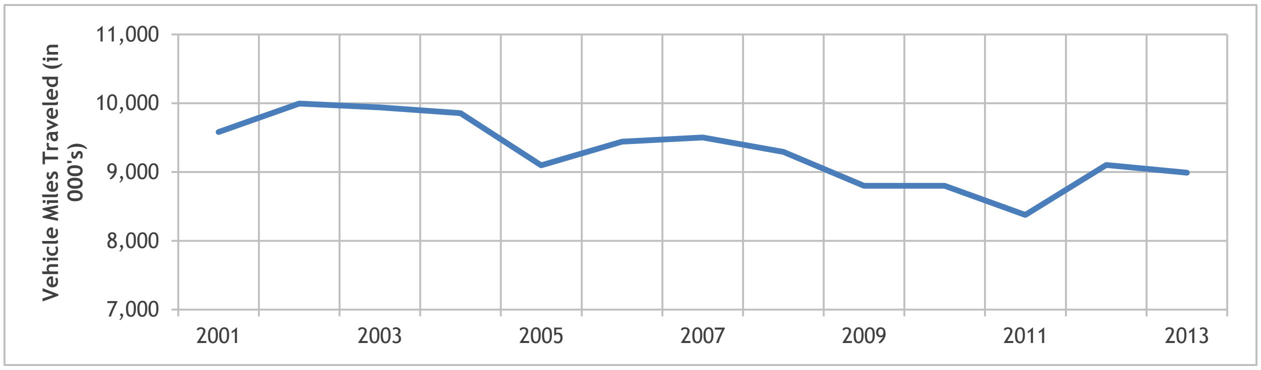

Figure 1: Daily Vehicle Miles Traveled in San Francisco, 2001-2013

Source: Caltrans Annual California Public Road Data Report, 2001-2013

Strategies to managing congestion are key to maintaining our accessibility as the city grows. These include: improving public transportation, bicycling and walking routes and facilities; coordinating new development to support walkable and transit-oriented neighborhoods; and managing vehicle use, parking and traffic signals to ensure safety and efficiency. There is evidence that these long-term strategies are working. As shown above in Figure 1, Vehicle miles traveled (VMT), a measure of the amount of total amount of driving, has been declining in San Francisco for over a decade, although the long term trend includes a dip then rise in VMT following the 2008-2009 recession.[7] Recent Census data also points to a trend of decreasing driving and reliance on automobiles. Between 2009 and 2014, the total number of San Francisco residents who commute to work in a private automobile has declined, while commuting by public transportation, bicycling, walking, and commuting by other means have increased. Of new commute trips, 37% are on public transit, 41% are active transportation (walking and biking). Over the same period, 44% of new households in San Francisco are car free.[8]

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[3] San Francisco has an estimated daytime population of 970,000, based on Analysis of the 2010-2012 California Household Travel Survey

[4] United States Census 2014 Population Estimate

[5] Association of Bay Area Governments, Projection 2013

[6] Office of Economics and Workforce Development Quarterly Dashboard Reports

[7] Caltrans Annual California Public Road Data reports, 2001-2013.

[8] Census American Communities Surveys 2005-2009 and 2010-2014.

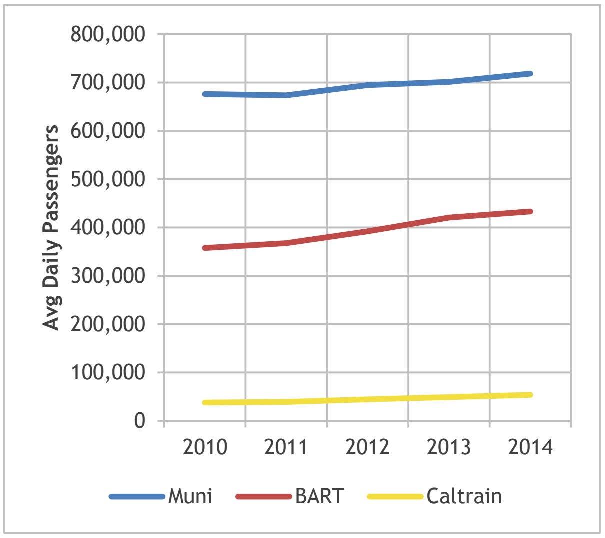

Figure 2: Average Daily Passengers by Transit Operator, 2010-2014

San Francisco's strong backbone of local and regional transit has been key to our ability to manage congestion. Muni, BART, Caltrain, and a handful of commuter bus lines, help move people into and around the city efficiently. Privately sponsored and operated services are also adding needed capacity. But as demand grows, our major transit systems are becoming crowded. Between 2010 and 2014, ridership on the three largest transit providers in San Francisco has been growing, as shown in Figure 2.

B.2 | How does the state of transportation measure up?

The recent increase in VMT corresponds with an increase in congestion, although over the last 15 years San Francisco is well below the peak VMT of the early 2000s. Between 2013 and 2015, in the afternoon peak travel period, average speeds on freeway segments have decreased 3.2 mph (10.8%) from 29.5 mph to 26.3 mph; and on arterial segments by 3.3 mph (20.6%), from 16.0 mph to 12.7 mph.

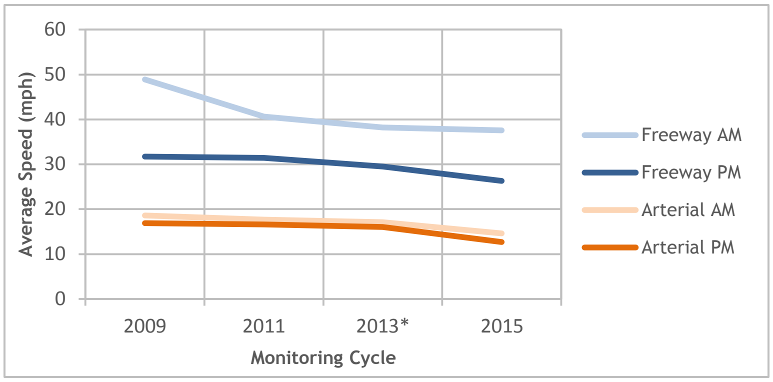

Figure 3: Average Speed over CMP Monitoring Cycles, 2009-2015

In the downtown core of San Francisco and freeways approaching downtown, where roadway expansion is neither feasible nor desirable, traffic speeds are particularly slow, as shown in Figure 4.

Recognizing that the City's transportation infrastructure can be used more efficiently to move more people, San Francisco has invested in prioritizing transit. Since 2013, the SFMTA has implemented service increases on 17 lines as part of Muni Forward, Phase 1 of Clay Street Transit-Only Lanes, Haight Street transit only contraflow lanes, more visible red lanes on Market Street, and other transit enhancements. The Transportation Authority has helped to fund Muni Forward as well as the replacement and expansion of Muni's bus and rail fleet. These investments have begun to pay off, and transit is becoming measurably more competitive with driving.

While transit speeds have become more competitive relative to driving speeds, transit speeds, like automobile speeds, have declined since 2013, from 8.1 mph to 7.9 mph for the rubber-tire fleet in the evening peak period.[9] This may be an indication of increased economic activity, traffic impacts from construction and the provision of more dedicated right-of-way to transit, bicycling and walking on some streets. While both transit and driving speeds have decreased, the decrease in transit speeds has been notably less than the decrease in auto speeds, indicating the effectiveness and importance of Muni Forward bus priority measures such as dedicated lanes and transit signal priority.

Data Sources: Iteris, Inc. & INRIX*, Inc.
*On routes where INRIX data is available

This map is for planning purposes only.

Figure 4: Level of Service on CMP Segments, 2015 PM Peak

Figure 5 shows in orange the percentage of congestion management program (CMP) roadway segments in 2013 and 2015 categorized by their automobile-to-transit speed ratio. The lower the ratio, the more competitive transit is with driving, in terms of speed. An auto-to-transit ratio of 2, for example, means that auto speeds are twice transit speeds, while a ratio of 1 indicates that transit moves at the same speed as auto traffic. San Francisco is moving in the right direction, with 33% more street segments in the under an auto-to-transit speed ratio of 2. Transit does not need to have speeds as high as auto traffic to be competitive; transit is less expensive than driving and enables productive use of in vehicle time, among other benefits.

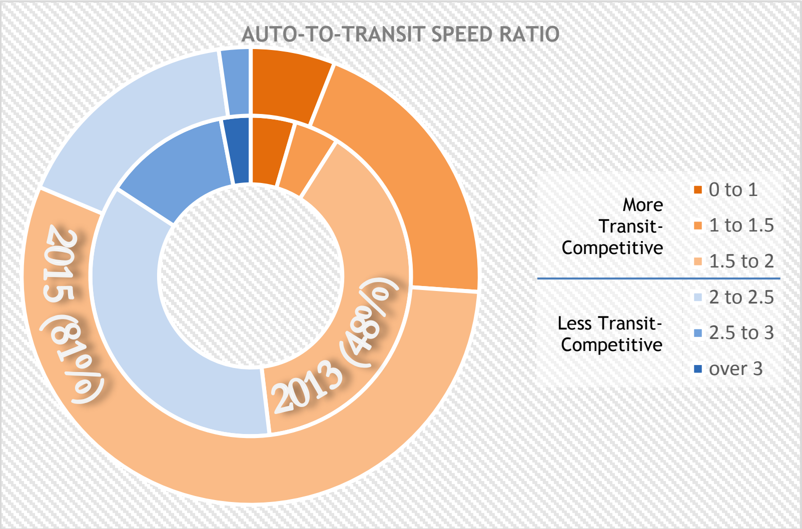

Figure 5: Auto-to-Transit Speed Ratio in the PM Peak, 2013 to 2015

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[9] Transit speeds are reported on CMP segments for comparison with auto speeds. They are not at a route level. At least 50% of a CMP segment must be covered by a Muni route to be reported. Light rail vehicles, cable cars, and historic street cars are not included.

C. What are we doing to manage congestion?

What is San Francisco doing about congestion?

C.1 | Managing Demand for Travel

San Francisco has a robust set of travel demand management (TDM) programs, policies, and requirements designed to enable and encourage people to make trips by transit, walking, and biking and to smooth vehicle circulation. These include a focus on new development as well as on managing congestion in existing neighborhoods and built up areas:

- Coordinating transportation aspects of area plans, development agreements, and other requirements on new development, including:
    - Central SoMa Land Use Plan
    - Central Waterfront development projects
    - Treasure Island, Hunter's Point /Shipyard, Schlage Lock, Parkmerced
    - Transportation Sustainability Project
- Policies and programs to manage trips in existing neighborhoods and built-up areas, including:
    - Commuter Benefits Ordinance and Emergency Ride Home Program
    - SFMTA Commuter Shuttle Policy
    - SFMTA Carsharing Policy
    - BART Travel Incentives Pilot Project
    - Parking Management and SF*park*
    - Transportation Demand Management neighborhood outreach and employer engagement

Furthermore, San Francisco is encouraging efficient land use planning by supporting development at higher densities in areas that are mixed-use (closer to jobs and retail) and are well served by transit. Plan Bay Area, the region's first Sustainable Communities Strategy, identifies Priority Development Areas (PDAs) where densities and transit levels can more readily support transit-oriented development. The Transportation Authority prepared a Transportation Investment and Growth Strategy, which describes how San Francisco will support PDAs through transportation investment. The city's use of Metropolitan Transportation Commission PDA planning funds is supporting the following planning efforts and studies in line with the Transportation Investment and Growth Strategy:

- PDA Planning Projects
    - Rail Storage Alternatives Analysis and I-280 Boulevard Feasibility Study
    - Embarcadero Multi-Modal Planning
    - Bayshore Multimodal Facility Study and Circulation Studies
    - 19th Ave/M-Oceanview Transit Improvement Study
    - Ocean Avenue Pedestrian and Streetscape Improvements
    - Caltrain North Terminal Study to Support Future Operations

C.2 | Planning Projects

San Francisco is planning to address needs in existing neighborhoods as well as for the long term needs of the City and the region. In order to support sustainable transportation currently and in the future, many initiatives called for in the 2013 San Francisco Transportation Plan are underway. The Transportation Authority is also coordinating with numerous local, regional state and Federal agencies and with the private sector to address congestion. Key initiatives include:

- Vision Zero Program
- MTC Regional Core Capacity Transit Study
- Freeway Corridor Management Study (managed lanes/carpool lane feasibility)
- Transportation Sustainability Program (proposed Transportation Sustainability Fee on residential and institutional development))
- Geary Corridor and Geneva/Harney Bus Rapid Transit
- Better Market Street Project
- Treasure Island Mobility Management Program
- Neighborhood Transportation Improvement Program (planning and capital improvement grants)
- Shared Mobility, Late Night, Parking Management and School Transportation sector studies

C.3 | **Funding and Delivering Projects**

The Transportation Authority is supporting near- and long-term transportation needs for San Francisco by funding capital improvements, projects, and programs through Proposition K transportation sales tax and Proposition AA vehicle registration fee, grant programs, administration of regional OneBayArea Grants (OBAG) funds,, and coordinating with other local and regional agencies to apply for state and Federal funding to match local investments. Below are a few signature projects supported with Transportation Authority programmed funds. Appendices 12, 13, 14, 15, and 16 provide more detail.

- Muni Forward
- Central Subway
- Caltrain Extension to Transbay Terminal
- Caltrain Electrification

In its role as Congestion Management Agency, as part of the OBAG framework for distribution of federal transportation funds, the Transportation Authority prepared the Transportation Investment and Growth Strategy and, through that program has programmed funds to the following projects:

- Chinatown Broadway Phase IV Street Design
- ER Taylor Safe Routes to School
- Light Rail Vehicle (LRV) Procurement[10]
- Lombard Street US-101 Corridor Improvement
- Longfellow Safe Routes to School
- Mansell Corridor Improvement

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[10] Funds for LRV were reprogrammed from SFMTA's Masonic Avenue Complete Streets project. See Appendix 12 for additional information.

- Second Street Streetscape Improvements
- Transbay Center Bike and Pedestrian Improvements

The Transportation Authority is also overseeing and leading the delivery of key projects, including serving as co-sponsor or lead agency for the construction of:

- Presidio Parkway (co-sponsor of Doyle Drive replacement)
- Folsom Street Off-Ramp Realignment
- Yerba Buena Island I-80 Interchange Improvement Project

Item 8 Enclosure A
Transportation Authority Board
December 15, 2015

2015

CONGESTION MANAGEMENT PROGRAM

SAN FRANCISCO COUNTY TRANSPORTATION AUTHORITY

CONTENTS

APPENDICES

PHOTO CREDITS

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CHAPTER ONE

BACKGROUND AND PROGRAM OVERVIEW

KEY TOPICS

- CMP Background
- Congestion Management in San Francisco
- 2015 Program Overview and Key Changes from 2013 CMP

1.1. Background

1.1.1 | Purpose of the CMP

The purpose of the 2015 San Francisco Congestion Management Program (CMP), prepared by the San Francisco County Transportation Authority, (the Transportation Authority) is to:

- Comply with state law by adopting a biennial CMP and submitting it to the Metropolitan Transportation Commission (MTC) for a conformance finding.
- Guide San Francisco agencies involved in congestion management;
- Outline the congestion management work program for fiscal years 2015/16 and 2016/17; and
- Set forth policies and technical tools to implement the CMP work program.

1.1.2 | Organization and Approach

The document follows MTC's Guidance for Consistency of Congestion Management Programs with the Regional Transportation Plan, per MTC Resolution 3000, last revised July, 2013.[1]

Each element required by the CMP legislation is discussed in a separate chapter. Each chapter describes the element's context in San Francisco, the work plan, and implementation guidance. The Transportation Authority Board will adopt any revisions developed during fiscal years 2015/16 and 2016/17 as amendments to the 2015 San Francisco CMP.

The 2015 CMP updates information from the 2103 CMP and reflects several important developments since 2013. The Transportation Authority prepared most of the 2015 CMP. The data in Chapter 4 (Multimodal Performance) is derived from a report prepared by Iteris, Inc. on behalf of the Transportation Authority. In preparing the CMP update, the Transportation Authority has consulted with the San Francisco Municipal Transportation Agency (SFMTA) and other partner agencies to update policies and compile system performance data.

1.1.3 | Origins and Intent of the CMP Legislation

CMP requirements were established in 1989 as part of a bi-partisan state legislative package, known as the Katz-Kopp-Baker-Campbell Transportation Blueprint for the Twenty-First Century (AB 471).

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[1] For the complete text of MTC's guidance, please refer to Appendix 1.

These requirements became effective when voters approved Proposition 111 on June 5, 1990. AB 1963 (Katz) in September 1994 and AB 2419 (Bowler) in July 1996 further modified CMP law. The passage of AB 298 (Rainey), effective January 1, 1997, made the CMP exempt from the California Environmental Quality Act (CEQA). SB 1636 (Figueroa), passed in September 2002, amended CMP requirements to allow local jurisdictions to designate Infill Opportunity Zones (IOZs). For the complete text of the CMP legislation, see Appendix 2.

The 1989 state legislation not only provided for increases in transportation funding, but also made significant changes in the requirements for planning and programming the transportation projects funded from these revenue sources. The goal of the legislation is to prioritize transportation funding decisions based on transportation system performance, local land use decisions and their impacts on transportation, and transportation control measures that address air quality goals.

The CMP requirements are the legislature's response to the traffic congestion experienced by all urbanized areas of California. Traffic congestion is widely perceived as outpacing the ability of the traditional transportation planning process to provide solutions. In San Francisco, with its high-intensity land uses and extensive transit network, traffic congestion poses a different problem than in lower-density counties, challenging conventional interpretations of the nature of the congestion problem. For the majority of the state's highly suburbanized metropolitan areas, traffic congestion has its roots in the following:

- Transit does not work well in the suburbs. The low-density suburban growth pattern throughout the state's metropolitan areas does not lend itself to cost-effective transit service, and therefore mobility depends largely on automobiles and freeways.
- Freeways full of solo drivers are inefficient investments. Pricing strategies (e.g., tolls, paid parking at work sites) are politically complicated, and ridesharing strategies (i.e., carpooling and vanpooling) have shown narrow success in sprawled suburbs. Most automobiles still carry just one person, regardless of trip purpose or time of day. The result is inefficient roadway facilities: even when full of cars, they carry only a fraction of the number of people they could accommodate.
- Building freeways and widening roads to address transportation demand is not cost-effective. Because land for transportation facilities is scarce, construction costs have escalated, and environmental constraints are significant, the real costs of capital investment in roads have risen dramatically. These high-cost facilities, which maximize automobile trips but do not maximize the number of people carried, result in a high cost per person transported.

The CMP legislation aims to increase the productivity of existing transportation infrastructure and encourage more efficient use of scarce new dollars for transportation investments, in order to effectively manage congestion, improve air quality, and ultimately allow continued development. In order to achieve this, the CMP law is based on five mandates:

- Require more coordination between federal, state, regional, and local agencies involved in the planning, programming, and delivery of transportation projects and services;
- Favor transportation investments that provide measurable and quick congestion relief;
- Link local land use decisions with their effect on the transportation system;
- Favor multimodal transportation solutions that improve air quality; and
- Emphasize local responsibility by requiring a Congestion Management Agency (CMA) in each urban county in the state.

1.2. Congestion Management in San Francisco

1.2.1 | **Applicability of the Concept**

The main impetus for the CMP legislation was worsening *suburban* transportation conditions, caused by land use patterns that perpetuate over-reliance on the private automobile. San Francisco has an extensive transit network and long-standing policies to encourage a multimodal transportation system. Congestion management goals are reinterpreted here (within the constraints of State law) to add value to San Francisco's transportation planning process. The City's Transit First policy, for instance, gives rise to our local interpretation of CMP rules: San Francisco tolerates a certain level of traffic congestion in order to enhance the competitiveness of transit service in comparison to private automobiles. The San Francisco General Plan also specifically discourages roadway capacity increases, stating that:

> "The existing vehicular capacity of the bridges, highways and freeways entering the city should not be increased and should be reduced where possible." (SF General Plan, Transportation Element, Objective 3, Policy 1).

If interpreted as improving the throughput of cars in the roadway network, congestion management is at odds with this policy. However, by re-interpreting congestion management as maximizing person throughput, then we have opportunities to capitalize on the City's significant supply of transit services, high densities, and relatively pedestrian-friendly environment. San Francisco can achieve congestion management goals if the measures of performance support the City's transportation and land use patterns and priorities.

1.2.2 | **| Relationship to RTP Goals**

In July 2013, MTC and the Association of Bay Area Governments (ABAG) adopted Plan Bay Area, the region's long-range Regional Transportation Plan (RTP) and Sustainable Communities Strategy (SCS). The CMP provides context and implementation tools for San Francisco in advancing the goals established in Plan Bay Area, particularly those that pertain to transportation: climate protection, healthy and safe communities, adequate housing, equitable access, economic vitality, and transportation system effectiveness, with emphases on decreasing automobile use and maintaining the system in a state of good repair. These goals are directly supported in San Francisco's CMP through transportation and land use policies; strategic investments and system management; and the performance measures the Transportation Authority uses to monitor transportation system performance. These elements are discussed throughout the 2015 CMP, as appropriate.

1.2.3 | **| Future Trends and Strategies**

The City's track record highlights the importance of maintaining travel *options,* not just to prevent worsening congestion, but to improve access and mobility for San Francisco residents, workers, and visitors, as the city continues to grow and develop.

Understanding demographic trends is important in charting future action. A development boom in the 1970s and 1980s was characterized by the growth of the city's financial district. This boom was followed by modest employment growth until the mid-1990s. Employment growth in San Francisco and the rest of the Bay Area has been cyclical in the years since, with employment booms accompanied by increases in construction followed by periods of economic recession. Currently, employment growth and construction of both commercial and residential development are robust.

Future economic and population growth in the Bay Area will differ significantly in pace and character from historic development trends. Regional land use forecasts and policies call for focused housing and employment growth in the region's urbanized core areas. This growth, in conjunction with rising incomes and the increase in commuting by San Francisco residents to job locations outside of the city, will bring new pressures to the local and regional transportation networks. This pattern is already in evidence, with thousands of new housing units and hundreds of thousands of square feet of commercial space currently under construction and more in the pipeline.[2]

Increasing numbers of San Francisco residents are out-commuting to take advantage of work opportunities in other Bay Area counties: the number of San Francisco residents traveling daily to work in Santa Clara County or San Mateo County is approximately 75% the number of Santa Clara County and San Mateo County residents employed in San Francisco.[3] These trends result in auto congestion and high transit ridership both into and out of San Francisco in the peak periods. Long-distance, auto-dominated commute patterns (such as the peninsular corridor) are heavy contributors to regional VMT. Efforts to combat global climate change have made clear the imperative to reduce vehicle miles traveled (VMT) at the regional level. However, current fiscal conditions are difficult for both infrastructure improvements and transit operating expenses, with declining Federal and State funding, resulting in an increasing reliance on local funding sources for solutions to both local and regional transportation challenges.

In spring of 2013, ABAG and MTC released their Draft Plan Bay Area detailing their land use projections to 2040. According to the Plan, San Francisco is set to absorb 90,000 new households by 2040 (using 2010 as a baseline), bringing the number of households to 470,000. Since 2010, San Francisco has added 7,000 net new housing units, and 50,000 more are already in the pipeline.[4] Employment in San Francisco is expected to increase by 190,000 jobs, culminating in over 750,000 jobs in the city by 2040. Enriching the city's inventory of available and auto-competitive transportation options–particularly transit system development–will be a key strategy for congestion management in San Francisco. In order to meet congestion management goals within San Francisco's transportation policy framework, auto-competitive transportation alternatives should be prioritized, including the following types of projects:

- Transit service and reliability enhancements. This is essential to ensure that transit is a viable option to the private automobile as new residential neighborhoods develop, especially in the city's eastern neighborhoods. Non-traditional transit options (zonal express bus service, demand responsive, etc.) may need to be explored as additional alternatives to drive-alone in some instances.
- Bicycle facility and bicycle safety enhancements. Bicycling is a primary mode of travel for a growing number of trips. Bicycling can be a suitable modal shift for many San Francisco automobile trips. We can make this option more viable by improving comfort and safety for cyclists in the City.
- Pedestrian facility and pedestrian safety enhancements. Many trips regardless of the primary mode begin or end with a pedestrian trip, and many San Franciscans make a substantial number

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[2] San Francisco Pipeline Reports, San Francisco Planning Department.

[3] Estimated from the 2010-2012 California Household Travel Survey Data

[4] San Francisco Housing Inventory Reports, San Francisco Planning Department

of their trips entirely as pedestrians. Pedestrian safety and access are critical to meet the growing demand for pedestrian-friendly neighborhoods and employment centers.

The Prop K Expenditure Plan for the local half-cent transportation sales tax is San Francisco's investment blueprint for congestion relief: on November 4, 2003, San Francisco voters extended the existing half-cent sales tax (Prop B) and approved a new 30-year Expenditure Plan, with a 75 percent approval rate. The primary goal of the Expenditure Plan is to implement the priorities of the countywide San Francisco Transportation Plan through investment in a set of projects and programs that include planning, maintenance and rehabilitation, and improvements to the city's multi-modal transportation system.

Congestion and demand management measures are also necessary to avoid further deterioration of transit travel times. San Francisco's congestion management activities will also need to focus on key improvements to congested roadway facilities to enable transit to get out of automobile traffic and to improve conditions for pedestrians and bicyclists. Particular attention will be paid to projects that improve the operating efficiency of the existing system, such as bus transit priority treatments. These projects help transit re-gain operating speed and retain or expand its market share.

Bus Rapid Transit (BRT) project development is continuing for two key corridors in the Transit Priority Network: Van Ness Avenue and Geary Boulevard, and the Transportation Authority completed a Feasibility Study for BRT Geneva Avenue and Harney Way. The SFMTA is leading the next phase of the Geneva BRT study. These efforts are examples of our commitment to separating transit right-of-way from congested city streets in an effort improve overall person throughput and reduce transit travel times in key corridors. These BRT corridors, which were identified in the Countywide Transportation Plan and Prop K Expenditure Plan, were also confirmed as priorities in the SFMTA's Muni Forward *Rapid Network*.

The 2004 Countywide Transportation Plan (CWTP) identified pricing as an important demand management tool in the County's congestion management toolkit. In September 2009, the Transportation Authority approved the final report of the *San Francisco On-Street Parking Management and Pricing Study*, which examined the role of parking pricing to manage demand, increase availability, and reduce excess vehicular circulation. In December 2010, the Transportation Authority approved the final study report on the feasibility of implementing an areawide congestion pricing program to manage weekday peak-period congestion. This *Mobility, Access, and Pricing Study* (MAPS) informs policy-makers of the benefits, costs, and impacts of a potential congestion pricing program. The Transportation Authority initiated the Parking Supply and Utilization Study in the summer of 2013 in partnership with the San Francisco Municipal Transportation Agency to evaluate how parking management, focused on private supplies of off-street parking, could reduce roadway congestion and shift trips to walking, cycling, and transit. In December of 2013, SFMTA released the evaluation of the SF*park* Pilot Project, which implemented variable, demand responsive parking prices for on-street parking and SFMTA-owned parking garages. The evaluation found an average decrease in parking prices, decreased vehicle miles traveled, and decreased greenhouse gas emissions.

The Transportation Authority is partnering with the San Francisco Planning Department (SF-Planning) and the SFMTA on the Transportation Sustainability Program (TSP), which supports sustainable transportation through a coordinated multiple-strategy approach. The first component of the TSP, the Transportation Sustainability Fee (TSF), supports transit by funding transportation improvements targeted to offset impacts from new development. The second component, the Transportation Demand Management (TDM) program, will provide guidance and an easy-to-use tool for developers to promote sustainable transportation options for residents, workers, and patrons traveling to and from the site. The third component focuses on aligning San Francisco's policies with forthcoming changes to traffic impact analysis under the California Environmental Quality Act, through California Senate Bill (SB) 743, which will require lead agencies to replace level-of-service (LOS) -- a measure which implies auto-centric impacts and mitigation measures -- with a vehicle miles traveled (VMT)-based metric that better identifies projects' environmental transportation impacts and also enables those impacts to be addressed through multi-modal solutions.

In December, 2013, The Transportation Authority Board adopted the San Francisco Transportation Plan (SFTP), which updates the 2004 CWTP, is the city's 30-year plan to identify goals, needs, and investment priorities for the city's transportation system and serves as the citywide long-range transportation planning document. The SFTP recommends an investment plan for projected transportation funds between now and 2040, proposes a San Francisco investment vision and revenue strategy for potential new local revenues, and proposes policy recommendations. The Transportation Authority will begin an update to the SFTP starting in 2016.

Congestion management activities during the next two fiscal years are set forth in the work plan section at the end of each chapter in this document. These activities will include advancing the recommendations established in the SFTP, multiple planning and environmental studies, development of key system improvement projects, and continued neighborhood transportation planning efforts. The Transportation Authority will also continue to develop the San Francisco Travel Demand Model in order to measure performance of the multimodal system, analyze Capital Improvement Program (CIP) changes and perform project delivery oversight, and improve forecasting of system performance impacts associated with transportation investments, policies, and land use changes. Since 2013, the Transportation Authority has continued to update and enhance the San Francisco Travel Demand Model.

1.3. Program Overview and Key Changes from the 2013 CMP

1.3.1 | Mandated Program Components

The following statutory requirements of CMP legislation are mandated for all urban counties in the state:

1. A CMP updated biennially. The CMP must contain the following:

- A designated CMP roadway network
- Traffic level of service (LOS) standards and a methodology for monitoring LOS on the designated CMP roadway network
- Transit service standards
- A multimodal performance element
- A land use impact analysis methodology
- A seven-year multimodal CIP;

2. A common database and method to analyze impacts of local land use decisions on the CMP network; and

3. A designated CMA for the county.

1.3.2 | Transportation Fund Programming

The CMP legislation included the creation of new funding sources, as well as changes to existing fund programming mechanisms, tied to implementation of CMP requirements. The Transportation Authority at the local level and MTC at the regional level have been empowered to make CMP conformance determinations affecting funding eligibility.

- State Fuel Tax Increment: The CMP legislation established a 9-cent per gallon in-crease in the state's fuel tax. In order to receive these revenues, urban counties must conform with CMP requirements, particularly performance monitoring and the implementation of required CMP elements. The CMP document itself must be updated every two years.
- Regional Improvement Program (RIP): RIP funds are programmed through the Regional Transportation Improvement Program (RTIP), which is biennially developed and adopted by MTC, and subsequently adopted into the State Transportation Improvement Program (STIP) by the California Transportation Commission (CTC). In order to be considered for funding through the RTIP, transportation projects must be included in the CIP of the CMP.
- Federal Surface Transportation Program (STP) and Congestion Management and Air Quality (CMAQ) Program Funds: In 1992, the California legislature passed SB 1435, which reconciled the CMP programming process with the then new federal Intermodal Surface Transportation and Efficiency Act (ISTEA). As a result, projects seeking certain STP or CMAQ funds (continued under TEA-21, SAFETEA-LU, and MAP-21) must be prioritized by each CMA in their biennial CIP for the CMP.

1.3.3 | Relationship to Ongoing Planning and Programming Efforts

CMPs are a component of a more comprehensive set of ongoing transportation planning and programming efforts at the local and regional levels:

- RTP: The CMP implements the local portion of the RTP and must be consistent with it. MTC determines consistency among CMPs in the region. MTC makes these determinations as a part of the conformance finding process for CMPs.
- RTIP: The RTIP is a 5-year programming document for a variety of federal and state funding sources (e.g., RIP) that are sub-allocated to the region. In the Bay Area, MTC works with the CMAs to develop the RTIP for our nine-county region. RTIPs statewide are approved collectively as the STIP by the CTC. For certain projects to be included in the RTIP, they must be included in the CMP CIP.
- City of San Francisco General Plan: According to the City Charter (section 3.524), the General Plan is a comprehensive, long-term, guide for the future development of the City and County. The General Plan guides transportation demand management measures that are addressed as part of the CMP. Chapter 6 addresses the Planning Department's role in making consistency findings for the CMP's CIP. While the General Plan provides the policy framework, State law does not require that the CMP be incorporated into the General Plan.
- **Air Quality Attainment Plans:** MTC's RTP is required by federal law to conform to the State Implementation Plan for improvement of air quality. Since the CMP must be found consistent with the RTP, the CMP must therefore also conform to the provisions of the State

Implementation Plan. In addition, the San Francisco CMP documents implementation of transportation control measures (TCMs) included in the 2010 Bay Area Clean Air Plan adopted by the BAAQMD pursuant to State requirements. Appendix 11 lists the currently adopted regional TCMs and how they are incorporated into San Francisco's congestion management strategies. BAAQMD is currently working on a 2015 update to the 2010 Clean Air Plan. The 2015 plan will include a Regional Climate Protection Strategy to help se the Bay Area on a pathway toward meeting long-term (i.e., 2050) greenhouse gas reduction goals.

1.3.4 | Key Changes from 2013 CMP

The following sections highlight the most significant updates included in the 2015 CMP.

CHAPTER 4: This chapter introduces a new multimodal count collection effort in order to establish trends in demand over time by different modes. It also includes substantive performance monitoring for auto and transit.

CHAPTER 5: The Transportation Demand Management (TDM) Element has been updated to reflect recent changes to planning code requirements, advancements to San Francisco TDM strategies, including new policies requiring TDM measures for new developments, commuter benefits and the Commuter Shuttle Policy, carsharing, bike sharing, and other policies. We also included information on the TDM programs included in area plans, development agreements, and institutional master plans. Two new pilot projects, the BART Travel Incentives Pilot Project and SF Moves Neighborhood Outreach Pilot Project, are also discussed in this chapter. Finally, updates to ongoing TDM projects and studies are included.

CHAPTER 6: This chapter includes new discussion of the preliminary draft of changes to CEQA guidelines released by the Governor's Office of Planning and Research on August 6, 2014, following the elimination of automobile level-of-service as a significant impact in CEQA environmental review. It also includes discussion of the Core Capacity Transit Study.

CHAPTER 7: This chapter reflects amendments made to the CIP. Per adopted procedures, the CIP is amended concurrently with Transportation Authority programming decisions. An ongoing work program item related to the CIP includes monitoring of state and federal funds to ensure that timely use of funds requirements are met. These requirements impose deadlines for project milestones such as obligation of funds, award of contracts and completion of construction. Failure to meet the deadlines can result in loss of funds to the project, the County, and/or the Bay Area Region.

CHAPTER 8: The Transportation Authority's San Francisco Travel Demand Forecasting Model has under-gone improvements since 2013, which are discussed in this chapter.

1.3.5 | Public Input

A public hearing on the Draft 2015 San Francisco CMP is scheduled for the December 8, 2015 meeting of the Transportation Authority Plans and Programs Committee. The Transportation Authority Board is scheduled to consider approval of the 2015 CMP on December 15, 2015.

CHAPTER TWO

CONGESTION MANAGEMENT AGENCY ROLE & RESPONSIBILITIES

KEY TOPICS

- Legislative Requirements
- Legislative Intent and Application to San Francisco
- San Francisco County Transportation Authority

2.1. Legislative Requirements

California Government Code section 65089 (a), as amended, states "A congestion management program shall be developed, adopted, and updated biennially, consistent with the schedule for adopting and updating the regional transportation improvement program, for every county that includes an urbanized area, and shall include every city and the county. The program shall be adopted at a noticed public hearing of the agency. The program shall be developed in consultation with, and with the cooperation of, the transportation planning agency, regional transportation providers, local governments, the [California] department [of Transportation], and the air pollution control district or the air quality management district, either by the county transportation commission, or by another public agency, as designated by resolutions adopted by the county board of supervisors and the city councils of a majority of the cities representing a majority of the population in the incorporated area of the county." For the complete text of the CMP statutes see Appendix 2.

2.2. Legislative Intent and Application to San Francisco

One of the main thrusts of the CMP legislation is to foster coordination of local land use and transportation investment decisions at the county or subregional level. In order to ensure local involvement in this process the CMP law vests significant authority and responsibility in the Congestion Management Agencies (CMAs). For example, in order to receive state and federal funds, transportation projects in an urban county must now be recommended by that county's CMA as part of its Congestion Management Program[1]. CMAs therefore act as a policy forum and technical resource to guide and help resolve transportation problems within counties when those problems have implications across city boundaries. San Francisco's distinct status as a city and county dictates a somewhat different role for the CMA in this regard, with the focus of involvement shifting to address problems across county lines (such as the effects of regional commute patterns into San Francisco), as well as issues of

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[1] If a county opts out of preparing a CMP, per ABE 2419 (Bowler), MTC will work with the appropriate agencies to establish project priorities for funding.

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coordination of city department activities affecting congestion management, such as trip reduction program implementation or transit service improvements.

2.3 The San Francisco County Transportation Authority

2.2.1 | Designation and Composition

On November 6, 1990, the Board of Supervisors designated the San Francisco County Transportation Authority (the Transportation Authority) as the CMA for the County. The Transportation Authority Board of Commissioners consists of the eleven members of the San Francisco Board of Supervisors, acting as Transportation Authority Commissioners.

2.2.2 | Roles and Responsibilities

The Transportation Authority is a special-purpose government agency, created on November 7, 1989, when San Francisco voters passed Proposition B. Proposition B increased the local sales tax by ½ cent for a period of 20 years, to fund San Francisco transportation projects and services. In November 2003, voters approved a new Expenditure Plan (Prop K), which superseded Prop B and extends the ½ cent sales tax for 30 years. The Transportation Authority administers, prioritizes, and programs Proposition K revenues. These revenues also leverage large amounts of State and Federal funds for transportation investments in San Francisco.

On November 2, 2010 San Francisco voters approved Proposition AA, authorizing collection of an additional $10 fee annually on motor vehicles registered in San Francisco and approving an Expenditure Plan for the new funds. The fee will fund local street repair, improvements to pedestrian and bicycle conditions, and public transit enhancements. As with Prop K, the Transportation Authority administers, prioritizes, and programs Prop AA funds.

In its capacity as the CMA for San Francisco, the Transportation Authority has primary responsibilities in the following areas:

- Develop and adopt the biennial CMP and related implementation guidance;
- Monitor City agencies' compliance with CMP requirements;
- Program Federal, State, and regional transportation funds;
- Review the programming of all transportation funds for San Francisco;
- Provide policy input into the regional transportation planning and programming process; and
- Develop and periodically update the long-range transportation plan for San Francisco.

The Transportation Authority's dual responsibilities – strategic programming of proposition-authorized funds through Strategic Plan processes, and prioritizing and programming of State and Federal funds through the CMP process – are an opportunity to coordinate San Francisco's transportation planning decisions and optimize the City's investments in transportation infrastructure and services. Leveraging State and Federal funds through strategic use of Proposition K monies is a primary example of the efficacy of this process. The San Francisco Transportation Plan improves the effectiveness of this process by linking transportation objectives and policies to a specific list of transportation investments, prioritized across a long-range planning horizon. The CMP's 7-year CIP and the Authority's Prop K Five-Year Prioritization Programs serve as the main implementation tools for the San Francisco Transportation Plan.

As the CMA, the Transportation Authority served as the lead coordinator for San Francisco involvement in the regional process to develop a Sustainable Communities Strategy (SCS) and update the Regional Transportation Plan (RTP). Plan Bay Area, which integrates the SCS and RTP into a single regional plan, was adopted in July 2013. As required by SB 375 (Steinberg), passed in 2008, Plan Bay Area integrates long-range land use, housing, and transportation planning in the region to reduce greenhouse gas emissions from motor vehicles.

Assembly Bill No. 981, the Treasure Island Transportation Management Act, authorizes the Board of Supervisors (BOS) of the City and County of San Francisco to designate a board or agency to act as the transportation management agency (TMA) for Treasure Island and implement the Treasure Island Development Program's transportation plan. In October 2011, the Transportation Authority Board recommended to the Board of Supervisors and the Treasure Island Development Authority (TIDA) that the Transportation Authority be designated as the Treasure Island Mobility Management Agency (TIMMA). Subsequent resolutions tasked the Transportation Authority with advancing agency formation documents, planning, and grant-writing.

In addition, acting as the CMA, the Transportation Authority plays a key role in evaluating and providing guidance on major local transportation projects and land use policies that may affect the performance of the transportation system.

2.2.3 | Implications of the Board's Multiple Roles

As described above, the San Francisco Board of Supervisors also serves as the Transportation Authority's Board of Commissioners. These multiple roles require careful balancing of the Board's responsibilities. Policy decisions made by the Board of Supervisors may have negative congestion management impacts and place the Transportation Authority Board, as CMA, in a position to find the City in non-conformance with the CMP. This may in turn generate difficult Proposition K funding choices for the Transportation Authority Board.

In order to minimize the potential for conflict, the Transportation Authority cannot limit its role to just monitoring CMP conformance after the fact. Instead, the Transportation Authority must take a proactive role to serve as a resource in analyzing the potential transportation implications of transportation and land use related actions, projects, or policies proposed for the City. In order to fulfill this responsibility, the Transportation Authority regularly participates in and comments on studies and discussions of key San Francisco transportation and land use issues, such as the Transit Effectiveness Project (now part of Muni Forward), the Transportation Sustainability Program, Better Market Street, and the Transit Core Capacity Study. This approach allows the Board to anticipate potential problems, instead of reacting when congestion impacts reach crisis proportions and require hasty actions.

2.2.4 | Relationship to City Agencies

State law mandates that the Transportation Authority, acting as CMA, biennially determine if the City is in conformance with the adopted Congestion Management Program. A finding of non-conformance has potentially significant consequences for transportation funding in the City. Also according to state law, it is the City's responsibility to ensure that transportation projects, programs, and services are put in place, through its implementing departments, to maintain conformance with the CMP.

In fulfilling its CMA mandate, the Transportation Authority must function as an independent agency to be able to objectively and credibly evaluate CMP conformance. This dictates a special relationship with City departments involved in transportation-related actions which must be assessed at least biennially relative to their congestion management impacts. On the other hand, because of the Board's multiple roles, as described in the previous section, the Transportation Authority's approach is to act as a resource, maximizing coordination with the City departments responsible for planning and implementation of transportation actions, so that such actions may be evaluated for congestion management impacts before they are put in place.

2.2.5 | Relationship to Regional Planning/Programming Agencies

As the Congestion Management Agency for San Francisco, the Transportation Authority plays a key liaison role with the Metropolitan Transportation Commission (MTC), the Bay Area's regional transportation planning agency, and with the Bay Area Air Quality Management District (BAAQMD), the agency responsible for implementation and monitoring of the region's Clean Air Plan. The Transportation Authority coordinates local input into MTC's Regional Transportation Plan (RTP), which establishes the overall vision for long-range transportation development and funding in the region, and the Regional Transportation Improvement Program (RTIP). Through its membership in the Bay Area Partnership, the Transportation Authority plays a key role in shaping the evolution of planning and programming processes affecting San Francisco's ability to make effective transportation investments and preserve its economic vitality. Further, through its leadership in this regional forum the Transportation Authority is in a position to influence the debate over the vision and goals for transportation and land use planning in the Bay Area, bringing to bear San Francisco's unique perspective on multimodal transportation, mobility, and livable communities.

CHAPTER THREE

CMP-DESIGNATED ROADWAY NETWORK

KEY TOPICS

- Legislative Requirements
- San Francisco CMP Roadways
- Work Program Items

3.1. Legislative Requirements

California Government Code Section 65089(b)(1)(A) requires that the designated Congestion Management Network include at least all state highways and principal arterials. No highway or roadway designated as part of the system may be removed from the system. The statutes do not define 'principal arterial.'

The statutes also refer to regional transportation systems as part of the required land use impacts analysis program, California Government Code Section 65089(b)(4). In 1991, the Bay Area's Congestion Management Agencies (CMAs) developed Congestion Management Program (CMP) networks in coordination with MTC's Metropolitan Transportation System (MTS). The MTS network, which includes both highways and transit services, was subsequently designated as the Congestion Management System, as required by the federal Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991. The MTC contracted with the congestion management agencies in the Bay Area to help develop the MTS and to use the CMPs to link land use decisions to the MTS.

3.2. San Francisco CMP Roadways

CMP legislation requires that all state highways (including freeways) and principal arterials are included in the CMP network. The network must be useful to track the transportation impacts of land development decisions, as well as to assess the congestion management implications of proposed transportation projects. San Francisco's network therefore includes numerous local thoroughfares since most urban traffic occurs on city arterials (rather than on the freeways). The next sections document the network selection criteria and process used in the initial San Francisco CMP in 1991, and describes the current network.

3.1.1 | Selection Criteria

Consistent with State requirements, the San Francisco CMP roadway network includes all freeways and state highways, as well as principal arterials. San Francisco has defined principal arterials as the Major Arterials designated in the Transportation Element of the City's General Plan, defined as follows:

> *"cross-town thoroughfares whose primary function is to link districts within the city and to distribute traffic from and to the freeways; these are routes generally of citywide significance; of varying capacity depending on the travel demand for the specific direction and adjacent land uses."*

Several additional arterials – Market Street, Mission Street, Sutter Street, and West Portal – are also included in the CMP roadway network. These streets experience significant conflicts between auto traffic and transit service.

3.1.2 | Segmentation Method

The 1993 CMP documented the criteria used in 1991 to segment the CMP roadway network in San Francisco, including freeway facilities (see Appendix 3). The following five criteria determined segment limits for the city arterials in the CMP: predominant development patterns (e.g., number of driveways, institutional uses); changes in speed limits; major cross streets; significant changes in traffic volumes; and freeway ramps. These criteria are generally recognized as significant in explaining the operating profile of a roadway.

For freeway facilities the segmentation criteria are simpler. They include major interchange on and off ramps, and points were two freeway facilities merge or bifurcate.

3.1.3 | Current Network

The complete CMP roadway network for San Francisco consists of 233 directional miles on both arterials and freeways.

Table 3-1: 2015 Monitored Segment Miles

ROADWAY TYPE	TOTAL DIRECTIONAL MILES
Arterial	198.2
Freeway	34.9
Total	233.1

As discussed in Chapter 4, performance monitoring was conducted in 2013 for the entire CMP network. The 2013 monitoring network is show in Figure 3-1, including the distinction between "official" and "additional" segments.

FREEWAYS AND STATE HIGHWAYS

San Francisco's CMP roadway network includes freeway segments on Interstate 80, Interstate 280, and US Route 101. State routes designated along City streets are also part of the CMP roadway network, as follows:

- US Route 101 – Richardson Avenue, Lombard Street west of Van Ness Avenue, and Van Ness between Lombard Street and Market Street;
- Route 1 – Park Presidio Boulevard, 19th Avenue, and Junipero Serra Boulevard south of 19th Avenue;
- Route 35 – Sloat Boulevard between 19th Avenue and Skyline Boulevard as well as Skyline Boulevard.

CITY ARTERIALS

The remaining CMP network arterials are city arterials. A table of all arterials included in the CMP network is included in Appendix 3.

3.1.4 | Network Changes

State law prohibits the removal of roadway facilities from the initially designated CMP network (unless facilities are physically removed from the transportation system, such as the Embarcadero Freeway). New facilities may be added to the CMP network without restrictions, subject to the established criteria for inclusion. No network segmentation changes are proposed in the 2015 CMP. Appendix 3 lists all CMP arterials where segmentation changes have been made since 1991, including a technical justification.

From time to time the Transportation Authority may also monitor additional segments that are not part of the official CMP network. These do not constitute official changes to the CMP network, but may be included to support current planning and system management efforts. The Transportation Authority has not monitored any additional segments in 2015.

Data Sources: Iteris, Inc. & 2015 SFCTA LOS Monitoring

This map is for planning purposes only.

Figure 3.1: Spring 2015 Monitored Segments

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3.1.5 | Relationship to the MTS

San Francisco's CMP roadway network is broadly consistent with the Metropolitan Transportation System (MTS) defined by MTC. The MTS is a regional network of roadways, transit corridors and transfer points. The State highways and major thoroughfares designated in San Francisco's CMP roadway network are all included in the San Francisco portion of the regional MTS network. In a few instances, the local CMP roadway network is not identical to the regional MTS network due to differences in the criteria used to define each network. San Francisco's CMP and MTS networks are coordinated with the networks of adjacent counties, to ensure regional connectivity.

A 1993 agreement delegated responsibility from MTC to the Transportation Authority to implement certain mandates in the federal Interstate Surface Transportation and Efficiency Act (ISTEA) of 1991 and by extension, under the Safe, Accountable, Flexible, Efficient Transportation Equity Act—A legacy for Users(SAFETEA-LU) of 2005. These include the analysis of potential impacts on the MTS of proposed local land use decisions (see Chapter 6). The MTS roadway network was updated in 2001 to reflect "support for 'smart growth' and 'environmental justice' by including new focus on facilities that serve major areas of high density, and that provide essential access to disadvantaged neighborhoods."

3.1.6 | Non-Automobile Networks

Transportation performance measures in the San Francisco CMP have broadened to increasingly incorporate multimodal performance. However, the city's dense grid allows parallel streets in the same corridor to serve different transportation functions, and the designated CMP roadway network does not necessarily align with the most important or heavily traveled routes for transit riders, bicyclists, or pedestrians. Therefore, many of the non-auto performance measures in this CMP include data from non-CMP portions of the street network or use citywide metrics. Some multimodal measures, such as transit speed, use data collected along CMP network segments to facilitate comparisons with automobile performance. Chapter 4 provides details on multimodal performance.

3.3. Work Program Items

- Participate in any future MTC efforts to redefine the Metropolitan Transportation System (MTS).

CHAPTER FOUR

MULTIMODAL PERFORMANCE

KEY TOPICS

- Legislative Requirements
- Legislative Intent and Application to San Francisco
- Applications of Multimodal Performance Measures
- Legislatively Required Performance Measures (Auto LOS and Transit)
- Summary of Monitoring Results
- Local Performance Measures (Transit, Bicycle, and Pedestrians)
- Work Program Items

This chapter presents the 2015 CMP multimodal performance results, including analyses of traffic congestion, transit, and non-motorized performance measures. It combines the traffic Level of Service (LOS) and multimodal performance elements required under state CMP legislation, reflecting the legislation's requirement that LOS be included as one of several multimodal performance measures. This approach is also consistent with San Francisco's urban, multimodal environment. Vehicular traffic congestion remains an important metric of transportation performance in San Francisco, but the City and County's Transit First policy and emphasis on person mobility place higher priority on the performance of alternative modes including transit, bicycles, and pedestrians than on private vehicle speeds.

4.1. Legislative Requirements

4.1.1 | LOS Monitoring

The California Government Code requires that San Francisco use automobile LOS standards to measure the performance of the CMP roadway network, but permits CMAs a choice among the following methodologies for measuring LOS:

- Transportation Research Board Circular 212 (TRC 212);
- Transportation Research Board's Special Report 209: *Highway Capacity Manual (HCM)*; or
- A uniform methodology adopted by the CMA that is consistent with *the Highway Capacity Manual*

The CMA is required to biennially determine the City's conformance with the CMP, including attainment of LOS standards.

In accordance with CMP legislation, the county and city governments are required to show that CMP route segments within their jurisdiction are operating at or above the CMP traffic LOS standard for all segments outside of any designated Infill Opportunity Zone (IOZ). Section 65089(b)(1)(B) states that "In no case shall the LOS standards established be below the LOS E or the current level, whichever is farthest from LOS A except when the area is in an infill opportunity zone. When the level of service on a segment or at an intersection fails to attain the established level of service standard outside an infill opportunity zone, a deficiency plan shall be adopted pursuant to section 65089.4". In addition, Section 65089.3 establishes that "The [California] [D]epartment [of Transportation] is responsible for data collection and analysis on state highways, unless the agency designates that responsibility to another entity."

Senate Bill 1636 (Figueroa), passed in 2002, authorized local jurisdictions to designate IOZs. IOZs must meet eligibility criteria to ensure they are compact, mixed-use areas that are well-served by transit. In December 2009, the San Francisco Board of Supervisors designated all then-eligible areas within the City and County of San Francisco as an IOZ (see Appendix 4). Senate Bill 743 (Steinberg), passed in 2013, changed the eligibility criteria for IOZ designation. Under the new criteria, an IOZ is an area designated by a city or a county within a half mile of a major transit stop or corridor that is included in a regional transportation plan. Areas that are designated transit priority areas within the regional Sustainable Communities Strategy are eligible for designation. Previous law also set a December 2009 deadline for jurisdictions to designated IOZs and terminated an IOZ designation if no development project was completed within the zone within four years of designation; SB 743 repealed both provisions. Within a designated IOZ, the local jurisdiction is not required to maintain traffic conditions to the LOS standard. Thus, CMP route segments located within an IOZ are exempt from the minimum LOS standards and deficiency plan requirements mandated elsewhere by the CMP legislation.

4.1.2 | Multimodal Performance Monitoring

The CMP legislation also requires a multimodal performance element. AB 1963 in 1994 modified Section 65089(b)(2) of the Government Code to replace the transit service standards requirements previously mandated for the 1991 and 1993 CMPs. The revised statutes state that the CMP shall include "[a] performance element that includes performance measures to evaluate current and future multimodal system performance for the movement of people and goods. At a minimum, these performance measures shall incorporate highway and roadway system performance, and measures established for the frequency and routing of public transit, and for the coordination of transit service provided by separate operators. These performance measures shall support mobility, air quality, land use, and economic objectives, and shall be used in the development of the capital improvement program..., deficiency plans..., and the land use analysis program....".

4.2. Legislative Intent and Application to San Francisco

The original CMP legislation defined performance narrowly as roadway LOS. The amendments acknowledged the need for diversified solutions to complex transportation problems in urban areas, and the inadvisability of tackling them with just one mode. Current performance element requirements recognize that the transportation system performance should be measured for all modes: automobile, transit, bicycle, and pedestrian.

According to the CMP legislation, deficiencies are detected only on the roadway system. Improvements on the LOS scale ensure better travel conditions for motorists, but the LOS scale does not take into account the person throughput capacity of a roadway. A city arterial may carry the maximum number of automobiles at acceptable speed, but if each vehicle carries only the driver, then throughput of the facility is suboptimal. San Francisco therefore includes performance standards and measurements that evaluate all aspects of the City's multimodal transportation network. San Francisco's high transit, pedestrian, and bicycle mode shares and extensive non-auto mode networks mean that the city benefits from a multimodal approach to system performance.

Consistent with State law, the 2015 San Francisco CMP distinguishes between two categories of performance measures. Legislatively Required measures include roadway LOS plus three transit service performance measures: routing, frequency, and inter-operator service coordination. These are the elements of congestion and multimodal performance measurement that are explicitly required by State congestion management statutes. Section 4.4 details the Legislatively Required metrics.

Local performance measures include multimodal metrics that are not used for determination of CMP conformance under State legislation but reflect performance goals for alternative modes in the City of San Francisco. The local measures are used for planning purposes and to track trends over time. Transit measures included in the 2015 CMP include transit speeds, transit-to-auto speed ratios, transit speed variability. In addition to these, we also include the service standards and milestones reported by the SFMTA, which include measures of transit crowding, transit on-time performance, and bunches and gaps in transit service. Non-motorized metrics include volumes, network connectivity, and safety. These measures are discussed in further detail in Section 4.5.

4.3. Applications of Multimodal Performance Measures

State law requires that link (roadway) LOS be used for determining CMP conformance and conducting deficiency planning, except within a designated Infill Opportunity Zone. Multimodal performance measures will be used for the following purposes:

- CMP conformance determinations. Link (roadway) LOS will continue to be used for conformance determinations for areas that are not designated by the City as an IOZ. Although areas within the designated IOZ are exempt from deficiency planning requirements, the Transportation Authority will continue to monitor multimodal performance, including LOS.
- CIP amendments. The Transportation Authority will continue to evaluate the potential impacts of proposed CIP changes on the performance of the multimodal network. This information is used as one of the factors in determining Transportation Authority concurrence with such proposals.
- Deficiency plans. Link LOS measurements will be used for deficiency determinations. Portions of the congestion management network within a designated IOZ are exempt from deficiency planning requirements. See Appendix 8 for more information on deficiency plans.
- Land use impacts analysis. Multimodal performance measures will be used for the analysis of impacts of local land use decisions on the CMP network.

4.4. Legislatively Required Performance Measures

4.4.1 | Roadway Level of Service (LOS)

This is the most traditional and best documented performance measure. The CMP legislation defines roadway performance primarily by using the LOS traffic engineering concept to evaluate the operating conditions on a roadway. LOS describes operating conditions on a scale of A to F, with "A" describing free flow, and "F" describing bumper-to-bumper conditions. The HCM defines LOS as "…a quality measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience."

Designation of much of San Francisco as an Infill Opportunity Zone strengthens the Transportation Authority's efforts to develop and employ multimodal performance measures appropriate to a dense, multimodal, urban environment. Under the CMP legislation, CMP segments within an IOZ are exempt from minimum LOS standards. The Transportation Authority continues to work with partner agencies to collect data and develop robust metrics that adequately monitor and evaluate multimodal system performance.

Still, continued monitoring of automobile LOS is useful for a variety of reasons. As the most extensive historical dataset available, LOS allows for the monitoring of traffic conditions over a long period of time. Congestion is also an important factor in the performance of surface-running transit service: where transit operates in mixed traffic, increased congestion will slow transit. Finally, ongoing monitoring of both automobile and transit speeds within the same corridor facilitates the assessment of relative modal performance. As such, the Transportation Authority monitored automobile LOS on the designated CMP network during 2015.

The traffic LOS standard for San Francisco is consistent with CMP-mandated criteria and was established at E in the initial (1991) CMP network. Facilities that were already operating at LOS F at the time of baseline monitoring, conducted to develop the first CMP in 1991, are legislatively exempt from the LOS standards. CMP segments that are within a designated IOZ are also exempt from LOS conformance requirements.

MONITORING APPROACH

The Transportation Authority uses INRIX data, a commercial dataset which combines several real-time GPS monitoring sources with data from highway performance monitoring systems, as the primary source for official speed and LOS calculations. INRIX data is supplemented with floating car data where INRIX data is not available. This method was adopted in the 2013 CMP after initial conducted as part of the 2011 CMP found that results calculated from INRIX were appropriate for use in speed and LOS calculations. The 2011 analysis found that speeds from INRIX data were, on average, higher than speeds from floating car runs, but fell within the range of variability of floating car results for a given segment and time period.

Prior to 2013, the Transportation Authority used the floating car method to collect travel time data on the CMP network. However, the resource-intensity of this method led to small sample sizes, which yielded relatively high variability in the results. In 2013, MTC contracted with INRIX to obtain region-wide commercial speed data, and has made the data available free of charge to CMAs and other local governments for planning and monitoring purposes.

The INRIX and floating car data were collected in April and May, 2015, which is the typical CMP monitoring period for San Francisco.

The methodology and results of the 2015 LOS Monitoring effort are detailed in Appendix 5.

SUMMARY OF 2015 LOS MONITORING RESULTS

Table 4-1, below, presents the change in CMP network average travel speeds, calculated as time-mean speed, between 2013 and 2015 for the AM and PM peak periods (7:00 to 9:00 a.m. and 4:30 to 6:30 p.m., respectively).

Table 4-1: CMP Network Average Travel Speed

CATEGORY	TIME PERIOD	TIME-MEAN TRAVEL SPEED		
		2013*	2015	PERCENT CHANGE
Arterial	AM	17.1 mph	14.6 mph	- 15%
	PM	16.0 mph	12.7 mph	- 21%
Freeway	AM	38.2 mph	37.6 mph	- 2%
	PM	29.5 mph	26.3 mph	- 11%

* The method used to calculate CMP speeds was improved for the 2015 CMP, and 2013 speeds have been recalculated using the updated method for comparison to 2015 results. See Appendix 5, Attachment 5.4 for details.

Average travel speeds on the CMP network have decreased since 2013 for all times measured times and road types. Average arterial travel speeds have decreased 15% from 17.1 mph to 14.6 mph in the AM peak and decreased 21% from 16.0 mph to 12.7 mph in the PM peak. The average travel speed on freeways decreased 2% from 38.2 mph to 37.6 mph and 11% from 29.5 mph to 26.3 mph in the PM peak.

Freeway segment speeds are historically highly variable. They tend to be slower during the PM peak than the AM. Inbound segments in the AM peak tend to be slower than their outbound counterparts, and outbound segments in the PM peak tend to be lower than their inbound counterparts. Freeway speeds ranged from a decrease of 7.2 mph (on US 101/Central Freeway from I-80 to Market in the PM peak) to an increase of 7.1 mph (on US 101/Central Freeway from Market to I-80 in the AM peak). The last was the 3rd slowest CMP freeway segments in 2013, and has moved to only the 6th slowest. The slowest four segments from 2013 are again the four slowest segments in 2015, and each decreased slightly in speed.

Out of 232 CMP arterial segments, average AM peak speeds increased or stayed the same on 36 segments and decreased on 210 segments. In the PM peak, average arterial speeds increased or stayed the same on 26 CMP segments and decreased on 220 segments. The analysis confirms expectations of decreased speeds across the network.

In the AM peak period, 4 arterial segments and 4 freeway segments were found to operate at LOS F. In the PM peak period, 20 arterial segments and 6 freeway segments were found to operate at LOS F. Each arterial segment operating at LOS F in the morning peak is within an IOZ, and each freeway segment operating at LOS F also operated at LOS F during base year monitoring, and so all CMP segments are exempt from deficiency planning requirements during the morning peak. Similarly, all CMP freeway and arterial segments operating at LOS F in the evening peak period are exempt because they are either within an IOZ or operated at LOS F during base year monitoring.

Full LOS monitoring results can be found in Appendix 5.

DEFICIENCY PLANNING

Since all segments measured at LOS F in the 2015 monitoring were exempt and did not represent a deficiency, and since San Francisco was not found to be deficient for any of the Legislatively Required transit performance measures, no deficiency planning process is triggered by the 2015 CMP. The Transportation Authority is continuing to collaborate with other agencies to incorporate additional multimodal performance measures into the CMP (see subsequent sections of this Chapter) and to improve the performance of the multimodal transportation system regardless of whether a specific deficiency is identified. For a detailed discussion regarding the CMP deficiency planning process, see Appendix 8.

4.4.2 | Transit Coverage/Routing

This refers to the pattern and hierarchy of the transit route network (e.g., radial/grid, rapid/local, etc.) and the service area covered (e.g., percent of total population served within one-quarter mile; or percent of total urbanized area served). San Francisco County has the most extensive transit coverage of any Bay Area county. As shown in Table 4-A at the end of this chapter, the Muni coverage standard is to provide service running at least 19 hours per day within a ¼ mile walking distance. Other transit operators serve smaller areas of the City and primarily provide connections to other parts of the region.

4.4.3 | Transit Frequency

This is the number of transit vehicles (buses, trains, or ferries) per hour (e.g., 4 buses per hour). The inverse of the frequency is called "headway," which is the time between transit vehicles (e.g., 15 minutes between buses).

Figure 4-1 shows key transit service routes in San Francisco operated by MUNI including Rapid, Metro, and Cable Car services.

Table 4-A, found at the end of this chapter, shows frequency (headway) and coverage standards for the major transit operators that provide service in San Francisco.

A number of transit operators provide connections to and from points outside the city. Because of the predominantly suburban, low-density environment in which they function, which limits the amount and kinds of service they can provide, these operators have significantly different standards from those that Muni is expected to achieve in San Francisco. These differences are reflected in Table 4-A. The transit standards are essentially established policy and in most cases are taken directly from each operator's Short Range Transit Plan.

4.4.4 | Interoperator Coordination

This addresses the linkages between transit services provided by different operators (e.g., timed transfers at transit centers, joint fare cards, etc.), to facilitate the use of transit.

Senate Bill 602 required that MTC, in coordination with the Bay Area's Regional Transit Coordinating Committee (RTCC), develop rules and regulations for fare and schedule coordination in MTC's nine-county Bay region. SB 1474, passed in 1996, set coordination objectives for the region's transit services, and MTC has adopted Resolution 3055, Transit Coordination Implementation Plan, to comply with SB 1474. This MTC-led process is considered sufficient to meet the intent of CMP law regarding transit service coordination in the region. Compliance with MTC's process by Muni and all other operators serving San Francisco will therefore constitute sufficient grounds for a finding of conformance with CMP transit coordination requirements.

The Transportation Authority is currently engaged with partner agencies in various efforts that seek to improve transportation system connectivity and ease interoperator transfers. This unified system, centered on a single farecard known as Clipper, is now operational in San Francisco and provides interoperator functionality. Eventually, Clipper will be part of an even more comprehensive multimodal system. This "integrated mobility account" would potentially include non-transit systems, namely FasTrak (automated bridge-tolling), on- and off-street parking payment, and, if implemented, congestion pricing fees. Such a system would provide ready access to account information through web and mobile interfaces. With a centralized mobility management system, users could also be encouraged to make better transportation decisions and evaluate travel costs and tradeoffs in a more comprehensive manner.

4.5. Local Performance Measures

In measuring performance, we are measuring the ability of the system to satisfy the transportation needs of all San Franciscans, and we must therefore measure performance with reference to particular groups of users—e.g., transit riders, bicyclists, and pedestrians.

Traffic congestion has been measured with a widely recognized, standard approach—LOS—for decades. By contrast, information about the performance of the rest of the transportation network, for those who choose to take transit, bicycle, or walk, is less standardized. Although the 2010 Highway Capacity Manual (HCM) now includes a methodology to calculate multi-modal LOS, its applicability to San Francisco's dense urban grid network is limited (see Appendix 5 for further discussion). Historically, certain transit system data has been collected in response to federal or state requirements tied to eligibility for funding. Typical data collected included total daily ridership—an indicator of current demand for service, and cost per passenger mile, an indicator of cost effectiveness. Increasingly, however, operators are deploying on-board monitoring technologies to help adjust daily operations, improve ongoing system planning, and inform longer-range capital planning.

Similarly, data pertaining to bicycle and pedestrian trips has historically been seldom available. When collected, it is usually in connection with a specific project proposal, and is not a part of a systematic effort that provides a picture of the user's experience.

Multimodal performance data is increasingly needed for system performance measurement pursuant to updates of the San Francisco Transportation Plan and congestion management planning as well as for project planning, transportation impact analysis, and project prioritization. It is necessary to provide better information to the traveling public, as well as to inform policy decisions about funding of transportation projects and services.

By applying the performance measures for travel by car, transit, bicycle, or foot to different neighborhoods in the city, we can produce a countywide picture of comparative mobility between neighborhoods, modes (e.g. transit vs. auto), or types of users (e.g. transit dependent, elderly). We can also evaluate the accessibility of different parts of the city by analyzing the number of destinations that are reachable by different modes of transportation.

The Transportation Authority's travel demand model and GIS database are the main tools for analysis of system performance data.

The Transportation Authority also continues its ongoing technical and policy vehicles for development of further local performance measures. The groundwork for further measures has been supported with allocations of Prop K funding for projects devoted to ongoing collection of multimodal data, such as automatic passenger counters (APCs) on transit vehicles, in-pavement bicycle volume counters, and intersection-level automated pedestrian counters.

4.5.1 | Transit Speed and Variability

APC DATA COLLECTION AND ANALYSIS METHODOLOGY

The San Francisco Municipal Transportation Agency (SFMTA) uses both automatic vehicle locator (AVL) and automatic passenger counter (APC) systems to collect robust, real-time data on bus performance and ridership. AVL and APC data support a wide range of operations, planning, and customer service activities.

AVL technology is installed on Muni's entire fleet of diesel (including hybrid) buses, electric trolley-buses, and light-rail vehicles. A GPS-based real-time monitoring system, AVL is useful both from an operational perspective (i.e., NextBus) and planning perspective. In 2007, the Transportation Authority used AVL data to validate travel demand model improvement efforts, which linked modeled transit speeds dynamically to auto speeds. (The San Francisco model is discussed in further detail in Chapter 8.) The 2007 CMP included, for the first time, reporting of transit speeds on key monitored segments of the Muni system.

APCs are a more robust on-board monitoring tool than AVLs. The SFMTA's APC system provides both running time (i.e., speed) information as well as passenger activity (boardings and alightings) data. In March 2005, the Transportation Authority approved the first of several allocations of Prop K funds to support the procurement and installation of APCs on a portion of Muni's bus fleet. SFMTA's Transit Effectiveness Project (TEP), (now Muni Forward), significantly accelerated the deployment of APCs on Muni's diesel bus and trolley bus fleet, in order to provide the high-resolution (i.e., stop-level and route-level) data necessary for the TEP's comprehensive system analysis.

More generally, the resources and analyses developed for the TEP's original analysis have provided SFMTA with a set of valuable tools and skills for data driven decision-making. Operations-level data, collected in real-time on a sufficient sample of vehicles and runs, supports a range of planning activities, from short-term resource deployment to financial planning and long-range system development. APC data is regularly shared between the SFMTA and the Transportation Authority for planning purposes, including for CMP reporting.

The SFMTA currently has APCs deployed on a significant portion of its bus fleet. Guided by a deployment plan, equipped vehicles are rotated across the system each month; thus each individual run (i.e., a particular scheduled departure of a specific route) is sampled on a regular basis (at least once per month). This is valuable for detailed service planning purposes. For broader system performance monitoring and planning purposes, such as the CMP, the APC data can be aggregated to a weekday peak period and have a relatively large sample set.

APC data was used to report transit speeds in 2009, 2011, and 2013. For the 2015 CMP the LOS monitoring consultants (Iteris) processed two months of APC data collected on Muni's bus (diesel and trolley coach) fleet. Muni light rail vehicles are not currently equipped with APCs, and were thus not included in the analysis. After undergoing a quality control "cleaning" to eliminate faulty and outlier data samples, the data was filtered to include only weekday peak periods. The same AM and PM peak time periods were as used as in the LOS Monitoring (7:00am-9:00am and 4:30pm-6:30pm).

The APC equipment relies on GPS technology to recognize Muni's designated stop locations as a vehicle traverses its route. The processed dataset provides stop-to-stop travel speed, inclusive of dwell time. Dwell time is assigned to the "upstream" stop: the segment-level data represents upstream stop-arrival point to downstream stop-arrival point. In this way, the processed data corresponds with the travel time and through-speed experience by a transit rider as he or she passes multiple stops while on-board. (This is comparable to manner in which automobile speed is reported in this chapter by including fully-stopped intersection delay in the calculation of through-travel speed.). Where the transit travel time results have been mapped to CMP segmentation, the bus stop segments were split at CMP boundaries, and the distance of each bus segment within a CMP segment was used to weight the average speed over the segment.

The APC dataset is from April and May of 2015, the same period as the roadway LOS monitoring effort. This allowed the comparison of auto to transit speeds on the portions of the CMP network for which Muni data was available. For each segment, the ratio of auto-to-transit speed was calculated. This figure is equivalent to the ratio of transit travel time to auto travel time. A ratio of 2 would indicate that, for a particular route, on-board transit travel time is twice that of auto travel time.

TRANSIT SPEEDS

Transit speeds on the CMP network have declined slightly since 2013, likely due to increasing traffic congestion. Compared to 2013, the average transit speeds (collected for buses only) in 2015 on the CMP network[1] decreased from 8.8 mph to 8.7 mph in the AM peak period. In the PM peak period transit speeds decreased from 8.1 mph to 7.9 mph. A roughly equal number of segments decreased as stayed the same or increased in average transit speed, for both AM and PM peak periods; in the AM, 65 segments decreased in speed while 68 stayed the same or increased, and in the PM 67 segments decreased and 67 stayed the same or increased. Figures 4-2 and 4-3 illustrate average bus speeds on CMP segments in the AM and PM peak periods, respectively.

Transit performs better, relative to auto speeds, in 2015 than it did in 2013. In 2013, auto speeds were greater than transit speeds by a factor of 2 or more on 42% of segments in the AM peak and 49% in the PM peak, for all CMP segments for which transit speeds were reported. In 2015, the number of segments with auto speeds exceeding transit speeds by that amount decreased to only 23% in the AM peak and 19% in the PM peak. The average auto-to-transit speed ratio decreased from 2.0 to 1.7 in the AM peak and 2.1 to 1.7 in the PM peak. Table 4-2 and Table 4-3 display segments with auto-to-transit speed ratios over 2.0 for the AM and PM peak periods, respectively.

Since 2013, one of the CMP segments with the highest auto-to-transit ratio, Fulton Street from 10th Avenue to Arguello, has been operating as part of a pilot service change that has established a limited-stop 5L-Fulton line during daytime hours. Transit speeds improved significantly, from 6.7 mph to 8.8 mph in the AM peak and from 4.5 mph to 9.9 mph in the PM peak. Similarly, the auto-to-transit speed ratio dropped from over 4 to under 2. Improvements to the 14R, which runs the length of Mission St from downtown to the county line, were implemented through one of Muni Forward's travel time reduction projects, and in 2015 CMP monitoring, auto-to-transit speed ratios dropped on all Mission/Otis CMP segments. Several other segments with high auto-to-transit ratios are planned for

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[1] Transit average speeds are unweighted.

transit improvements, including Van Ness Avenue with the Van Ness Avenue Bus Rapid Transit (BRT) and on Geary Blvd with the Geary BRT project. On Market Street between Van Ness and Embarcadero, where, as part of a planned series of safety enhancements, several turning restrictions direct traffic off of Market Street and transit-only lanes were painted bright red to encourage better compliance, surface transit has become more competitive with autos in both directions and both morning and evening peak travel periods.

Transit became less competitive relative to auto on 22 segments in the AM peak and 21 segments in the PM peak. By comparison, transit became more competitive relative to transit on 110 segments in both the AM and PM peak periods.

Although useful, the current analysis of individual segments does not account for the number of riders affected on segments or transit routes with different levels of performance. In future monitoring cycles, ridership data could be added to the analysis to enable identification of transit routes that affect the greatest numbers of riders. Route-level speed and travel time information may also be useful.

TRANSIT SPEED VARIABILITY

The standard deviation and coefficient of variation of travel time provide indicators of how reliable transit vehicle travel times are for a given segment. The standard deviation provides an absolute measure of variability, and indicates in minutes how far from the mean speeds typically range. The coefficient of variation (CV) is calculated by dividing the standard deviation by the average speed, thereby normalizing the results to compare relative variability between faster and slower segments. The CV is expressed as a percentage of the mean speed.

Transit speed variability is high for many segments. Coefficients of variation on many segments are 20% or more, indicating that transit travel time on a typically 30-minute trip is more than six minutes faster or slower than average more nearly one-third of the time. The coefficient of variation exceeds 30% for 23 segments in the PM peak and 15 segments in the AM peak, representing approximately ten percent of monitored segments. Table 4-4 and Table 4-5 display these least reliable segments in the AM and PM peak period.

Full results are included in Appendix 7.

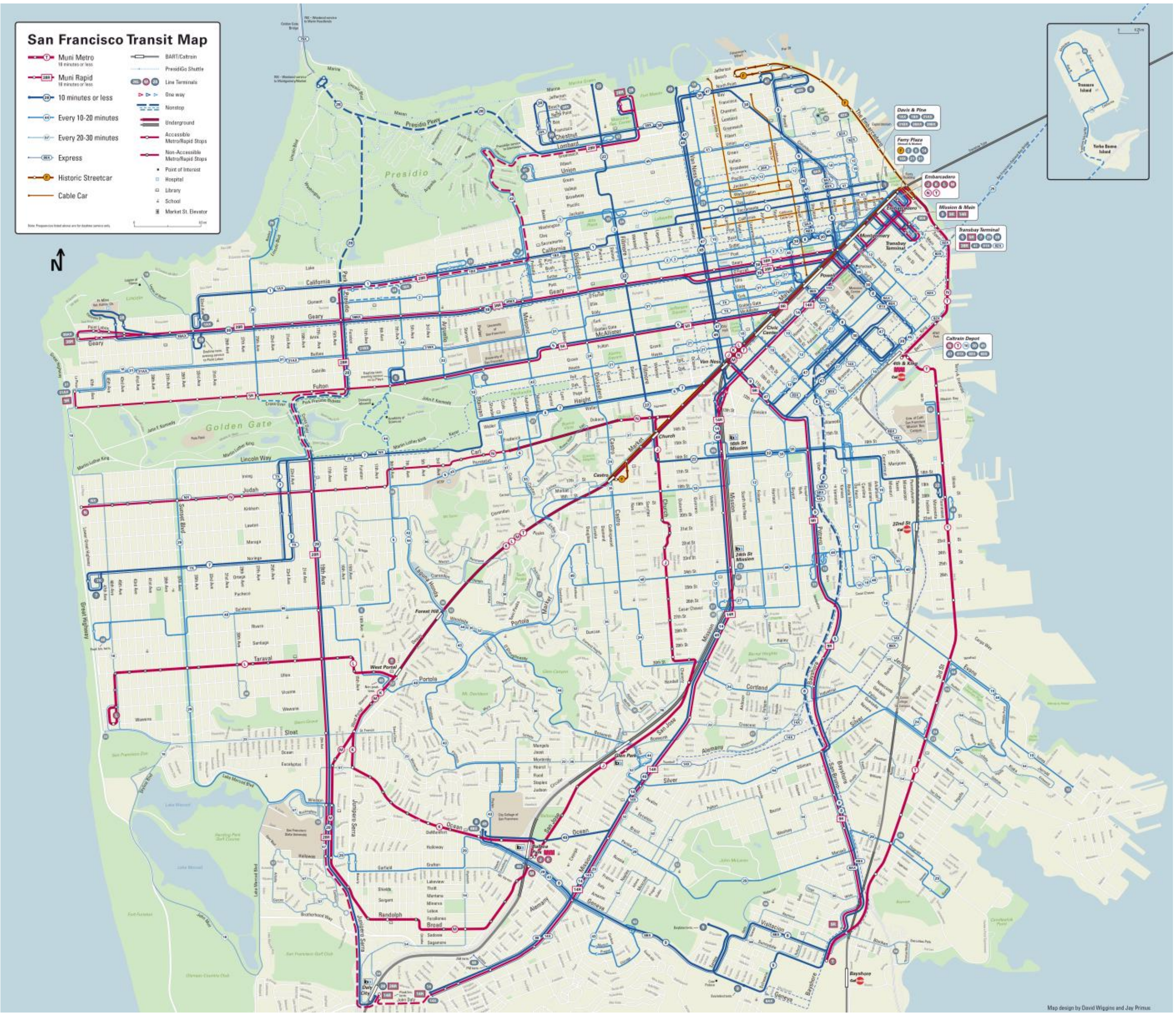
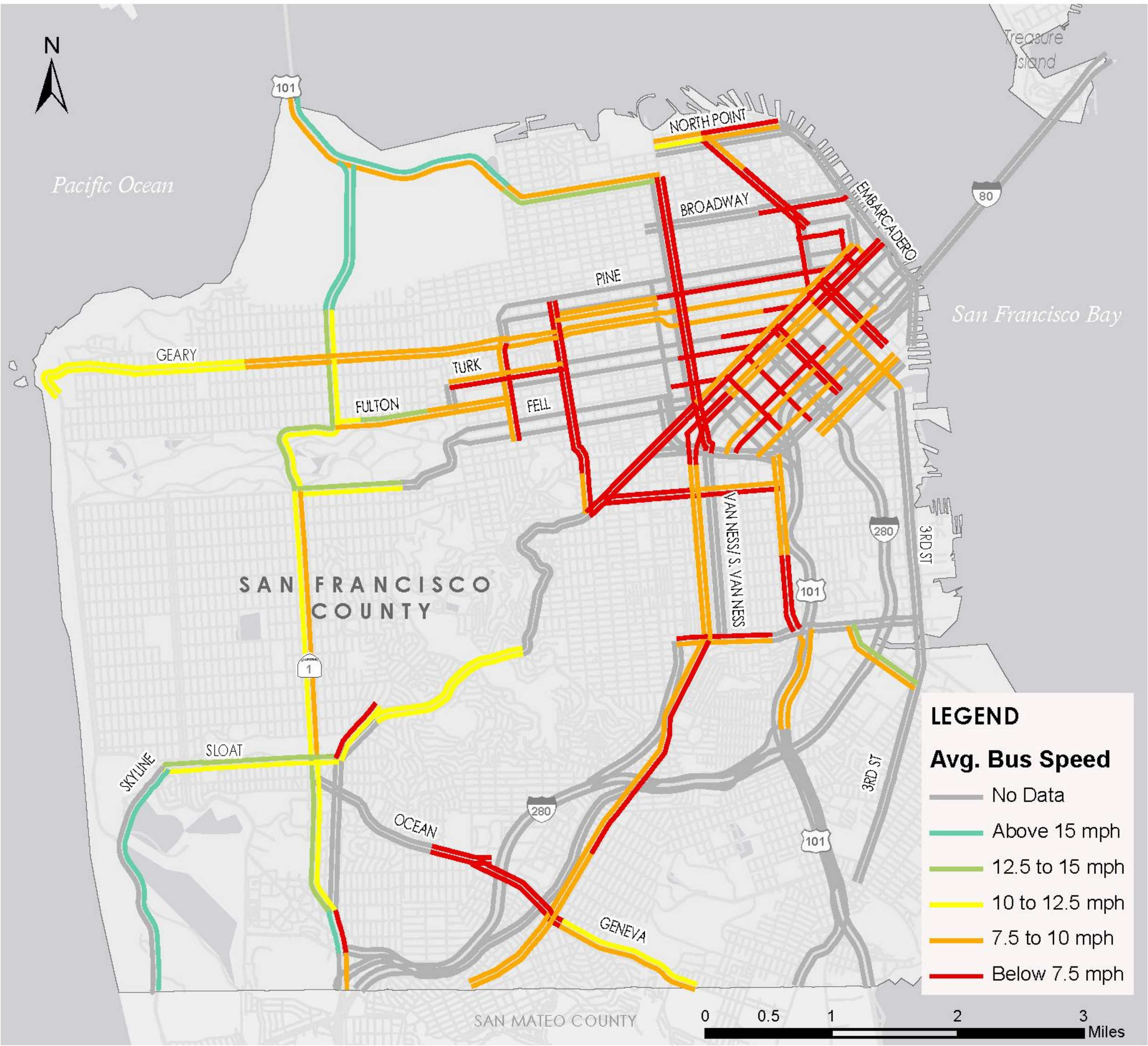


Figure 4-1: Muni San Francisco Transit System Map



Data Sources: Iteris, Inc. & SFMTA Automatic Passenger Counters

This map is for planning purposes only.

Figure 4-2: 2015 Average Muni Bus Speeds on CMP Network Segments, Weekday AM Peak

Data Sources: Iteris, Inc. & SFMTA Automatic Passenger Counters

This map is for planning purposes only.

Figure 4-3: 2015 Average Muni Bus Speeds on CMP Network Segments, Weekday PM Peak

E8A-30

Table 4-2: CMP Segments with Auto-to-Transit Speed Ratios above 2.0 during AM Peak

CMP SEGMENT	DIR.	AVG. AUTO SPEED (MPH)	AVG.TRANSIT SPEED (MPH)	AUTO/TRANSIT SPEED RATIO
Market/Portola: Guerrero to Castro	W	15.1	5.4	2.8
J. Serra: County Line to Brotherhood	N	27.0	9.8	2.8
Bayshore: Jerrold to Industrial	S	24.4	8.9	2.7
Doyle/ Richardson/ Lombard: County Line to SF Cemetery	E	25.4	9.7	2.6
Columbus: Greenwich to Montgomery	S	11.8	4.8	2.5
Van Ness/S. Van Ness: Washington to Lombard	N	12.7	5.2	2.4
Harrison: 8th Street to Division	W	14.0	6.0	2.3
Mission/Otis: 14th Street to 9th Street	N	12.4	5.4	2.3
Van Ness/S. Van Ness: Washington to Golden Gate	S	12.8	5.7	2.2
Market/Portola: Van Ness to Guerrero	W	14.3	6.4	2.2
16th St: Market to Mission	E	13.1	5.9	2.2
19th Ave/Park Presidio: US 101 to Lake	S	39.7	17.9	2.2
Geneva: Paris to Cayuga	W	10.7	4.9	2.2
Cesar Chavez: Bryant to Guerrero	W	13.1	6.0	2.2
North Point: Embarcadero to Columbus	W	13.9	6.4	2.2
Doyle/ Richardson/ Lombard: SF Cemetery to County Line	W	35.1	16.2	2.2
Ocean: Miramar to Howth	E	11.9	5.5	2.2
Potrero: 21st Street to Cesar Chavez	S	14.5	6.8	2.1
Turk: Stanyan to Divisadero	E	15.7	7.4	2.1
West Portal: Ulloa to Sloat	S	14.8	7.0	2.1
Fulton: Park P. to 10th Avenue	E	19.3	9.2	2.1
Potrero: 21st Street to Division	N	19.5	9.3	2.1
J. Serra: 19th to Brotherhood	S	39.3	18.9	2.1
16th St: Mission to Market	W	13.3	6.4	2.1
Sloat: Skyline to Junipero Serra	E	23.0	11.1	2.1
Van Ness/S. Van Ness: Golden Gate to Washington	N	11.1	5.4	2.1
Van Ness/S. Van Ness: 13th to Golden Gate	N	13.0	6.4	2.0
8th St: Market to Bryant	S	13.5	6.7	2.0
Harrison: 4th Street to 8th Street	W	17.2	8.6	2.0
Ocean: Howth to Miramar	W	11.4	5.7	2.0

Table 4-3: CMP Segments with Auto-to-Transit Speed Ratios above 2.0 during PM Peak

CMP SEGMENT	DIR.	AVG. AUTO SPEED (MPH)	AVG.TRANSIT SPEED (MPH)	AUTO/TRANSIT SPEED RATIO
Columbus: Montgomery to Greenwich	N	4.4	12.5	2.8
Market/Portola: Guerrero to Castro	W	4.8	13.0	2.7
Bayshore: Jerrold to Industrial	S	7.5	19.3	2.6
West Portal: Ulloa to Sloat	S	5.8	14.3	2.5
Mission/Otis: 14th Street to 9th Street	N	5.4	13.3	2.5
Columbus: Greenwich to Montgomery	S	4.2	10.2	2.4
Fulton: Park P. to 10th Avenue	E	8.8	20.6	2.3
Harrison: 1st Street to 4th Street	W	5.6	13.1	2.3
North Point: Columbus to Van Ness	W	5.7	13.2	2.3
Market/Portola: Guerrero to Van Ness	E	5.3	12.2	2.3
Market/Portola: Van Ness to Guerrero	W	4.8	10.9	2.3
16th St: Market to Mission	E	6.0	13.5	2.3
Van Ness/S. Van Ness: Golden Gate to Washington	N	5.2	11.7	2.3
Van Ness/S. Van Ness: Washington to Lombard	N	7.4	16.4	2.2
Fulton: 10th Avenue to Park P.	W	6.7	14.7	2.2
Skyline: County Line to Sloat	N	16.4	35.8	2.2
Doyle/ Richardson/ Lombard: County Line to SF Cemetery	E	18.5	39.9	2.2
Hayes: Market to Gough	W	5.4	11.2	2.1
Folsom: 8th Street to 4th Street	E	4.6	9.5	2.1
Harrison: 8th Street to Division	W	6.2	12.8	2.1
19th Ave/Park Presidio: US 101 to Lake	S	18.8	38.0	2.0
Geneva: Cayuga to Paris	E	5.3	10.7	2.0
Ocean: Miramar to Howth	E	5.5	11.1	2.0
Sloat: Skyline to Junipero Serra	E	11.2	22.6	2.0
Ocean: Howth to Miramar	W	4.3	8.6	2.0

Table 4-4: Least Reliable Transit Segments (CV>30%), AM Peak

SEGMENT	DIR.	AVG. TRANSIT SPEED (MPH)	S.D. TRANSIT SPEED (MPH)	COEFFICIENT OF VARIATION
J. Serra: County Line to Brotherhood	N	9.8	7.7	79%
J. Serra: 19th to Brotherhood	S	18.9	12.2	65%
J. Serra: Brotherhood to 19th	N	7.2	4.3	60%
Evans: Cesar Chavez to 3rd Street	E	9.8	4.4	45%
Townsend: 2nd Street to 7th Street	W	9.2	3.9	42%
Masonic: Page to Geary	N	7.4	3.1	42%
Doyle/ Richardson/ Lombard: Lyon/Francisco to SF Cemetery*	W	16.2	6.5	40%
Doyle/ Richardson/ Lombard: SF Cemetery to County Line	W	16.2	6.5	40%
2nd St: Brannan to Market	N	7.2	2.7	38%
Market/Portola: Van Ness to Guerrero	W	6.4	2.2	34%
Doyle/ Richardson/ Lombard: County Line to SF Cemetery	E	9.7	3.1	32%
Doyle/ Richardson/ Lombard: SF Cemetery to Lyon/Francisco	E	9.7	3.1	32%
Fulton: Park P. to 10th Avenue	E	9.2	2.9	32%
Main: Mission to Market	N	8	2.5	31%
Bayshore: Jerrold to Industrial	S	8.9	2.7	30%

Table 4-5: Least Reliable Transit Segments (CV>30%), PM Peak

SEGMENT	DIR.	AVG. TRANSIT SPEED (MPH)	S.D. TRANSIT SPEED (MPH)	COEFFICIENT OF VARIATION
Sloat: Skyline to Junipero Serra	E	11.2	10.8	96%
Main: Mission to Market	N	6	5.5	92%
Townsend: 2nd Street to 7th Street	W	5.7	3.5	61%
North Point: Columbus to Embarcadero	E	7.9	3.8	48%
Pine: Market to Kearny	W	8.9	4.2	47%
Fulton: 10th Avenue to Park P.	W	6.7	3.1	46%
5th St: Brannan to Market	N	3.8	1.7	45%
2nd St: Brannan to Market	N	5.7	2.5	44%
19th Ave/Park Presidio: Lake to US 101	N	11.3	4.8	42%
Fulton: Park P. to 10th Avenue	E	8.8	3.3	38%
Bayshore: Jerrold to Industrial	S	7.5	2.8	37%
J. Serra: County Line to Brotherhood	N	13.2	4.9	37%
Doyle/ Richardson/ Lombard: Lyon/Francisco to SF Cemetery*	W	10.8	4	37%
Doyle/ Richardson/ Lombard: SF Cemetery to County Line	W	10.8	4	37%
Beale/Davis: Clay to Mission	S	7.1	2.6	37%
J. Serra: 19th to Brotherhood	S	17.2	6.2	36%
Harrison: 1st Street to 4th Street	W	5.6	2	36%
Folsom: 8th Street to 4th Street	E	4.6	1.6	35%
Townsend: 7th Street to 2nd Street	E	5.1	1.7	33%

2nd St: Market to Brannan	S	4.6	1.5	33%
Cesar Chavez: Guerrero to Bryant	E	6.8	2.2	32%
Bayshore: Industrial to Cesar Chavez	N	9.7	3.1	32%
Broadway: Montgomery to Embarcadero	E	5.6	1.7	30%

4.5.2 | Muni Service Standards and Milestones

In November 1999, San Francisco voters passed Proposition E which, among other changes, amended the City Charter to require the creation of service standards and milestones for Muni to attain. The SFMTA Board of Directors updates these periodically. Table 4-B lists the service standards and milestones that directly pertain to the improvement of Muni performance.

Muni on-time performance as measured by arrival times against published schedules has fallen since the last CMP update in 2011 from 73% to 60%, below the goal of 85%. Headway adherence has remained constant, with approximately 65% adherence, also below the 85% goal. The proportion of scheduled service hours actually delivered fell to 95 percent from 97% in 2011. The goal for service delivered is 98.5%. Finally, the proportion of vehicles too full to board (pass-ups) increased in the morning peak period to 6.5% (from 5% in 2011) but decreased slightly in the afternoon peak from 8% in 2011 to 7% in 2013. Both morning and afternoon peak pass-ups remain above the 4% goal.

4.5.3 | Pedestrian and Bicycle Volumes

The City and County of San Francisco has placed a high priority on shifting travelers' modes to increase the number of trips made by walking and bicycling. Unlike automobile and transit volumes, increasing volumes of pedestrian and bicycle traffic are a direct indicator of system performance because increased use of these modes alleviates, rather than causes, traffic congestion and transit crowding. Walking and bicycling are space-efficient, healthy, and environmentally beneficial ways to travel, and have minimal negative impact on surrounding communities.

The Transportation Authority estimates from the 2010-2012 California Household Travel Survey (CHTS) that during the study period approximately 24% of trips to, from, and within San Francisco were made by walking, while approximately 2% were made by bicycle. Trips beginning and ending in San Francisco were estimated to be about 34% walking and 3% bicycling. In 2010, the San Francisco Board of Supervisors adopted a resolution establishing an ambitious citywide goal of 20% of trips being made by bicycle by 2020.

Little data has historically been available to measure the numbers of trips made by walking and bicycling, but City and County agencies are now working together to collect volume data for both modes on a more regular basis.

In 2009, the Transportation Authority approved two Prop K allocations to develop SFMTA's ability to collect pedestrian and bicycle data on a regular basis, and in 2013 the Transportation Authority approved an allocation to further develop an automated bicycle counter system. These efforts have collected mode-specific volume data at key locations in the city, although the pedestrian count effort has focused more on collecting data at many different locations than on developing a consistent but smaller set of locations to track over time.

Unlike for automobile and transit performance, volume information—tracked over time—is a reasonable proxy for the "performance" of a non-motorized mode of travel and the shifting usage to that mode. Under the City's Transit First policy, the Countywide Transportation Plan, and numerous other policy documents, increases in pedestrian and bicycle travel are central and explicit goals.

CITYWIDE BICYCLE COUNTING PROJECT

SFMTA has conducted citywide bicycle counts at key intersections and corridors since 2006. The number of bicycle count locations has grown over the years – 21 in 2006, 40 in 2011, 51 in 2013, and 79 survey locations in 2014. While annual bicycle counts have in the past been completed each August, the count date was moved to late September in 2011 both to align more closely with the bicycle counting standards set by the National Bicycle and Pedestrian Documentation Project (NBPDP) and to capture bicycle trips taken while school is in session. Additionally, count duration has been increased from approximately one-and-a-half to approximately two hours. Counts continue to be conducted primarily during the PM peak period. During the 2014 count effort, video data collection technology was utilized for the first time. This approach captures a more holistic picture of trips at key locations by also counting people walking, taking transit, and traveling in vehicles in the city.

Figure 4-4 shows bicycle counts from 2011 through 2014. It must be noted that count locations have been increasing and the figure shows counts from the same 38 counters for all three years. There has been a significant increase of about 14% in bicycle counts from 2011 to 2013. Assuming uniform growth, the annual growth would be 7%. However, it appears that the growth from 2013 to 2014 has been marginal at 1.5%. A comparison with data back from 2006 (when the counts project started) shows that 3,748 bicycles in 2006 have grown to 11,473 bicycles in 2014 at 19 overlapping locations – a 206% increase over 8 years. A total of 26,817 bicycles were observed at 79 survey locations in 2014. Full results of the bicycle count are available in the SFMTA's 2014 Bicycle Count Report.

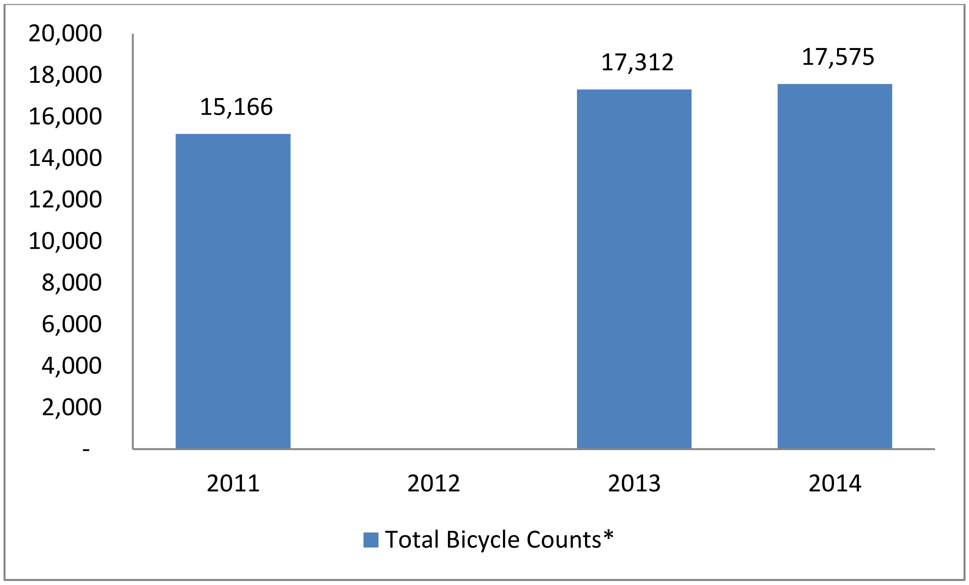


Figure 4-4: Manual Bicycle Counts 2011-2014

* Volumes represented are at the same 38 locations for all three years. No data collected in 2012.

Source: SFMTA Annual Bicycle Count Survey 2014

In recent years, there has been a proliferation of automated counters due to the fact that manual method of data collection is limited by staffing constraints and lacks the ability to quantify bicycle usage at different times of the day, seasonally, and throughout the year. SFMTA currently operates 25 automated bicycle counters all over the city that operate round the year. Data from these automatic bicycle counters has become available for the first time in 2013, providing a set of continuous streams of ridership data in a cost-effective manner. SFMTA plans to add 50 additional counters by 2017. The automated bicycle count data is more robust than that collected manually on a specific day during a specific week. Figure 4-5 shows that monthly weekday bicycle counts collected by 19 automated counters from 2013. Due to gaps in data remaining counters were excluded from the analysis. While SFMTA's citywide bicycle counting effort show an increase in cycling, counts from automated counters indicate a slight decrease. This could indicate that cycling has been relatively flat since 2013, but it could also indicate that cyclists are changing their routes as infrastructure is built, so they are not being counted at the fixed counter locations.

In addition to the SFMTA, SFCTA has initiated a manual bicycle counts effort this year that it intends to continue in future. This effort was implemented along with counting both turn movements and pedestrians at the selected intersections. Bicycle counts were recorded for 2 hours each in the AM (7AM – 9AM) and PM (4:30PM – 6:30PM) peak periods at 14 intersections around the city. The counts by location are reported in Table 4-7. In contrast to the SFMTA counts, these were recorded between the last week of April and third week of May 2015.

Table 4-7: SFCTA Bicycle Counts, April-May 2015

COUNT LOCATION	AM (7-9)	PM (4:30-6:30)	TOTAL
3rd St & 16th St	61	96	157
3rd St & Evans Ave	61	63	124
3rd St & Palou Ave	73	76	149
6th St & Howard St	91	478	569
19th Ave & Holloway Ave	35	50	85
Geneva Ave & Alemany Blvd	21	24	45
Leavenworth St & Eddy St	20	44	64
Mission St & 16th St	121	199	320
Montgomery St & Bush St	87	44	131
Park Presidio Blvd & Geary Blvd	11	11	22
Portola Dr & O'Shaughnessy-Woodside	30	11	41
Potrero Ave & 16th St	74	100	174
South VanNess Ave & 13th St	67	154	221
Stockton St & Broadway	81	78	159
All locations	833	1,428	2,261

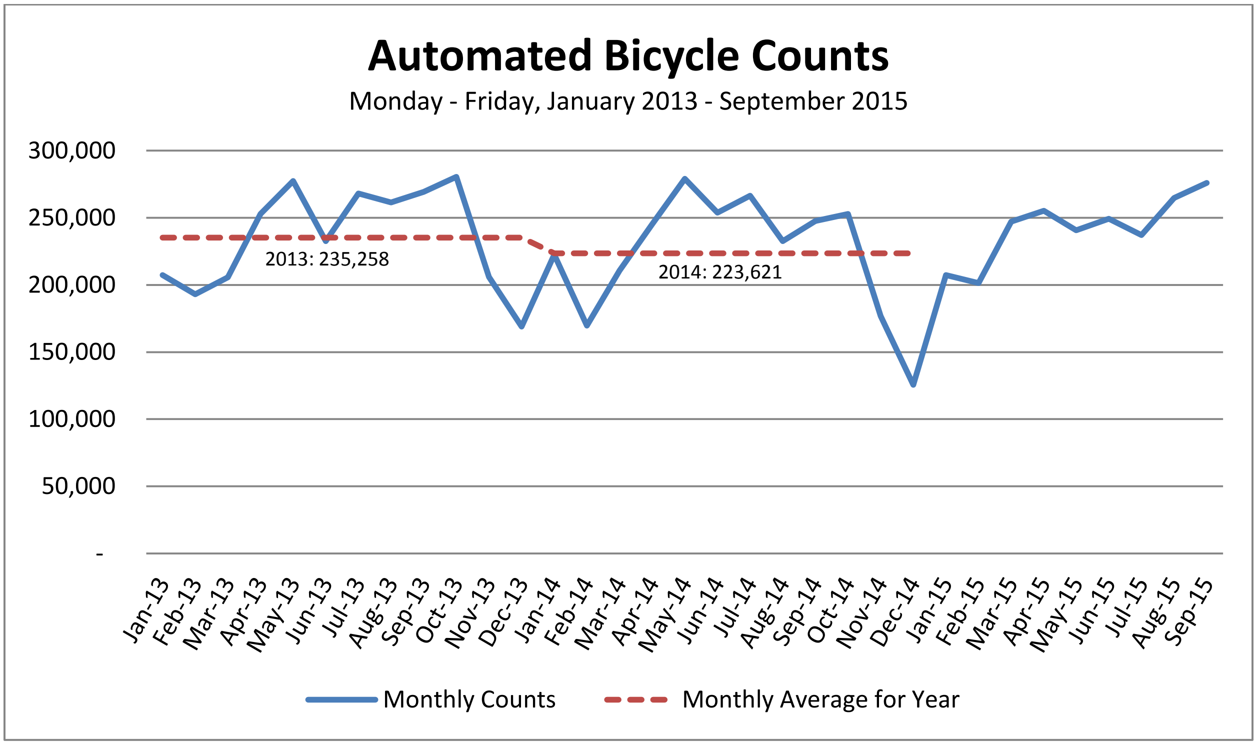


Figure 4-5: Monthly Automated Bicycle Counts (Weekday) 2013-2015

4.5.4 | Bicycle Network Connectivity

The extent and connectivity of the pedestrian and bicycle networks are important metrics of non-motorized transportation performance. Comprehensive networks that allow pedestrians and bicyclists to travel easily and safely between destinations are essential to encourage non-motorized travel as an alternative to driving and contributing to traffic congestion.

The San Francisco Bicycle Plan, adopted by the SFMTA in 2009, includes improvements to and expansion of the City's existing bicycle routes, which comprised 208 total miles in 2008. The Plan, which was originally adopted in 2005 but subject to a four-year court injunction that was lifted partially in 2009 and entirely in 2010, calls for 34 miles of new Class II bicycle lanes in addition to the previously existing 45 miles, 75 miles of shared on-street bike routes marked with sharrows, new and improved bicycle parking citywide, as well as additional programs, policies, and projects to improve bicycle connectivity and safety.

Since the Bicycle Plan injunction was lifted, the City has moved rapidly to implement it. 30 of the 34 miles of Class II bicycle lanes proposed in the plan had been completed as of August 2014. In addition, six bike lane projects developed after the 2009 Bike Plan were also completed adding another 3.2 miles. Progress on the Plan has also included upgrades to existing bike infrastructure including sharrows and pilot installation of separated bikeways, bike boxes at intersections, and colored pavement treatments to increase the visibility and safety of bicycling on City streets. 51 of the 75 miles of shared bike routes identified in the 2009 Bike Plan had been completed as of August 2014.

Table 4-8 summarizes length of bicycle facilities by type. As of October 2015, the completed network included 436 miles of bike routes, of which 16% were Class I paths and 32% were Class II designated bicycle lanes. The rest are Class III signed routes in shared lanes, many of which have wide shoulders or are marked with sharrows. There are also 13 miles of Class IV bike facilities that are separated by a vertical element from the rest of traffic.

Table 4-8: San Francisco Bicycle Facilities, 2011 to 2015

	2011		2013		2015	
FACILITY TYPE	MILES	% TOTAL	MILES	% TOTAL	MILES	% TOTAL
Bicycle Path (Class I)	69	18%	69	16%	69	16%
Bicycle Lane (Class II)*	121	31%	132	31%	140	32%
Bicycle Route (Class III)	193	49%	213	50%	214	49%
Separated Bikeways (Class IV)**	6	2%	12	3%	13	3%
Total	389	100%	427	100%	436	100%

Source: SFMTA

* includes bike lanes and buffered bike lanes (paint buffer only). ** includes bike lanes with vertical barrier element (such as curb, planter, parking).

The SFMTA 2013-2018 Bicycle Strategy recommends that a new “Comfort Assessment” methodology related to what is termed “Level of Traffic Stress” (LTS) be used going forward. This recognizes the fact that there are diverse arrays of bike facility characteristics that may not be accurately described by just the “Class” level categories. The methodology would further promote the city's goal to create a network that is comfortable for all users, especially vulnerable user groups like youths, the disabled, seniors, and low-income communities. The strategy report identified that about 20 miles of the city’s bicycle network has buffered bike lanes, and cycle tracks that satisfy the comfort level of most people. The strategy also stresses that consistency of LTS along corridors is as important as the LTS itself. This kind of an assessment could help identify network gaps and intersection “hot spots”.

4.5.5 | Pedestrian and Bicycle Safety

Safety for pedestrians and cyclists are key measures of non-motorized transportation performance, and a critical policy priority for the city of San Francisco. The City and County of San Francisco adopted Vision Zero as a policy in 2014, committing to build better and safer streets, educate the public on traffic safety, enforce traffic laws, and adopt policy changes that save lives. The goal is to create a culture that prioritizes traffic safety and to ensure that mistakes don’t result in serious injuries or death.

In tracking progress towards reducing injuries and fatalities, the primary source of data is the California Statewide Integrated Traffic Records System (SWITRS) maintained by the California Highway Patrol, which compiles all local collision reports into a unified database. Fatalities from traffic collisions are tracked, and collisions resulting in injury are classified by severity of injury. Table 4-9, below, displays injury and fatality statistics by involved party for the most recent decade for which traffic collision data has been analyzed (2003-2013).

As shown in Table 4-9, injury collisions among all users has varied throughout the decade, with no clearly discernible trends; injuries peaked in 2012 and then fell to their lowest level in the decade in the following year.

One clear trend is an increase in bicyclist collisions, which grew steadily over the decade, increasing by 112 percent between 2003 and 2012. This increase is likely due to the significant rise in bicycling activity observed in recent years and to the citywide injunction on bicycle improvements which was in place from 2006 until August 2010.

Collisions resulting in injury are a more reliable indicator of safety trends than traffic deaths: fatal collisions, being rarer events, are subject to more random fluctuation and greater relative (percentage) shifts on a year-to-year basis. Still, across a longer timeframe, traffic fatalities have declined significantly. Annual traffic deaths among all users in the 1960s regularly exceeded 100 per year; during the 2003-2013 period, annual traffic fatality totals have varied between 23 and 42 annually. Pedestrian fatalities have represented approximately 60% of total traffic deaths during this ten-year period, with annual figures varying between 13 and 25 pedestrian fatalities per year.

Since the launch of the Vision Zero policy in 2014, city agencies have redoubled efforts to reduce traffic injuries and fatalities. The SFMTA committed to implementing 24 safety engineering projects in 24 months, and has implemented 17 as of fall, 2015. During the same period, a major safety education campaign focused on increasing driver yielding to pedestrians was completed, and police citation activity increased significantly.

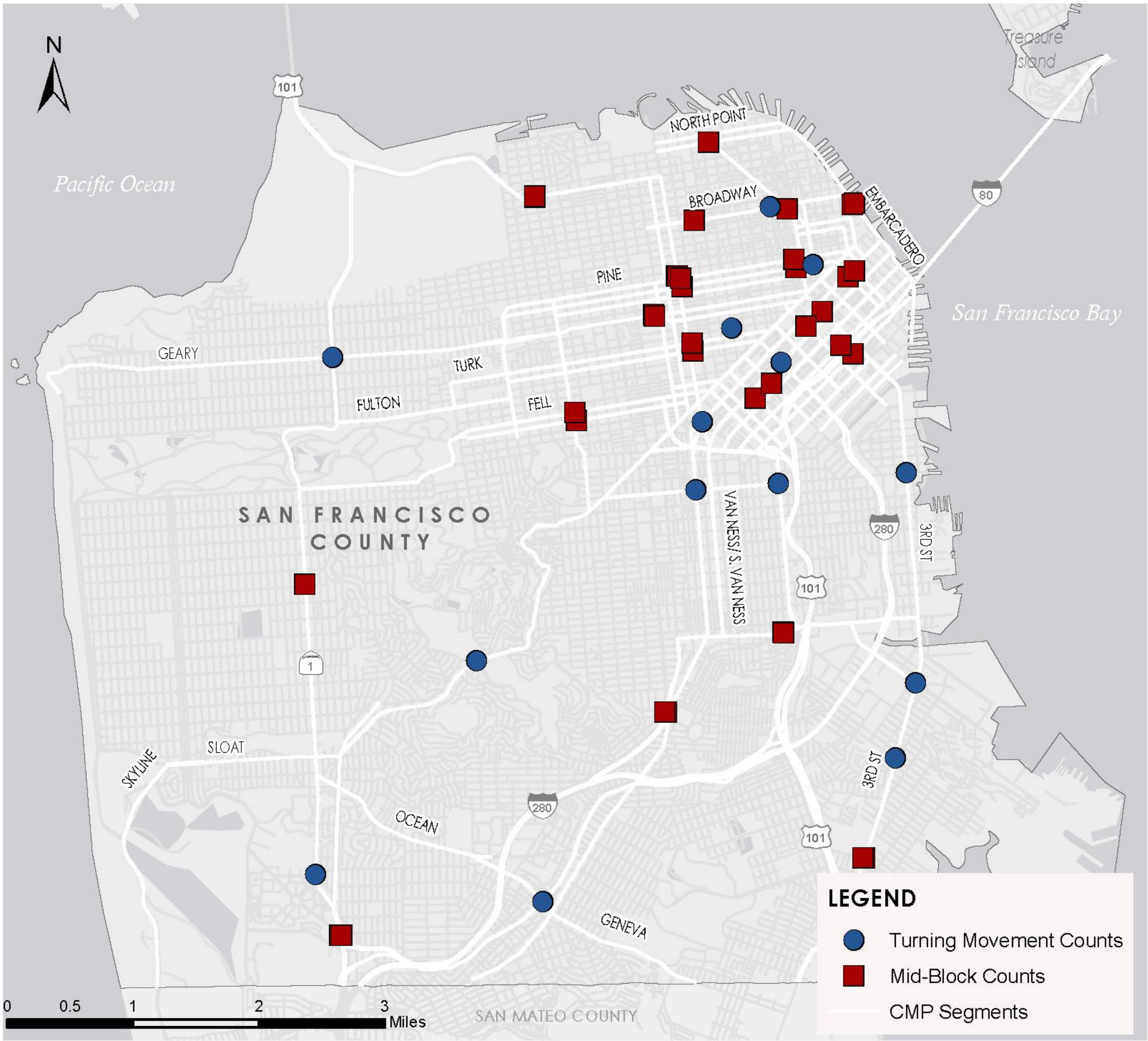
Table 4-9: Traffic Collision Injuries and Fatalities by Involved Party, 2003-2013

	YEAR	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Injury Collisions	All Users	3,511	3,038	3,227	2,869	3,021	3,010	2,877	3,081	3,111	3740	2562
	Pedestrians	815	727	747	726	796	799	695	784	844	942	518
	Bicyclists	311	316	343	343	451	468	531	599	630	658	454
Fatal Collisions	All Users	41	33	26	28	42	27	30	23	28	31	34
	Pedestrians	25	20	14	15	24	13	17	14	17	16	21
	Bicyclists	1	1	2	2	1	3	1	1	4	2	4

Source: California Highway Patrol SWITRS Annual Report

4.5.6 | Multimodal Volume Monitoring

Congestion on city streets and crowding on transit are the outcome of several factors including, for congestion, the number of cars driving; the roadway capacity available; construction, lane blockages, and other special events; allocation of signal green-time to various competing modes and movements, and for crowding, the number of riders; vehicle size, frequency of service, origin-destination demand patterns. These factors can be roughly classified into supply-side and demand-side. In order to understand the latter, and create a set of data that can be analyzed longitudinally by various modes, with the 2015 CMP the Transportation Authority began a biennial multimodal volume monitoring program which, in the first year, collected mainline traffic volumes at 29 locations and intersection traffic, bike, and pedestrian counts at 14 locations. Figure 4-7 shows locations where counts were collected. The mainline counts are continuous 3-day midweek counts (including two locations where weekend counts were also collected). The intersection counts were conducted on one day, with 2-hour AM peak and 2-hour PM peak counts, totaling 4-hours of counts at each location. By collecting volume at a fixed set of locations on a biennial basis, we can form a basis for some insight into trends over time. This complements the SFMTA's annual bicycle count program. Results of multiday mainline traffic counts are shown in Table 4-10. Results of multimodal peak period intersection counts are shown in Table 4-11



Data Sources: Iteris, Inc. & 2015 SFCTA LOS Monitoring

This map is for planning purposes only.

Figure 4-7: Locations of Turning Movement and Mid-Block Counts

Table 4-10: Traffic Volumes at Mainline Count Locations

	NORTHBOUND			SOUTHBOUND		
LOCATION	DAILY	AM	PM	DAILY	AM	PM
19th Ave between Moraga and Noriega	31,547	2,600	4,190	35,793	4,276	4,815
1st St between Mission and Minna	-	-	-	15,061	2,001	1,236
3rd St between Fitzgerald and Gilman	11,169	1,754	1,270	9,892	1,217	1,501
3rd St between Minna and Howard	29,231	3,661	3,274	-	-	-
4th St between Minna and Howard	-	-	-	14,859	1,242	2,274
7th St between Howard and Folsom	22,434	2,719	2,980	-	-	-
8th St between Tehama and Celementina	-	-	-	19,721	2,454	1,920
Columbus Ave between Broadway and Pacific	11,798	1,411	1,677	13,102	2,018	1,327

Fremont St between Mission and Natoma	19,928	2,493	2,109	-	-	-
Junipero Serra Blvd between Font and Brotherhood Ramps	50,644	5,931	6,234	49,438	6,408	6,720
Mission St between 24th and 25th	7,477	1,026	957	7,007	524	1,079
San Jose Ave between Randall and Saint Mary's	20,457	3,399	2,867	17,793	2,354	3,248
The Embarcadero between Broadway and Washington	19,132	2,576	2,022	16,424	2,140	1,664
Van Ness Ave Between California and Pine	25,347	2,997	2,799	21,788	2,025	3,121
	Eastbound			**Westbound**		
Bay St between Leavenworth and Columbus	11,572	2,562	1,325	10,806	947	2,357
Broadway Tunnel between Larken and Powell	16,423	2,114	1,867	14,345	1,295	2,412
Bryant St between 3rd and 4th	20,518	3,227	1,680	-	-	-
Bush St between Grant and Kearny	29,037	3,693	3,244	-	-	-
Bush St between Van Ness and Polk	21,215	2,985	2,021	-	-	-
Cesar Chavez St between York and Hampshire	28,494	3,287	3,782	25,407	3,592	3,282
Fell St between Divisadero and Scott	-	-	-	28,481	2,815	4,080
Geary Blvd between Laguna and Gough	18,189	3,298	2,099	16,443	1,499	2,595
Golden Gate Ave between Van Ness and Polk	13,569	1,997	1,726	-	-	-
Harrison St between 3rd and 4th	-	-	-	24,093	2,489	3,178
Lombard St between Broderick and Divisadero	25,346	3,920	2,939	25,452	2,214	3,820
Oak St between Divisadero and Scott	27,873	3,616	3,095	-	-	-
Pine St between Grant and Kearny	-	-	-	15,109	1,542	2,164
Pine St between Van Ness and Polk	-	-	-	18,327	1,276	2,867
Turk St between Van Ness and Polk	-	-	-	11,917	1,231	1,825

Table 4-11: Multimodal Volumes at Intersection Count Locations

	AM			PM		
LOCATION	VEHICLE TRAFFIC	BICYCLES	PEDESTRIANS	VEHICLE TRAFFIC	BICYCLES	PEDESTRIANS
3rd St and 16th St	3,574	61	172	4,043	96	254
3rd St and Evans Ave	3,445	61	218	3,496	63	230
3rd St and Palou Ave	3,192	73	780	3,696	76	969
6th St and Howard St	5,265	91	835	6,044	478	1,121
19th Ave and Holloway Ave	9,123	35	1,803	10,079	50	2,297
Geneva Ave and Alemany Blvd	5,287	21	216	5,651	24	402
Leavenworth St and Eddy St	2,049	20	1,336	2,225	44	2,216
Mission St and 16th St	2,913	121	3,279	4,238	199	5,352
Montgomery St and Bush St	3,385	87	7,395	2,158	44	9,165
Park Presidio Blvd and Geary Blvd	10,847	11	796	11,226	11	812
Portola Dr and O'Shaughnessy / Woodside	7,625	30	398	8,091	11	270
Potrero Ave and 16th St	4,452	74	776	5,834	100	785
South Van Ness Ave and 13th St	8,918	67	299	8,846	154	395
Stockton St and Broadway	4,178	81	3,554	4,514	78	4,295

4.6. Work Program Items

Work program items consist of those intended to improve the City's performance monitoring as well as initiatives targeted at improving system performance. Transportation Authority work program elements intended to continue and enhance performance monitoring include:

- Monitor CMP network speeds and LOS in Spring 2015.
- Collect vehicle, transit, pedestrian, and bicycle count information to understand longitudinal trends in demand.
- Monitor transit travel times and reliability on the CMP network and Muni Rapid Network, and work with SFMTA to further develop and establish regular spatial reliability data reporting.
- Work to include transit ridership in future monitoring results in order to estimate person-throughput on the CMP network.
- Coordinate with City departments to improve the availability and collection of data about level of service and performance of all modes. Examples of modal performance analyses include SFMTA's planned bicycle network comfort index study to inform project prioritization.
- With OEWD, SFMTA, and other partner agencies, support development of a data monitoring practice for all-night transportation as part of the Late Night Transportation Study.
- Coordinate with the SFMTA on bicycle counting and pedestrian counting projects.
- Collaborate with other City agencies to refine and standardize metrics for bicycle and pedestrian performance.

In addition, the Transportation Authority and City agencies will continue to engage in planning efforts and implement projects to improve performance of the transportation system. The San Francisco Transportation Plan, scheduled for adoption in December 2013, focuses on prioritizing projects and programs and developing strategies to improve system performance. The Transportation Authority will, as part of its efforts to improve performance:

- Continuously improve the San Francisco Model's capability to model all modes of transportation, including bicycle and pedestrian trips.
- Work with SFMTA to identify Transit Performance Initiative priorities (the City's long range priorities for BART, Caltrain, and Muni Metro). Fund a Long Range Transit Network Development study to identify solutions to Muni Metro system bottlenecks and include solutions that would improve the travel time and reliability of Muni Metro tunnel operations.
- Continue to participate in multimodal corridor improvement efforts such as the Better Market Street Project and BRT projects.
- Through a partnership with the region, counties, and Caltrans, identify and promote San Francisco's priorities for the regional freeway network. Set a vision for the management of the City's freeway management through the Freeway Performance Initiative.
- Continue to participate in citywide pedestrian safety initiatives, including through the Pedestrian Safety Task Force, by coordinating with other City agencies to implement the WalkFirst investment strategy, and by supporting the City's traffic calming program.
- Coordinate with SFMTA on development and implementation of the bicycle network.
- Dedicate Prop K funds to the design and implementation of complete streets enhancements that "Follow the Paving."

Table 4-A

Transit Service

Frequency and Coverage Standards

MUNI

Frequency Standard (headway in minutes)

Route Type	Day	Weekday Evening	Late Night
Rapid	10	15	20
Grid	20	20	30
Circulator	30	30	--
Specialized		Based on demand	

Route Type	Day	Weekend Evening	Late Night
Rapid	12	15	20
Grid	20	20	30
Circulator	30	30	--

Coverage Standard

All residential neighborhoods in San Francisco should be within a quarter of a mile of a Muni bus stop or rail line stop.

AC TRANSIT

Frequency Standard (headway in minutes)

SERVICE TYPE			TIME PERIOD		
	Peak	Mid-day	Night	Owl	Weekend/Holidays
Transbay Express	10-30	--	--	--	--
Transbay Basic	10-15	30-45	45-60	--	30

Coverage Standard

AC Transit provides two levels of service to the Transbay Terminal in San Francisco. Transbay Express provides medium to high frequency peak-hour service between San Francisco and selected areas of the District where there is demand for transit services which BART cannot meet. Transbay Basic provides direct service between San Francisco and major East Bay areas that are not well served by BART; the service operates all day at a medium to high frequency on a local and/or limited stop basis.

Table 4-A (cont.)

BART

Frequency Standard (headway in minutes)

LINE

TIME PERIOD	Pittsburg/ Bay Point	Dublin/ Pleasanton	Fremont-Daly City	Richmond-Millbrae	Downtown San Francisco (Combined)
Weekday Peak	5	15	15	15	2.7
Weekday Mid-day	15	15	15	15	3.8
Weekday Night	20	20	--	--	10.0
Saturday Day	20	20	20	20	5.0
Saturday Night	20	20	--	--	10.0
Sunday/Holiday all day	20	20	--	--	

Coverage Standard

BART rail service is provided between the hours of 4:00 a.m. and approximately 1:30 a.m. Monday through Friday, 6 a.m. to approximately 1:30 a.m. on Saturdays, and 8 a.m. to approximately 1:30 a.m. on Sundays and major holidays. Closings for individual stations are timed with the schedule for the last train beginning at approximately midnight.

BART has eight stations in San Francisco: Four spaced a half mile apart on Market Street and four at variable distances in the central and southern areas of the City.

CALTRAIN

Frequency Standard
Three trains per hour during peak periods, supplemented by Baby Bullet express service twice per hour during peak periods.

Sixty-minute headways on weekday midday, evening, and weekend service. Weekend service is supplemented by two Baby Bullet express trains.

Coverage Standard
The Caltrain system operates on a 77.2-mile route between San Francisco and Gilroy. There are 33 stations in the 19 cities that Caltrain serves, including two in San Francisco. San Francisco is also directly served by the Bayshore Caltrain station, located immediately south of the City/County limits in San Mateo County

Table 4-A (cont.)

GOLDEN GATE TRANSIT

Frequency Standard (headway in minutes)

	TIME PERIOD	
SERVICE TYPE	**Peak**	**Base**
Commute Bus	60 (peak direction only)	
Basic Service Bus	60	60
Larkspur Ferry	2 hrs	2 hrs
Sausalito Ferry	2 hrs	2 hrs.

Coverage Standard

Commute bus routes operate weekdays, in the peak travel direction, between residential areas in Marin and Sonoma Counties and the San Francisco Financial District and Civic Center.
Basic service routes operate all day, seven days a week, between the Transbay Terminal and Civic Center in San Francisco and various suburban centers within Marin and Sonoma Counties.

Commute bus service will be considered in the commute and/or reverse-commute directions along service corridors with a demonstrated or projected daily ridership that supports at least two round-trips carrying 30 passengers per trip on average (120 passengers per day) when resources are available to improve service.

On ferries, improved headways will be considered in cases where the maximum load factor is exceeded and resources are available to improve service.

SAMTRANS

Frequency Standard (headway in minutes)

	TIME PERIOD	
SERVICE TYPE	**Peak**	**Off-Peak**
Coastal	90	90
Community	60	--
Local	60	60
Multi-City	60	60
Mainline	30	60

Coverage Standard

SamTrans' goal is to ensure 70 percent of county residents live within walking distance (i.e., one quarter mile) of a bus stop. Transit access is determined by mapping all active bus stops within the system and then calculating the population (based on 2010 Census data) within one-quarter mile radii of those stops. This information is then compared to the total county population.

Table 4-B: Muni Service Standards and Goals 1999-2015

STANDARD	FY 99/00 Actual	FY 02/03 Goal	FY 02/03 Actual	FY 03/04 Goal	FY 03/04 Actual	FY 04/05 Goal	FY 04/05 Actual	FY 05/06 Goal	FY 05/06 Actual	FY 06/07 Goal	FY 06/07 Actual	FY 08/09 Goal	FY 08/09 Actual
Vehicles that run on time	46%	75%	71%	85%	68%	85%	71%	85%	69%	85%	71%	85%	73.30%
Scheduled service hours delivered	95.6%	97.5%	94.5%	98.5%	97.3%	98.5%	94.3%	98.5%	94.2%	98.5%	94.3%	98.5%	97%
Vehicles too full to board	0.2%	<5%	1.6%	<5%	2.1%	<5%	0.4%	<5%	1.6%	<5%	1.30%	<5%	AM: 3.9% PM: 2.8%
Peak period load factors (% of capacity)	Various	<85%	2 lines exceeded goal	<85%	3 lines exceeded goal	<85%	6 lines exceeded goal	<85%	7 lines exceeded goal	<85%	14.9% of lines exceeded goal	<85%	TBD in Next SRTP
Actual headways vs. scheduled	45%	85%	75%	85%	69%	85%	69%	85%	60%	85%	61%	85%	60.2%
Percentage of transit trips with <2 min bunching on Rapid Network													
Percentage of transit trips with +5 min gaps on Rapid Network													
Vehicle availability	99.6%	98.5%	99.6%	98.5%	99.0%	98.5%	98.4%	98.5%	98.3%	98.5%	99.1%	99.0%	TBD in Next SRTP

Sources: San Francisco Municipal Railway FY2008 – FY2027 Short Range Transit Plan, 2008, Prop E Annual Reports, Monthly Strategic Plan Metrics Reports.

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Table 4-B: Muni Service Standards and Goals 1999-2015, Continued

STANDARD	FY 09/10 Goal	FY 09/10 Actual	FY 10/11 Goal	FY 10/11 Actual	FY 11/12 Goal	FY 11/12 Actual	FY 12/13 Goal	FY 12/13 Actual	FY 13/14 Goal	FY 13/14 Actual	FY 14/15 Goal	FY 14/15 Actual
Vehicles that run on time	85%	73.50%	85%	73%	85%	60.1%	85%	60%	85%	59%	85%	59%
Scheduled service hours delivered	98.5%	96.6	98.5%	97%	98.5%	96.7%	98.5%	97%	98.5%	97%	98.5%	97%
Vehicles too full to board	N/A	AM: 4.5% PM: 4.4%	<4%	AM: 5.2% PM: 8.3%	<4%	AM: 5.9% PM: 7.1%	<4%	AM: 5.9% PM: 7.1%	<4%	AM: 7.4% PM: 8.6%	<4%	AM: 7.4% PM: 8.6%
Peak period load factors (% of capacity)	TBD in Next SRTP	TBD in Next SRTP	TBD in Next SRTP	TBD in Next SRTP	TBD in Next SRTP	TBD in Next SRTP	TBD in Next SRTP	TBD in Next SRTP	TBD in Next SRTP	TBD in Next SRTP	TBD in Next SRTP	TBD in Next SRTP
Actual headways vs. scheduled	>85%	60.1%	>85%	64.7%	Replaced by Bunching / Gapping	Replaced by Bunching / Gapping	Replaced by Bunching / Gapping	Replaced by Bunching / Gapping	Replaced by Bunching / Gapping	Replaced by Bunching / Gapping	Replaced by Bunching / Gapping	Replaced by Bunching / Gapping
Percentage of transit trips with <2 min bunching on Rapid Network					Measure in Development	3.9%	Measure in Development	4.0%	Measure in Development	4.0%	Measure in Development	4.8%
Percentage of transit trips with +5 min gaps on Rapid Network					Measure in Development	19.5%	Measure in Development	17.8%	Measure in Development	18.6%	Measure in Development	17.2%
Vehicle availability	TBD in Next SRTP	TBD in Next SRTP	TBD in Next SRTP	TBD in Next SRTP	TBD in Next SRTP	TBD in Next SRTP	TBD in Next SRTP	TBD in Next SRTP	TBD in Next SRTP	TBD in Next SRTP	TBD in Next SRTP	TBD in Next SRTP

Sources: San Francisco Municipal Railway FY2008 - FY2027 Short Range Transit Plan, 2008, Prop E Annual Reports, Monthly Strategic Plan Metrics Reports.

CHAPTER FIVE

TRAVEL DEMAND MANAGEMENT ELEMENT

KEY TOPICS

- Legislative Requirements
- Legislative Intent and Application to San Francisco
- TDM Policy Framework
- TDM Policies and Programs
- Plans and Studies
- Work Program

5.1. Legislative Requirements

The Congestion Management Program legislation[1] requires that the CMP include a travel demand management (TDM) element. TDM refers to tools and strategies that can reduce congestion and driving alone while encouraging travel by walking, bicycling, transit, carpooling, and other modes of travel. TDM can include policies, requirements on new development, and information/outreach programs designed to facilitate the use of sustainable transportation options. This section describes San Francisco's TDM Policy Framework and TDM programs. .

5.2. Legislative Intent and Application to San Francisco

The CMP legislation's requirement for a TDM element encourages local policy and programs to promote travel behavior changes to reduce congestion and associated impacts identified in the CMP.

5.3. TDM Policy Framework

San Francisco has several guiding policy documents that shape the development of TDM activities. These include:

- **Transit First Policy.** In 1973, the City Planning Commission and the Board of Supervisors adopted the Transit First policy, giving priority to transit rather than accommodating the single occupant automobile. Over the next twenty years, Transit First has evolved into a set of policies advocating travel demand management and prioritization of alternative modes. The City's Transit First Policy is documented in the City Charter, the Transportation Element of the City's General Plan, the Planning Code, and other City ordinances.

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[1] California Government Code Section 65098 (b)(3)

- **San Francisco General Plan.** The San Francisco General Plan includes multiple objectives relevant to TDM (see sidebar box). Many of the city's recent area plans, including the Transbay Transit Center District Plan (2009), the Eastern Neighborhoods Transportation Implementation Planning Study (2011), the Central Corridor Plan (Draft – 2013), and others, also include TDM objectives.
- **Inter-Agency TDM Strategy.** In 2014, City agencies developed an Interagency Travel Demand Management Strategy outlining the city's approach to TDM, including activities related to (1) Implementing new TDM Policies, (2) Enforcement of existing policies, and (3) Developing supportive programs and services.

5.3.1 | Objectives in the General Plan

The Transportation Element of the General Plan lays out the City's policy of transit-oriented solutions for accommodating growth in travel demand and discouraging single-occupant automobile travel:

- Objective 3: Maintain and enhance San Francisco's position as a regional destination without inducing a greater volume of through automobile traffic.
- Objective 4: Maintain and enhance San Francisco's position as the hub of a regional, city-centered transit system.
- Objective 7: Develop a parking strategy that encourages short-term parking at the periphery of downtown and long-term intercept parking at the periphery of the urbanized bay area to meet the needs of long-distance commuters traveling by automobile to San Francisco or nearby destinations.
- Objective 10: Develop and employ methods of measuring the performance of the city's transportation system that respond to its multi-modal nature.
- Objective 11: Establish public transit as the primary mode of transportation in San Francisco and as a means through which to guide future development and improve regional mobility and air quality.
- Objective 16: Develop and implement programs that will efficiently manage the supply of parking at employment centers throughout the city so as to discourage single-occupant ridership and encourage ridesharing, transit and other alternatives to the single-occupant automobile.
- Objective 17: Develop and implement parking management programs in the downtown that will provide alternatives encouraging the efficient use of the area's limited parking supply and abundant transit services.
- Objective 20: Give first priority to improving transit service throughout the city, providing a convenient and efficient system as a preferable alternative to automobile use.
- Objective 21: Develop transit as the primary mode of travel to and from downtown and all major activity centers within the region.
- Objective 23: Improve the city's pedestrian circulation system to provide for efficient, pleasant, and safe movement.
- Objective 27: Ensure that bicycles can be used safely and conveniently as a primary means of transportation, as well as for recreational purposes.
- Objective 28: Establish parking rates and off-street parking fare structures to reflect the full costs, monetary and environmental, of parking in the city.

- Objective 32: Limit parking in downtown to help ensure that the number of auto trips to and from downtown will not be detrimental to the growth or amenity of downtown.
- Objective 34: Relate the amount of parking in residential areas and neighborhood commercial districts to the capacity of the city's street system and land use patterns.

5.3.2 | Regional TDM Requirements - Transportation Control Measures

San Francisco is subject to regional air district requirements to implement TDM measures (also referred to as Transportation Control Measures) to address air quality issues. In 1991 as required by the California Clean Air Act (CCAA), the Association of Bay Area Governments (ABAG), the Bay Area Air Quality Management District (BAAQMD), and the Metropolitan Transportation Commission (MTC) jointly prepared the Bay Area Clean Air Plan, which included measures to reduce the total *number of trips* and miles traveled, ("Transportation Control Measures," or TCMs). The most recent Plan, the *2010 Bay Area Clean Air Plan*, was adopted by BAAQMD in March 2010. The Plan for the first time addresses greenhouse gases, as well as ozone, particulate matter, and air toxics. It also included new and revised TCMs.

Local agencies are expected to incorporate TCMs into planning and implementation for transportation and land use programs. The region, through the MTC, is held responsible for overall progress toward the stated goals. The CMP process provides an opportunity to integrate local planning and programming into the regional air quality planning process. Appendix 11 lists the currently adopted regional TCMs, and discusses how San Francisco's congestion management strategies contribute to, or reinforce, these measures.

5.4. TDM Policies and Programs

San Francisco currently has a range of TDM strategies including programs focused on employers, neighborhoods, schools, new development requirements and enforcement, and policies to promote sustainable modes. These strategies are described below in the following categories:

- TDM requirements on new development, including planning code requirements, requirements in area plans and development agreements.
- TDM policies, including the Commuter Benefits Ordinance and the Commuter Shuttle Policy.
- TDM programs including the on-street carsharing pilot program, bicycle sharing program, residential outreach program, and others.

5.4.1 | TDM Requirements on New Development

AREA PLANS AND DEVELOPMENT AGREEMENTS

Numerous TDM requirements are included within area plans and negotiated agreements for major developments. Significant examples include the following:

- **The Transit Center District Plan** emphasizes Transportation Demand Management as a means of reducing the reliance on automobiles and encouraging mode shifts to transit, carpooling, bicycling, and walking. The plan goals state that 95 percent of trips should be made by transit, walking, or bicycling. It includes supplementary objectives to reach this goal, such as parking supply and management tools; transit incentives, and expansion of Section 163 requirements (see below).

- **The Park Merced Transportation Plan** includes shuttles to Daly City BART and a Shopper's Shuttle to local destinations. In addition, a transportation coordinator will coordinate and manage additional TDM programs.
- The **Candlestick Point & Hunters Point Shipyard Phase II Transportation Plan** proposes new bus service and infrastructure, and requires a Transportation Coordinator to manage unbundled parking, bicycle support facilities, provide transit passes (paid by homeowner's dues), and implement dynamic pricing for visitor parking. The TDM Program will target both residents and employers in the area, with employers expected to provide bicycle parking and amenities, carpooling and vanpooling services, Guaranteed Ride Home program, information on transportation alternatives, commuter checks, telecommuting options, and parking cash-out programs.
- The **Treasure Island Transportation Implementation Plan** includes a congestion pricing program, parking policies, mandatory pre-paid transit vouchers, ramp metering, and special events and emergency access transportation planning. The program will disincentivize residents' use of personal automobiles and increase the appeal of transit, walking, and bicycling. In addition, the parking policies will utilize parking maximums instead of minimums, and unbundle parking prices. Transit passes would also be mandatory for residential units and hotel guests. Additional TDM programs proposed in this plan include Bay Area Bikeshare stations, carshare availability, and employer TDM programs. In 2014, the San Francisco Transportation Authority was designated as the Mobility Management Agency for Treasure Island, and will be responsible for implementation of TDM on Treasure Island.

INSTITUTIONAL MASTER PLANS

TDM measures are also present in Institutional Master Plans, which city planning code requires for .all medical and post-secondary educational institutions in the City and County of San Francisco; currently 41 institutions are subject to the requirement. IMPs describe any planned campus expansions and present mitigations for reducing the impact of the expansion on the surrounding neighborhood; this could include TDM measures such as shuttles, changes to parking policy, etc. For example, the Institutional Master Plan prepared by the California Pacific Medical Center in 2008 describes the campus TDM program, which includes elements such as free transit passes, vanpool subsidies, and other measures.

SECTION 163 REQUIREMENTS AND TMASF

Planning Code Section 163 requires that all new development of over 100,000 square feet of new office space (or 25,000 square feet in some districts), or 100 residential units in specific zoning designations undertake measures to mitigate impacts on the transportation system, for the lifetime of the project. Section 163 was first added to the Planning Code in 1985 (Ordinance 414-85) as a means to mitigate the transportation impacts, and thus allow a greater density of development than would otherwise be possible. It was subsequently expanded to all new development of over 100,000 sf in downtown areas zoned C-3, and has more recently been expanded again to include other non-residential, office space outside of the C-3-O, and residential development

Planning Code 163 requires that project sponsors provide onsite transportation brokerage and management service to building occupants that include coordination, encouragement, and promotion of TDM activities, including:

- Transit and ridesharing
- Reduced parking demand and efficient use of parking
- Provision of car-sharing pods and use of car-sharing services (per Section 166)
- Flex-time or staggered work hours program
- Other activities determined by the Planning Department to be appropriate to meeting the purpose of this requirement

Buildings can elect to meet Section 163 requirements on their own or by contracting with a City-approved provider (or vendor) of transportation brokerage services or administering TDM services on their own. Currently, TMASF Connects, a non-profit organization, is the only City-approved vendor of transportation brokerage services. TMASF was first incorporated as a non-profit in 1989 and began to provide transportation management services in 1990. TMASF provides information support and promotions to its currently 68 member building tenants to reduce drive alone rates. Its member buildings report a single-occupancy vehicle (SOV) mode share of less than 10 percent in the last several years. TMASF's activities include providing a web site with transportation resources for employers and travelers, publishing a newsletter, issuing traveler alerts, and organizing periodic campaigns to promote sustainable commute alternatives.

MISSION BAY TRANSPORTATION MANAGEMENT ASSOCIATION

As a condition of the Mission Bay Development Plan, the Mission Bay Transportation Management Association (TMA) was formed and began operating in May 2010. The TMA operates shuttle service to and from BART and Caltrain, facilitates TDM marketing, provides bicycle parking assistance, and provides information via a website. Membership includes all property owners and developers. According to the 2014 Mission Bay Annual Report, projected annual shuttle ridership is expected to reach 394,160 boardings and ridership has continually increased since the inception of the shuttle in 2010.

PLANNING CODE REQUIREMENTS

The San Francisco Planning Code contains numerous additional requirements to help ensure new developments include features to support sustainable transportation. For example:

- Unbundled parking is required for residential buildings with ten or more dwelling units
- Carshare parking is required for residential and nonresidential development
- Secure bicycle parking is required across most types of development
- Showers and lockers are required for most commercial uses and for large retail uses

5.4.2 | TDM Policies and Programs

COMMUTER BENEFITS ORDINANCE

In August 2008, the City enacted a landmark Commuter Benefits Ordinance (CBO), which became effective on January 19, 2009. The ordinance requires businesses with locations in San Francisco and more than 20 employees to offer commuter benefits such as transit, vanpool, and bicycle programs to their eligible employees. In 2012, the Bay Area Air Quality Management District (BAAQMD) and the Bay Area Metropolitan Transportation Commission implemented a similar program on a pilot basis, but focused on employers with fifty or more full-time employees in the region (the local ordinance applies to employers in San Francisco with at least twenty employees nationwide).

The San Francisco Department of the Environment (SFE) is working with the region to coordinate both the local and regional ordinances for seamless implementation and program management. SFE works with employers with less than 50 employees and coordinates with the region when outreaching to employers with 50 or more employees. 2520 employers subject to the SF Commuter Benefits Ordinance have submitted a compliance form, with a cumulative 25,000 employees participating in their employer's commuter benefit program.

SFMTA COMMUTER SHUTTLE POLICY

Numerous employers, educational institutions, medical facilities, office buildings, and transportation management associations offer shuttle service to their employees, students, and clients. Some buildings are required to provide shuttle service as part of their conditions of approval, and an employer may comply with San Francisco's Commuter Benefits Ordinance by offering a free commute shuttle to employees. The majority of the commuter shuttles are closed systems that provide service to a specific population and are not open to the general public. Most shuttles are provided for free to employees (or students, tenants, etc.).

In 2014, SFMTA launched the Commuter Shuttles Pilot Program to create clear and enforceable locations and guidelines for private shuttle loading and unloading and reduce conflicts with Muni and other vehicles. In October, 2015, SFMTA released a Commuter Shuttle Policy that permits ongoing use of the shared stops subject to additional requirements.

SFMTA CARSHARING POLICY

Carsharing programs are encouraged in San Francisco as a means to reduce car ownership and decrease VMT[2]. The precise number of carsharing members in San Francisco is unknown but is increasing. In Plan Bay Area, the Metropolitan Transportation Commission (MTC) estimated a total of 60,000 carsharing members in the region when accounting for both City CarShare and Zipcar.

To further encourage carsharing, SFMTA developed a carsharing policy in 2013. The policy outlines a process whereby private carsharing companies can apply to use on-street parking spaces for carshare vehicles. Currently, 202 on-street parking spaces are reserved for carshare vehicles. The spaces are granted to three Carshare organizations (Zipcar, City CarShare, and Getaround), that SFMTA has qualified for the program. SFMTA will be evaluating the program and recommending next steps in spring, 2016.

EMERGENCY RIDE HOME PROGRAM

The San Francisco Department of Environment (SFE)'s Emergency Ride Home (ERH) program promotes sustainable commuting by ensuring a free or low-cost ride home in cases of emergency. The program pays for a ride home for employees of registered businesses in the event of illness, severe crisis, unscheduled overtime, or disruption of carpool or vanpool schedules. The program is designed to remove some of the risks and reliability concerns associated with the choice of carpooling or relying on transit service for the commute trip. SFE promotes the ERH program to City employees and all San Francisco employers and commuters. As of October 2015, over 780 San Francisco businesses were enrolled in the program.

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[2] Cervero, R., Golub, A., & Nee, B. (2007). City CarShare: Longer-term travel demand and car ownership impacts. Transportation Research Record: Journal of the Transportation Research Board, 1992, 70-80.

CITYCYCLE PROGRAM

SFE has administered and promoted a bicycle fleet program, CityCycle, since 2005. The aim of the program is to convert a portion of the vehicle fleet of the City and County of San Francisco to bicycles through departmental efforts supplemented by targeted promotion. A Transportation Fund for Clean Air (TFCA) grant funds the bicycles, trailers, locks, helmets, and bike maintenance plan for bicycles in the City's fleet. SFE staff administers the program, including outreach to all City staff making a significant number of vehicle trips to accomplish their work duties. There are currently almost 300 CityCycle bicycles in use across 30 city departments. The SFE estimates that these bicycles eliminate about 30,000 vehicle miles of travel annually from San Francisco city streets.

CARPOOLS

SFMTA encourages the use of carpools and vanpools during the morning and evening commutes. The City provides a casual carpool pick-up location on Beale Street between Howard and Folsom, adjacent to the Temporary Transbay Terminal site. At this location, there is signage indicating several East Bay destination locations.

SFMTA also administers a program through which major employers (those with Transportation Brokerage Services described above) may provide parking for employee carpool vehicles (three or more riders) in City-owned garages at a reduced rate. The City also provides a limited amount of designated on-street parking in the downtown area for registered/permitted vanpool vehicles.

BIKESHARING

The first phase of the regional Bay Area Bike Share program opened on August 29, 2013 with 700 bikes at 70 stations in San Francisco and along the peninsula as a pilot program of the Bay Area Air Quality Management District and the Metropolitan Transportation Commission (MTC), and was initially operated by Alta Bikeshare. Half of the bikes are in San Francisco, concentrated around downtown and SoMa. In May 2015, MTC entered into contract with a private company, Motivate, which has promised to radically expand the program to as many as 7,000 bicycles throughout the Bay Area, drawing on corporate sponsorships for funding.

BART TRAVEL INCENTIVES PILOT PROJECT

Crowding on the BART system has reached untenable levels, especially in the Transbay market connecting the East Bay with downtown San Francisco. Trains have been operating above 100% of programmed capacity during peak periods in this corridor since 2012, and growth is expected to continue. BART predicts ridership growth at between 2 and 6 percent per year through 2040. BART is working on a number of capacity enhancing solutions, but all of these projects will take several years to come online and a more immediate solution is needed.

The Transportation Authority and BART are working together on a pilot project to address crowding by incentivizing riders to shift their travel to the shoulders of the peak period or other stations and routes. This will involve creating a BART loyalty program whereby riders receive rewards for using BART during off-peak periods. Traveler responses to the incentives will be monitored closely using transit smart card (Clipper) data, and incentives would be adjusted accordingly for maximum effect. The pilot is expected to launch during 2016.

SF MOVES NEIGHBORHOOD TDM OUTREACH PILOT PROJECT

SF Moves is a program that connects people who live, work, or own and operate businesses within certain San Francisco neighborhoods with resources to inform them about and familiarize them with the City's transportation options. SF Moves is currently limited to residents, employees and business owners and managers within the Mission District, but will be expanded to other neighborhoods during 2016.

SF Moves is a partnership of the San Francisco Municipal Transportation Agency (SFMTA) and the San Francisco Department of the Environment through funding by the Bay Area Air Quality Management District's Transportation Fund for Clean Air and the San Francisco County Transportation Authority's Proposition K (San Francisco's half-cent local sales tax for transportation). The pilot is modeled on neighborhood TDM outreach programs demonstrated to be successful in other cities such as Portland, Oregon and Seattle, Washington.

5.4.3 | **Parking Management**

The General Plan, Planning Code, and Zoning Code guide parking management in San Francisco. San Francisco's existing parking policies are intended to support the city's development, and have been especially successful in the downtown area by limiting the provision of parking provided with new office development. Parking policies are also designed to support the City's Transit First policy through a combination of regulatory controls, revenue transfers, regulations, and incentives. The San Francisco Transportation Plan and Prop K Expenditure Plan category D1 provide policy guidance and funding for parking management initiatives. In November 2007, San Francisco voters approved Proposition A, which shifted responsibility for parking regulations, fees, and fines from the Board of Supervisors to SFMTA. In 2007, the Transportation Authority and the Metropolitan Transportation Commission (MTC) applied for and subsequently received a U.S. Department of Transportation (USDOT) Urban Partnership Program (UPP) grant, which includes $19.4 million for a demonstration of variable parking pricing as part of the Federal initiative to fight congestion. SFMTA is leading the implementation of the variable parking pricing pilots through the SF*park* program.

SFPARK

SF*park* was a demonstration project funded through the Department of Transportation's Urban Partnership Program. For the SF*park* pilot projects, the SFMTA used several strategies to make it easier to find a space and improve the parking experience, including:

- Demand-responsive pricing
- Making it easier to pay at meters and avoid citations
- Longer time limits
- Improved user interface and product design
- Improved information for drivers, including static directional signs to garages and real-time information about where parking is available on- and off-street
- Highly transparent, rules-based, and data-driven approach to making changes to parking prices

SF*park* piloted and cultivated several emerging technologies, including smart meters, parking sensors, and a sophisticated data management tool. The demonstration ran from 2010-2014, after which SFMTA evaluated the program. To isolate and measure the effects of policy changes, the SFMTA designated seven parking management districts as pilot areas, which included 6,000 metered spaces, or a quarter of the city's total metered parking spaces, and 12,250 spaces in SFMTA-administered garages, or 75 percent of the off-street spaces managed by the SFMTA. The SFMTA also used two additional areas as control areas where no changes to parking management or technology were implemented. The SFMTA collected "before", "mid-point", and "after" data in both pilot and control areas. The evaluation found several benefits including better parking availability, improved ease of payment, and reduced circling for parking and associated reductions in greenhouse gas emissions and vehicle miles traveled, among other benefits. SFMTA is in the process of determining next steps for the SF*park* program.

5.5. TDM Studies and Plans

This section describes recently-completed and ongoing studies and planning efforts relevant to TDM.

5.5.1 | Travel Demand Management Toolkit

The SFMTA, City Planning Department, and SFCTA are partnering to develop a toolkit of TDM measures for new development. The toolkit will be used to ensure a consistent approach to including TDM in new development and ensuring that the most effective measures are prioritized. The toolkit is expected to be complete by 2016.

5.5.2 | TDM Partnership Project

In fall 2015, the Transportation Authority completed the Travel Demand Management Partnership Project, a three-year effort completed in collaboration with the SFMTA, SFE, and the Planning Department, and funded through the MTC's Bay Area Climate Initiatives Program, the Prop K half-cent sales tax for transportation, and the Transportation Fund for Clean Air. The purpose of the program was to pilot test new methods of engagement with the private sector, especially major employers and institutions, and to strengthen collaboration among agencies responsible for TDM. The partnership gave rise to the Commuter Shuttles Pilot Program and the Inter-Agency TDM Strategy, mentioned previously. The project final report recommended focusing employer outreach efforts on employers with a strong internal champion.

5.5.3 | Mobility Access & Pricing Study and Parking Supply and Utilization Study

In December, 2010, the Transportation Authority Board approved the final report of the San Francisco Mobility, Access and Pricing Study (MAPS). The study assessed the potential for implementing a peak-hour congestion charge in the northeast portion of the city, and found that the charge would be effective in reducing congestion. Following adoption of the study, stakeholders suggested exploring whether better downtown parking management could achieve some of the same benefits as congestion pricing.

In response, the Transportation Authority initiated the Parking Supply and Utilization Study in Summer 2013 in partnership with the San Francisco Municipal Transportation Agency. The Study is evaluating how parking management, focused on private supplies of off-street parking, could reduce roadway congestion and shift trips to walking, cycling, and transit. The Study is developing and evaluating different policy alternatives; recommendations are expected in December, 2015.

5.5.4 | San Francisco Transportation Plan

The San Francisco Transportation Plan, adopted in 2013, identifies TDM as a cost-effective investment to move closer to the plan's goals. Therefore, the SFTP recommends a 20 percent increase in funding in the Investment Plan and a 100 percent increase in funding in the SF Investment Vision scenario. The Investment Plans also recommend the implementation of congestion pricing in the northeast cordon and on Treasure Island.

SFTP POLICY RECOMMENDATIONS RELATED TO TDM

- Implement the recommendations of the TDM Partnership Program including a SFMTA Shuttle Partners Program
- Explore an area-wide parking cap or employer trip reduction programs for SoMa/Mission Bay
- Develop TDM program that touches employers, visitors, schools, and residents
- Develop proactive employer outreach and incentive programs in the downtown core, southwest, and southeast parts of the city, and investigate formation of transportation management associations (TMAs) in these areas
- Increase enforcement efforts to ensure TDM measures included in existing development agreements are implemented, and step up enforcement of the city's commuter benefits ordinance
- Support SFMTA's regulatory programs to allow safe integration of third party providers
- Support development and implementation of the Transportation Sustainability Program
- Further evaluate potential congestion pricing program for the Northeast Cordon

In partnership with the SFMTA and the Planning Department, the Transportation Authority will begin a major update to the SFTP in 2016 as part of a Long Range Transportation Planning Program (LRTPP). As part of this effort, the team will further analyze TDM's role in meeting citywide goals such as vehicle miles travelled. This study will work in partnership with the SFMTA-led TDM framework and strategy. The LRTPP anticipates completing a visioning exercise in 2016, modal studies (including TDM) in 2017, and an update to the SFTP in 2018.

5.6. Inter-Agency Work Program

- Implement the Inter-Agency TDM strategy, developing an integrated TDM framework to guide the development of TDM activities across the City.
- Complete the TDM Toolkit for new development.
- Support enforcement of TDM-related developer commitments and planning code requirements.
- Complete the SF Moves residential outreach pilot, evaluate results and determine next steps.
- Continue enforcement of the SF Commuter Benefits Ordinance and increase rates of compliance.
- Complete the evaluation of the on-street carsharing program and determine next steps.
- Complete the BART Travel Incentives pilot project and determine next steps.
- Complete the San Francisco Parking Management and Utilization studies, and determine next steps for downtown parking management.
- Update the SFTP as part of Long Range Transportation Planning Program, including components focused on Travel Demand Management.
- Continue all other ongoing TDM programs and activities.
- Continue to work on regional TDM initiatives, coordinating with both regional entities (BAAQMD and MTC), and neighboring local agencies.

CHAPTER SIX

LAND USE IMPACTS ANALYSIS PROGRAM

KEY TOPICS

- Legislative Requirements
- Legislative Intent and Application to San Francisco
- Institutional Framework for a CMP Land Use Analysis Program
- Neighborhood Transportation Planning
- Infill Opportunity Zones
- Transportation Impact Analysis
- Work Program

6.1. Legislative Requirements

The California Government Code section 65089(b)(4) requires that Congestion Management Programs (CMPs) include a program to analyze the transportation system impacts of local land use decisions. These analyses must measure impacts using CMP performance measures, and estimate the costs of mitigating the impacts. The estimates should exclude costs associated with inter-regional travel and provide credit for public or private contributions to regional transportation system improvements. The legislation specifies that land use analysis programs should be coordinated with California Environmental Quality Act (CEQA) efforts, wherever applicable.

The CMP legislation also requires the Transportation Authority, as the Congestion Management Agency, to "develop a uniform database on traffic impacts for use in a countywide transportation computer model..." that will be used "to determine the quantitative impacts of development on the circulation system..." (California Government Code section 65089(c)). The database must be consistent with the modeling methodology used by regional planning agencies, the Metropolitan Transportation Commission (MTC) and the Association of Bay Area Governments (ABAG), to comply with the CMP.

The Transportation Authority's GIS database, including ABAG Projections data, updated CMP networks, and numerous other data items (such as roadway level of service, transit ridership, travel behavior survey results, etc.) constitutes the uniform database for San Francisco. In addition, the Transportation Authority has an activity-based travel demand forecasting model used in combination with the uniform database. This is further detailed in Chapter 8.

In September of 2002 the legislature passed SB 1636, which is intended to "remove regulatory barriers around the development of infill housing, transit-oriented development, and mixed use commercial development" (65088(g)) by enabling local jurisdictions to designate "infill opportunity zones." These zones (IOZs) are defined as areas with compact, transit-oriented housing and mixed use in close proximity to transit service. The CMP network segments within a designated IOZ are exempt from CMP traffic level of service (LOS) standards. SB 743 revised the definition and requirements related to IOZs, as discussed in section 6.5. A map of San Francisco's IOZs can be seen in Figure 6-2.

On September 27, 2013, the governor signed into law SB 743, which revised the criteria for determining the significance of transportation impacts within transit priority areas. Transit priority areas are defined as areas within a half mile of a major transit stop, either existing, or planned, which in San Francisco comprises most of the city. The text of SB 743 specifically eliminates automobile delay as measured by level of service as a significant impact on the environment in transit priority areas. Parking impacts from infill development also shall not be considered significant impacts on the environment. On August 6, 2014, the Governor's Office of Planning and Research released a preliminary discussion draft of changes to CEQA guidelines, which identified vehicle miles traveled as generally the most appropriate measure of transportation impacts. After soliciting comments, the Office of Planning and Research has indicated that it intends to release final changes to CEQA guidelines in late 2015, with rulemaking complete in early 2016.

6.2. Legislative Intent and Application to San Francisco

The General Plan and the City Charter are the primary institutional parameters that frame the City's process for reviewing land development impacts on the transportation network. San Francisco is a Charter City, and it has a consolidated city and county government. An eleven-member Board of Supervisors serves as the legislative body for the City's unified city and county government. The City Planning Commission (CPC) has responsibility for land use decision-making throughout the City. The Mayor appoints the seven members of the CPC. Among the responsibilities of the CPC are the following:

- Exclusive authority to act on General Plan policies and area land use plans (per City Charter);
- Holding public hearings on all appeals to Negative Declaration determinations and certification of local Environmental Impact Reports; and
- Discretionary actions on Conditional Use permits, (which can be appealed to the Board of Supervisors) and decisions by the Zoning Administrator, Discretionary Reviews, and others that can be appealed to the Board of Appeals

In addition, both the CPC and the Board of Supervisors must approve all rezoning.

The Planning Department's land use responsibilities include transportation matters. The Planning Department has primary responsibility for assessment of the transportation impacts of development proposals, and to determine consistency with land use and transportation policies in the General Plan. The existing local regulations include measures to mitigate project-specific transportation impacts within the policy and priority framework of the General Plan, the long-range transportation plan, and the Capital Improvement Program (CIP) of the CMP.

As CMA for San Francisco, the Transportation Authority ensures that the City complies with CMP requirements including land use impact monitoring. AB 1619, passed by the California State Assembly in 1994, stipulates that the CMA should prepare any countywide transportation plan. Pursuant to a December 1994 action, the Board of Supervisors directed the Transportation Authority to prepare a countywide transportation plan, and to coordinate City Departments. An Interagency Project Charter for San Francisco Long Range Transportation Planning Program, executed in December 2015, between the Transportation Authority, the SFMTA, and the Planning Department, outlines roles and responsibilities for developing the Countywide Transportation Plan. The most recently adopted Plan, now known as the San Francisco Transportation Plan (SFTP), was adopted by the Board in December of 2013. The Transportation Authority is currently completing an update of the Plan, which is expected to be adopted by the Transportation Authority Board in 2016.

6.2.1 | Policy Issues in Land Use and Transportation Demand

LOCAL TRANSPORTATION IMPACT ANALYSIS

The CMP-based land use analysis program links the City's land development decisions to conditions on the regional transportation system. This link already exists at the regional level in MTC's Regional Transportation Plan (RTP), which links long-range planning for transportation investment with estimates of land development based on regional demographic growth and economic development.

The City already has in place an extensive process for evaluating the transportation impacts of land development proposals. This process, which ensures the City's compliance with State and Federal environmental review requirements, is the responsibility of the Planning Department. In particular, with the passage of California Senate Bill 743 (see section 6.6), the City plans to align its CEQA review and development approval process to better align with RTP goals such as a vehicle miles traveled reduction target. Nevertheless, as CMA, the Transportation Authority has a role in ensuring that the impacts of land use decisions on the transportation system are analyzed with a uniform methodology, consistent with the long-term strategic goals of the General Plan and the San Francisco Transportation Plan.

UNIFORM METHODOLOGY

The Transportation Authority, as CMA, retains its own GIS database and travel demand model to analyze transportation and provide uniform assumptions for City departments. For major land use decisions, the Transportation Authority's tools are used to assess transportation impacts and ensure that the methodology used to assess them is consistent with MTC models and ABAG data.

One key aspect of the CMP approach to land use impacts analysis is that, pursuant to state law, the Transportation Authority will also be responsible for reviewing transportation analysis of specific development projects under CEQA and determining the consistency of these "sub-area" analyses with the citywide model. Examples of this role include our work to support the Bayview/Hunters Point Redevelopment Area Environmental Impact Report (EIR), the Transbay Center District Plan EIR, and the Market/Octavia Better Neighborhoods Plan EIR, and the Central SoMa Plan and EIR.

The primary purpose of the land use analysis program is, therefore, to inform decisions on the supply of transportation infrastructure to the City and how the City should best spend scarce transportation dollars. This program adds no new requirements to the existing local project environmental review process, but it provides a long-term transportation investment policy context for local environmental review. It also informs decision-making in the reverse direction: as CMA, the Transportation Authority is responsible for commenting on local land use decisions and making such comments with an understanding of how land use choices will shape future transportation demand. With the passage of California Senate Bill 743 and the future use of Vehicle Miles Traveled as a primary metric for determining traffic related environmental impacts, review of land use project will be more consistent with other goals in the SFTP and related City documents.

6.2.2 | Consistency with Long Term Strategic Goals of General Plan and San Francisco Transportation Plan

San Francisco has been able to maintain one of the highest levels of transit use among U.S. cities because of its relatively high-density development and because topography and geography limit vehicular access routes to and from the City.

There have been significant numbers of non-resident commuters into the city for over a century. To improve the balance of housing and jobs, during the 1980s San Francisco actively promoted new residential development. Extensive revisions to the City's General Plan and rezonings were undertaken. Each of these land use plans—the Downtown Plan, Rincon Hill, North of Market, Chinatown, Neighborhood Commercial, Van Ness Avenue, South of Market, and Mission Bay—incorporated measures to retain and enhance opportunities for residential development.

In recent years, several more area plans have been developed or adopted including: the Market/Octavia Plan, Eastern Neighborhoods Plan, Balboa and Glen Park BART Station Area Plans, the Treasure Island Plan, and the Transbay Center District Plan. In addition, housing development has been promoted by the policies of the San Francisco Redevelopment Agency and its successor agency, the Office of Community Investment and Infrastructure, in various areas, including the Rincon Point/South Beach, Yerba Buena Gardens, Transbay, the Bayview Hunters Point Redevelopment Plan Areas, Candlestick Point-Hunters Point Shipyard Phase 2, Parkmerced, and Visitacion Valley.

San Francisco's continued role as a regional employment center and its policy of housing development have had an impact on the demand for transportation in the city. A primary mission of the Transportation Authority is to strategize investment in the city's transportation infrastructure and promote the development of demand management tools to address growing travel demand. Infrastructure investment is intended both to address future growth in transportation demand and to improve the city's current transportation system. Demand management is needed to promote a balanced and cost-effective transportation system.

In past decades San Francisco's primary transportation challenge was to absorb new jobs downtown without proportionately increasing the number of workers commuting by car. That challenge was successfully met with the construction of BART and MUNI services focused on downtown commuting, combined with limits on parking provision.

Today San Francisco's transportation challenges are more varied. They are numerous and located across the city, throughout the various neighborhoods as well in core areas, which can expect not only employment growth but also extensive residential growth. Challenges include competitive transit service for non-commute and reverse commute trips; neighborhood parking management; safety for pedestrians and bicyclists; improved transit reliability and speed through the development of a transit priority network; and reducing emissions of pollution and greenhouse gasses. Increasingly, the imperative to address regional land use and transportation relationships is moving to the fore, with the targeting of resources to Priority Development Areas (PDAs) and development of a regional High Occupancy/Toll (HOT) lane system. In addition, state laws promulgated in 2006 and 2007 require greater integration of land use and transportation planning processes in recognition of the climate change challenge. Climate change issues and initiatives are discussed further in Section 6.3.5, below.

Underlying these needs is the challenge of finding new mechanisms to pay for needed transit and other improvements as development decisions are made. A discussion of the city's initiative to update transportation impact and mitigation fees is provided in Chapter 4.

NOTE: California Government Code Section 65089(b)(4) requires the land use program to assess the impacts of land development on regional transportation systems. In the 1991 San Francisco CMP this was interpreted to mean impacts on the CMP roadway network. However, the federal Intermodal Surface Transportation Efficiency Act (ISTEA), passed in 1991, explicitly requires the development of a metropolitan transportation system (MTS), including both transit and highways. As discussed in Chapter 3, MTC contracted with the Transportation Authority, acting as CMA, to help develop the MTS and to use the CMP process to link land development decisions to impacts on the MTS. For purposes of the land use analysis program, the San Francisco CMP will use the San Francisco component of the MTS, but conformance with roadway level of service (LOS) standards will continue to be assessed using the CMP roadway network, which is a subset of the multimodal MTS.

6.3. Institutional and Policy Framework for a CMP Land Use Analysis Program

6.3.1 | Prop K Mandate

When voters approved Prop K in November 2003, they approved various policies and priorities in the Expenditure Plan designed to implement San Francisco's Transit First policy, and improve the coordination of land use and transportation.

Transit investment accounts for 65 percent of the San Francisco transportation sales tax expenditure plan (74 percent if paratransit is included), and the investment program supports the City's future growth plans.

The Expenditure Plan directs the Transportation Authority to "give priority for funding to major capital projects that are supportive of adopted land use plans with particular emphasis on improving transit supply to corridors designated for infill housing and other transit-supportive land uses."

The Plan goes on to define transit-supportive land uses as "those which help to increase the cost-effectiveness of transit service by improving transit ridership and reducing traffic along transit corridors."

All projects must also demonstrate consistency with the Prioritization Criteria in the Expenditure Plan. This includes "compatibility with existing and planned land uses, and with adopted standards for urban design and for the provision of pedestrian amenities; and supportiveness of planned growth in transit-friendly housing, employment and services."

Finally, the Expenditure Plan provides funding for neighborhood planning studies and local match for regional planning and capital grants such as the Community-Based Transportation Planning (CBTP) and Transportation for Livable Communities (TLC) grant program. TLC supports transit-oriented development and funds related improvements for transit, bicyclists, and pedestrians including streetscape beautification improvements such as landscaping, lighting, and street furniture.

6.3.2 | MTC/CMA Transportation/Land Use Work Plans

MTC provides the nine Bay Area CMAs with a share of regional planning funds ("3% Planning Funds") to support local and county-level planning functions established under state and federal law. These activities include the development of the CMP.

In 2003, MTC approved the San Francisco CMA's Transportation – Land Use Coordination Work Program (T-PLUS). T-PLUS recognizes the expanded role for the CMAs in coordinating transportation and land use planning, such as through the Transportation for Livable Communities (TLC) program. Pursuant to MTC's CMA Transportation/Land Use initiative, the Transportation Authority focuses on the following activities to help integrate transportation and land use decisions:

First, the Transportation Authority prioritizes transportation planning funds and capital investments that meet performance criteria or demonstrate a strong vision for coordinated land use and transportation development.

The Transportation Authority provides technical guidance and assistance with the planning process to partner agencies, communities, and project sponsors, including neighborhood planning, thereby facilitating access to discretionary state and regional grants and providing for coordinated county-level input into the regional transportation planning process.

The Transportation Authority promotes legislative activities that encourage smart growth, more sustainable transportation and development-related investment decisions by the City and developers, and more efficient travel decisions by all transportation system users. Examples include the Transportation Authority's support of the State Resources Agency's revisions to the CEQA Guidelines Transportation Checklist and our work with local partner agencies to reform the City's CEQA transportation impact analysis process.

The Transportation Authority coordinates county-level input into the regional Sustainable Communities Strategy (SCS), the RTP, and related regional land use planning efforts.

Finally, the Transportation Authority conducts project and program delivery oversight to ensure efficient use of funds and effective project delivery.

6.3.3 | Plan Bay Area and Priority Development Areas

ABAG and MTC have been working for years to encourage the region's municipalities to plan for compact, transit-oriented development to meet the region's sustainability goals. This work was previously conducted through the FOCUS program that invited municipalities to nominate locations to be considered as Priority Development Areas (PDAs) or Priority Conservation Areas (PCAs) based on regionally established criteria. In 2013, the region adopted Plan Bay Area, the first SCS for the San Francisco Bay Area prepared pursuant to Senate Bill 375 (Steinberg). PDAs and PCAs are key "building blocks" of the region's land use strategy presented in Plan Bay Area.

San Francisco has identified twelve PDAs, generally in the eastern part of San Francisco, and generally locations that have been comprehensively planned as part of an Area Plan process. Collectively, San Francisco's PDAs make up approximately 25% of San Francisco's land area and have the capacity to take on approximately 80% of the housing growth and 60% of the job growth that has been forecast in San Francisco as a part of the Plan Bay Area process (or about 80,000 housing units out of 92,000 and 143,000 jobs out of 191,000). San Francisco's PDAs were first identified and approved by the San Francisco Board of Supervisors in 2007 and have been updated since then to reflect slight changes to boundaries. San Francisco's PDAs are shown in Figure 6-1. San Francisco has also identified four Priority Conservation Areas (PCAs), as adopted by the Board of Supervisors in 2015: Sutro Tower, Aquavista/Twin Peaks, Bayview Radio Property, and Palou/Phelps Open Space. In August 2015, ABAG approved three additional regional PCAs that cross San Francisco: California Coast Trail (along the Pacific coast), San Francisco Bay Water Trail (including access points in San Francisco's Marina

District), and San Francisco Bay Trail (along the Embarcadero, through the Marina and over the Golden Gate Bridge).

Figure 6-1: Priority Development Areas in San Francisco

As a part of Plan Bay Area, the region has begun to identify more robust funding incentives for PDAs and PCAs, as demonstrated through the One Bay Area Grant (OBAG) framework using funds from the Cycle 2 federal Surface Transportation Program and from the Congestion Mitigation and Air Quality Improvement Program for the five-year cycle (Fiscal Years 2012-13 through 2016-17). This includes the County OBAG program, administered by the Bay Area's Congestion Management Agencies (CMAs), that was created to incentivize jurisdictions to fulfill the region's land use and sustainability goals in several ways as listed below. More recently, these efforts to link transportation funding with PDAs and PCAs through the regional transportation plan and funding framework continue as part of the Plan Bay Area 2040 update and Cycle 2 OBAG (Fiscal Years 2017-18 through 2021-22) development processes.

- Cycle 1 County OBAG funds were distributed to the region's nine CMAs using a funding formula that was based 50 percent on population, 25 percent on historic housing production (with 12.5 percent of that share for affordable housing), and 25 percent on future housing growth assigned through the Regional Housing Needs Allocation (with 12.5 percent of that share for future affordable housing). While this change did not increase San Francisco's share of funding, it is an important policy direction of linking land use planning with transportation investment. For Cycle 2, MTC is considering giving an even greater weight to housing production and affordable housing, which would increase San Francisco's share from Cycle 1, despite the reduction in total OBAG program-wide funding.
- San Francisco and the other larger CMAs were required to program 70 percent of funds to support PDAs (smaller CMAs were required to program 50 percent of funds to support PDAs).

- All jurisdictions receiving funds were required to have a certified Housing Element and have adopted a Complete Streets policy to be eligible for funds.
- Each CMA was required to create a Transportation Investment and Growth Strategy that describes how it expects to support its PDAs through transportation investment. The Transportation Authority prepared San Francisco's Transportation Investment and Growth Strategy that was adopted by the Transportation Authority Board in July 2013.

The OBAG funding framework also created a new program being administered in concert with the Coastal Conservancy to support Priority Conservation Area-related planning and implementation activities.

In order to facilitate growth and transportation investments in the San Francisco's PDAs, the $2.38 million in Local PDA Planning funds were administered by the San Francisco Planning Department (SF Planning) in line with the Transportation Investment and Growth Strategy (see Table 6-1 for the list of projects).

Table 6-1: Local PDA Planning Projects in San Francisco

PROJECT	PDA SUPPORTED	FUNDING LEVEL
Rail Storage Alternatives Analysis & Boulevard Feasibility Study	Multiple (Mission Bay, Eastern Neighborhoods, Transbay Terminal)	$514,940
Embarcadero Multi-Modal Planning	Multiple (Port of San Francisco, Mission Bay, Eastern Neighborhoods, Transbay Terminal, Downtown/Van Ness/Geary)	$250,000
Bayshore Station Re-location	San Francisco/San Mateo Bi-County Area	$392,000
M-Ocean View Re-Alignment Study	19th Avenue Corridor	$492,000
Ocean Avenue Pedestrian and Streetscape Improvements	Balboa Park	$342,000
Caltrain North Terminal Study to Support Future Operations	Mission Bay	$177,060
Market/Noe Technical Analysis	Market & Octavia	$100,000
Administration	n/a	$112,000

6.3.4 | Multi Agency Land Use and Transportation Studies

In addition to projects identified to receive PDA Planning Funds, San Francisco is leading or plans to lead several studies in which transportation is closely tied to land use development. All planned development areas are located within PDAs and involve a multi-agency approach in which the Transportation Authority has a supporting role.

CORE CAPACITY TRANSIT STUDY

The Core Capacity Transit study is a multi-agency study to identify and prioritize the major investments needed to serve the growing demand for transit service in to the San Francisco Core, both from within the City and County of San Francisco as well as Transbay trips. The study will consider short, medium, and long term investments that could help upgrade the overall transportation system in these markets, with an eye towards the interrelationship between changes in local and regional land use and both transit service demand and provision. This study is expected to be completed in 2017.

6.3.5 | Climate Change Initiatives

AB 32, enacted in 2006, established a statewide target for greenhouse gas (GHG) emissions reduction and gave the California Air Resources Board (CARB) the authority to regulate GHG emissions, including those from private vehicles. The target reduction is to reach 1990 emission levels by 2020. In 2008, CARB approved a Scoping Plan that outlines the state's approach to reducing GHG emissions. Among other strategies, AB 32 calls for implementation of a cap-and-trade program to regulate GHGs, which commenced in January 2013.

SB 375, passed in 2008, provides a mechanism for the implementation of AB 32 for the transportation sector, which is responsible for approximately 40 percent of the state's GHG emissions. As required by SB 375, the Metropolitan Transportation Commission (MTC) and the Association of Bay Area Governments (ABAG) have developed Plan Bay Area the Bay Area's Sustainable Communities Strategy (SCS), described above.

Further proactive approaches that are both realistic and effective in addressing GHG reduction are needed to achieve AB 32 goals. It is also only prudent to recognize that there are limits to what can effectively be achieved in any one region. Climate change is not a local issue, and the federal government will need to play an expanded role in helping the state and region achieve GHG reductions. The effectiveness of that role will depend, in large measure, on the direction of federal climate legislation and the degree to which updates to federal surface transportation legislation will be able to secure reliable and stable revenues for transportation infrastructure projects and services, beyond what the state is able to fund in the foreseeable future.

It is inescapable that, in order for GHG reduction efforts to be effective, there will be a need to realign not just travel behavior, but locational choices for many economic activities that take place in the region. A timid approach will only produce marginal results. Local jurisdictions will be called to do their part in accepting growth, density and changes in travel behavior, and the region will need to realign its transportation investment priorities to provide funding for the infrastructure necessary to support those choices.

Locally, the City of San Francisco has adopted a citywide ordinance (81-08) that sets ambitious goals for local reduction to achieve an 80% reduction below 1990 levels by 2050. The Transportation Authority's SFTP effort is exploring strategies to meet that goal for the transportation sector, finding that efforts to significantly increase investment in non-auto transportation infrastructure and strong pricing and other demand management policies will not be enough to get the City to its GHG reduction goals, and that unprecedented behavior change is necessary. The Transportation Authority also coordinated with the San Francisco Department of the Environment (SFE) and the SFMTA on the 2013 update to the Climate Action Strategy (CAS) for the Transportation Sector, a component of the City's Climate Action Plan.

6.3.6 | Regional Land Use Forecasts

For most forecasting activities, the Transportation Authority is required to use regionally-adopted projections of future Bay Area land use growth, including the distribution and nature of that growth across the region's individual jurisdictions.

In 2013, ABAG adopted its most recent regional land use forecast. The SCS Jobs Housing Connection targets San Francisco to absorb an additional 90,000 households by 2040 (using 2010 as a baseline), bringing the number of households to 470,000. Employment in San Francisco is projected to add 190,000 jobs by 2040, bringing the total to more than 750,000 jobs located in the city.

The region will require bold investment and system management policies—both to achieve a future in which Bay Area growth is more focused and to reach targets that cannot be attained with land use strategies alone. The need for substantial VMT reduction to reduce climate change impacts makes transit investment a priority need, with increased funding necessary for operations, maintenance, and prioritized capital projects. Transit is most constrained in the region's core areas, as was demonstrated by recent record levels of ridership across multiple Bay Area systems, including consistent ridership counts at or above capacity on multiple corridors and services.

System management and demand management must also begin to be more of a focus in the City's and region's investment programs. Pricing strategies, in particular, will be a crucial growth management tool and means of self-help for the region, system operators, and local jurisdictions. Pricing policies are already regionally supported through development of a regional HOT lane system, regional parking pricing initiatives, and initiatives to use pricing incentives to shape travel demand.

The region must recognize the real and pressing infrastructure and service needs of core areas if the RTP/SCS and related regional planning work is to be meaningful. San Francisco is committed to playing a central role in the region's sustainable growth.

6.4. Neighborhood Transportation Planning

The Transportation Authority supports community-based transportation improvements by leading and funding neighborhood-focused transportation planning studies. These efforts help address community transportation concerns and engage community leadership in the transportation planning process, especially in underserved and disadvantaged communities.

Over the last decade, the Transportation Authority, working with other agency partners, has completed several neighborhood transportation plans, many of which were funded with grants from the Metropolitan Transportation Commission's Community Based Transportation Planning (CBTP) program, which focuses planning resources in minority and low-income communities – referred to by MTC as Communities of Concern. These plans have included the following:

- Chinatown Neighborhood Transportation Plan and Pilot Study (2015)
- Potrero Hill Neighborhood Transportation Plan (2015)
- Western SOMA Neighborhood Transportation Plan (2012)
- Bayview Hunters Point Neighborhood Transportation Plan (2010)
- Columbus Avenue Neighborhood Transportation Plan (2010)
- 19th Avenue Park Presidio Neighborhood Transportation Plan (2008)
- Mission-Geneva Neighborhood Transportation Plan (2007)
- Mission South of Chavez Neighborhood Transportation Plan (2007)

The Transportation Authority also manages the Neighborhood Transportation Improvement Program, a Proposition K funded program established to support community-based neighborhood scale planning efforts in San Francisco neighborhoods, especially in underserved neighborhoods and areas with vulnerable populations (e.g. seniors, children, and/or people with disabilities). The goal of the program is help neighborhoods in each supervisorial district create a pipeline of grant-ready projects that have a high degree of community and agency consensus. Another objective of the program is to increase the capacity of neighborhoods and Community-Based Organizations (CBOs) to undertake neighborhood transportation planning. Current projects include:

- District 1: Improving Connections from Golden Gate Park to the Presidio
- District 2: Lombard Study: Managing Access to the "Crooked Street"
- District 2: Lombard Street / U.S. 101 Corridor Pedestrian Safety Study
- District 5: Western Addition Community Based Neighborhood Transportation Plan (also funded with MTC CBTP funds)
- District 9: Alemany Interchange Improvement Study
- District 10: Cesar Chavez / Bayshore / Potrero Intersection Improvement Project
- District 10: Potrero Hill Pedestrian Safety and Transit Access

6.5. Infill Opportunity Zones

Senate Bill 1636 (Figueroa), passed in 2002, granted local jurisdictions the authority to designate Infill Opportunity Zones (IOZs) in areas meeting certain specified requirements. Within a designated IOZ, the CMA is not required to maintain traffic conditions to the automobile level of service (LOS) standard. The San Francisco Board of Supervisors adopted San Francisco's IOZ on December 8, 2009.

SB 743 (Steinberg), passed in 2013, changed the eligibility criteria for IOZ designation. Previously, local jurisdictions that met a minimize population threshold could designate an IOZ in areas that met certain criteria regarding zoning and transit proximity. Under the new requirements, jurisdictions may designate an IOZ in any area:

- That is within a half mile of a major transit stop or corridor that is included in the RTP;
- That is within a designated transit priority area within the regional SCS; and
- Where an IOZ would be consistent with the jurisdiction's General Plan and any applicable Specific Plan.

Figure 6-2 identifies the current IOZ areas in San Francisco. Under the new criteria, additional areas could be eligible for designation. See Appendix 4 for the Board of Supervisors resolution on the IOZ.

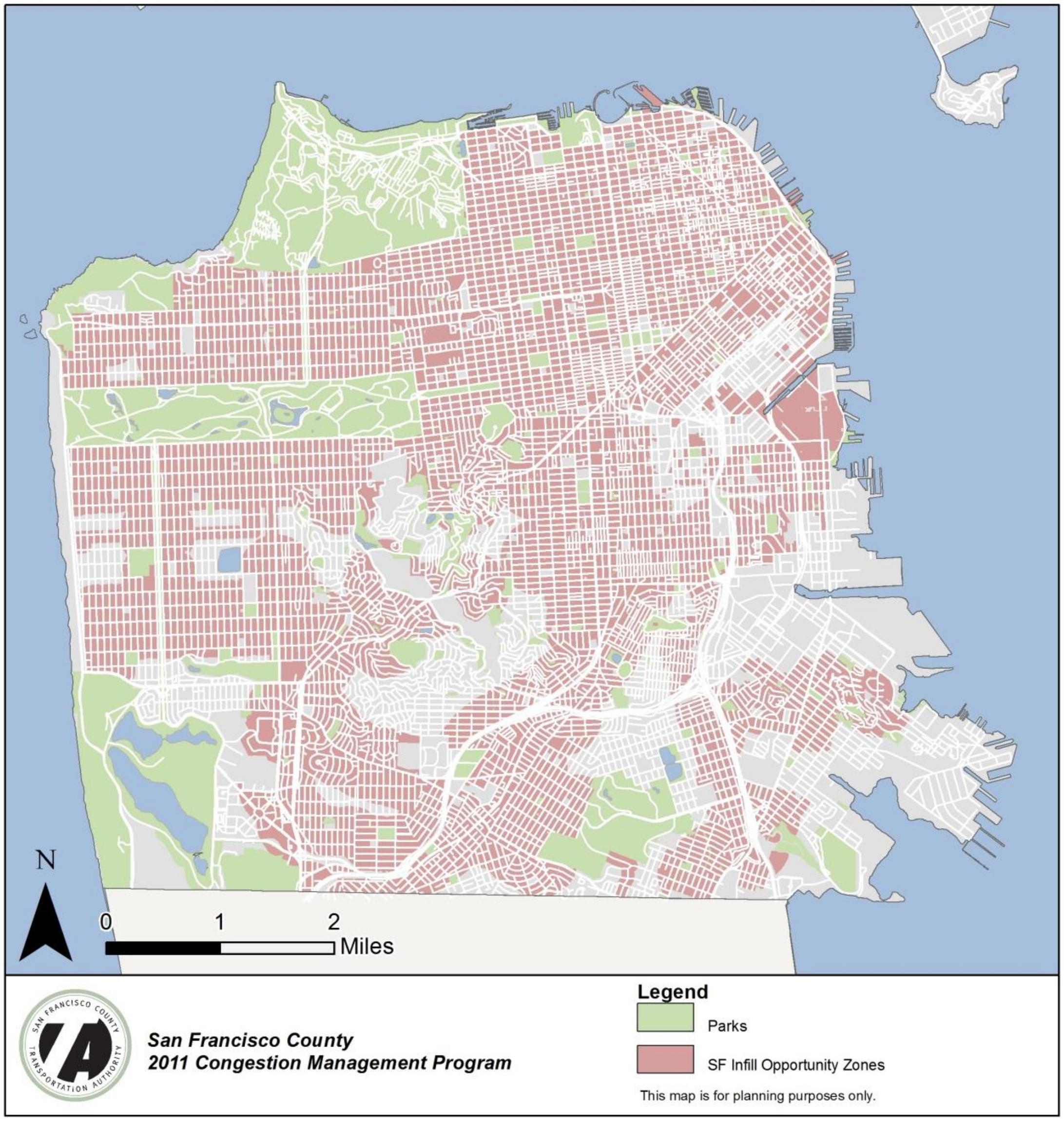

Figure 6-2: San Francisco IOZs

6.5.1 | Congestion Management Agency Requirements

State congestion management law requires CMAs to establish vehicle level of service (LOS) standards for a designated countywide network of roadways (see Chapter 3). Within a designated IOZ, CMP automobile LOS standards are not applicable. Instead, an alternative metric can be applied for local analysis of transportation impacts. The Transportation Authority is coordinating with relevant City agencies through the Transit Sustainability Fee effort to develop and implement the alternative to LOS, consistent with statutory requirements. The investment strategies, program funding, and policy recommendations in the San Francisco Transportation Plan is representative of the flexible level of service mitigation options as is required under SB 1636.

6.6. Transportation Impact Analysis

San Francisco's approach to conformance with the CMP land use impacts analysis requirements is based on the existing process administered by the Planning Department. The Planning Department works from its Transportation Impact Analysis Guidelines for Environmental Review (see Appendix 8).

The Transportation Authority is currently partnering with the Planning Department and other City agencies to improve the City's CEQA transportation impact analysis methodology and process, by advancing a measure consistent with SB 743 for assessing transportation impacts.

6.6.1 | Uniform Land Use Analysis Methodology

The Transportation Authority uses tools and analysis techniques that use regionally-consistent land use assumptions. For example, in updating the SFTP the Transportation Authority used land use forecasts developed by the Planning Department (subject to regional requirements for consistency with ABAG), generated new estimates of future travel demand, and tested alternative projects and investment strategies to address those future transportation needs.

6.6.2 | Transit Impact Development Fee

First enacted in 1981, the Downtown Transit Impact Development Fee (TIDF) ordinance was enacted as a means to have new development pay its fair share for expanded transit capacity to serve that development. TIDF assesses a one-time fee per square foot on new or converted office space in the downtown area.

In 2004, the Board of Supervisors recognized that a significant number of new transit trips would be generated by non-residential development. The Board approved an amendment to the TIDF legislation that expanded the ordinance to include the following land uses: visitor services; medical and health services; cultural, institutional, and educational (CIE); retail and entertainment; office use; and production, distribution, and repair (PDR). The legislation was also amended to include all new developments citywide, rather than just in the downtown office area. The 2004 TIDF ordinance established a fee schedule, which is subject to annual adjustment without further action by the Board of Supervisors to reflect changes in the relevant Consumer Price Index, as determined by the City Controller. The current fee schedule was last updated in February 2013, based on a nexus study completed in 2011, and is shown in Table 6-2. In addition to the annual fee adjustments, the ordinance lowered the threshold for triggering the TIDF from 3,000 square feet of new development to 800 square feet. It also established a new policy credit against the fee that could be available for small businesses and projects that provide less than the maximum authorized parking.

Table 6-2: 2013 TIDF Ordinance Fee Schedule

LAND USE CATEGORY	TIDF PER SQ. FT. OF DEVELOPMENT
Visitor Services	$12.64
Medical and Health Services	$13.30
Cultural/Institution/Education	$13.30
Museums	$11.05
Retail/Entertainment	$13.30
Management, Information and Professional	$12.64
Production/Distribution/Repair	$6.80

Appendix 9 contains a copy of the 2004 TIDF ordinance.

The revenues from the fee may subsidize capital and operating expenses for existing and new transit service. New development generates more transit trips, which add to the already heavily utilized transportation system, especially in the downtown area during peak periods. This, in turn, creates a greater burden on the City transit system. Because transit operates at or near capacity during peak periods, ridership growth must be addressed through increased Muni service frequencies. However, constrained infrastructure (e.g., Market Street tunnel) and reduced operating funding (e.g., from the state) limit the ability of Muni to increase peak-period service.

The impact fee levied on developers must be related to providing new or expanded transit service to support peak period travel generated by new development (including any costs associated with operations or capital). The need for transit services as a result of new development must be established. Furthermore, the proposed expenditures of the fee and the dollar amount of the fee must also have a "nexus" to the development project impacts.

At the time of writing, the Transportation Sustainability Fee, which increases the amount of the TIDF and expands its application to market rate residential development, is under consideration by the Board of Supervisors for approval.

6.6.3 | Transportation Sustainability Fee Nexus Study

CEQA TRANSPORTATION IMPACT ANALYSIS AND IMPACT FEE MITIGATION REFORM

CEQA requires California's public agencies to determine the potential for proposed projects to have significant impacts on the environment, including transportation impacts. CEQA also encourages agencies to develop thresholds of significance—the quantitative point at which an environmental effect may be considered significant—to facilitate these determinations. Although CEQA gives local jurisdictions discretion to adopt impact measures and significance thresholds, many agencies in California measure a project's effects on transportation using the Highway Capacity Manual's intersection Level of Service (LOS) measure, which measures delay to automobiles.

In October 2008, the Transportation Authority adopted the Final Report on the Automobile Trip Generation Impact Measure as an alternative to automobile LOS. The Report recommends that the City measure the transportation impacts of projects under CEQA based on the net new automobile trips generated (ATG) by a project. Project sponsors could mitigate trip generation impacts by paying a new auto trip mitigation fee (ATMF) that would fund a set of citywide and local area projects designed to address environmental impacts caused by the project.

The proposed replacement measure and mitigation approach was considered superior to the existing practice because it was:

- A better indicator of environmental effect than LOS;
- Consistent with the City's Transit First Policy and other environmental and health goals;
- More efficient and transparent for the Planning Department to implement and for project sponsors to understand; and
- A more effective approach to transportation impact mitigation.

In a separate but related development the Transportation Authority worked with the State Office of Policy and Research in 2009 to revise the CEQA Guidelines section on transportation impact analysis, which removed the exclusive reference to automobile LOS and replaced it with an option for local jurisdictions to select an alternative measure of transportation impact. The revisions also deleted references to parking as a transportation impact area.

In 2011, the Transportation Authority, together with the Planning Department, SFMTA and Mayor's Office of Economic and Workforce Development (OEWD), completed a Nexus Study for the proposed fee, the Transportation Sustainability Fee Program. The fee would be based upon the motorized trips generated by a project and fund a package of improvements designed to offset the transportation impacts of development including transit service and priority improvements, transportation demand management projects and bicycle and pedestrian network enhancements. Legislation for the Program was introduced to the San Francisco Board of Supervisors in May 2012. Since then, the City has been simultaneously pursuing environmental review and updating of the fee Nexus Study to be consistent with Plan Bay Area. On September 27, 2013, the governor signed into law SB743, which revised the criteria for determining the significance of transportation impacts within transit priority areas.

In the fall of 2014, the State of California Office of Planning and Research released draft guidelines for implementation of SB 743, indicating that vehicle miles traveled would be the primary metric for evaluating transportation impacts. Final guidelines are anticipated by the end of 2015 and completion of the rulemaking process will likely be completed by the end of 2016. At that point in time, level of service will no longer be used to determine transportation impacts under CEQA.

6.7. Work Program

The Transportation Authority will continue to work jointly with City departments and regional agencies to assess the transportation impacts of planned growth, to better link transportation and land use planning, and advance climate change-related goals related to transportation. Specifically, the Transportation Authority will:

- Support the development of the regional land use model.
- Continue to develop applications of land use data within the GIS and model databases to conduct multimodal performance measurement and analysis (e.g., the relationship of land use patterns to transit usage and coverage).
- Participate in statewide, regional, and local SB 375 implementation activities by coordinating San Francisco input and advocating for San Francisco priorities in such activities as the setting of targets and preparations for the next RTP/SCS.
- Coordinate with appropriate City departments to reform transportation impact analysis in San Francisco through participation in the Transit Sustainability Fee Nexus Study and follow-up efforts.
- Continue development of the Neighborhood Transportation Planning and PDA Planning efforts as recommended in the Transportation Investment and Growth Strategy.
- Coordinate with appropriate city departments to develop and adopt the 2017 SFTP update.

- Continue to review and provide technical support to ongoing area plans and land use studies under development, including PDA projects as listed in Table 6-1.

CHAPTER SEVEN

CAPITAL IMPROVEMENT PROGRAM

KEY TOPICS

- Legislative Requirements
- Relationship to Other Plans
- Relationship to City Department Activities
- Funding and Programming
- Amendment
- Project Delivery

7.1. Legislative Requirements

California Government Code 65089(b)(5) requires that the CMP contain a seven-year Capital Improvement Program (CIP), developed by the Congestion Management Agency (CMA), the Transportation Authority for San Francisco, to maintain or improve the transportation system performance measures established in the CMP, and to address impacts on the regional network, as identified through the land use impact analysis program.

7.2. Relationship to Other Plans

7.2.1 | Regional Transportation Plan and Countywide Transportation Plan

The CMP statute requires that each CMP be consistent with the long-range Regional Transportation Plan (RTP), developed by the regional transportation planning agency (the Metropolitan Transportation Commission, or MTC, for the Bay Area), and each county's component of the RTP must be supported by a long-range countywide transportation plan (San Francisco Transportation Plan, or SFTP), developed by the CMA. The CIP is intended to serve as a short or medium-range implementation vehicle for investment priorities as prioritized in the long-range plans.

Through the RTP, the MTC establishes the Bay Area's vision for transportation with supporting policies and investment strategies, including a list of specific projects and programs. Inclusion of projects and programs in the RTP is a prerequisite for receiving state and federal transportation grants for certain state or federal approvals and a requirement for capacity expanding projects that may have air quality impacts. The MTC adopted the most recent RTP, titled Plan Bay Area, in July 2013. Plan Bay Area is the region's first RTP that explicitly integrated transportation and land-use strategies to meet the SB 375 requirements to accommodate future population growth and reduce greenhouse gas emissions.

The Transportation Authority develops the SFTP for San Francisco, consistent with MTC guidelines, to guide transportation investment and to serve as a basis for RTP assumptions. The Transportation Authority adopted the SFTP in December 2013, which identified four goals (economic competitiveness, safe and livable neighborhoods, environmental health, and well maintained infrastructure) and proposed scenarios that invest strategically in a diverse set of projects to make progress toward each of the goals. The Transportation Authority ensures the CIP projects, as well as their selection processes, are consistent with the SFTP. The SFTP is discussed in further detail in Chapter 6 (Land Use Impacts Analysis).

7.2.2 | Prop K and AA Expenditure Plans

In 2003, 75% of San Francisco voters approved Prop K, extending the existing half-cent sales tax for transportation and adopting a new 30-year Expenditure Plan. The 30-year Expenditure Plan directs $2.35 billion (in 2003 $'s) to a list of transportation projects that were developed through the first SFTP and are expected to leverage another $9.6 billion in other federal, state and local funds. In 2010, San Francisco voters approved Prop AA, authorizing an additional $10 vehicle registration fee on motor vehicles registered in San Francisco. Prop AA revenues fund projects in a 20-year Expenditure Plan and are meant to complement Prop K by adding funding to address capital shortfalls (e.g. in street resurfacing) and provide new funding for pedestrian safety, which has few dedicated funding sources.

As further discussed in the Funding and Programming section, the Prop K Strategic Plan and 5-Year Prioritization Programs (5YPPs) continue to ensure Prop K investments, one of the major funding sources for the CIP, are aligned with the updated SFTP priorities.

7.2.3 | Bay Area Clean Air Plan

The Transportation Authority ensures that the CIP conforms to air quality mitigation measures for transportation-related vehicle emissions, as detailed in the Bay Area Air Quality Management District's (BAAQMD) Clean Air Plan and related documents. This also raises San Francisco projects' competitiveness for external funds, since the MTC gives priority to proposed projects that support or help implement the mitigation measures outlined in the Clean Air Plan. See Appendix 11 for San Francisco's trip reduction efforts in relationship to the regional mitigation measures.

7.2.4 | Other Capital Plans and Short Range Transit Plans

Each City department develops its own capital investment plans for inclusion in San Francisco's ten-year Capital Plan. In addition to the citywide Capital Plan, the SFMTA has multiple short-term and long-term processes to prioritize its capital needs, including its Strategic Plan, Transit Fleet Management Plan, Short Range Transit Plan, and an Enterprise Asset Management System under development. Five regional transit operators that serve San Francisco also develop their own capital plans and Short Range Transit Plans: BART, AC Transit, SamTrans, Golden Gate Transit, and Caltrain. The Transportation Authority considers these plans as an input into its programming process to facilitate better coordination of San Francisco programming decisions with citywide and regional priorities in compliance with CMP requirements. Also see Section 7.3: Relationship to City Department Activities.

7.2.5 | San Francisco General Plan

The San Francisco City Charter assigns responsibility to the Planning Department for consistency review of capital improvements with the General Plan. This consistency review function is incorporated into the Transportation Authority's CIP programming process. If necessary, projects in the CIP may be submitted to the Planning Department for a General Plan consistency check. However, in practice, this is not typically required as the SFTP is consistent with the General Plan.

7.3. Relationship to City Department Activities

The changes in programming introduced by the 1995 CMP, as explained in this chapter, do not substantially alter programming-related activities currently performed by City departments. The goal of the process is, in fact, to streamline the programming process so that complete and timely information is available to the Transportation Authority Board, providing a well-defined context that facilitates strategic programming policy decisions. It is important to note, for example, that each City department or other eligible project sponsor will continue to develop its own capital investment plans. The Transportation Authority's intent is not to suggest changes to the priorities within those plans, but rather to steer the overall programming strategy and analysis of trade-offs, with a particular focus on the fund sources included in this CIP.

The Transportation Authority review process, as explained in Section 7.5, provides the required structure to analyze programming and performance data that will inform those Transportation Authority Board decisions. It is important to note that the process is intended to function using information already developed by project sponsors. The most significant value added by the Transportation Authority's review process is in providing an overall context for transportation programming strategy and system performance to facilitate Transportation Authority Board decisions.

Key roles and responsibilities of the City departments and the Transportation Authority in the transportation programming process are summarized below.

7.3.1 | City Departments

1. Prepare plans, prioritize capital improvement programs and develop financial plans on an annual or biannual basis
2. Use financial constraints and strategies imposed by external agencies in addition to those established by the Transportation Authority and departments for various funding sources
3. Revise financial plans at regular intervals to reflect changes in project scope, budget or schedule, and changes in funding projections
4. Process CIP amendments through the Transportation Authority, and obtain Transportation Authority Board approval or administrative review before submittal of new information to outside agencies
5. Check eligible project list consistency with the San Francisco General Plan before adoption by Authority Board (performed by the Planning Department)
6. Make prioritization recommendations at the time of eligible project consistency review

7.3.2 | Transportation Authority

1. Develop, adopt, and update the CMP and its CIP
2. Process CIP amendments according to the established procedures
3. Provide input into the MTC, state, and federal agencies' process for the preparation and updates of the Regional, State, and Federal Transportation Improvement Programs (RTIP, STIP, and TIP) in coordination with sponsors.
4. Provide Prop K and Prop AA revenue estimates and advise on financial strategies

5. Develop Prop K and Prop AA Strategic Plan and 5YPP updates to respond to revisions in departments' and other project sponsors' (e.g. regional transit operators) capital and financial plans and to reflect CIP amendment decisions
6. Notify outside programming agencies of decisions on CIP amendments
7. Program the Prop K, the Prop AA, and the local (40%) portion of the TFCA funds, as well as discretionary funds as directed by the MTC, state, and federal agencies

7.4. Funding and Programming

As a result of the Transportation Authority's role as the Prop K and Prop AA administrator and the CMA, the capital priorities programming process not only involves state and federal funds that are required by state law to be programmed through the CMP but also incorporates the Prop K and Prop AA programming strategy. Listed below are major CIP funding sources administered by the Transportation Authority. Importantly, as described in the Relationship with Other Plans section, the Transportation Authority ensures that all CIP projects, as well as the programming and project selection processes, are consistent with the RTP, SFTP, and other requirements attached to the funding.

Evaluation of potential impacts of CIP projects on multimodal system performance is embedded throughout the project selection and monitoring processes. The results of the CMP multimodal system performance analysis and any deficiency findings will also be incorporated into the future CIP development as appropriate. Please refer to Chapter 4 for a detailed discussion of multimodal system performance.

7.4.1 | Surface Transportation Program / Congestion Mitigation Air Quality Program

Conformance with the CMP is required for a local jurisdiction to receive federal Surface Transportation Program (STP) funds or Congestion Mitigation and Air Quality Improvement Program (CMAQ) funds. STP funds are among the most flexible and are used to support a wide range of transportation improvement projects across all modes. CMAQ funds are intended for projects that reduce transportation related emissions. Both funds are distributed mainly by the regional transportation planning agency, i.e. the MTC for the Bay Area. The MTC has divided the Bay Area's share of STP and CMAQ funds into multiple programs under the umbrella of the One Bay Area Grant (OBAG) program. Each of the OBAG programs typically has its own associated policies and guidelines in pursuant of RTP goals. Since the 2013 CMP, the MTC extended the overall STP/CMAQ investment framework from a four-year to a five-year period (originally federal fiscal years 2012/13 through 2015/16, now through 2016/17) since federal revenues had come in lower than expected for the first four years and projects were taking longer to deliver. One of the centerpieces of OBAG is the county share program, which is intended to better integrate the region's transportation program with land use and housing policies and to promote transportation investments in Priority Development Areas (PDAs). PDAs refer to locally-identified, regionally designated infill development opportunity areas within existing communities. Since the adoption of the final OBAG program of projects in June 2013, the Transportation Authority has provided monitoring and support for sponsor agencies as projects advance through the design and construction phases under the federal aid guidelines. See Appendix 12 for the updated project list.

7.4.2 | State Transportation Improvement Program

Inclusion in the CIP is a prerequisite for inclusion in the State Transportation Improvement Program (STIP), a five-year program of projects adopted by the California Transportation Commission (CTC) every two years. Priorities for approximately 75% of the STIP programming capacity are set by regional transportation planning agencies, and the remaining 25% is established by the state. The Regional Transportation Improvement Program (RTIP) is the MTC's submittal to the state, which is merged with other regions' RTIPs and additional CTC priorities to become the STIP. In the Bay Area, the practice has been for the CMAs to establish priorities for their county share, subject to the MTC's concurrence and the CTC approval of the region's RTIP. The Transportation Authority's Board-adopted list of San Francisco RTIP priorities include remaining commitment of about $147 million to four projects: Central Subway (first priority, $75.5 million), payback to MTC of an advance for Presidio Parkway (second priority, $34 million), Caltrain Electrification ($20 million), and Caltrain Downtown Extension to a Rebuilt Transbay Terminal ($17.9 million).

The STIP used to be a significant, although highly variable source of state funds for highways, local streets and roads, transit rehabilitation and expansion projects, and pedestrian and bicycle projects. In recent cycles, the biennial STIP programming cycles have experienced a drastic reduction in available funding, due primarily to reduced revenues from fuel taxes, but also to the lack of an adequately funded multi-year federal transportation bill. Given that this year's fund estimate is only $46 million statewide (vs. $1.3 billion in 2014 STIP), CTC is making no new funds available for CMAs in the 2016 STIP. In accordance with MTC's 2016 RTIP Policies and Procedures, CMAs must still submit their carryover programming and any associated changes from the 2014 STIP to MTC. Appendix 12 shows the San Francisco draft 2016 RTIP priorities. The 2016 STIP is expected to be approved by MTC in December 2015, followed by the CTC's adoption in March 2016.

7.4.3 | Prop K Transportation Sales Tax

Prop B was the first half-cent local sales tax for transportation in San Francisco, approved by San Francisco voters in 1989. Prop K, passed by the voters in November 2003, extended the half-cent local sales tax for transportation and adopted a new 30-year Expenditure Plan, superseding the prior one. At the time of the Expenditure Plan adoption, Prop K was expected to generate $2.35 billion (in 2003 $'s) over 30 years and to leverage close to $10 billion in federal, state, and other local funds.

The Expenditure Plan established four overall categories of investment and attached mandatory percentage shares of total Prop K revenues: Transit (65.5%), Street and Traffic Safety (24.6%), Paratransit (8.6%), and Transportation System Management / Strategic Initiatives (1.3%). The Expenditure Plan details eligible projects and programs, including named major capital projects (e.g. Central Subway, Caltrain Downtown Extension to a Rebuilt Transbay Terminal, Caltrain Electrification, and Replacement of Doyle Drive) and 21 programmatic (i.e. not project-specific) categories, ranging from street resurfacing to pedestrian and bicycle improvements to transit vehicle replacements to transportation demand management. Appendix 13 provides a summary of the Expenditure Plan, which lists the eligible projects and programs along with their shares of Prop K funds and expected leveraging goals.

As required by the Expenditure Plan, the Transportation Authority Board adopts a Prop K Strategic Plan to guide the day-to-day implementation of the Prop K program, and for each of the programmatic categories, a 5YPP. The Prop K Strategic Plan is the financial tool that guides the timing and allocation of Prop K revenues over the 30-year Expenditure Plan period, and it considers many factors, such as the presence of matching funds and the likelihood of projects to move forward in the year proposed. The 5YPP includes prioritization criteria, a five-year list of projects (with scope, schedule, cost, and funding information), and performance measures. The Strategic Plan and 5YPPs are updated quadrennially in coordination with updates to the RTP and may, between quadrennial updates, be amended as needed, as determined and recommended by the Executive Director. In 2014 the Transportation Authority approved the 2014 Strategic Plan and 5YPPs, which cover Fiscal Years 2014/15 - 2018/19. The update was strongly coordinated with Plan Bay Area and the SFTP update. Appendix 14 provides a list of programmatic categories in the Expenditure Plan and refers to the current 2014 5YPP project lists. Appendix 15 summarizes the funding levels in the 2014 Strategic Plan baseline as adopted in September 2014.

7.4.4 | Prop AA Vehicle Registration Fee

Prop AA is a $10 countywide vehicle registration fee that was passed by San Francisco voters in 2010. Total revenues are estimated over the 30-year period at approximately $150 million (year of expenditure), or approximately $5.0 million annually, to fund smaller, high-impact projects throughout the city on a pay-as-you-go basis. The Prop AA Expenditure Plan established four categories of investment and attached mandatory percentage shares over 30 years: Street Repair & Reconstruction (50%), Pedestrian Safety (25%), and Transit Reliability & Mobility Improvements (25%). In December 2012, the Transportation Authority Board approved the first Prop AA Strategic Plan, which guides the timing of expenditures, and sets policies for day-to-day management of the program. The Strategic Plan directs $26.4 million to projects through Fiscal Year 2016/17. See Appendix 16 for the Prop AA Strategic Plan Programming.

7.4.5 | Transportation Fund for Clean Air

The Transportation Fund for Clean Air Program (TFCA) was established to fund the most cost effective transportation projects that achieve emission reductions from motor vehicles. Funds are generated from a $4 surcharge on the vehicle registration fee. Forty percent of the funds are set aside for Program Managers for each of the nine counties in the Bay Area Air Quality Management District (BAAQMD). The Transportation Authority is the designated TFCA Program Manager for San Francisco. In that capacity, it programs approximately $800,000 every year to clean air vehicles, shuttle operations, bicycle and pedestrian improvements, and other eligible transportation projects that help clean up the air by reducing motor vehicle emissions. The Transportation Authority also provides assistance to project sponsors in applying Regional TFCA funds, programmed directly by the BAAQMD. The remaining sixty percent of the revenues, referred to as the Regional Fund, is distributed on a competitive basis to applicants from the nine Bay Area counties. See Appendix 12 for the list of San Francisco TFCA projects selected since the last CMP.

7.4.6 | Lifeline Transportation Program

The MTC established the Lifeline Transportation Program (LTP) to improve transportation choices for low-income persons as part of the 2005 RTP. For the Cycle 4 LTP, the MTC assigned a total of up to $4.9 million in two different funding sources (i.e. federal Job Access and Reverse Commute (JARC) and State Transit Assistance (STA) funds) to the Transportation Authority, and assigned state Prop 1B funds to transit operators, including $6.1 million to the SFMTA and $4.6 million to BART, to program with the Transportation Authority's concurrence. See Appendix 12 for the Cycle 3 LTP project list.

7.5. Amendment

The previous sections describe the central role of the CMP in establishing standards and measuring or otherwise assessing the performance of the multimodal transportation system, and the role of the CIP in helping to maintain that level of performance. Any proposed changes to CIP projects must therefore first be assessed by the Transportation Authority for potential effects on the system performance. Because project viability can be affected by changes in any component of its funding package, the requirement for Transportation Authority review applies to all funding components of CIP projects, whether they are directly programmed by the Transportation Authority or not. There are two kinds of CIP amendments: policy level and administrative level.

7.5.1 | Policy-Level CIP Amendments

Policy-level amendments apply to changes that are deemed by the Transportation Authority to be significant enough that they have the potential to affect the performance of the multimodal transportation system, such as scope, schedule, or budget changes that will affect the year of delivery (completion), the amount or availability of operating funds, the year of programming, the fund source designation, or any other aspect of the funding packet requiring action by the MTC or the CTC for funds initially prioritized or programmed by the Transportation Authority. Policy-level amendments require approval by the Transportation Authority Board prior to processing of the change by the project sponsor.

Regardless of the funding source or other programming aspects affected, the Executive Director may rule that a requested CIP amendment is administrative if the proposed changes, involving one or more projects and one or more funding sources, requires programming actions that can be authorized at the staff level at the MTC or the CTC, or at the regional office level for federal agencies, such as administrative TIP amendments, or if it results in the following:

- no net change in the total amount of funds allocated to each of the projects involved; and
- no change to the total amount of dollars of each funding source, all affected projects combined; and
- no increase in Prop K or Prop AA match required, all affected projects combined; and
- when a programming year is involved, it will have no effect on the delivery schedule for the project because the schedule is determined by documented external factors.

7.5.2 | Administrative-Level CIP Amendments

These apply mostly to programming changes that can alter the overall transportation programming strategy for San Francisco even though their individual effects on system performance may only be very marginal. Such programming changes will trigger the need for administrative level review even if they are not tied to a specific project listed in the CIP as long as they affect San Francisco's share of a transportation funding source listed in the CIP. The purpose of this requirement is to ensure that the Transportation Authority has the required information to evaluate programming strategy and the performance of CIP projects in the context of the universe of programming and project delivery decisions in San Francisco. Administrative-level amendments will only require notification to and concurrent review by the Transportation Authority's Executive Director or her designee. In addition, proposed changes to Prop K and Prop AA programming will automatically trigger administrative-level review and, at the Executive Director's discretion, may require policy-level amendments.

7.5.3 | Applicability of CIP Amendments

Applicable funding sources include but are not limited to those programmed directly by the Transportation Authority, such as county share STP/CMAQ, RIP, LTP (JARC, STA, and STP), TFCA, Prop K, and Prop AA. Certain funding sources are programmed through state or regional processes and typically become available to project sponsors through a separate application procedure. In some cases, the funds are allocated on a first-come, first-served basis, so project sponsors' ability to act quickly is crucial. Further, many sources have timely use of funds requirements where failure to meet deadlines can result in loss of funds to the project or to San Francisco or prohibition from applying for future cycles until deadlines are met. The MTC has requested that CMAs assist with oversight of certain funding sources (e.g. Highway Safety Improvement Program) even if not directly prioritized by CMAs. The intent is to improve project delivery and specifically to avoid loss of funds to the region. The Transportation Authority encourages sponsors to proactively notify the Transportation Authority of any project delivery issues or other issues that may threaten a project's ability to meet timely use of fund deadlines, whether sources covered by CIP amendments or not. The Transportation Authority can serve as a resource and facilitator to help resolve delivery issues and avoid loss of funds to San Francisco projects.

7.5.4 | Amendment Process

In order to avoid additional reporting burdens on project sponsors, there is no specific form or format for submittals to the Transportation Authority. However, project sponsors wishing to make application to regional, state, or federal programming agencies for changes affecting current CIP programming must provide a brief written explanation (email is acceptable) and a description of proposed changes.

The Transportation Authority performs an initial administrative level review, to determine the need for further application information as well as to suggest the appropriate level CIP amendment required. This is followed by detailed, concurrent reviews for programming and performance implications. The process also calls for discussions with project sponsors to resolve any issues identified by the Transportation Authority's review, and establishes basic procedures to ensure disposition of the requests for review within a reasonable period of time. The timelines proposed below will vary depending upon the urgency of the request and external factors, such as deadlines established by the MTC or Caltrans.

REQUEST IN-TAKE REVIEW: Upon receipt of a request for programming changes, the Transportation Authority will perform an initial staff-level review. Within ten (10) working days after receipt of the request, the Transportation Authority will communicate in writing to the applicant the need for any additional information, necessary in order to further process the application. Within ten (10) working days after receipt of all information necessary to complete the request, the Transportation Authority will notify the applicant in writing if the amendment is approved administratively; appears to be administrative but requires additional information to approve; or is a policy-level amendment requiring Transportation Authority Board action. If the Transportation Authority finds that a policy-level amendment will be required, the communication will include:

- a schedule for Transportation Authority Board approval;

- a preliminary list of unresolved conformance or consistency issues identified in connection with the request; and
- a proposed course of action for resolution of these issues, including, at least, consultation and joint efforts with the applicant.

DETAILED REVIEW FOR POLICY-LEVEL AMENDMENT: Unless otherwise specified in the proposed schedule for resolution of issues, within ten (10) working days after the notification, the Transportation Authority will complete a detailed review of the request. The detailed review will include two components: a programming review, and a performance review. To expedite the process, both reviews will be carried out concurrently at the Transportation Authority.

The programming review will evaluate issues of Prop K and Prop AA Strategic Plan consistency and CMP CIP conformance, focusing on the following key strategic programming and fiscal policy factors:

- **Cost of Money:** Does the proposed change limit availability of funding by Prop K or Prop AA category or by state or federal funding source? Does it require or bring the Transportation Authority closer to the need to bond in order to deliver the Prop K program? Does it otherwise affect other CIP funding sources so as to increase the cost of money?
- **Leveraging Capacity:** Does the proposed programming change improve or worsen the Transportation Authority's prospective ability to capture state and federal funds for San Francisco projects? Does it increase the required local (Prop K, Prop AA, or other) match?
- **Other Programming Policy Consistency:** Does the proposed programming change result in a skew of the funding category targets established in the Prop K or Prop AA Strategic Plan? Does it substantially alter the programming priorities established in the Strategic Plan of 5YPPs? Does it substantially alter the programming priorities established in the latest CMP CIP?

The performance review will evaluate impacts on the performance of San Francisco's multimodal transportation system according to the criteria described below. These analyses are intended to provide order-of-magnitude findings about future system performance, particularly cumulative impacts on operating conditions at the facility, corridor, or systemwide level. The process is not focused on prediction of minor changes in individual CMP network segments.

- **Effects of Schedule Changes on Performance:** Does the proposed programming change involve or result in a delay in the delivery (completion) of any CIP projects? Are there significant anticipated impacts on system performance because of completion delays?
- **Effects of Scope Changes on Performance:** Does the proposed programming change result in a downsizing of CIP projects?
- **Potential Deficiencies:** Does the proposed programming change create the potential for a deficiency on the CMP network? Does it adversely affect the City's ability to implement already adopted deficiency plans? Does it adversely affect the likely effectiveness or delivery timelines for an already adopted deficiency plan?
- **Multimodal Balance:** Does the proposed programming change affect the multimodal balance of the CIP? Does it significantly degrade performance conditions for one mode vis-à-vis other modes? Is it likely to significantly affect certain categories of travelers vs. others (e.g., will it adversely affect off-peak transit riders vs. drivers, or local vs. through trips?).
- **Subarea Impacts.** The analysis will address questions such as is the proposed programming change likely to result in disproportionate adverse impacts to system performance for one subarea of the City vs. the others?

DISPOSITION OF POLICY-LEVEL AMENDMENT REQUESTS: If there are no outstanding issues identified during the review process, the item will be scheduled for Transportation Authority Board action at the next meeting, with a recommendation for approval. If issues identified during the review process are not resolved within the time frame specified in the initial notification, the Transportation Authority will establish a schedule for final resolution of these issues, and invite the pertinent programming agencies to facilitate the process. The findings and recommendations from this process will be agendized for Transportation Authority Board action on a schedule determined by the Executive Director.

As part of the evaluation process for all CIP Amendments, the Transportation Authority will explicitly consider and recommend adjustments to the Prop K and Prop AA Strategic Plans and to the TFCA program, as appropriate, to maintain consistency. Such adjustments will be scheduled for Transportation Authority Board action concurrently with the corresponding CIP Amendments.

The Transportation Authority will notify the pertinent regional, state, or federal agencies of the Transportation Authority Board action on policy level CIP Amendments, and/or staff-level approval of Administrative-Level CIP Amendments, as appropriate.

7.6. Project Delivery

One of the key purposes of the CMP is to establish the link between transportation investment and system performance. Programming projects in the CIP is only half of the picture. In order to be effective, the CIP must also function as a transportation project *delivery* mechanism. Failure to deliver projects or delays in implementation can affect system performance. Further, depending upon the fund source, delay in obligating funds or implementing a project can result in loss of funds to the project, to San Francisco, and/or to the Bay Area. In the long run, poor project delivery rates can influence state and federal authorization levels for transportation funding, leading to fewer resources to dedicate to maintaining and improving the transportation system.

The Transportation Authority has mechanisms in place for tracking Prop K and Prop AA project delivery (i.e., the Strategic Plan, 5YPPs, the Portal, MyStreetSF.com, and ongoing project management oversight activities). As a CMA, the Transportation Authority continues to work with the MTC and Caltrans to monitor project delivery rates for projects programmed in the RTIP and federal TIP, and serve as a resource to facilitate and advocate for San Francisco sponsors.

CHAPTER 8

TRAVEL DEMAND MODEL AND UNIFORM DATABASE

KEY TOPICS

- Legislative Requirements
- Legislative Intent and Application to San Francisco
- Technical Approach
- Work Programs Items

8.1. Legislative Requirements

California Government Code section 65089 (c), requires that each Congestion Management Agency (CMA), in consultation with the regional transportation planning agency (the Metropolitan Transportation Commission (MTC) in the Bay Area), the county, and local jurisdictions, develop a uniform database on traffic impacts for use in a countywide transportation computer model. The CMA must approve computer models used for county sub-areas, including models used by local jurisdictions for land use impact analysis. All models must be consistent with the modeling methodology and databases used by the regional transportation planning agency.

8.2. Legislative Intent and Application to San Francisco

Congestion management legislation was enacted in part to help transportation planning agencies identify the source of the transportation impacts of land use decisions. All Bay Area counties except San Francisco include multiple local jurisdictions each of which has authority over land use within its boundaries. The transportation impacts of decisions made in one local jurisdiction are felt across local jurisdictional boundaries. The travel demand model is intended as a technical tool to analyze land use impacts across local jurisdictions from a uniform technical basis.

As a unified City and County, San Francisco is spared the need to estimate transportation impacts across city boundaries, although inter-county impacts must still be considered. San Francisco's travel demand forecasting challenge is primarily the forecasting of travel by modes other than the private automobile, (e.g. transit, pedestrian, and cycling trips).

The Transportation Authority continually updates and refines their travel demand forecasting model, San Francisco Chained Activity Modeling Process (SF-CHAMP). Since the creation of the original San Francisco model in 2000, the model's geographic scope has been extended to the full nine-county Bay Area, along with significant improvements to pricing sensitivity and time-of-day modeling. The

Metropolitan Transportation Commission (MTC) has also now developed an activity based model with a similar structure.

In 2014, the Transportation Authority completed SF-CHAMP 5.0, which was calibrated using Census 2010 and The California Household Travel Survey (CHTS) 2010-2012. Previous model versions used earlier Census and household travel survey data. The Model Consistency Report for CHAMP 5.0 is included as Appendix 17. In 2015, the Transportation Authority updated their model to SF-CHAMP 5.1, which includes an updated bicycle route choice model, and are currently testing SF-CHAMP 5.2 which will include more accurate representation of parking prices and better sensitivity to them.

The Transportation Authority continues to use its Geographic Information System (GIS) database as a supplemental analysis tool for appropriate CMP purposes.

The model is integrated with the Transportation Authority's GIS database. The GIS is ideally suited for the graphic display of model outputs and more detailed spatial analysis. Together, GIS and the San Francisco Travel Demand Forecasting Model can be very effective both for sketch planning and the policy-level travel demand and performance forecasting exercises associated with long-range planning. The Transportation Authority's integrated model and GIS allow the ready presentation of data using graphics and maps.

The following section provides an overview of the San Francisco Travel Demand Forecasting Model and the GIS database.

8.3. Technical Approach

8.3.1 | The San Francisco Travel Demand Forecasting Model

The San Francisco Travel Demand Forecasting Model, known as SF-CHAMP, is a computer-based tool used to assess the impacts of land use, socioeconomic, and transportation system changes on the performance of the transportation system. SF-CHAMP was developed to reflect the unique transportation, socioeconomic, and land use characteristics of San Francisco and the Bay Area. The Model uses residents' observed travel patterns; detailed representations of the region's transportation system, population and employment characteristics; transit line boardings during specific time periods; roadway volumes; bicycle networks; tolling and parking pricing; and the number of vehicles available to households to simulate daily travel activity and measure performance. Future year transportation, land use, and socioeconomic inputs are used to forecast future travel demand.

I. ACTIVITY-BASED MICROSIMULATION

SF-CHAMP incorporates a state of the art approach to forecasting travel demand. This activity-based microsimulation model is sensitive to a broad array of conditions that influence travelers' choices.

One of the fundamental differences between SF-CHAMP and traditional models is that it is tour-based not trip-based. A tour is a sequence of trips made by an individual that begins and ends at home without any intermediate stops at home, whereas a trip is a single movement from an origin to a destination. Furthermore, the Transportation Authority's model predicts tours for individual household members (over five years old) and the resulting trips that comprise each tour, rather than just trips for each household, as in most traditional travel demand models. Tour-based models do not require data beyond what is needed to develop a four-step travel model system. However, the tour-based methodology allows the model to:

- deal more realistically and precisely with trip chaining and interrelationships between individual trips made over the entire day;
- separate travel into mandatory and discretionary tours; and
- provide a more precise estimate of volumes that can support microsimulation models.

The second fundamental difference between SF-CHAMP and traditional models is that each individual's travel patterns are microsimulated, allowing previous decisions and preferences to inform subsequent decisions. Importantly, the combination of microsimulation and tour-based methodology allows decision-makers to understand not just the changes in the magnitude and direction of trip-making associated with a transportation or land use change, but also which San Francisco or Bay Area residents are most directly affected by that change. This equity analysis is a key advancement over traditional four-step models. Tour-based models also account more reliably for the complexities involved in multi-mode trip making. SF-CHAMP addresses the tradeoffs between modes for the full tour, as well as the tradeoffs between modal options of trips within a tour.

II. MODEL APPLICATIONS

The Transportation Authority uses the SF-CHAMP to provide detailed forecasts supporting a number of specific planning applications, including the countywide transportation plan known as the San Francisco Transportation Plan (SFTP), the Transportation Authority's Strategic Analysis Reports (SARs), policy analyses, mobility assessments, the Transit Core Capacity Study, the Regional Transportation Plan, the Transportation Sustainability Fee Nexus Study, and environmental analyses. Current model applications include Better Market Street, the Parking Supply and Utilization Study, the Freeway Corridor Management Study, and the Treasure Island Mobility Management Study.

Historically, the Transportation Authority also applied the model to assess Proposition K Expenditure Plan performance and impacts, as well as the full 2004 Countywide Transportation Plan package.

III. MODEL DEVELOPMENT AND ENHANCEMENTS

The key inputs required to develop and apply a travel demand forecasting model include information on household and individual travel behavior (obtained in a household travel survey), representations of the pedestrian, transit, and roadway networks, and spatial representations of employment and residential characteristics. In the SF-CHAMP, most of the model components were estimated (the process of establishing the relationship between various relevant inputs) using household travel data collected by the Metropolitan Transportation Commission (MTC). In addition to the household travel survey, a "stated preference" survey collected preference data on transit reliability, crowding, personal security, and auto parking availability and cost.

Note that SF-CHAMP is not a single model but, in fact, a series of component models that operate in a coordinated fashion, each with its own unique purpose. The following paragraphs provide brief overviews of the model inputs and components. Figure 8-1 illustrates how the model components are structured to produce travel demand forecasts.

At the time of its initial release, SF-CHAMP was one of the first activity-based travel demand models used in practice and has been continuously used and updated both in order to take advantage of new data, and to be appropriately sensitive to issues confronted in new projects and plans for which it is used. SF-CHAMP version 5.1 is the current version of the model. The following paragraphs discuss the evolution of SF-CHAMP from version 3.0 to 5.1.

SF-CHAMP 3.0 is a hybrid model that forecasts the daily activity patterns and travel for San Francisco residents, but uses the Metropolitan Transportation Commission's (MTC) BAYCAST-90 model for non-San Francisco residents. This approach was appropriate to keep the initial implementation of an advanced tool manageable. For modeling pricing policies in San Francisco, however, this approach was limiting because much of the travel activity within San Francisco is generated by residents of other counties. In order to treat the entire Bay Area region in a consistent manner, CHAMP 4.0 predicts the daily activity patterns and tours of every Bay Area resident in all nine counties.

SF-CHAMP version 4.0 Harold added capabilities with respect to pricing sensitivity. Previous model versions did not have an explicit toll-choice model. Rather, SF-CHAMP 3.0 considered any bridge tolls during the "highway assignment" model component. SF-CHAMP 4.0 uses a "nested logit" approach for modeling tolls, which more accurately represents carpool cost-sharing, variations in travelers' values-of-time, and relationship to mode choice. Through this enhancement, it is possible to represent the choice of driving around a congestion pricing zone for free, or paying a toll to take advantage of time savings offered by reduced congestion in the priced area.

The SF-CHAMP 4.0 model was also enhanced to use continuous value-of-time distributions, rather than a single value of time for each of three income groups. This particular enhancement allows for a much greater range of variability across individuals, and is very well suited to models, such as SF-CHAMP, implemented in a micro-simulation framework. A new stated-preference survey was used to analyze the elasticities of mode and time-of-day choice to pricing policies. In addition, the following structural changes were made:

- Destination choice for non-work tours was moved up in the model chain so that chosen destinations can inform time-of-day choice (work destination choice already preceded time-of-day choice); and
- A detailed half-hourly trip time-of-day choice model was added to the end of the model chain, specifically to model peak spreading for auto trips.

SF-CHAMP version 4.3, Fury, incorporated significant advances in transit, pedestrian, and bicycle modeling. In order to more robustly address the effects of transit crowding, SF-CHAMP version 4.3, Fury, incorporated an iterative transit assignment was used that incorporated a feedback function that calculated dwell times as a function of boardings and alightings, and sought an equilibrated transit assignment similar to how highway assignment has been traditionally addressed. A bicycle route choice model, estimated using the CycleTracks smartphone data, was added in order to capture the effects of bicycle infrastructure construction. Furthermore, a simplified pedestrian route choice model was added in order to take into account hills and varying levels of pedestrian attractiveness. All of these improved route choice components were then used to estimate new mode choice models, which also included additional modes such as Ferry. These mode choice models were estimated using BATS2000 data and also included a more nuanced understanding of the effects of congested travel time on the utility of driving. In addition to mode choice, the auto ownership models were re-estimated using BATS2000 data. All models were calibrated to 2000 and where possible 2010 conditions and validated using transit boardings and vehicle count data.

Mode choice models were re-calibrated for SF-CHAMP 5.0 using California Household Travel Survey 2010-2012, which performed better than previous household travel surveys at capturing all trips made by a household during the survey day, and especially non-motorized trips, which are historically more likely to be underreported. The calibration also used observed highway volumes from Caltrans' Performance Measurement System (PeMS), and observed transit data from BART, Muni, AC Transit, Caltrain, and other transit operators. SF-CHAMP 5.1 implements and updated bicycle route choice model, which was estimated using data obtained from CycleTracks and calibrated using bicycle counts from SFMTA's array of permanent, automatic bicycle counters.

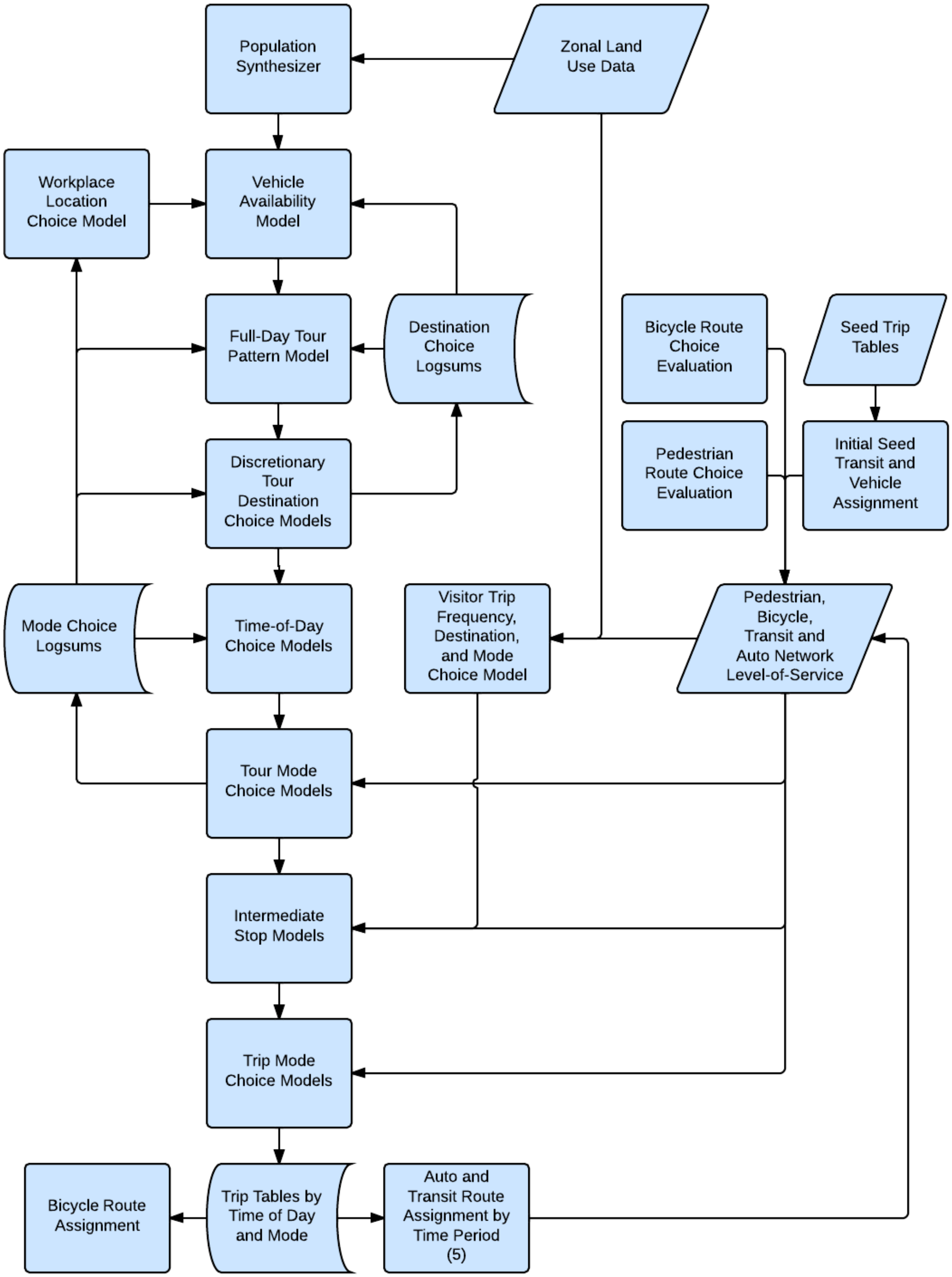

Figure 8-1: CHAMP 5.1 Model Components

IV. MODEL INPUT AND COMPONENTS

San Francisco's travel demand model has the capability to use any standard set of ABAG land use projections as an input. Currently, most projects use the Sustainable Communities Strategies - Jobs Housing Connection ABAG forecast for population, households, jobs, and employed residents. Outside of San Francisco, the direct land use inputs to the MTC model are used. Within San Francisco, the San Francisco Planning Department allocates the countywide control totals for population, households, jobs, and employed residents to Transportation Analysis Zones (TAZs). Base year and future year forecasts were developed using a parcel-level residential and employment database, inventories of new development projects under construction, approved, and under review, and information on development potential for major area plans.

The San Francisco 981 TAZ system is used within the City and County of San Francisco. Outside of the City, the San Francisco Model zone system is the same as the MTC Model 1454 zone system. Overall the model has approximately 2,250 zones. As part of the CHAMP 3.0 release, the model zone system was updated in 2007 to reflect MTC's new 1,454-zone system. The number of zones within San Francisco was also increased from 766 to 981 as part of this update.

SF-CHAMP's transportation networks are very detailed and use network assumptions consistent with the MTC Regional Transportation Plan. Within San Francisco, the network is the original City base map developed by the San Francisco Department of Public Works. It is highly spatially accurate and it includes every street segment within the City. For external counties, the roadway network from the MTC regional model highway network was used as a base. All local and regional transit route alignments and all stop locations are coded in the SF-CHAMP's transit networks. Outside San Francisco, the MTC regional model transit network is used to represent the pertinent transit services. The model networks are ground-truthed and updated on an ongoing and project-specific basis.

V. POPULATION SYNTHESIS

The model uses a synthesized population of Bay Area residents. As described earlier, SF-CHAMP is an activity-based microsimulation model. This means that the model works at the level of the individual decision-maker – each Bay Area resident. It is therefore necessary to create a representation of each decision-maker. TAZ-level totals of households, population, and employed residents, as well as census-based distributions of household configuration, age, and income-level serve as inputs to the population synthesis model.

The model samples the Census Public Use Microdata Sample (PUMS) (from the American Communities) household records, and then assigns these to the TAZ, based on the control totals and marginal distributions. The result is a file with one record for each decision-maker. It matches all control totals and distributions when aggregated to the TAZ-level.

VI. VEHICLE AVAILABILITY

The vehicle availability model predicts the vehicles available in each household for each Bay Area resident. The model estimates the probabilities of having zero, one, two, or three or more vehicles available. The Model accounts for tradeoffs for auto ownership based on the employment locations of workers in the household. This is a significant factor for auto ownership in a transit-rich environment such as San Francisco..

The vehicle availability model was validated primarily on two key variables, number of workers per household and super district1, using the 2010 Census and CHTS 2010-2012.

VII. FULL DAY PATTERN MODEL

The main feature of the full day pattern approach is that it simultaneously predicts the main components of all of a person's travel across the day. Predicting tours (a sequence of trips made by an individual that begin and end at home without any intermediate stops at home) rather than trips is a significant improvement over traditional trip generation procedures because of the relationships between trips on any tour. Figure 8-2 illustrates the difference between trips (as estimated in the traditional four-step process) and tours.

Several models are used to predict the full day pattern. The **Primary Tour Generation Models** predict whether each individual will make either no tour on a typical weekday or will make a primary tour for one of the following purposes: work, school, or other. The individual's primary tour is defined as the longest tour in elapsed time made with a stop at work, school, or for other purposes. All of these tours are home-based. Work-based tours and secondary home-based tours are also predicted. The models also predict whether there are intermediate stops on each primary tour: none, one, or more on the outbound portion only, one or more on the inbound portion only, or one or more on both portions. Subsequent models predict the exact number of intermediate stops on each tour leg.

By using tours as a key unit of travel, we capture the interdependence of different activities in a trip chain. This provides a better understanding of non-home-based trips, especially in the case of the work-based sub-tours that represent a significant proportion of non-home-based travel.

The full-day pattern tour models were validated by converting tours to trips and comparing these to the CHTS 2010-2012.

VIII. TIME OF DAY MODELS

The time-of-day model predicts the period when the traveler leaves home to begin the primary tour simultaneously with the period when the traveler leaves the primary destination to return home. It also predicts the time period of any intermediate stops. The periods used in SF-CHAMP are defined as:

- Early (3:00 AM to 5:59 AM)
- AM peak (6:00 AM to 8:59 AM)
- Midday (9:00 AM to 3:29 PM)
- PM peak (3:30 PM to 6:29 PM)
- Late (6:30 PM to 2:59 AM)

Activity-based models can account for tradeoffs between trip chaining and time of day by evaluating time of day decisions at the tour level rather than the trip level. Pricing policies (such as parking or toll policies) can be tested more accurately by including these tradeoffs between the need to travel for purposes that are time-dependent (such as day care or work) and the desire to avoid peak period pricing. Activity-based models can also account more reliably for the complexities involved in multi-mode trip making.

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[1] Superdistrict is a geographic area defined by MTC.

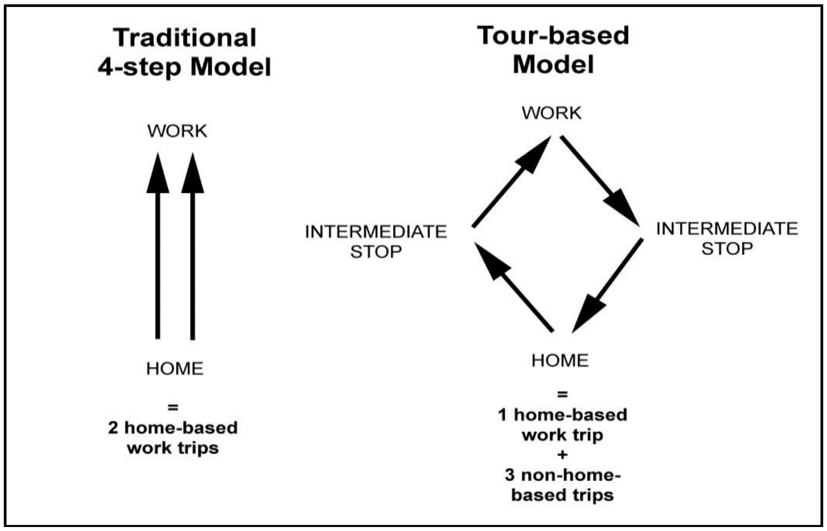

Figure 8-2: Trip Definitions: 4-step model vs. tour-based model

IX. DESTINATION CHOICE MODELS

Given that the full day activity model has predicted that a traveler makes a tour with a primary destination as well as potentially some number of intermediate stops, the destination choice models select the likely destinations for these trips. The San Francisco Model includes two types of destination choice models.

The **Primary Tour Destination Models** predict the destination of tours such as the workplace or school. The **Intermediate Stop Location Models** predict the location of intermediate stops for tours with stops on the way to and/or from the primary destination, where those stops are conditional on where the primary destination is located. Factors considered in destination choice include distance, accessibility for various modes (for that individual's auto-ownership level), and the land use density and type at various locations (i.e. retail, office, etc).

The Destination Choice Models were validated against the 2010-2012 CHTS survey data for primary destinations by purpose and trip length frequency distributions.

X. MODE CHOICE MODELS

After the Full Day Pattern Models and the Destination Choice Models have predicted the number, timing, and destination of trips, the Mode Choice Models predict the mode used by the traveler to reach their destination. Mode refers to the type of transportation, such as walking, bicycling, riding transit (such as light rail or bus), driving alone, or sharing a ride. The San Francisco mode choice models differ from traditional trip-based mode choice models in that there are two distinct sets of mode choice models. The Tour Mode Choice Model determines the primary mode for the tour, while the Trip Mode Choice Models determine the mode for each individual trip made on that tour, based on the mode chosen for the tour.

An analysis of trips by mode revealed the significant percentage of transit trips and non-motorized (walk and bike) trips made by San Francisco residents. It also showed that a number of transit trips are made using several transit modes; i.e., local bus access to BART. San Francisco can be considered a transit-rich environment, where most residents can walk to transit, and a limited supply of parking is available with a high cost. Based on this analysis, a detailed representation of available modes was developed, including:

- Muni Light Rail
- Muni Local Bus
- Regional bus routes (Golden Gate Transit, AC Transit, SamTrans)
- Caltrain
- BART
- Ferry
- Walk
- Bike
- Drive Alone
- Shared Ride 2
- Shared Ride 3+

The mode choice models were validated against the 2010-2012 CHTS, Census and ACS Journey to Work data, and observed SFMTA, BART, Caltrain, and Ferry ridership levels.

XI. VISITOR MODELS

Given San Francisco's popularity as a tourist destination, trips made by visitors from beyond the San Francisco Bay Area had to be accounted for in the San Francisco Model. A series of models were estimated to predict the visitor trips by mode for San Francisco tourist destinations. These models were not based on BATS household travel survey of Bay Area residents, but rather were estimated using San Francisco Visitor & Convention Bureau data, and coefficients derived from the Honolulu model visitor development effort.

The visitor models are significantly less complex than the San Francisco resident models. They estimate the number of visitors to 29 key visitor destinations for each of three modes. The destinations include among others, Alcatraz, Golden Gate Park, North Beach, Union Square, and a cable car ride.

XII. ASSIGNMENT

The detailed estimate of activity patterns of Bay Area travelers (including the type and timing of trips, destinations, and modes of travel) results in tables of trips by mode of travel from zone to zone by time of day. For example, a matrix may contain the number of transit trips during the AM peak, while another may contain a matrix of drive alone trips in the evening time period. This time period-specific demand is then assigned to the regional roadway and transit networks.

There are three primary components to the assignment process – transit, bicycle and roadway. Transit assignment uses detailed information from the mode choice models to determine the particular route that a traveler uses. For example, the mode choice models may predict that a traveler uses a bus to get from the Inner Sunset to Civic Center, but it does not predict which bus. The Transit Assignment Model predicts the specific route chosen, and any transfers, based on walking time to the nearest stop, expected wait time, presence of other transit alternatives (such as the multiple routes that serve a significant portion of Van Ness Avenue), fares, in-vehicle travel time, and walk time to the final destination. The transit assignment algorithm is based on the minimization of generalized cost for a certain origin-destination pair by time period. Generalized cost is a weighted cost that takes into account in vehicle travel time, waiting time, walk access time, transfers, and transfer time. The trip mode choice model dictates which transit modes is the "primary mode" for each user. Depending on the primary mode, other secondary modes may be made available as access and egress modes (e.g., walk access mode to BART primary mode).

Roadway assignment predicts the specific route chosen by travelers based primarily on congested travel times and traveler cost (distance and tolls), collectively summed into a generalized cost function. If a particular route between two points has a smaller generalized cost than another, it will attract drivers until the generalized cost on all routes between two points is equal. This equilibrated state is often referred to as Static Deterministic User Equilibrium.

Bicycle assignment predicts the route taken by cyclists based on a bike route choice model estimated using revealed choice bicycle route data from the CycleTracks smartphone application. The bicycle route choice model takes into account hills, bike lanes, bike route, number of turns, wrong way streets, and distance.

The validation of transit and highway assignments is done separately, using observed volumes of vehicles and passengers on the highway and transit systems, respectively. Assignment validation at the county level was completed using aggregated volumes by corridor (identified by screenlines), type of service (facility type, mode or operator), size (volume group), and time period. Speeds and travel times are also used in highway and transit validations to ensure that these are accurately represented in the models.

8.3.2 | GIS Database and ArcGIS 10.1

The Transportation Authority uses a GIS database coupled with ESRI's ArcGIS 10.1 software to complement the strategic analysis facilitated by SF-CHAMP. The Transportation Authority's GIS database includes a large repository of shape files corresponding to local and regional street networks, census tracts, census block groups, census blocks, TAZs, transit routes, public facilities, and more.

The GIS database is refreshed on an ongoing basis with data obtained from our citywide and regional partner agencies, as the Transportation Authority generally does not directly develop comprehensive GIS files in-house.

However, the Transportation Authority is obligated to maintain a geodatabase of CMP level-of-service shape files. These shape files contain travel time and speed data for all auto CMP segments. The auto data is updated every two years as part of our CMP update. Transit data is also available.

For all other GIS shape files, the City provides a website complete with Census data for San Francisco geography and street centerline files for throughout San Francisco.

8.3.3 | MTC Model Consistency

The Transportation Authority completed a Model Consistency Report in November 2015 to demonstrate the consistency of CHAMP 5.0 with the MTC regional model and modeling requirements. The MTC Consistency Guidelines list the items that need to be documented as part of this Consistency Report. The CHAMP 5.0 Model Consistency Report is included as Appendix 17.

8.4. Work Program Items

The Transportation Authority will continue to work collaboratively with the Planning Department, MTA, other City agencies, regional transit operators, Caltrans, and MTC to:

- Continue to apply the model to assess impacts of policy and transportation changes on local and regional trip making behavior and network conditions. Better Market Street, the Parking Supply and Utilization Study, the San Francisco Transportation Plan, the Transit Core Capacity Study, and other ongoing projects will depend heavily on modeling support.
- Continue to apply and develop the citywide Dynamic Traffic Assignment model.
- Continue the development of a Dynamic Transit Assignment model to better represent individual transit route choice decisions, the aggregate impact of those decisions on transit performance (particularly in regard to reliability), and the feedback of transit performance into transit route choice.

Item 8 Enclosure B
Transportation Authority Board
December 15, 2015

APPENDICES

2015

CONGESTION MANAGEMENT PROGRAM

SAN FRANCISCO COUNTY TRANSPORTATION AUTHORITY

APPENDIX 1

MTC Guidance

Item 2c

METROPOLITAN
TRANSPORTATION
COMMISSION

Joseph P. Bort MetroCenter
101 Eighth Street
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Memorandum

TO: Planning Committee

DATE: July 5, 2013

FR: Executive Director

RE: 2013 Congestion Management Program Guidance: MTC Res. No. 3000, Revised)

Background

The state law establishing the Congestion Management Programs (CMPs) includes specific requirements for the content and development process, the relationship between the CMPs and the metropolitan planning process, and requirements for system monitoring. MTC's responsibilities include review of the consistency of the CMPs with the Regional Transportation Plan (RTP), evaluation of the consistency and compatibility of the CMPs in the region, and inclusion of the CMP projects in the Regional Transportation Improvement Program (RTIP) in order to compete for state funding.

CMP Review Process and Schedule

MTC is required to evaluate consistency of the CMPs every two years with the RTP that is in effect when the CMP is submitted. In anticipation of the upcoming CMP review this fall (see Table 1, attached) staff is recommending an update to the CMP guidelines to reflect the policies in Plan Bay Area that are relevant to the CMPs. This will allow the CMAs time to incorporate the new guidance into their draft CMPs that are due to MTC in October.

Proposed Changes in CMP Guidance for 2013

The changes to the CMP Guidance include references to regional goals and policies established in the draft Plan Bay Area. Staff will update the guidelines, as necessary, to reflect any final revisions to the Plan that have relevance to the CMPs. Projects proposed for the Regional Transportation Improvement Program (RTIP) will be reviewed for consistency with MTC's Plan Bay Area.

Recommendation

MTC Res. 3000 delegates to this Committee the responsibility for approving amendments to the CMP Guidance (MTC Res. No 3000). Staff recommends that the committee approve the revisions to Attachments A and B of Res. No. 3000, for the purpose of providing guidance for the development of the 2013 CMPs consistent with Plan Bay Area.

Steve Heminger

E8B-2

Table 1

MTC’s 2013 CMP Review Process and Draft Schedule

Date	Event	Responsible Party
July 12	Approval of updates to CMP Guidance	MTC’s Planning Committee
October 16	Final 2013 CMPs due to MTC Proposed RTIP project listings to MTC	CMAs
October 21- November 14	Review of consistency of CMPs with the Regional Transportation Plan (RTP)	MTC staff
November 14 (tentative)	MTC’s Consistency Findings on 2013 CMPs	Planning Comm. Recommendation
December 11	MTC’s approval of the 2014 RTIP	PAC recommendation
December 18 (tentative)	MTC’s Consistency Findings on 2013 CMPs MTC’s approval of the 2014 RTIP	MTC
December 24	2014 RTIP due to the California Transportation Commission (CTC)	MTC

Date:	June 25, 1997	
W.I.:	30.5.10	
Referred By:	WPC	
Revised:	06/11/99-W	05/11/01-POC
	06/13/03-POC	06/10/05-POC
	05/11/07-PC	05/08/09-PC
	06/10/11-PC	07/12/13-PC

ABSTRACT

Resolution No. 3000, Revised

This resolution revises MTC's Guidance for Consistency of Congestion Management Programs with the Regional Transportation Plan (RTP).

This resolution supersedes Resolution No. 2537

Attachments A and B of this resolution were revised on June 11, 1999 to reflect federal and state legislative changes established through the passage of the Transportation Equity Act of the 21st Century and SB 45, respectively. In addition, the Modeling Checklist has been updated.

Attachments A and B of this resolution were revised on May 11, 2001 to reflect state legislative changes and to reference updated demographic and forecast data.

Attachments A and B of this resolution were revised on June 13, 2003 to reflect state legislative changes, 2001 RTP goals and policies, and to reference updated demographic and forecast data.

Attachments A and B of this resolution were revised on June 10, 2005 to reflect the updated RTP goals, as per Transportation 2030, and to reference updated demographic and forecast data.

Attachments A and B of this resolution were revised on May 11, 2007 to reflect federal legislative changes established through the passage of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA), and to reference new State Transportation Control Measures and updated demographic and forecast data.

Attachments A and B of this resolution were revised on May 8, 2009 to reflect MTC's new RTP (Transportation 2035 Plan), an updated Travel Demand Modeling Checklist, and revised Resolution 3434 and TOD policy.

E8B-4

Attachments A and B of this resolution were revised on June 10, 2011 to reflect the new regional coordinated land use and transportation planning process as directed through SB 375, an updated Travel Demand Modeling Checklist, the newly released Highway Capacity Manual 2010, the Bay Area 2010 Ozone Strategy, and updates to the table noting achievement of the Transit Oriented Development requirements by Resolution No. 3434 transit extension project.

Attachments A and B of this resolution were revised on July 12, 2013 to reflect the new RTP (Plan Bay Area) and the statutory requirements in MAP-21 for RTP and air quality conformity requirements.

Date: June 25, 1997
W.I.: 30.5.10
Referred By: WPC

Re: Congestion Management Program Policy.

METROPOLITAN TRANSPORTATION COMMISSION
RESOLUTION NO. 3000

WHEREAS, the Metropolitan Transportation Commission (MTC) is the regional transportation planning agency for the San Francisco Bay Area pursuant to Government Code Sections 66500 et seq; and

WHEREAS, Government Code § 65080 requires each transportation planning agency to prepare a regional transportation plan and a regional transportation improvement program directed at the achievement of a coordinated and balanced regional transportation system; and

WHEREAS, Government Code § 65089 requires a designated local agency in each urbanized county to develop, adopt, and periodically update a congestion management program for the county and its included cities unless a majority of local governments in a county and the county board of supervisors elect to be exempt; and requires that this congestion management program be developed in consultation, among others, with the regional transportation planning agency; and

WHEREAS, Government Code § 65089.2 requires that, for each congestion management program prepared, the regional transportation planning agency must make a finding that each congestion management program is consistent with the regional transportation plan, and upon making that finding shall incorporate the congestion management program into the regional transportation improvement program; and

WHEREAS, Government Code § 65082 requires that adopted congestion management programs be incorporated into the regional transportation improvement program approved by MTC; and

WHEREAS, MTC has adopted a Congestion Management Program Policy (MTC Resolution 2537, Revised) to provide guidance for all the counties and cities within the region in preparing their congestion management programs; and,

WHEREAS, MTC's Congestion Management Program Policy needs to be updated from time to time to provide further guidance, now, therefore, be it

RESOLVED, that MTC adopts the Congestion Management Program Policy, as set forth in Attachments A and B to this resolution, which are incorporated herein by reference; and, be it further

RESOLVED, that the MTC Work Program Committee is delegated the responsibility for approving amendments to Attachments A and B; and, be it further

RESOLVED, that this resolution shall be transmitted to the nine Bay Area Congestion Management Agencies for use in preparing their congestion management programs; and, be it further

RESOLVED, that MTC Resolution No. 2537, Revised is hereby superceded.

METROPOLITAN TRANSPORTATION COMMISSION

Jane Baker, Chairwoman

The above resolution was entered into
by the Metropolitan Transportation
Commission at a regular meeting of the
Commission held in Oakland,
California, on June 25, 1997.

Date:	June 25, 1997	
W.I.:	30.5.10	
Referred By:	WPC	
Revised:	06/11/99-W	05/11/01-POC
	06/13/03-POC	06/10/05-POC
	05/11/07-PC	05/08/09-PC
	06/10/11-PC	07/12/13-PC

Attachment A
Resolution No. 3000
Page 1 of 11

GUIDANCE FOR CONSISTENCY OF

CONGESTION MANAGEMENT PROGRAMS

WITH THE REGIONAL TRANSPORTATION PLAN

Metropolitan Transportation Commission

July 2013

GUIDANCE FOR CONSISTENCY OF CONGESTION MANAGEMENT PROGRAMS WITH THE REGIONAL TRANSPORTATION PLAN

TABLE OF CONTENTS

I. INTRODUCTION

A. Purpose of This Guidance

The Congestion Management Program (CMP) statutes establish specific requirements for the content and development process for CMPs, for the relationship between CMPs and the metropolitan planning process, for CMA monitoring and other responsibilities, and for the responsibilities of MTC as the regional transportation agency. CMPs are not required in a county if a majority of local governments and the Board of Supervisors adopt resolutions electing to be exempt from this requirement (AB 2419 (Bowler) Chapter 293, Statutes of 1996). This Guidance is for those counties that prepare a CMP in accordance with state statutes. For counties that opt out of preparing a CMP, MTC will directly work with the appropriate county agencies to establish project priorities for funding.

CMP statutes also specify particular responsibilities involving CMPs for the regional transportation agency, in the Bay Area, MTC. These responsibilities include review of the consistency of the CMPs with the RTP, evaluation of the consistency and compatibility of the CMPs in the Bay Area, and inclusion of the CMP projects in the Regional Transportation Improvement Program (RTIP).

The purpose of this guidance is to focus on the relationship of the CMPs to the regional planning process and MTC's role in determining consistency of CMPs with the Regional Transportation Plan (RTP).

B. Legislative Requirement for Congestion Management Programs

Congestion Management Programs were established as part of a bi-partisan legislative package in 1989, and approved by the voters in 1990. This legislation also increased transportation revenues and changed state transportation planning and programming processes. The specific CMP provisions were originally chartered by the Katz-Kopp-Baker-Campbell Transportation Blueprint for the Twenty-First Century by AB 471 (Katz); (Chapter 106, Statutes 1989). They were revised by AB 1791 (Katz) (Chapter 16, Statutes of 1990), AB 3093 (Katz) (Chapter 2.6, Statutes of 1992), AB 1963 (Katz) (Chapter 1146, Statutes of 1994), AB 2419 (Bowler) (Chapter 293, Statutes of 1996), AB 1706 (Chapter 597, Statutes of 2001), and SB 1636 (Figueroa)(Chapter 505, Section 4, Statutes of 2002), which defines and incorporates "infill opportunity zones." The provisions regarding establishing new "infill opportunity zones" have now expired, but established infill opportunities zones are still subject to the statutes.

CMP statutes establish requirements for local jurisdictions to receive certain gas tax subvention funds. Additionally, CMPs play a role in the development of specific project proposals for the Regional Transportation Improvement Program.

C. The Role of CMPs in the Metropolitan Planning Process

CMPs play a role in the countywide and regional transportation planning processes:

- CMPs can identify specific near term projects to implement the longer-range vision established in a countywide plan.

- Through CMPs, the transportation investment priorities of the multiple jurisdictions in each county can be addressed in a countywide context.

- CMPs establish a link between local land use decision making and the transportation planning process.

- CMPs are a building block for the federally required Congestion Management Program.

II. MTC's ROLE and RESPONSIBILITIES

A. MTC's Responsibilities regarding CMPs

MTC's direct responsibilities under CMP statutes are concentrated in the following provisions:

"The regional agency shall evaluate the consistency between the program (i.e., the CMP) and the regional transportation plans required pursuant to Section 65080. In the case of a multicounty regional transportation planning agency, that agency shall evaluate the consistency and compatibility of the programs within the region. (Section 65089.2 (a))

The regional agency, upon finding that the program is consistent, shall incorporate the program into the regional transportation improvement program as provided for in Section 65082. If the regional agency finds the program is inconsistent, it may exclude any project in the congestion management program from inclusion in the regional transportation improvement program. (Section 65089.2(b))

It is the intent of the Legislature that the regional agency, when its boundaries include areas in more than one county, should resolve inconsistencies and mediate disputes which arise between agencies related to congestion management programs adopted for those areas." Section 65089.2.(d)(1))

B. The Regional Transportation Plan (RTP) Regulatory Setting and Goals

Federal Requirements

The primary federal requirements regarding RTPs are addressed in the metropolitan transportation planning rules in Title 23 of the Code of Federal Regulations (CFR) Part 450 and 500 and Title 49 CFR Part 613. These federal regulations have been updated to reflect the metropolitan transportation planning regulations called out in MAP-21. Under MAP-21, the U.S. Department of Transportation requires that metropolitan planning organizations, such as MTC, prepare long-range transportation plans and update them every four years if they are in areas designated as “nonattainment” or “maintenance” for federal air quality standards. Plan Bay Area fulfills this requirement.

State Requirements

California Government Code Section 65080 sets forth the State’s requirements for RTPs. Section 65080 requires MPOs located in air quality nonattainment regions update their RTPs at least every four years.

The regional agencies, particularly MTC, the Association of Bay Area Governments, the Bay Area Air Quality Management District, and the Bay Conservation and Development Commission, will also address new requirements flowing from California’s 2008 Senate Bill 375 (Steinberg), which calls on each of the state’s 18 metropolitan areas to reduce greenhouse gas (GHG) emissions from cars and light trucks. The mechanism for achieving these reductions will be a Sustainable Communities Strategy (SCS). Plan Bay Area is the region’s SCS and RTP and has been developed in an integrative process with the Bay Area’s regional and local partners.

State Regional Transportation Plan (RTP) Guidelines

The RTP Guidelines adopted by the California Transportation Commission (CTC) state that the CTC cannot program projects that are not identified in the RTP.

Section 65080 of the Government Code, as amended by SB 375, states that the RTP shall contain four distinct elements:

- A Policy Element that reflects the mobility goals, policies and objectives of the region;
- A Sustainable Communities Strategy, as established through SB 375;
- An Action Element that identifies programs and actions to implement the RTP; and
- A Financial Element that summarizes the cost of implementing the projects in the RTP in a financially constrained environment.

Plan Bay Area serves all the specific planning purposes outlined in the CTC RTP Guidelines

C. Consistency Findings

MTC’s findings for the consistency of CMPs focus on five areas:

- Goals and objectives established in the RTP,
- Consistency of the system definition with adjoining counties,
- Consistency with federal and state air quality plans,
- Consistency with the MTC travel demand modeling database and methodologies; and
- RTP financial assumptions.

E8B-12

1) <u>Goals and objectives established in the RTP</u>

Plan Bay Area represents the adopted transportation policy and action statement of how the Bay Area will approach the region's transportation needs to the year 2040. It was prepared by MTC in partnership with the Association of Bay Area Governments (ABAG), the Bay Area Air Quality Management District (BAAQMD), and the Bay Conservation and Development Commission (BCDC) and in collaboration with Caltrans, the nine county-level Congestion Management Agencies (CMAs) or substitute agencies, over two dozen Bay Area transit operators, and numerous transportation stakeholders and the public.

Plan Bay Area incorporates a set of performance targets for as quantifiable measures against which progress may be evaluated, as shown below:

<u>PLAN BAY AREA PERFORMANCE TARGETS</u>

Goal/Outcome	#	Target
Climate Protection	1	Reduce per-capita CO_2 emissions from cars and light-duty trucks by 15% *Statutory - Source: California Air Resources Board, as required by SB 375*
Adequate Housing	2	House 100% of the region's projected growth by income level (very-low, low, moderate, above-moderate) without displacing current low-income residents *Statutory - Source: ABAG, as required by SB 375*
Healthy & Safe Communities	3	Reduce premature deaths from exposure to particulate emissions: • Reduce premature deaths from exposure to fine particulates (PM2.5) by 10% • Reduce coarse particulate emissions (PM10) by 30% • Achieve greater reductions in highly impacted areas *Source: Adapted from federal and state air quality standards by BAAQMD*
	4	Reduce by 50% the number of injuries and fatalities from all collisions (including bike and pedestrian) *Source: Adapted from California State Highway Strategic Safety Plan*
	5	Increase the average daily time walking or biking per person for transportation by 70% (for an average of 15 minutes per person per day) *Source: Adapted from U.S. Surgeon General's guidelines*
Open Space and Agricultural Preservation	6	Direct all non-agricultural development within the urban footprint (existing urban development and urban growth boundaries) *Source: Adapted from SB 375*
Equitable Access	7	Decrease by 10% the share of low-income and lower-middle income residents' household income consumed by transportation and housing

		Source: Adapted from Center for Housing Policy
ECONOMIC VITALITY	**8**	Increase gross regional product (GRP) by an average annual growth rate of approximately 2% *Source: Bay Area Business Community*
TRANSPORTATION SYSTEM EFFECTIVENESS	**9**	• Increase non-auto mode share by 10% • Decrease automobile vehicle miles traveled per capita by 10% *Source: Adapted from Caltrans Smart Mobility 2010*
	10	Maintain the transportation system in a state of good repair: • Increase local road pavement condition index (PCI) to 75 or better • Decrease distressed lane-miles of state highways to less than 10% of total lane-miles • Reduce share of transit assets past their useful life to 0% *Source: Regional and state plans*

Regional Transit Expansion Program
The Regional Transit Expansion Program – adopted by the Commission as Resolution 3434 –calls for a nearly $12 billion investment in new rail and bus projects that will improve mobility and enhance connectivity for residents throughout the Bay Area. MTC has adopted a Transportation and Land Use Platform that calls for supportive land use plans and policies to support transit extensions in Res. 3434. Further, MTC has adopted a Transit Oriented Development Policy, as part of Res. 3434, that establishes specific housing thresholds for these extensions, requires station area plans and establishes corridor working groups. These regional policies and specific projects within the county should be recognized in the CMP (attached as Appendix C).

2) Consistency of the system definition with adjoining counties

The CMP statutes require that the CMA designate a system of highways and roadways which shall be subject to the CMP requirements. Consistency requires the regional continuity of the CMP designated system for facilities that cross county borders.

3) Consistency with pertinent Air Quality Plans

Transportation Control Measures (TCMs)are identified in the federal and state air quality plans to achieve and maintain the respective standards for ozone and carbon monoxide. The statutes require that the Capital Improvement Program (CIP) of the CMP conform to transportation related vehicle emission air quality mitigation measures. CMPs should promote the region's adopted transportation control measures (TCMs) for the Federal and State Clean Air Plans. In addition, CMPs are encouraged to consider the benefits of greenhouse gas (GHG) reductions in developing the CIP, although GHG emission reductions are not currently required in either Federal or State Clean Air Plans.

A reference to the lists of federal and state TCMs is provided in Attachment B. The lists may be updated from time to time to reflect changes in the federal and state air quality plans..

In particular, TCMs that require local implementation should be identified in the CMP, specifically in the CIP.

CMPs are also required to contain provisions pertaining to parking cash-out.

> ***(1) The city or county in which a commercial development will implement a parking cash-out program that is included in a congestion management program pursuant to subdivision (b), or in a deficiency plan pursuant to Section 65089.4, shall grant to that development an appropriate reduction in the parking requirements otherwise in effect for new commercial development. (2) At the request of an existing commercial development that has implemented a parking cashout program, the city of county shall grant an appropriate reduction in the parking requirements otherwise applicable based on the demonstrated reduced need for parking, and the space no longer needed for parking purposes may be used for other appropriate purposes.*** (Section 65089 (d)

It should also be noted that starting on January 1, 2010, cities, counties and air districts have the option of enforcing the State Parking Cash-Out statutes (Section 43845 of the Health and Safety Code), as per SB 728 (Lowenthal). This provides local jurisdictions with another tool to craft their own approaches to support multi-modal transportation systems, address congestion and green house gasses.

4) Consistency with the MTC Travel Demand Modeling Databases and Methodologies

MTC's statutory requirements regarding consistent databases are as follows:

> ***The agency, (i.e., the CMA) in consultation with the regional agency, cities, and the county, shall develop a uniform data base on traffic impacts for use in a countywide transportation computer model . . . The computer models shall be consistent with the modeling methodology adopted by the regional planning agency. The data bases used in the models shall be consistent with the data bases used by the regional planning agency. Where the regional agency has jurisdiction over two or more counties, the data bases used by the agency shall be consistent with the data bases used by the regional agency.*** (Section 65089 (c))

MTC desires the development and implementation of consistent travel demand models, with shared input databases, to provide a common foundation for transportation policy and investment analysis.

The Regional Model Working Group of the Bay Area Partnership serves as a forum for sharing data and expertise, and providing peer review for issues involving the models developed by or for the CMAs, MTC, and other parties. The MTC Checklist for

Modeling will be used to guide the consistency assessment of CMA models with the MTC model.

The Checklist is included in Attachment B, and addresses:

- Demographic/econometric forecasts
- Pricing assumptions
- Network assumptions
- Travel demand methodologies; and,
- Traffic assignment methodologies

5) Level of Service Methodology

CMP statutory requirements regarding level of service are as follows

> ***"Level of service (LOS) shall be measured by Circular 212, by the most recent version of the Highway Capacity Manual, or by a uniform methodology adopted by the agency that is consistent with the Highway Capacity Manual."*** (Section 65089 (b)

The most recently adopted version of the Highway Capacity Manual is HCM2010, which significantly enhances how engineers and planners assess the traffic and environmental effects of highway projects by:

- Providing an integrated multimodal approach to the analysis and evaluation of urban streets from the points of view of automobile drivers, transit passengers, bicyclists, and pedestrians;
- Addressing the proper application of micro-simulation analysis and the evaluation of those results; and
- Examining active traffic management in relation to both demand and capacity.

Use of is HCM2010 encouraged, especially for the integrated multimodal approach to analysis of streets for various users.

6) RTP Financial Requirements and Projections

Under the federal transportation authorization (MAP-21), the actions, programs and projects in the RTP must be financially deliverable within reasonable estimates of public and private resources. While CMPs are not required by legislation to be financially constrained, recognition of financial constraints, including the costs for maintaining, rehabilitating, and operating the existing multi-modal system and the status of specific major projects, will strengthen the consistency and linkage between the regional planning process and the CMP. The CMA may submit project proposals for consideration by MTC in developing future financially constrained RTPs.

D. Consistency and Compatibility of the Programs within the Region

The CMP statutes require that, in the case of a multi-county regional transportation agency, that agency shall evaluate the consistency and compatibility of the congestion management programs within the region. Further, it is the Legislature's stated intention that the regional agency (i.e., MTC in the San Francisco Bay Area) resolve inconsistencies and mediate disputes between congestion management programs within a region.

To the extent useful and necessary, MTC will identify differences in methodologies and approaches between the CMPs on such issues as performance measures and land use impacts.

E. Incorporation of the CMP Projects into the RTIP

State transportation statutes require that the MTC, in partnership with the State and local agencies, develop the Regional Transportation Improvement Program (RTIP) on a biennial cycle. The RTIP is the regional proposal for State and federal funding, adopted by MTC and provided to the California Transportation Commission (CTC) for the development of the State Transportation Improvement Program (STIP). In 1997, SB 45 (Statutes 1997, Chapter 622) significantly revised State transportation funding policies, delegating project selection and delivery responsibilities for a major portion of funding to regions and counties. Subsequent changes to state law (AB 2928 – Statutes 2000, Chapter 91) made the RTIP a five-year proposal of specific projects, developed for specific fund sources and programs. The RTIP is required to be consistent with the RTP that is currently in effect. The RTP is revised periodically.

The CMP statutes establish a direct linkage between CMPs that have been found to be consistent with the RTP, and the RTIP. MTC will review the projects in the Capital Improvement Program (CIP) of the CMP for consistency with the RTP. MTC’s consistency findings for projects in the CMPs will be limited to those projects that are included in the RTP, and do not extend to other projects that may be included in the CMP. Some projects may be found consistent with a program category in the RTP. MTC, upon finding that the CMP is consistent with the RTP, shall incorporate the program into the RTIP, subject to specific programming and funding requirements. If MTC finds the program inconsistent, it may exclude any project in the program from inclusion in the RTIP. Since the RTIP must be consistent with the RTP, projects that are not consistent with the RTP will not be included in the RTIP. MTC may include certain projects or programs in the RTIP which are not in a CIP, but which are in the RTP. In addition, SB 45 requires projects included in the Interregional Transportation Improvement Program (ITIP) to be consistent with the RTP.

MTC will establish funding bid targets for specific funds, based upon the fund estimate as adopted by the California Transportation Commission (CTC). Project proposals can only be included in the RTIP within these funding bid targets. MTC will also provide information on other relevant RTIP processes and requirements, including coordination between city, county, and transit districts for project applications, schedule, evaluations and recommendations of project submittals, as appropriate for the RTIP.

As per CTC's Guidelines, MTC will evaluate the projects in the RTIP based on specific performance indicators and measures as established in the RTP, and provide this evaluation to the CTC along with the RTIP. CMAs are encouraged to consider the performance measures in Plan Bay Area when developing specific project proposals for the RTIP; more details will be provided in the RTIP Policies and Procedures document, adopted by MTC for the development of the RTIP.

III. CMP PREPARATION AND SUBMITTAL TO MTC

A. CMP Preparation

If prepared, the CMP shall be developed by the CMA in consultation with, and with the cooperation of, MTC, transportation providers, local governments, Caltrans, and the BAAQMD, and adopted at a noticed public hearing of the CMA. As established in SB 45, the RTIP is scheduled to be adopted by December 15 of each odd numbered year. If circumstances arise that change this schedule, MTC will work with the CMAs and substitute agencies in determining an appropriate schedule and mechanism to provide input to the RTIP.

B. Regional Coordination

In addition to program development and coordination at the county level, and consistency with the RTP, the compatibility of the CMPs with other Bay Area CMPs would be enhanced through identification of cross county issues in an appropriate forum, such as Partnership and other appropriate policy and technical committees. Discussions would be most beneficial if done prior to final CMA actions on the CMP.

C. Submittal to MTC

To provide adequate review time, draft CMPs should be submitted to MTC in accordance to a schedule MTC will develop to allow sufficient time for incorporation into the RTIP for submittal to the California Transportation Commission. Final CMPs must be adopted prior to final MTC consistency findings.

D. MTC Consistency Findings for CMPs

MTC will evaluate consistency of the CMP every two years with the RTP that is in effect when the CMP is submitted; for the 2013 CMP the RTP in effect will be Plan Bay Area. MTC will evaluate the consistency of draft CMPs when received, based upon the areas specified in this guidance, and will provide staff comments of any significant concerns. MTC can only make final consistency findings on CMPs that have been officially adopted.

E8B-18

Date:	June 25, 1997	
W.I.:	30.5.10	
Referred By:	WPC	
Revised:	06/11/99-W	05/11/01-POC
	06/13/03-POC	06/10/05-POC
	05/11/07-PC	05/08/09-PC
	06/10/11-PC	07/12/13-PC

Attachment B to MTC Resolution No. 3000 consists of:

Appendix A	Federal and State Transportation Control Measures
Appendix B	Checklist for Modeling Consistency for CMPs
Appendix C	MTC's Regional Transit Expansion Program of Projects (MTC Resolution No. 3434, revised 09/24/08)
Appendix D	MTC's Resolution No. 3434 Transit Oriented Development (TOD) Policy, revised 10/24/07

Appendix A: Federal and State Transportation Control Measures (TCMs)

Federal TCMs:
For a list and description of current Federal TCMs, see the “Federal Ozone Attainment Plan for the 1-Hour National Ozone Standard” adopted Oct. 24, 2001, and “2004 Revision to the California State Implementation Plan for Carbon Monoxide, Updated Maintenance Plan for Ten Federal Planning Areas,” approved January 30, 2006.

The current Federal TCMs have been fully implemented. Refer to the "Final Transportation-Air Quality Conformity Analysis Transportation 2035 Plan and 2011 Transportation Improvement Program" at http://www.mtc.ca.gov/funding/tip/Final_AQ_conformity_Analysis.pdf (page 15) for the specific implementation steps in the advancement of these Federal TCMs.

State TCMs:
For a list and description of current State TCMs, see “Bay Area 2010 Ozone Strategy,” or subsequent revisions as adopted by the Bay Area Air Quality Management.

CMAQ Evaluation and Assessment Report:
MTC participated in a federal evaluation and assessment of the direct and indirect impacts of a representative sample of Congestion Mitigation and Air Quality (CMAQ) – funded projects on air quality and congestion levels. The study estimated the impact of these projects on emissions of transportation related pollutants, including carbon monoxide (CO), ozone precursors – oxides of nitrogen (NOx), volatile organic compounds (VOCs), particulate matter (PM10 and PM2.5), and carbon dioxide (CO2) for information purposes, as well as on traffic congestion and mobility. There is also additional analysis of the selected set of CMAQ-funded projects to estimate of the cost effectiveness at reducing emissions of each pollutant. This report may be of interest to CMAs; it is available on line at:
http://www.fhwa.dot.gov/environment/cmaqpgs/safetealu1808/index.htm
or from the MTC/ABAG Library.

Appendix B: MTC Checklist for Modeling Consistency for CMPs

Overall approach

MTC's goal is to establish regionally consistent model "sets" for application by MTC and the CMAs. In the winter of 2010/2011, MTC replaced the modeling tool – named *BAYCAST-90* – that had been in place, with relatively minor modifications, for the past two decades with a more sophisticated, so-called "activity-based" model – named *Travel Model One*. This change required a broad re-thinking of these guidelines as they now require a framework in which trip-based and activity-based models can be aligned. The approach remains the same: a checklist is used to adjudge consistency across model components.

Checklist

This checklist guides the CMAs through their model development and consistency review process by providing an inventory of specific products to be developed and submitted to MTC, and by describing standard practices and assumptions.

Because of the complexity of the topic, the checklist may need additional detailed information to explain differences in methodologies or data. Significant differences will be resolved between MTC and the CMA, taking advantage of the Regional Model Working Group. Standard formats for model comparisons will be developed by MTC for use in future guidelines.

Incremental updates

The CMA forecasts must be updated every two years to be consistent with MTC's forecasts. Alternative approaches to fully re-running the entire model are available, including incremental approaches through the application of factors to demographic inputs and/or trip tables. Similarly, the horizon year must be the same as the TIP horizon year. However, interpolation and extrapolation approaches are acceptable, with appropriate attention to network changes. These alternatives to re-running the entire model should be discussed with MTC before the CMP is adopted by the CMA.

Defining the MTC model sets

The MTC model sets referred to below are defined as those in use on December 31st of the year preceding the CMP update.

Key Assumptions

Please report the following information.

A. General approach:

Discuss the general approach to travel demand modeling by the CMA and the CMA model's relationship to either *BAYCAST-90* or *Travel Model One*.

PRODUCT 1: Description of the above.

B. Demographic/economic/land use forecasts:

Both base and forecast year demographic/economic/land use ("land use") inputs must be consistent – though not identical – to the census tract-level data provided by ABAG. Specifically, if CMAs wish to reallocate land use within their own county (or counties), they must consult with the affected city (or cities) as well as with ABAG and MTC. Further, the resulting deviation in the subject county (or counties) should be no greater than plus or minus one percent from the county-level totals provided by ABAG for the following variables: population, households, jobs, and employed residents. Outside the subject county (or counties), the land use variables in the travel analysis zones used by the county must match either ABAG's estimates exactly when aggregated/disaggregated to census tracts or the county-in-question's estimates per the revision process noted above (e.g. Santa Clara county could use the revised estimates San Mateo developed through consultation with local cities, ABAG, and MTC). Forecast year demand estimates should use either the *Plan Bay Area* or Draft Proposed Plan (used in the *Plan Bay Area* DEIR) land use data, both generated by ABAG. CMAs may also analyze additional, alternative land use scenarios that will not be subject to consistency review.

PRODUCTS: 2) A statement establishing that the differences between key ABAG land use variables and those of the CMA do not differ by more than one percent at the county level for the subject county. A statement establishing that no differences exist at the census-tract-level outside the county between the ABAG forecast or the ABAG/CMA revised forecast.

3) A table comparing the ABAG land use estimates with the CMA land use estimates by county for population, households, jobs, and employed residents for both the base year and the horizon year.

4) If land use estimates within the CMA's county are modified from ABAG's projections, agendas, discussion summaries, and action items from each meeting held with cities, MTC, and/or ABAG at which the redistribution was discussed, as well as before/after census-tract-level data summaries and maps.

C. Pricing Assumptions:

Use MTC's automobile operating costs, transit fares, and bridge tolls or provide an explanation for the reason such values are not used.

PRODUCT 5: Table comparing the assumed automobile operating cost, key transit fares, and bridge tolls to MTC's values for the horizon year.

D. Network Assumptions:

Use MTC's regional highway and transit network assumptions for the other Bay Area counties. CMAs should include more detailed network definition relevant to their own county in addition to the regional highway and transit networks. For the CMP horizon year, to be compared with the TIP interim year, regionally significant network changes in the base case scenario shall be limited to the current Transportation Improvement Program (TIP) for projects subject to inclusion in the TIP.

PRODUCT 6: Statement establishing satisfaction of the above.

E. **Automobile ownership:**
Use *Travel Model One* automobile ownership models or forecasts, *BAYCAST-90* automobile ownership models, or submit alternative models to MTC for review and comment.

PRODUCT 7: County-level table comparing estimates of households by automobile ownership level (zero, one, two or more automobiles) to MTC's estimates for the horizon year.

F. **Tour/trip generation:**
Use *Travel Model One* tour generation models or forecasts, *BAYCAST-90* trip generation models, or submit alternative models to MTC for review and comment.

PRODUCT 8: Region-level tables comparing estimates of trip and/or tour frequency by purpose to MTC's estimates for the horizon year.

G. **Activity/trip location:**
Use *Travel Model One* activity location models or forecasts, *BAYCAST-90* trip distribution models, or submit alternative models to MTC for review and comment.

PRODUCTS: 9) Region-level tables comparing estimates of average trip distance by tour/trip purpose to MTC's estimates for the horizon year.

10) County-to-county comparison of journey-to-work or home-based work flow estimates to MTC's estimates for the horizon year.

H. **Travel mode choice:**
Use *Travel Model One* models or forecasts, *BAYCAST-90* models, or submit alternative models to MTC for review and comment.

PRODUCT 11: Region-level tables comparing travel mode share estimates by tour/trip purpose to MTC's estimates for the horizon year.

I. **Traffic Assignment**
Use *Travel Model One* or *BAYCAST-90* models, or submit alternative models to MTC for review and comment.

PRODUCTS: 12) Region-level, time-period-specific comparison of vehicle miles traveled and vehicle hours traveled estimates by facility type to MTC's estimates for the horizon year.

13) Region-level, time-period-specific comparison of estimated average speed on freeways and all other facilities, separately, to MTC's estimates for the horizon year.

Alternatively, CMAs may elect to utilize MTC zone-to-zone vehicle trip tables, adding network and zonal details within the county as appropriate, and then re-run the assignment. In this case, only Products 12 and 13 are applicable.

Appendix C: MTC's Regional Transit Expansion Program of Projects
(MTC Resolution 3434)

Note that Resolution No. 3434, Revised, is reproduced below with the TOD Policy attached as Appendix D to Resolution No. 3000; other associated appendices are not attached here – the other appendices are available upon request from the MTC library.

Date:	December 19, 2001	
W.I.:	12110	
Referred by:	POC	
Revised:	01/30/02-C	07/27/05-C
	04/26/06-C	10/24/07-C
	09/24/08-C	

ABSTRACT

Resolution No. 3434, Revised

This resolution sets forth MTC's Regional Transit Expansion Program of Projects.

This resolution was amended on January 30, 2002 to include the San Francisco Geary Corridor Major Investment Study to Attachment B, as requested by the Planning and Operations Committee on December 14, 2001.

This resolution was amended on July 27, 2005 to include a Transit-Oriented Development (TOD) Policy to condition transit expansion projects funded under Resolution 3434 on supportive land use policies, as detailed in Attachment D-2.

This resolution was amended on April 26, 2006 to reflect changes in project cost, funding, and scope since the 2001 adoption.

This resolution was amended on October 24, 2007 to reflect changes in the Transit-Oriented Development (TOD) Policy in Attachment D-2.

This resolution was amended on September 24, 2008 to reflect changes associated with the 2008 Strategic Plan effort (Attachments B, C and D).

Further discussion of these actions are contained in the MTC Executive Director's Memorandum dated December 14, 2001, July 8, 2005, April 14, 2006, October 12, 2007 and September 10, 2008.

Date: December 19, 2001
W.I.: 12110
Referred by: POC

RE: Regional Transit Expansion Program of Projects

METROPOLITAN TRANSPORTATION COMMISSION
RESOLUTION NO. 3434, Revised

WHEREAS, the Metropolitan Transportation Commission (MTC) is the regional transportation planning agency for the San Francisco Bay Area pursuant to Government Code Section 66500 et seq.; and

WHEREAS, MTC adopted Resolution No. 1876 in 1988 which set forth a new rail transit starts and extension program for the region; and

WHEREAS, significant progress has been made in implementing Resolution No. 1876, with new light rail service in operation in San Francisco and Silicon Valley, new BART service extended to Bay Point and Dublin/Pleasanton in the East Bay, and the BART extension to San Francisco International Airport scheduled to open in 2002; and

WHEREAS, MTC's long range planning process, including the Regional Transportation Plan and its *Transportation Blueprint for the 21st Century*, provides a framework for comprehensively evaluating the next generation of major regional transit expansion projects to meet the challenge of congestion in major corridors throughout the nine-county Bay Area; and

WHEREAS, the Commission adopted Resolution No. 3357 as the basis for assisting in the evaluations of rail and express/rapid bus projects to serve as the companion follow-up program to Resolution No. 1876; and

WHEREAS, local, regional, state and federal discretionary funds will continue to be required to finance an integrated program of new rail transit starts and extensions including those funds which are reasonably expected to be available under current conditions, and new funds which need to be secured in the future through advocacy with state and federal legislatures and the electorate; and

WHEREAS, the Regional Transit Expansion program of projects will enhance the Bay Area’s transit network with an additional 140 miles of rail, 600 miles of new express bus routes, and a 58% increase in service levels in several existing corridors, primarily funded with regional and local sources of funds; and

WHEREAS, MTC recognizes that coordinated regional priorities for transit investment will best position the Bay Area to compete for limited discretionary funding sources now and in the future; now, therefore, be it

RESOLVED, that MTC adopts a Regional Transit Expansion Program of Projects, consistent with the Policy and Criteria established in Resolution No. 3357, as outlined in Attachment A, attached hereto and incorporated herein as though set forth at length; and be it further

RESOLVED, that this program of projects, as set forth in Attachment B is accompanied by a comprehensive funding strategy of local, regional, state and federal funding sources as outlined in Attachment C, attached hereto and incorporated herein as though set forth at length; and, be it further

RESOLVED, that the regional discretionary funding commitments included in this financial strategy are subject to the terms and conditions outlined in Attachment D, attached hereto and incorporated herein as though set forth at length; and, be it further

METROPOLITAN TRANSPORTATION COMMISSION

Sharon J. Brown, Chair

The above resolution was entered into by the
Metropolitan Transportation Commission
at a regular meeting of the Commission held
in Oakland, California, on December 19, 2001.

Appendix D: MTC's Regional Transit Expansion Program of Projects (MTC Resolution 3434) TOD Policy

Res. No. 3434, TOD Policy (Attachment D-2), revised October 24, 2007, is shown below; other associated Res. 3434 appendices are available upon request from the MTC library.

Date: July 27, 2005
W.I.: 12110
Referred by: POC
Revised: 10/24/07-C

Attachment D-2
Resolution No. 3434
Page 10 of 7

MTC RESOLUTION 3434 TOD POLICY FOR REGIONAL TRANSIT EXPANSION PROJECTS

1. Purpose

The San Francisco Bay Area—widely recognized for its beauty and innovation—is projected to grow by almost two million people and one and a half million jobs by 2030. This presents a daunting challenge to the sustainability and the quality of life in the region. Where and how we accommodate this future growth, in particular where people live and work, will help determine how effectively the transportation system can handle this growth.

The more people who live, work and study in close proximity to public transit stations and corridors, the more likely they are to use the transit systems, and more transit riders means fewer vehicles competing for valuable road space. The policy also provides support for a growing market demand for more vibrant, walkable and transit convenient lifestyles by stimulating the construction of at least 42,000 new housing units along the region's major new transit corridors and will help to contribute to a forecasted 59% increase in transit ridership by the year 2030.

This TOD policy addresses multiple goals: improving the cost-effectiveness of regional investments in new transit expansions, easing the Bay Area's chronic housing shortage, creating vibrant new communities, and helping preserve regional open space. The policy ensures that transportation agencies, local jurisdictions, members of the public and the private sector work together to create development patterns that are more supportive of transit.

There are three key elements of the regional TOD policy:

(a) Corridor-level thresholds to quantify appropriate minimum levels of development around transit stations along new corridors;

(b) Local station area plans that address future land use changes, station access needs, circulation improvements, pedestrian-friendly design, and other key features in a transit-oriented development; and

(c) Corridor working groups that bring together CMAs, city and county planning staff, transit agencies, and other key stakeholders to define expectations, timelines, roles and responsibilities for key stages of the transit project development process.

2. TOD Policy Application

The TOD policy only applies to physical transit extensions funded in Resolution 3434 (see Table 1). The policy applies to any physical transit extension project with regional discretionary funds, regardless of level of funding. Resolution 3434 investments that only entail level of service improvements or other enhancements without physically extending the system are not subject to the TOD policy requirements. Single station extensions to international airports are not subject to the TOD policy due to the infeasibility of housing development.

TABLE 1
RESOLUTION 3434 TRANSIT EXTENSION PROJECTS SUBJECT TO CORRIDOR THRESHOLDS

Project	Sponsor	Type	Threshold met with current development?	Meets TOD Policy (with current + new development as planned)?
BART East Contra Costa Rail Extension (eBART) (a) Phase 1 Pittsburg to Antioch (b) Future phases	BART/CCTA	Commuter Rail	No No	Yes No
BART – Downtown Fremont to San Jose / Santa Clara (a) Fremont to Berryessa (b) Berryessa to San Jose/Santa Clara	(a) BART (b) VTA	BART extension	No No	Not yet determined; planning is underway Not yet determined
AC Transit Berkeley/Oakland/San Leandro Bus Rapid Transit: Phase 1	AC Transit	Bus Rapid Transit	Yes	Yes
Caltrain Downtown Extension/Rebuilt Transbay Terminal	TJPA	Commuter Rail	Yes	Yes
MUNI Third Street LRT Project Phase 2 – New Central Subway	MUNI	Light Rail	Yes	Yes
Sonoma-Marin Rail (a) Phase 1 downtown San Rafael to downtown Santa Rosa (b) Future phases tbd	SMART	Commuter Rail	No	Not yet determined; planning is underway Not yet being planned

Project	Sponsor	Type	Threshold met with current development?	Meets TOD Policy (with current + new development as planned)?
Dumbarton Rail	SMTA, ACCMA, VTA, ACTIA, Capitol Corridor	Commuter Rail	No	Not yet determined; planning is underway
Expanded Ferry Service to Berkeley, Alameda/Oakland/Harbor Bay, Hercules, Richmond, and South San Francisco; and other improvements.*	WTA	Ferry	No	Line specific

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* Ferry terminals where development is feasible shall meet a housing threshold of 2500 units. MTC staff will make the determination of development feasibility on a case by case basis.

3. Definitions and Conditions of Funding

For purposes of this policy "regional discretionary funding" consists of the following sources identified in the Resolution 3434 funding plan:

FTA Section 5309- New Starts
FTA Section 5309- Bus and Bus Facilities Discretionary
FTA Section 5309- Rail Modernization
Regional Measure 1- Rail (bridge tolls)
Regional Measure 2 (bridge tolls)
Interregional Transportation Improvement Program
Interregional Transportation Improvement Program-Intercity rail
Federal Ferryboat Discretionary
AB 1171 (bridge tolls)
CARB-Carl Moyer/AB434 (Bay Area Air Quality Management District) [1]

These regional funds may be programmed and allocated for environmental and design related work, in preparation for addressing the requirements of the TOD policy. Regional funds may be programmed and allocated for right-of-way acquisition in advance of meeting all requirements in the policy, if land preservation for TOD or project delivery purposes is essential. No regional funds will be programmed and allocated for construction until the requirements of this policy have been satisfied. See Table 2 for a more detailed overview of the planning process.

4. Corridor-Level Thresholds

Each transit extension project funded in Resolution 3434 must plan for a minimum number of housing units along the corridor. These corridor-level thresholds vary by mode of transit, with more capital-intensive modes requiring higher numbers of housing units (see Table 3). The corridor thresholds have been developed based on potential for increased transit ridership, exemplary existing station sites in the Bay Area, local general plan data, predicted market demand for TOD-oriented housing in each county, and an independent analysis of feasible development potential in each transit corridor.

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[1] The Carl Moyer funds and AB 434 funds are controlled directly by the California Air Resources Board and Bay Area Air Management District. Res. 3434 identifies these funds for the Caltrain electrification project, which is not subject to the TOD policy.

TABLE 2
REGIONAL TOD POLICY IMPLEMENTATION PROCESS FOR TRANSIT EXTENSION PROJECTS

Transit Agency Action	City Action	MTC/CMA/ABAG Action
All parties in corridors that do not currently meet thresholds (see Table 1) establish Corridor Working Group to address corridor threshold. Conduct initial corridor performance evaluation, initiate station area planning. ⇩		
Environmental Review/ Preliminary Engineering /Right-of-Way	Conduct Station Area Plans	Coordination of corridor working group, funding of station area plans
Step 1 Threshold Check: the combination of new Station Area Plans and existing development patterns exceeds corridor housing thresholds .		
Final Design	Adopt Station Area Plans. Revise general plan policies and zoning, environmental reviews	Regional and county agencies assist local jurisdictions in implementing station area plans
Step 2 Threshold Check: (a) local policies adopted for station areas; (b) implementation mechanisms in place per adopted Station Area Plan by the time Final Design is completed. ⇩		
Construction	Implementation (financing, MOUs) Solicit development	TLC planning and capital funding, HIP funding

TABLE 3: CORRIDOR THRESHOLDS
HOUSING UNITS – AVERAGE PER STATION AREA

Project Type / Threshold	BART	Light Rail	Bus Rapid Transit	Commuter Rail	Ferry
Housing Threshold	3,850	3,300	2,750	2,200	2,500*

Each corridor is evaluated for the Housing Threshold. For example, a four station commuter rail extension (including the existing end-of-the-line station) would be required to meet a corridor-level threshold of 8,800 housing units.

Threshold figures above are an average per station area for all modes except ferries based on both existing land uses and planned development within a half mile of all stations. New below market rate housing is provided a 50% bonus towards meeting housing unit threshold.

** Ferry terminals where development is feasible shall meet a housing threshold of 2500 units. MTC staff will make the determination of development feasibility on a case by case basis.*

Meeting the corridor level thresholds requires that within a half mile of all stations, a combination of existing land uses and planned land uses meets or exceeds the overall corridor threshold for housing (listed in Table 3);

Physical transit extension projects that do not currently meet the corridor thresholds with development that is already built will receive the highest priority for the award of MTC's Station Area Planning Grants.

To be counted toward the threshold, planned land uses must be adopted through general plans, and the appropriate implementation processes must be put in place, such as zoning codes. General plan language alone without supportive implementation policies, such as zoning, is not sufficient for the purposes of this policy. Ideally, planned land uses will be formally adopted through a specific plan (or equivalent), zoning codes and general plan amendments along with an accompanying programmatic Environmental Impact Report (EIR) as part of the overall station area planning process. Minimum densities will be used in the calculations to assess achievement of the thresholds.

An existing end station is included as part of the transit corridor for the purposes of calculating the corridor thresholds; optional stations will not be included in calculating the corridor thresholds.

New below-market housing units will receive a 50 percent bonus toward meeting the corridor threshold (i.e. one planned below-market housing unit counts for 1.5 housing units for the purposes of meeting the corridor threshold. Below market for the purposes of the Resolution 3434 TOD policy is affordable to 60% of area median income for rental units and 100% of area median income for owner-occupied units);

The local jurisdictions in each corridor will determine job and housing placement, type, density, and design.

The Corridor Working Groups are encouraged to plan for a level of housing that will significantly exceed the housing unit thresholds stated here during the planning process. This will ensure that the Housing Unit Threshold is exceeded corridor-wide and that the ridership potential from TOD is maximized.

5. Station Area Plans

Each proposed physical transit extension project seeking funding through Resolution 3434 must demonstrate that the thresholds for the corridor are met through existing development and adopted station area plans that commit local jurisdictions to a level of housing that meets the threshold. This requirement may be met by existing station area plans accompanied by appropriate zoning and implementation mechanisms. If new station area plans are needed to meet the corridor threshold, MTC will assist in funding the plans. The Station Area Plans shall be conducted by local governments in coordination with transit agencies, Association of Bay Area Governments (ABAG), MTC and the Congestion Management Agencies (CMAs).

Station Area Plans are opportunities to define vibrant mixed use, accessible transit villages and quality transit-oriented development – places where people will want to live, work, shop and spend time. These plans should incorporate mixed-use developments, including new housing, neighborhood serving retail, employment, schools, day care centers, parks and other amenities to serve the local community.

At a minimum, Station Area Plans will define both the land use plan for the area as well as the policies—zoning, design standards, parking policies, etc.—for implementation. The plans shall at a minimum include the following elements:

- Current and proposed land use by type of use and density within the ½ mile radius, with a clear identification of the number of existing and planned housing units and jobs;
- Station access and circulation plans for motorized, non-motorized and transit access. The station area plan should clearly identify any barriers for pedestrian, bicycle and wheelchair access to the station from surrounding neighborhoods (e.g., freeways,

railroad tracks, arterials with inadequate pedestrian crossings), and should propose strategies that will remove these barriers and maximize the number of residents and employees that can access the station by these means. The station area and transit village public spaces shall be made accessible to persons with disabilities.

- Estimates of transit riders walking from the half mile station area to the transit station to use transit;
- Transit village design policies and standards, including mixed use developments and pedestrian-scaled block size, to promote the livability and walkability of the station area;
- TOD-oriented parking demand and parking requirements for station area land uses, including consideration of pricing and provisions for shared parking;
- Implementation plan for the station area plan, including local policies required for development per the plan, market demand for the proposed development, potential phasing of development and demand analysis for proposed development.
- The Station Area Plans shall be conducted according to the guidelines established in MTC's Station Area Planning Manual.

6. Corridor Working Groups

The goal of the Corridor Working Groups is to create a more coordinated approach to planning for transit-oriented development along Resolution 3434 transit corridors. Each of the transit extensions subject to the corridor threshold process, as identified in Table 1, will need a Corridor Working Group, unless the current level of development already meets the corridor threshold. Many of the corridors already have a transit project working group that may be adjusted to take on this role. The Corridor Working Group shall be coordinated by the relevant CMAs, and will include the sponsoring transit agency, the local jurisdictions in the corridor, and representatives from ABAG, MTC, and other parties as appropriate.

The Corridor Working Group will assess whether the planned level of development satisfies the corridor threshold as defined for the mode, and assist in addressing any deficit in meeting the threshold by working to identify opportunities and strategies at the local level. This will include the key task of distributing the required housing units to each of the affected station sites within the defined corridor. The Corridor Working Group will continue with corridor evaluation, station area planning, and any necessary refinements to station locations until the corridor threshold is met and supporting Station Area Plans are adopted by the local jurisdictions.

MTC will confirm that each corridor meets the housing threshold prior to the release of regional discretionary funds for construction of the transit project.

7. Review of the TOD Policy

MTC staff will conduct a review of the TOD policy and its application to each of the affected Resolution 3434 corridors, and present findings to the Commission, within 12 months of the adoption of the TOD policy.

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2015 CONGESTION MANAGEMENT PROGRAM

APPENDIX 2

California Government Codes Concerning CMPs

GOVERNMENT CODE
SECTION 65088-65089.10

65088. The Legislature finds and declares all of the following:

(a) Although California's economy is critically dependent upon transportation, its current transportation system relies primarily upon a street and highway system designed to accommodate far fewer vehicles than are currently using the system.

(b) California's transportation system is characterized by fragmented planning, both among jurisdictions involved and among the means of available transport.

(c) The lack of an integrated system and the increase in the number of vehicles are causing traffic congestion that each day results in 400,000 hours lost in traffic, 200 tons of pollutants released into the air we breathe, and three million one hundred thousand dollars ($3,100,000) added costs to the motoring public.

(d) To keep California moving, all methods and means of transport between major destinations must be coordinated to connect our vital economic and population centers.

(e) In order to develop the California economy to its full potential, it is intended that federal, state, and local agencies join with transit districts, business, private and environmental interests to develop and implement comprehensive strategies needed to develop appropriate responses to transportation needs.

(f) In addition to solving California's traffic congestion crisis, rebuilding California's cities and suburbs, particularly with affordable housing and more walkable neighborhoods, is an important part of accommodating future increases in the state's population because homeownership is only now available to most Californians who are on the fringes of metropolitan areas and far from employment centers.

(g) The Legislature intends to do everything within its power to remove regulatory barriers around the development of infill housing, transit-oriented development, and mixed use commercial development in order to reduce regional traffic congestion and provide more housing choices for all Californians.

(h) The removal of regulatory barriers to promote infill housing, transit-oriented development, or mixed use commercial development does not preclude a city or county from holding a public hearing nor finding that an individual infill project would be adversely impacted by the surrounding environment or transportation patterns.

65088.1. As used in this chapter the following terms have the following meanings:

(a) Unless the context requires otherwise, “agency” means the agency responsible for the preparation and adoption of the congestion management program.

(b) “Bus rapid transit corridor” means a bus service that includes at least four of the following attributes:

(1) Coordination with land use planning.
(2) Exclusive right-of-way.
(3) Improved passenger boarding facilities.
(4) Limited stops.
(5) Passenger boarding at the same height as the bus.
(6) Prepaid fares.

(7) Real-time passenger information.
(8) Traffic priority at intersections.
(9) Signal priority.
(10) Unique vehicles.

(c) "Commission" means the California Transportation Commission.

(d) "Department" means the Department of Transportation.

(e) "Infill opportunity zone" means a specific area designated by a city or county, pursuant to subdivision (c) of Section 65088.4 that is within one-half mile of major transit stop or high-quality transit corridor included in a regional transportation plan. A major transit stop is as defined in Section 21064.3 of the Public Resources Code, except that, for purposes of this section, it also includes major transit stops that are included in the applicable regional transportation plan. For purposes of this section, a high-quality transit corridor means a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours.

(f) "Interregional travel" means any trips that originate outside the boundary of the agency. A "trip" means a one-direction vehicle movement. The origin of any trip is the starting point of that trip. A roundtrip consists of two individual trips.

(g) "Level of service standard" is a threshold that defines a deficiency on the congestion management program highway and roadway system which requires the preparation of a deficiency plan. It is the intent of the Legislature that the agency shall use all elements of the program to implement strategies and actions that avoid the creation of deficiencies and to improve multimodal mobility.

(h) "Local jurisdiction" means a city, a county, or a city and county.

(i) "Multimodal" means the utilization of all available modes of travel that enhance the movement of people and goods, including, but not limited to, highway, transit, nonmotorized, and demand management strategies including, but not limited to, telecommuting. The availability and practicality of specific multimodal systems, projects, and strategies may vary by county and region in accordance with the size and complexity of different urbanized areas.

(j) (1) "Parking cash-out program" means an employer-funded program under which an employer offers to provide a cash allowance to an employee equivalent to the parking subsidy that the employer would otherwise pay to provide the employee with a parking space. "Parking subsidy" means the difference between the out-of-pocket amount paid by an employer on a regular basis in order to secure the availability of an employee parking space not owned by the employer and the price, if any, charged to an employee for use of that space.

(2) A parking cash-out program may include a requirement that employee participants certify that they will comply with guidelines established by the employer designed to avoid neighborhood parking problems, with a provision that employees not complying with the guidelines will no longer be eligible for the parking cash-out program.

(k) "Performance measure" is an analytical planning tool that is used to quantitatively evaluate transportation improvements and to assist in determining effective implementation actions, considering all modes and strategies. Use of a performance measure as part of the program does not trigger the requirement for the preparation of deficiency plans.

(l) "Urbanized area" has the same meaning as is defined in the 1990 federal census for urbanized areas of more than 50,000 population.

(m) Unless the context requires otherwise, "regional agency" means the agency responsible for preparation of the regional transportation improvement program.

65088.3. This chapter does not apply in a county in which a majority of local governments, collectively comprised of the city councils and the county board of supervisors, which in total also represent a majority of the population in the county, each adopt resolutions electing to be exempt from the congestion management program.

65088.4. (a) It is the intent of the Legislature to balance the need for level of service standards for traffic with the need to build infill housing and mixed use commercial developments within walking distance of mass transit facilities, downtowns, and town centers and to provide greater flexibility to local governments to balance these sometimes competing needs.

(b) Notwithstanding any other provision of law, level of service standards described in Section 65089 shall not apply to the streets and highways within an infill opportunity zone.

(c) The city or county may designate an infill opportunity zone by adopting a resolution after determining that the infill opportunity zone is consistent with the general plan and any applicable specific plan, and is a transit priority area within a sustainable communities strategy or alternative planning strategy adopted by the applicable metropolitan planning organization.

65088.5. Congestion management programs, if prepared by county transportation commissions and transportation authorities created pursuant to Division 12 (commencing with Section 130000) of the Public Utilities Code, shall be used by the regional transportation planning agency to meet federal requirements for a congestion management system, and shall be incorporated into the congestion management system.

65089. (a) A congestion management program shall be developed, adopted, and updated biennially, consistent with the schedule for adopting and updating the regional transportation improvement program, for every county that includes an urbanized area, and shall include every city and the county. The program shall be adopted at a noticed public hearing of the agency. The program shall be developed in consultation with, and with the cooperation of, the transportation planning agency, regional transportation providers, local governments, the department, and the air pollution control district or the air quality management district, either by the county transportation commission, or by another public agency, as designated by resolutions adopted by the county board of supervisors and the city councils of a majority of the cities representing a majority of the population in the incorporated area of the county.

(b) The program shall contain all of the following elements:

(1) (A) Traffic level of service standards established for a system of highways and roadways designated by the agency. The highway and roadway system shall include at a minimum all state highways and principal arterials. No highway or roadway designated as a part of the system shall be removed from the system. All new state highways and principal arterials shall be designated as part of the system, except when it is within an infill opportunity zone. Level of service (LOS) shall be measured by Circular 212, by the most recent version of the Highway Capacity Manual, or by a uniform methodology adopted by the agency that is consistent with the Highway Capacity Manual.

The determination as to whether an alternative method is consistent with the Highway Capacity Manual shall be made by the regional agency, except that the department instead shall make this determination if either (i) the regional agency is also the agency, as those terms are defined in Section 65088.1, or (ii) the department is responsible for preparing the regional transportation improvement plan for the county.

(B) In no case shall the LOS standards established be below the level of service E or the current level, whichever is farthest from level of service A except when the area is in an infill opportunity zone. When the level of service on a segment or at an intersection fails to attain the established level of service standard outside an infill opportunity zone, a deficiency plan shall be adopted pursuant to Section 65089.4.

(2) A performance element that includes performance measures to evaluate current and future multimodal system performance for the movement of people and goods. At a minimum, these performance measures shall incorporate highway and roadway system performance, and measures established for the frequency and routing of public transit, and for the coordination of transit service provided by separate operators. These performance measures shall support mobility, air quality, land use, and economic objectives, and shall be used in the development of the capital improvement program required pursuant to paragraph (5), deficiency plans required pursuant to Section 65089.4, and the land use analysis program required pursuant to paragraph (4).

(3) A travel demand element that promotes alternative transportation methods, including, but not limited to, carpools, vanpools, transit, bicycles, and park-and-ride lots; improvements in the balance between jobs and housing; and other strategies, including, but not limited to, flexible work hours, telecommuting, and parking management programs. The agency shall consider parking cash-out programs during the development and update of the travel demand element.

(4) A program to analyze the impacts of land use decisions made by local jurisdictions on regional transportation systems, including an estimate of the costs associated with mitigating those impacts. This program shall measure, to the extent possible, the impact to the transportation system using the performance measures described in paragraph (2). In no case shall the program include an estimate of the costs of mitigating the impacts of interregional travel. The program shall provide credit for local public and private contributions to improvements to regional transportation systems. However, in the case of toll road facilities, credit shall only be allowed for local public and private contributions which are unreimbursed from toll revenues or other state or federal sources. The agency shall calculate the amount of the credit to be provided. The program defined under this section may require implementation through the requirements and analysis of the California Environmental Quality Act, in order to avoid duplication.

(5) A seven-year capital improvement program, developed using the performance measures described in paragraph (2) to determine effective projects that maintain or improve the performance of the multimodal system for the movement of people and goods, to mitigate regional transportation impacts identified pursuant to paragraph (4). The program shall conform to transportation-related vehicle emission air quality mitigation measures, and include any project that will

increase the capacity of the multimodal system. It is the intent of the Legislature that, when roadway projects are identified in the program, consideration be given for maintaining bicycle access and safety at a level comparable to that which existed prior to the improvement or alteration. The capital improvement program may also include safety, maintenance, and rehabilitation projects that do not enhance the capacity of the system but are necessary to preserve the investment in existing facilities.

(c) The agency, in consultation with the regional agency, cities, and the county, shall develop a uniform data base on traffic impacts for use in a countywide transportation computer model and shall approve transportation computer models of specific areas within the county that will be used by local jurisdictions to determine the quantitative impacts of development on the circulation system that are based on the countywide model and standardized modeling assumptions and conventions. The computer models shall be consistent with the modeling methodology adopted by the regional planning agency. The data bases used in the models shall be consistent with the data bases used by the regional planning agency. Where the regional agency has jurisdiction over two or more counties, the data bases used by the agency shall be consistent with the data bases used by the regional agency.

(d) (1) The city or county in which a commercial development will implement a parking cash-out program that is included in a congestion management program pursuant to subdivision (b), or in a deficiency plan pursuant to Section 65089.4, shall grant to that development an appropriate reduction in the parking requirements otherwise in effect for new commercial development.

(2) At the request of an existing commercial development that has implemented a parking cash-out program, the city or county shall grant an appropriate reduction in the parking requirements otherwise applicable based on the demonstrated reduced need for parking, and the space no longer needed for parking purposes may be used for other appropriate purposes.

(e) Pursuant to the federal Intermodal Surface Transportation Efficiency Act of 1991 and regulations adopted pursuant to the act, the department shall submit a request to the Federal Highway Administration Division Administrator to accept the congestion management program in lieu of development of a new congestion management system otherwise required by the act.

65089.1. (a) For purposes of this section, "plan" means a trip reduction plan or a related or similar proposal submitted by an employer to a local public agency for adoption or approval that is designed to facilitate employee ridesharing, the use of public transit, and other means of travel that do not employ a single-occupant vehicle.

(b) An agency may require an employer to provide rideshare data bases; an emergency ride program; a preferential parking program; a transportation information program; a parking cash-out program, as defined in subdivision (f) of Section 65088.1; a public transit subsidy in an amount to be determined by the employer; bicycle parking areas; and other noncash value programs which encourage or facilitate the use of alternatives to driving alone. An employer may offer, but no agency shall require an employer to offer, cash, prizes, or items with cash value to employees to encourage participation in a trip reduction program as a condition of approving a plan.

(c) Employers shall provide employees reasonable notice of the content of a proposed plan and shall provide the employees an opportunity to comment prior to submittal of the plan to the agency for adoption.

(d) Each agency shall modify existing programs to conform to this section not later than June 30, 1995. Any plan adopted by an agency prior to January 1, 1994, shall remain in effect until adoption by the agency of a modified plan pursuant to this section.

(e) Employers may include disincentives in their plans that do not create a widespread and substantial disproportionate impact on ethnic or racial minorities, women, or low-income or disabled employees.

(f) This section shall not be interpreted to relieve any employer of the responsibility to prepare a plan that conforms with trip reduction goals specified in Division 26 (commencing with Section 39000) of the Health and Safety Code, or the Clean Air Act (42 U.S.C. Sec. 7401 et seq.).

(g) This section only applies to agencies and employers within the South Coast Air Quality Management District.

65089.2. (a) Congestion management programs shall be submitted to the regional agency. The regional agency shall evaluate the consistency between the program and the regional transportation plans required pursuant to Section 65080. In the case of a multicounty regional transportation planning agency, that agency shall evaluate the consistency and compatibility of the programs within the region.

(b) The regional agency, upon finding that the program is consistent, shall incorporate the program into the regional transportation improvement program as provided for in Section 65082. If the regional agency finds the program is inconsistent, it may exclude any project in the congestion management program from inclusion in the regional transportation improvement program.

(c) (1) The regional agency shall not program any surface transportation program funds and congestion mitigation and air quality funds pursuant to Section 182.6 and 182.7 of the Streets and Highways Code in a county unless a congestion management program has been adopted by December 31, 1992, as required pursuant to Section 65089. No surface transportation program funds or congestion mitigation and air quality funds shall be programmed for a project in a local jurisdiction that has been found to be in nonconformance with a congestion management program pursuant to Section 65089.5 unless the agency finds that the project is of regional significance.

(2) Notwithstanding any other provision of law, upon the designation of an urbanized area, pursuant to the 1990 federal census or a subsequent federal census, within a county which previously did not include an urbanized area, a congestion management program as required pursuant to Section 65089 shall be adopted within a period of 18 months after designation by the Governor.

(d) (1) It is the intent of the Legislature that the regional agency, when its boundaries include areas in more than one county, should resolve inconsistencies and mediate disputes which arise between agencies related to congestion management programs adopted for those areas.

(2) It is the further intent of the Legislature that disputes which may arise between regional agencies, or agencies which are not within the boundaries of a multicounty regional transportation

planning agency, should be mediated and resolved by the Secretary of Business, Housing and Transportation Agency, or an employee of that agency designated by the secretary, in consultation with the air pollution control district or air quality management district within whose boundaries the regional agency or agencies are located.

(e) At the request of the agency, a local jurisdiction that owns, or is responsible for operation of, a trip-generating facility in another county shall participate in the congestion management program of the county where the facility is located. If a dispute arises involving a local jurisdiction, the agency may request the regional agency to mediate the dispute through procedures pursuant to subdivision (d) of Section 65089.2. Failure to resolve the dispute does not invalidate the congestion management program.

65089.3. The agency shall monitor the implementation of all elements of the congestion management program. The department is responsible for data collection and analysis on state highways, unless the agency designates that responsibility to another entity. The agency may also assign data collection and analysis responsibilities to other owners and operators of facilities or services if the responsibilities are specified in its adopted program. The agency shall consult with the department and other affected owners and operators in developing data collection and analysis procedures and schedules prior to program adoption. At least biennially, the agency shall determine if the county and cities are conforming to the congestion management program, including, but not limited to, all of the following:

(a) Consistency with levels of service standards, except as provided in Section 65089.4.

(b) Adoption and implementation of a program to analyze the impacts of land use decisions, including the estimate of the costs associated with mitigating these impacts.

(c) Adoption and implementation of a deficiency plan pursuant to Section 65089.4 when highway and roadway level of service standards are not maintained on portions of the designated system.

65089.4. (a) A local jurisdiction shall prepare a deficiency plan when highway or roadway level of service standards are not maintained on segments or intersections of the designated system. The deficiency plan shall be adopted by the city or county at a noticed public hearing.

(b) The agency shall calculate the impacts subject to exclusion pursuant to subdivision (f) of this section, after consultation with the regional agency, the department, and the local air quality management district or air pollution control district. If the calculated traffic level of service following exclusion of these impacts is consistent with the level of service standard, the agency shall make a finding at a publicly noticed meeting that no deficiency plan is required and so notify the affected local jurisdiction.

(c) The agency shall be responsible for preparing and adopting procedures for local deficiency plan development and implementation responsibilities, consistent with the requirements of this section. The deficiency plan shall include all of the following:

(1) An analysis of the cause of the deficiency. This analysis shall include the following:

(A) Identification of the cause of the deficiency.

(B) Identification of the impacts of those local jurisdictions within the jurisdiction of the agency that contribute to the deficiency. These impacts shall be identified only if the calculated traffic level of service following exclusion of impacts pursuant to subdivision (f) indicates that the level of service standard has not been maintained, and shall be limited to impacts not subject to exclusion.

(2) A list of improvements necessary for the deficient segment or intersection to maintain the minimum level of service otherwise required and the estimated costs of the improvements.

(3) A list of improvements, programs, or actions, and estimates of costs, that will (A) measurably improve multimodal performance, using measures defined in paragraphs (1) and (2) of subdivision (b) of Section 65089, and (B) contribute to significant improvements in air quality, such as improved public transit service and facilities, improved nonmotorized transportation facilities, high occupancy vehicle facilities, parking cash-out programs, and transportation control measures. The air quality management district or the air pollution control district shall establish and periodically revise a list of approved improvements, programs, and actions that meet the scope of this paragraph. If an improvement, program, or action on the approved list has not been fully implemented, it shall be deemed to contribute to significant improvements in air quality. If an improvement, program, or action is not on the approved list, it shall not be implemented unless approved by the local air quality management district or air pollution control district.

(4) An action plan, consistent with the provisions of Chapter 5 (commencing with Section 66000), that shall be implemented, consisting of improvements identified in paragraph (2), or improvements, programs, or actions identified in paragraph (3), that are found by the agency to be in the interest of the public health, safety, and welfare. The action plan shall include a specific implementation schedule. The action plan shall include implementation strategies for those jurisdictions that have contributed to the cause of the deficiency in accordance with the agency's deficiency plan procedures. The action plan need not mitigate the impacts of any exclusions identified in subdivision (f). Action plan strategies shall identify the most effective implementation strategies for improving current and future system performance.

(d) A local jurisdiction shall forward its adopted deficiency plan to the agency within 12 months of the identification of a deficiency. The agency shall hold a noticed public hearing within 60 days of receiving the deficiency plan. Following that hearing, the agency shall either accept or reject the deficiency plan in its entirety, but the agency may not modify the deficiency plan. If the agency rejects the plan, it shall notify the local jurisdiction of the reasons for that rejection, and the local jurisdiction shall submit a revised plan within 90 days addressing the agency's concerns. Failure of a local jurisdiction to comply with the schedule and requirements of this section shall be considered to be nonconformance for the purposes of Section 65089.5.

(e) The agency shall incorporate into its deficiency plan procedures, a methodology for determining if deficiency impacts are caused by more than one local jurisdiction within the boundaries of the agency.

(1) If, according to the agency's methodology, it is determined that more than one local jurisdiction is responsible for causing a deficient segment or intersection, all responsible local

jurisdictions shall participate in the development of a deficiency plan to be adopted by all participating local jurisdictions.

(2) The local jurisdiction in which the deficiency occurs shall have lead responsibility for developing the deficiency plan and for coordinating with other impacting local jurisdictions. If a local jurisdiction responsible for participating in a multi-jurisdictional deficiency plan does not adopt the deficiency plan in accordance with the schedule and requirements of paragraph (a) of this section, that jurisdiction shall be considered in nonconformance with the program for purposes of Section 65089.5.

(3) The agency shall establish a conflict resolution process for addressing conflicts or disputes between local jurisdictions in meeting the multi-jurisdictional deficiency plan responsibilities of this section.

(f) The analysis of the cause of the deficiency prepared pursuant to paragraph (1) of subdivision (c) shall exclude the following:

(1) Interregional travel.

(2) Construction, rehabilitation, or maintenance of facilities that impact the system.

(3) Freeway ramp metering.

(4) Traffic signal coordination by the state or multi-jurisdictional agencies.

(5) Traffic generated by the provision of low-income and very low income housing.

(6) (A) Traffic generated by high-density residential development located within one-fourth mile of a fixed rail passenger station, and

(B) Traffic generated by any mixed use development located within one-fourth mile of a fixed rail passenger station, if more than half of the land area, or floor area, of the mixed use development is used for high density residential housing, as determined by the agency.

(g) For the purposes of this section, the following terms have the following meanings:

(1) "High density" means residential density development which contains a minimum of 24 dwelling units per acre and a minimum density per acre which is equal to or greater than 120 percent of the maximum residential density allowed under the local general plan and zoning ordinance. A project providing a minimum of 75 dwelling units per acre shall automatically be considered high density.

(2) "Mixed use development" means development which integrates compatible commercial or retail uses, or both, with residential uses, and which, due to the proximity of job locations, shopping opportunities, and residences, will discourage new trip generation.

65089.5. (a) If, pursuant to the monitoring provided for in Section 65089.3, the agency determines, following a noticed public hearing, that a city or county is not conforming with the requirements of the congestion management program, the agency shall notify the city or county in writing of the specific areas of nonconformance. If, within 90 days of the receipt of the written notice of nonconformance, the city or county has not come into conformance with the congestion management program, the governing body of the agency shall make a finding of nonconformance and shall submit the finding to the commission and to the Controller.

(b) (1) Upon receiving notice from the agency of nonconformance, the Controller shall withhold apportionments of funds required to be apportioned to that nonconforming city or county by Section 2105 of the Streets and Highways Code.

(2) If, within the 12-month period following the receipt of a notice of nonconformance, the Controller is notified by the agency that the city or county is in conformance, the Controller shall allocate the apportionments withheld pursuant to this section to the city or county.

(3) If the Controller is not notified by the agency that the city or county is in conformance pursuant to paragraph (2), the Controller shall allocate the apportionments withheld pursuant to this section to the agency.

(c) The agency shall use funds apportioned under this section for projects of regional significance which are included in the capital improvement program required by paragraph (5) of subdivision (b) of Section 65089, or in a deficiency plan which has been adopted by the agency. The agency shall not use these funds for administration or planning purposes.

65089.6. Failure to complete or implement a congestion management program shall not give rise to a cause of action against a city or county for failing to conform with its general plan, unless the city or county incorporates the congestion management program into the circulation element of its general plan.

65089.7. A proposed development specified in a development agreement entered into prior to July 10, 1989, shall not be subject to any action taken to comply with this chapter, except actions required to be taken with respect to the trip reduction and travel demand element of a congestion management program pursuant to paragraph (3) of subdivision (b) of Section 65089.

65089.9. The study steering committee established pursuant to Section 6 of Chapter 444 of the Statutes of 1992 may designate at least two congestion management agencies to participate in a demonstration study comparing multimodal performance standards to highway level of service standards. The department shall make available, from existing resources, fifty thousand dollars ($50,000) from the Transportation Planning and Development Account in the State Transportation Fund to fund each of the demonstration projects. The designated agencies shall submit a report to the Legislature not later than June 30, 1997, regarding the findings of each demonstration project.

65089.10. Any congestion management agency that is located in the Bay Area Air Quality Management District and receives funds pursuant to Section 44241 of the Health and Safety Code for the purpose of implementing paragraph (3) of subdivision (b) of Section 65089 shall ensure that those funds are expended as part of an overall program for improving air quality and for the purposes of this chapter.

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APPENDIX 3

Congestion Management Program Roadway Network Segmentation and Changes

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CMP NETWORK - ARTERIALS

Rationale for Segmentation

Street Name	Land Use	Speed Limit	Major Cross Street	Change In Volume	Free-way Ramp
1st Street					
Market-Harrison					
3rd Street					
Jamestown-Evans *		x	x		
Evans-China Basin		x			
China Basin-Market		x		x	
4th Street					
Market-Harrison					x
Harrison-3rd St					x
5th Street					
Market-Brannan					
6th Street					
Market-Brannan					
7th Street					
Brannan-Market					
8th Street					
Market-Bryant					
9th Street					
Brannan-Market					
10th Street					
Market-Brannan					
19th Avenue/Park Presidio Blvd					
U.S.101-Lake		x			
Lake-Lincoln		x	x		
Lincoln-Sloat			x		
Sloat-J.Serra			x		
Alemany Blvd					
C & C limit-Lyell *		x			
Lyell-Bayshore		x			
Army Street					
Guerrero-Kansas *	x	x			x
Kansas-Bryant *					x
Bryant-3rd St.					x
Bay Street					
Van Ness-Embarcadero					
Bayshore Blvd					
Army-Industrial *			x		x
Industrial- C & C limit			x		x
Beale/Davis					
Clay-Mission					
Brannan Street					
Division-9th St					
6th St-5th St					
Broadway					
Gough-Larkin	x				

Street Name	Land Use	Speed Limit	Major Cross Street	Change In Volume	Free-way Ramp
Larkin-Powell (Tunnel)	x	x			
Powell-Montgomery		x			
Montgomery-Embarcadero			x		
Brotherhood Way					
J.Serra-Alemany					
Bryant Street					
Division-4th St					x
4th St-Embarcadero					x
Bush Street					
Masonic-Gough	x				
Gough-Market *	x		x		
Castro/Divisadero Street					
Pine-Geary			x		
Geary-14th St	x		x		
14th St-Market	x		x		
Clay Street					
Kearny-Davis					
Columbus Avenue					
North Point-Greenwich				x	
Greenwich-Montgomery			x		
Drumm Street					
Washington-Market					
Duboce Avenue					
Market-Mission *	x				
Mission-Potrero	x				
The Embarcadero					
Townsend-North Point					
Evans Avenue					
Army-3rd St *					
Fell Street					
Gough-Laguna					x
Laguna-Stanyan					x
Franklin Street					
Market-Pine			x		
Pine-Lombard	x				
Fremont Street					
Harrison-Market *					
Fulton Street					
Masonic-Arguello		x	x		
Arguello-Park Presidio *		x	x		
Geary Blvd					
Market-Gough	x	x			
Gough-Arguello		x			
Arguello-25th Ave			x		
25th Ave-Great Hwy	x		x		

Street Name	Land Use	Speed Limit	Major Cross Street	Change In Volume	Free-way Ramp
Geneva Avenue					
Phelan-Cayuga	x				
Cayuga-Paris	x				
Paris-Santos	x				
Golden Gate Avenue					
Masonic-Franklin	x	x	x		
Franklin-Market	x	x	x		
Gough Street					
Pine-Geary			x		
Geary-Golden Gate *	x				
Golden Gate-Market	x				
San Jose Avenue/Guerrero					
Army-29th St	x	x			
29th St-Monterey Blvd					x
Harrison Street					
Embarcadero-1st St *					x
1st St-4th St					x
4th St-8th St					x
8th St-13th St					x
Hayes Street					
Market-Gough					
Howard Street					
Embarcadero-S.Van Ness					
Junipero Serra Blvd					
Sloat-19th Ave *		x	x		
19th Ave-Brotherhood Way			x		
Brotherhood-C & C limit			x		
Kearny Street					
Market-Columbus					
King Street					
6th St-Embarcadero					
Lincoln Blvd/Kezar Drive					
19th Ave-5th Ave	x				
5th Ave-Stanyan	x				
Lombard Street					
Francisco-Van Ness *					
Main Street					
Mission-Market					
Market/Portola					
Sloat-Santa Clara	x				
Santa Clara-Clipper *	Grade Change				
Clipper-Castro	x				
Castro-Guerrero	x				
Guerrero-Van Ness			x	x	
Van Ness-Drumm	x				

Street Name	Land Use	Speed Limit	Major Cross Street	Change In Volume	Free-way Ramp
Masonic Avenue					
Pine-Geary			x		
Geary-Page			x		
Mission/Otis					
Embarcadero-3rd St	x				
3rd St-9th St	x				
9th St-14th St	x				
14th St-Army *	x				
Army-Ocean *			x		
Ocean-Sickles	x				
Montgomery Street					
Broadway-Bush					
North Point Street					
Van Ness-Columbus			x		
Columbus-Embarcadero			x		
O'Farrell Street					
Gough-Mason *	x				
Mason-Market	x				
Oak Street					
Stanyan-Divisadero *	x		x		
Divisadero-Laguna	x		x		x
Laguna-Franklin					x
Ocean Avenue					
19th Ave-Miramar *	x				
Miramar-I-280	x				
Pine Street					
Market-Kearny	x				
Kearny-Leavenworth	x				
Leavenworth-Franklin	x				
Franklin-Presidio	x				
Potrero Avenue					
Division-21st St	x			x	
21st St-Army	x			x	
Skyline Drive					
Sloat-City & County limit					
Sloat Boulevard					
Skyline-J.Serra					
Stanyan Street					
Fulton-Turk					
Sutter Street					
Market-Mason *	x				
Mason-Gough	x				
Gough-Divisadero	x		x		
Turk Street					
Market-Hyde	x				
Hyde-Gough	x				

Street Name	Land Use	Speed Limit	Major Cross Street	Change In Volume	Free-way Ramp
Hyde-Gough	x				
Gough-Divisadero	x				
Divisadero-Stanyan			x		
Van Ness Avenue					
Lombard-Washington	Sig.	Syst.	Change		
Washington-GoldenGate Av *	x				
Golden Gate Ave-13th St *					x
13th St-Army					x
Washington Street					
Kearny-Drumm					
West Portal Avenue					
Sloat-Ulloa					

* indicates change in segment boundary.

CMP NETWORK - FREEWAYS

Rationale for Segmentation

Freeway	Split	Off-ramp	On-ramp
I-280			
C & C limit- U.S. 101	x		
101/280 -6th/Brannan	x		
U.S.101			
C & C limit- I-280	x		
I-280- I-80	x		
I-80- Fell/Laguna	x		
I-80			
U.S. 101- Fremont		x	
Fremont- Treasure Island		x	

Table II
Rationale for Changes to Arterial Segmentation
Since 1991

Third Street	Eliminated Fairfax Street as a break point. Evans Avenue is the new break point because of the change in speed limit and because Evans is a major cross street.
Alemany Boulevard	Lyell Street is a necessary break point because of a speed limit change.
Army Street (César Chávez)	Because of the size of the U.S. 101 interchange at Army Street circle, a break point was established on each side of it. One is at Kansas Street and a second is at Bryant Street.
Bayshore Boulevard	Industrial is a necessary break point because of nearby off and on-ramps.
Bush Street	Gough is the best divider to break Bush into two segments because land use changes occur at Gough and because it is a major cross street.
Duboce Avenue	Folsom Street was eliminated as a break point and replaced with Mission Street, because of the presence of on and off ramps to 101.
Evans Avenue and Fremont Street	The 1991 intermediate segment limits could not be justified and were eliminated (no apparent change in traffic flow conditions)
Fulton Street	Arguello was identified as an intermediate segment limit because it is a major cross street and because of a speed limit change.
Harrison Street	Eliminated 2nd Street and substituted First Street is the first break point because of the I-80 on-ramp.
Junipero Serra Boulevard	The first segment boundary is 19th Avenue instead of Holloway, as justified by the change in speed limit and also because 19th Avenue is a major cross street.
Lombard Street	Eliminated intermediate segment boundaries because land uses and traffic conditions are uniform along this street.
Market Street	Established a new segment boundary at Clipper because of a change in grade on each side of Clipper. Eliminated unjustified breaks at Danvers, Sanchez and Gough.
Mission Street	Eliminated intermediate boundaries between 14th and Army and between Army and Ocean to better reflect land use.
O'Farrell Street	Eliminated intermediate segment boundaries at Van Ness, Leavenworth and Taylor, which created segments too short for accurate measurement. Mason is the new break point because of land use changes.
Van Ness Avenue	Added Golden Gate Avenue as an intermediate segment boundary because of land use changes (start of the Civic Center area).

E8B-55

METROPOLITAN
TRANSPORTATION
COMMISSION

Joseph P. Bort MetroCenter
101 Eighth Street
Oakland, CA 94607-4700
TEL 510.817.5700
TTY/TDD 510.817.5769
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WEB www.mtc.ca.gov

January 10, 2007

REC'D JAN 12 2007

Ms. Tilly Chang
Deputy Director for Planning
San Francisco Transportation Authority
100 Van Ness Avenue, 26th floor
San Francisco, CA 94102

RE: San Francisco CMP Segment Modification

Dear Tilly:

Thank you for the letter dated January 4, 2007 regarding CMP monitoring on Brannan Street. After reviewing your letter and the CMP monitoring map for the area, MTC supports the proposed changes to make monitoring on Brannan in this area consistent with SFCTA's standard CMP segment definitions while continuing to monitor Brannan Street consistent with overall CMP guidance.

MTC expects monitoring on Brannan will take place on Brannan from Division to 6th Street and from 6th Street to 3rd Street effective spring 2007. Please let me know if there are any questions.

Yours truly,

Doug Johnson

J:\Section\Planning\djohnson\SFCTA\CMP_modifications_Jan_2007.doc

cc: Sean Co, MTC
Valerie Knepper, MTC
Doug Kimsey, MTC

E8B-56

Proposed new CMP monitoring segments

San Francisco County
Congestion Management Program

0 0.125 0.25 0.5 Miles

This map is intended for planning purposes only.

Map Produced: 11/27/2006 KNS

APPENDIX 4

San Francisco Board of Supervisors Resolution Adopting Infill Opportunity Zones

FILE NO. 091335

Amendment of the Whole
In Committee
11/23/2009

RESOLUTION NO. 494-09

[Resolution establishing Infill Opportunity Zones for Congestion Management Planning in the City and County of San Francisco under California Government Code Section 65088.]

Resolution establishing Infill Opportunity Zones for Congestion Management Planning in the City and County of San Francisco under California Government Code Section 65088.

WHEREAS, State Senate Bill 1636 ("SB 1636") allows local jurisdictions to designate eligible areas as Infill Opportunity Zones ("IOZs") so that Congestion Management Program ("CMP") requirements better support local land use and transportation policies, pursuant to California Government Code Section 65088.4; and

WHEREAS, The San Francisco County Transportation Authority ("Authority") and the City and County of San Francisco ("City") seek to reform the City's approach to analyzing transportation impacts pursuant to the California Environmental Quality Act ("CEQA"), to better support local land use and transportation polices, by measuring Automobile Trips Generated ("ATG") rather than Level of Service ("LOS"); and

WHEREAS, The adoption of an IOZ in the City would provide strong support for the Authority and the City's effort to replace LOS with ATG for CEQA transportation impact purposes; and

WHEREAS, The adoption of an IOZ in the City would allow the Authority, as Congestion Management Agency ("CMA"), to better support the City's Transit First Policy, land use planning efforts, compact land use pattern, and multimodal transportation system through CMP practices; and

WHEREAS, SB 1636 requires that any IOZ designation be made no later than December 31, 2009; and

WHEREAS, The IOZ designation is consistent with the San Francisco General Plan ("General Plan") because: (1) it will further the goals of the City's Transit First Policy as articulated in General Plan; (2) it will directly support policy objectives of the General Plan, including, but not limited to, Objectives 1, 2, 3, 10, 11, 12, 14, 15, 18, and 19 of the Transportation Element; and (3) it will compliment City efforts to promote infill housing and mixed-use commercial developments in proximity to multimodal transportation infrastructure; and

WHEREAS, The Board of Supervisors finds the City to be eligible for IOZ designation in the area identified by the Authority in the IOZ Map ("IOZ Map") on file with the Clerk of the Board of Supervisors in File No. 091335 , which is hereby declared to be a part of this motion as if set forth fully herein; and

WHEREAS, The Board of Supervisors' eligibility findings are supported by analysis conducted by Authority staff, which is on file with the Clerk of the Board of Supervisors in File No. 091335 , and which is hereby declared to be a part of this motion as if set forth fully herein; now, therefore, be it

RESOLVED, That the Board of Supervisors finds that the IOZ designation is, on balance, consistent with the General Plan; and be it

FURTHER RESOLVED, That the eligible portion of the City identified by the Authority in the IOZ Map is hereby designated an IOZ within the meaning of California Government Code Section 65088.

E8B-60

City and County of San Francisco
Tails
Resolution

City Hall
1 Dr. Carlton B. Goodlett Place
San Francisco, CA 94102-4689

File Number: 091335 **Date Passed:** December 08, 2009

Resolution establishing Infill Opportunity Zones for Congestion Management Planning in the City and County of San Francisco under California Government Code Section 65088.

December 08, 2009 Board of Supervisors - ADOPTED

Ayes: 11 - Alioto-Pier, Avalos, Campos, Chiu, Chu, Daly, Dufty, Elsbernd, Mar, Maxwell and Mirkarimi

File No. 091335

I hereby certify that the foregoing Resolution was ADOPTED on 12/8/2009 by the Board of Supervisors of the City and County of San Francisco.

Angela Calvillo
Clerk of the Board

18 December 2009
Date Approved

Mayor Gavin Newsom

E8B-61

2015 CONGESTION MANAGEMENT PROGRAM

APPENDIX 5

2015 Level of Service Monitoring Methodology and Results

E8B-62

LOS AND TRANSIT MONITORING

2015

ACKNOWLEDGEMENTS

We wish to thank the following agencies for providing the data used in this Congestion Monitoring Program:

METROPOLITAN TRANSPORTATION COMMISSION for providing access to INRIX data for the auto analysis.

SAN FRANCISCO MUNICIPAL TRANSPORTATION AGENCY for providing access to Automatic Passenger Count (APC) data for the transit analysis.

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FIGURES

TABLES

APPENDIX 5
LOS MONITORING METHODOLOGY & RESULTS

KEY TOPICS

- LOS Standard and Exempt Facilities
- Methodology
- Network Segmentation
- Travel Speed Results
- LOS F Segments
- Future Monitoring Considerations

The Transportation Authority monitors LOS biennially on the CMP network for the morning and evening peak periods (7:00-9:00 a.m. and 4:30-6:30 p.m.). The Transportation Authority, as the CMA, assesses the City's conformance with LOS standards based on the monitoring results. The CMA ensures that LOS measurement methods used by its contractors, Caltrans, or other agencies involved in monitoring the CMP network are consistent with State law.

The 2015 LOS monitoring effort was conducted on behalf of the Transportation Authority by Iteris Inc.

1. LOS Standard and Exempt Facilities

The traffic LOS standard for San Francisco is consistent with CMP mandated criteria and was established at E in the initial (1991) CMP network. Facilities that were already operating at LOS F at the time of baseline monitoring, conducted to develop the first CMP in 1991, are legislatively exempt from the LOS standards. CMP segments that are within a designated IOZ are also exempt from LOS conformance requirements.

For LOS monitoring purposes, the CMP segments are categorized by exempt or non-exempt status:

- Exempt – segments which either: a) were at LOS F during the first monitoring cycle (1991 or 1992/93) or b) are located within an IOZ and are legislatively exempted from the LOS E standard.

- Non-exempt – all other segments. If a non-exempt segment fails for three consecutive CMP cycles, it is classified as deficient.

Since 2005, monitoring has included the exempt facilities in addition to the rest of the CMP network.

2. CMP Network

The CMP network includes all state highways, principal arterials and several other roads as defined in previous LOS monitoring efforts. The CMP network is divided into shorter lengths of road called CMP segments. Figure 1 shows a map of the Official CMP Segments. Table 1 below summarizes the distances monitored for arterials and freeways for the 2015 CMP.

Data Sources: Iteris, Inc. & 2015 SFCTA LOS Monitoring

This map is for planning purposes only.

Figure 1 SFCTA Official CMP Segments

Table 1 SFCTA CMP network

ROADWAY TYPE	DISTANCE (MILES)
Arterial	198.2
Freeway	34.9
Total	233.1

There were two changes to the CMP network in 2015 as confirmed by SFCTA:

- Construction and opening of Presidio Parkway in 2015 to replace Doyle Drive causing the realignment of the CMP segment; and
- Shift of traffic lanes to the new eastern span of the Bay Bridge in September 2013.

3. Methodology

In past years, the Transportation Authority used the floating car method to collect travel time data on the CMP network. However, this approach yields small sample sizes and relatively high variability in the results, and is also resource-intensive. For the 2013 CMP update, SFCTA transitioned to using commercial speed data, provided by vendor INRIX, as the primary source to calculate official speed and LOS results. The use of commercial speed data is discussed in more detail below. Most freeway and arterial segments were monitored using commercial speed data; the floating car method was used only for segments for which INRIX data is not available.

The Transportation Authority has historically used the 1985 HCM methodology to monitor LOS on the CMP network and continues to calculate LOS using this method. The 1985 HCM methodology was utilized in the baseline monitoring cycle and is necessary to maintain historical comparisons, identify exempt segments, and monitor potential network deficiencies. Since 2009, all the arterial segments were also evaluated using the HCM 2000 classification. Both the HCM 1985 and 2000 results are presented below.

For freeways, only HCM 1985 LOS was calculated, as the HCM 2000 methodology requires traffic density information for all unique freeway segments and ramps. Collection of comprehensive freeway traffic densities is beyond the scope of the CMP monitoring effort.

3.1 | Monitoring Times

Commercial speed data was collected for San Francisco County starting on April 6, 2015 and ending on May 15, 2015. The monitoring activities were conducted on Tuesdays, Wednesdays and Thursdays for the morning and afternoon peak period. The morning peak period was defined from 7:00 a.m. to 9:00 a.m., and the afternoon peak period was from 4:30 p.m. to 6:30 p.m. No public holidays occurred during these dates and local schools were in session.

These monitoring times were also used for transit LOS monitoring (see Appendix 7).

3.2 | Commercial Speed Data

Since the adoption of the 2009 CMP update, there has been a proliferation of archived commercial speed data. This data is collected through real-time GPS monitoring of a variety of sources such as delivery vehicles, navigational devices, and highway performance monitoring systems, and obtained from a third-party vendor. Archived commercial speed data offers several advantages compared to floating car data collection for congestion monitoring:

- Thousands of sampled data points are available for all freeway segments and most arterial segments in San Francisco during the spring monitoring period, providing potentially more reliable and consistent data.
- Data is available for all times of day, including peak, shoulder, midday, evening, and overnight periods.
- Obtaining commercial speed data is cost effective, providing significant savings that could be reinvested in data collection for more robust multimodal performance metrics.

The primary disadvantage of using private commercial speed data is that the sampled speeds aggregated at the TMC level do not allow detailed analysis of traffic flow and congestion at a more granular level.

As part of the 2011 CMP update, the Transportation Authority explored the reliability of this new data source by comparing results computed from the floating car data with those computed from INRIX data for the same locations and time periods. The analysis found that, although the INRIX data speeds were somewhat higher, on average, than the floating car speeds, the difference was within the typical range of variation for floating car results and that commercial speed data and floating vehicle data were equally acceptable for meeting CMP legislative requirements. The analysis determined that the commercial speed data approach was promising for future monitoring cycles.

In 2013, MTC contracted with INRIX to obtain region wide commercial speed data, and has made the data available to CMAs and other local governments free of charge for planning and monitoring purposes. The data available from INRIX was in the form of traffic message channel (TMC) links;

For segments that lack sufficient real-time data during a given time period, INRIX incorporates historical data into the datapoint. However, for this CMP update, data that was based on historical data was discarded. The TMC links were subsequently mapped to the CMP segments; in cases where multiple TMC links spanned a single CMP segment, the travel times were summed and then aggregated spatially to obtain the required average peak period speeds by CMP segment. The resulting data was filtered to produce speeds measured for each day and peak period.

3.3 | Supplemental Travel Time Runs

Floating car surveys were conducted on CMP segments without TMC coverage.

In the floating car method, the driver of the test vehicle "floats" with the traffic by attempting to safely pass as many vehicles as pass the test vehicle. GPS receivers on the floating cars use differential GPS (DGPS) to provide position information with sub-meter precision during runs, enabling calculation of accurate travel speeds. Four runs were made in each direction during each peak period. During the travel time runs, the monitoring equipment recorded position and time at one-second intervals. The driver of the monitoring vehicle drove the speed limit if no other cars were present.

Source: **SFDPW**

3.4 | LOS Assignment

Using the calculated average speed for arterials and freeways, lookup tables were applied to yield the LOS. The LOS assignments for arterials and freeways are consistent with previous reporting periods and legislative requirements from the California Government Code.

ARTERIALS

LOS for arterial segments was assigned using both 1985 (Table 2) and 2000 HCM (Table 3) methodologies.

Table 2 Arterial LOS Assignment, HCM 1985

ARTERIAL CLASS	I	II	III
Range of Free Flow Speed (mph)	45 to 35	35 to 30	35 to 25
Typical Free Flow Speed (mph)	40	33	27
LEVEL OF SERVICE	AVERAGE TRAVEL SPEED (MPH)		
A	≥ 35	≥ 30	≥ 25
B	≥ 28	≥ 24	≥ 19
C	≥ 22	≥ 18	≥ 13
D	≥ 17	≥ 14	≥ 9
E	≥ 13	≥ 10	≥ 7
F	< 13	< 10	< 7

Source: Table 11-1, Highway Capacity Manual, 1985

Table 3 Urban Street LOS Assignment, HCM 2000

URBAN STREET CLASS	I	II	III	IV
Range of Free Flow Speed (mph)	55 to 45	45 to 35	35 to 30	35 to 25
Typical Free Flow Speed (mph)	50	40	35	30
LEVEL OF SERVICE				AVERAGE TRAVEL SPEED (MPH)
A	> 42	> 35	> 30	> 25
B	> 34-42	> 28-35	> 24-30	> 19-25
C	> 27-34	> 22-28	> 18-24	> 13-19
D	> 21-27	> 17-22	> 14-18	> 9-13
E	> 16-21	> 13-17	> 10-14	> 7-9
F	≤ 16	≤ 13	≤ 10	≤ 7

Source: Exhibit 15-2, Highway Capacity Manual 2000 (U.S. Customary Units)

FREEWAYS

The HCM-1985 method was used to calculate LOS for all freeway CMP segments (Table 4).

Table 4 Freeway Segments, HCM 1985

LEVEL OF SERVICE	DENSITY (PC/MI/LN)	SPEED (MPH)	V/C RATIO	SATURATION FLOW (PCPHPL)
A	≤ 12	≥ 60	0.35	700
B	≤ 20	≥ 55	0.58	1,000
C	≤ 30	≥ 49	0.75	1,500
D	≤ 42	≥ 41	0.90	1,800
E	≤ 67	≥ 30	1.00	2,000
F	> 67	< 30	-	-

Source: SFCTA CMP Report, 2007

3.5 | Factors That May Affect Results

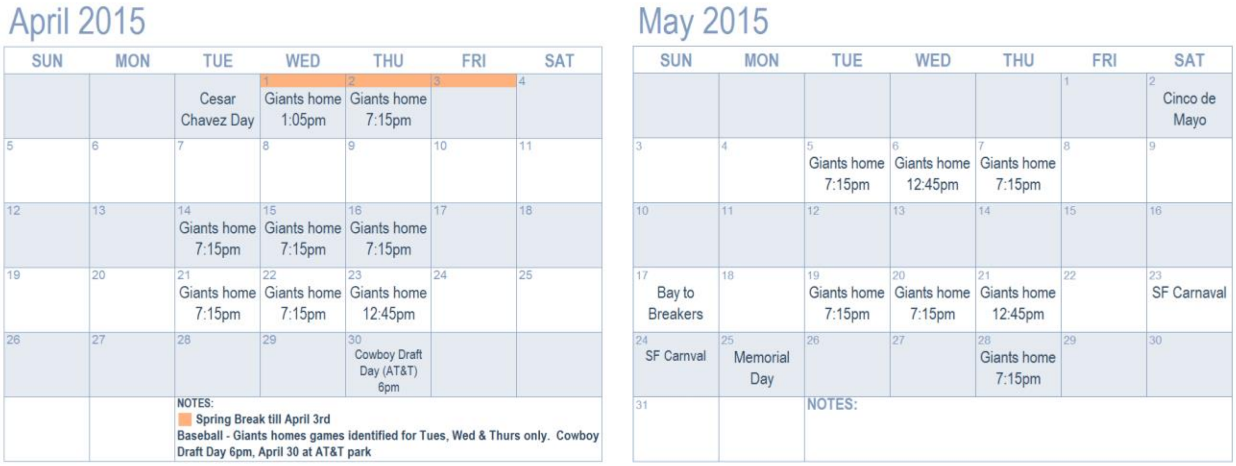
Special events, construction and weather events can potentially affect the monitoring results.

SPECIAL EVENTS

Events in San Francisco County were reviewed to see if they occurred during the Tuesday, Wednesday, and Thursday peak periods. Traffic data associated with such events would be removed from monitoring due to expected irregularities.

While there were some significant regional events (such as Bay to Breakers and SF Carnival), the majority of events did not occur within the monitoring times (Figure 2). SF Giants games were the notable exception. Games started at 12:45 p.m. or at 7:15 p.m. Both of these timeslots were deemed to impact on the afternoon peak period. However, due to the frequency of these events, the data collected from these days were retained in the dataset.

E8B-72



April 2015

SUN	MON	TUE	WED	THU	FRI	SAT
		Cesar Chavez Day	1 Giants home 1:05pm	2 Giants home 7:15pm	3	4
5	6	7	8	9	10	11
12	13	14 Giants home 7:15pm	15 Giants home 7:15pm	16 Giants home 7:15pm	17	18
19	20	21 Giants home 7:15pm	22 Giants home 7:15pm	23 Giants home 12:45pm	24	25
26	27	28	29	30 Cowboy Draft Day (AT&T) 6pm		
		NOTES: 🟧 Spring Break till April 3rd Baseball - Giants homes games identified for Tues, Wed & Thurs only. Cowboy Draft Day 6pm, April 30 at AT&T park				

May 2015

SUN	MON	TUE	WED	THU	FRI	SAT
					1	2 Cinco de Mayo
3	4	5 Giants home 7:15pm	6 Giants home 12:45pm	7 Giants home 7:15pm	8	9
10	11	12	13	14	15	16
17 Bay to Breakers	18	19 Giants home 7:15pm	20 Giants home 7:15pm	21 Giants home 12:45pm	22	23 SF Carnaval
24 SF Carnval	25 Memorial Day	26	27	28 Giants home 7:15pm	29	30
31		NOTES:				

Figure 2 Planned events in San Francisco County: Spring 2015

CONSTRUCTION

Community service announcements were reviewed to identify significant construction impacts during the spring monitoring period. Sources of data included:

- Government websites (including SF Public Works);
- Specific construction project websites (including Central Subway and the Transbay Center);
- Facebook news feeds (including 511 SF Bay traffic updates);
- The Accela Right of Way Management Database for San Francisco; and
- Caltrans Performance Measurement System (PeMS) lane closure database.

Both long term and short term events were investigated. Short term construction or maintenance events include events that had a short duration impact on the CMP segment. The commercial speed data collected during the work could be identified and excluded from the analysis, and there would still be enough remaining data to successfully record the performance of the CMP segment. In the 2015 analysis, no short term events were identified from these data sources.

Source: (Source: **SFCTA**)

However, 4th Street experienced major and ongoing construction throughout the entire monitoring period, including complete closure to auto traffic between O'Farrell and Market Streets. In this instance, even on the segment that remained open, there would not be enough alternative days to provide a suitable sample size if all days impacted by construction were removed. Therefore, this data was retained in the analysis. Segments impacted by ongoing construction and maintenance are listed in Table 3.

Table 5 Long-term construction projects active during Spring LOS monitoring

DESCRIPTION	IMPACTED ROADS	CORRESPONDING CMP ID AND DESCRIPTION	
Central Subway Project - Utility Work and Portal Construction	4th Street Stockton Street	9	4th St/Stockton: O'Farrell to Harrison (closed from O'Farrell to Market)
		10	4th St/Stockton: Harrison to Channel
Transbay Transit Center	Mission Street between 2nd and Main	172	Mission/Otis: 3rd Street to Embarcadero
		173	Mission/Otis: Embarcadero to 3rd Street
	1st Street between Mission and Howard	1	1st St: Market to Harrison
	Fremont Street between Mission and Howard	102	Fremont: Harrison to Market
	Folsom Street between Main and Beale	99	E Folsom: 1st Street to Embarcadero
	Howard Street between 2nd and Main	136	Howard: Embarcadero to South Van Ness
Presidio Parkway / Doyle Drive	During monitoring period, the traffic used El Camino Real as a bypass road, during tunnel / bridge construction on the new Presidio Parkway	78	E Doyle/ Richardson/ Lombard: SF Cemetery to Lyon / Francisco
		81	W Doyle/ Richardson/ Lombard: Lyon/ Francisco to SF Cemetery
Bay Bridge Construction	I-80: Fremont Exit to Treasure Island	245	I-80: Fremont Exit to Treasure Island

Bike to Work day was May 14, 2015. Data from this day was retained in the dataset.

WEATHER EVENTS

There were no significant weather events during the monitoring period.

4. Travel Speed Results

Attachments 5.1, 5.2 and 5.3 present the LOS monitoring results for all segments on arterials and freeways in the CMP network. For arterials, the results are presented for both the 1985 and 2000 HCM methodologies. The information includes segment length, direction of travel, time of day (morning and afternoon peak), average operating speed measured, and LOS results for all monitoring cycles.

Table 6 and Figure 3, below, present the change in CMP Network Average Travel Speeds between 2009 and 2015. These results include only segments that were measured in both 2013 and 2015 and reflect the "official" results for each year. Figures 4 and 5 display all LOS results graphically for the morning and afternoon peak periods, respectively. Figure 6 and 7 show segments that are exempt from LOS standards because they were found to be LOS F in the inaugural CMP cycle, while Figure 8 shows the portions of the CMP network that are within San Francisco's Infill Opportunity Zone and are therefore exempt from LOS standards, as well.

E8B-74

Table 6 CMP Network Time-Mean Travel Speed

CATEGORY	PEAK	2009	2011	2013*	2015	PERCENT CHANGE
Arterial	AM	18.6	17.7	17.1	14.6	-15%
	PM	16.9	16.6	16.0	12.7	-21%
Freeway	AM	48.9	40.6	38.2	37.6	-1%
	PM	31.7	31.4	29.5	26.3	-11%

* The 2013 results were updated to be consistent with the 2015 aggregation method. A comparison of original and updated results is presented in Attachment 5.4

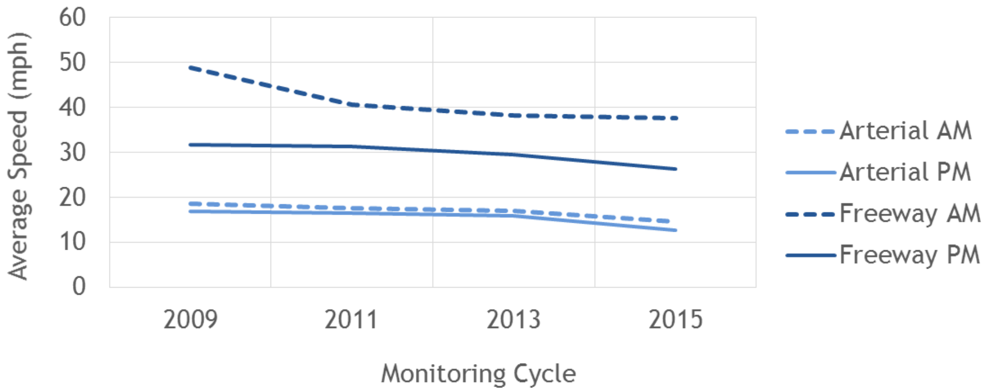
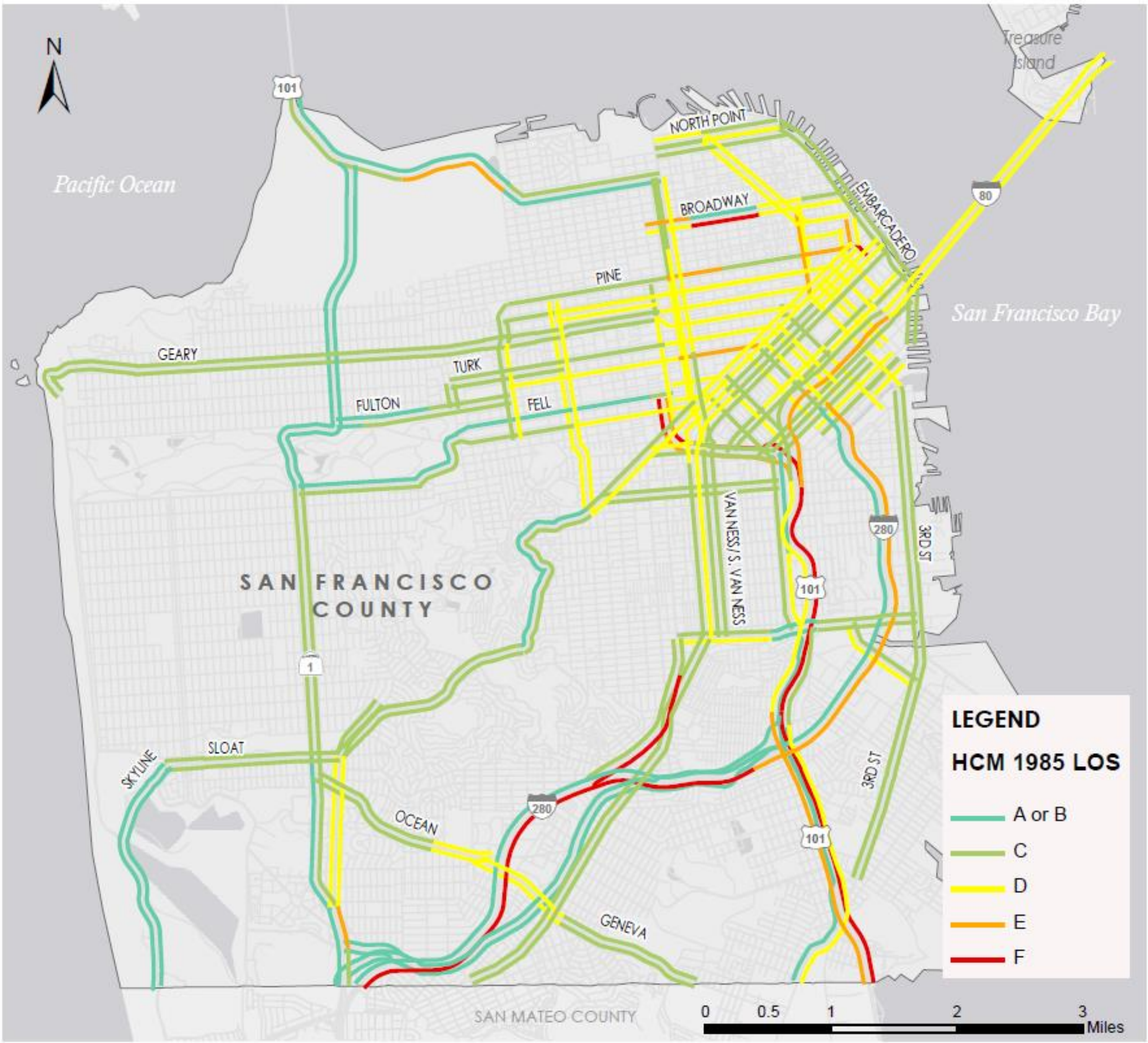


Figure 3 CMP Network Time Mean Travel Speed

There was a highly significant reduction in average speed of approximately 3 mph across all CMP routes and time periods between 2013 and 2015. Table 7 shows arterials with decreases in speeds greater than 10 mph. There were no arterials that increased in speed by more than 10 mph, and no freeways that increased or decreased in speed by more than 10 mph. One segment along 19th Avenue / Park Presidio recorded a large decrease in speed from 44.6 mph in 2013 (LOS A) to 17.7 mph in 2015 (LOS D) in the afternoon peak period. This segment travelled northbound from Lake Street to US 101 and this large decrease in speed is expected to be caused by construction work along the US 101.

Table 7 Arterials with significant decrease in speed (> 10 mph)

CMP ID	CMP SEGMENT	FROM / TO	TIME PERIOD	2013 AVERAGE SPEED (MPH)	2015 AVERAGE SPEED (MPH)
26	19th Ave/Park Presidio	Lake to US 101	AM / PM	49.6/44.6	37.4/17.7
81	Doyle/ Richardson/ Lombard	Lyon/Francisco to SF Cemetery	PM	26.0	13.0
127	Guerrero/San Jose	Monterey to 29th	PM	27.0	14.5

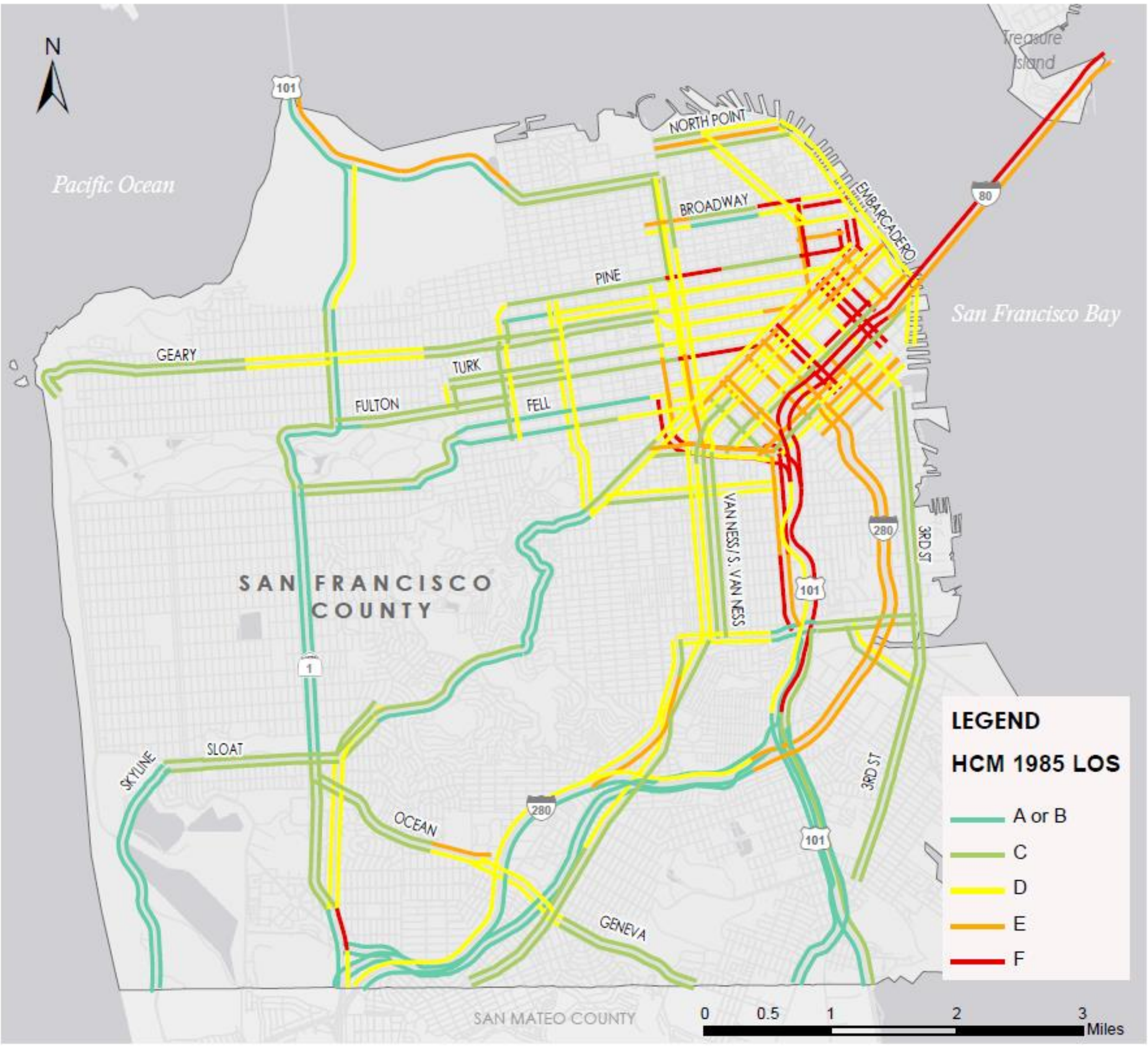


Data Sources: Iteris, Inc. & INRIX*, Inc.
*On routes where INRIX data is available

This map is for planning purposes only.

Figure 4 Average Speeds on CMP Segments, Weekday AM Peak Period

E8B-76



Data Sources: Iteris, Inc. & INRIX*, Inc.
*On routes where INRIX data is available

This map is for planning purposes only.

Figure 5 Average Speeds on CMP Segments, Weekday PM Peak Period

E8B-77

Figure 6 Segments Exempt in AM Due to Monitoring at LOS F in Inaugural Cycle

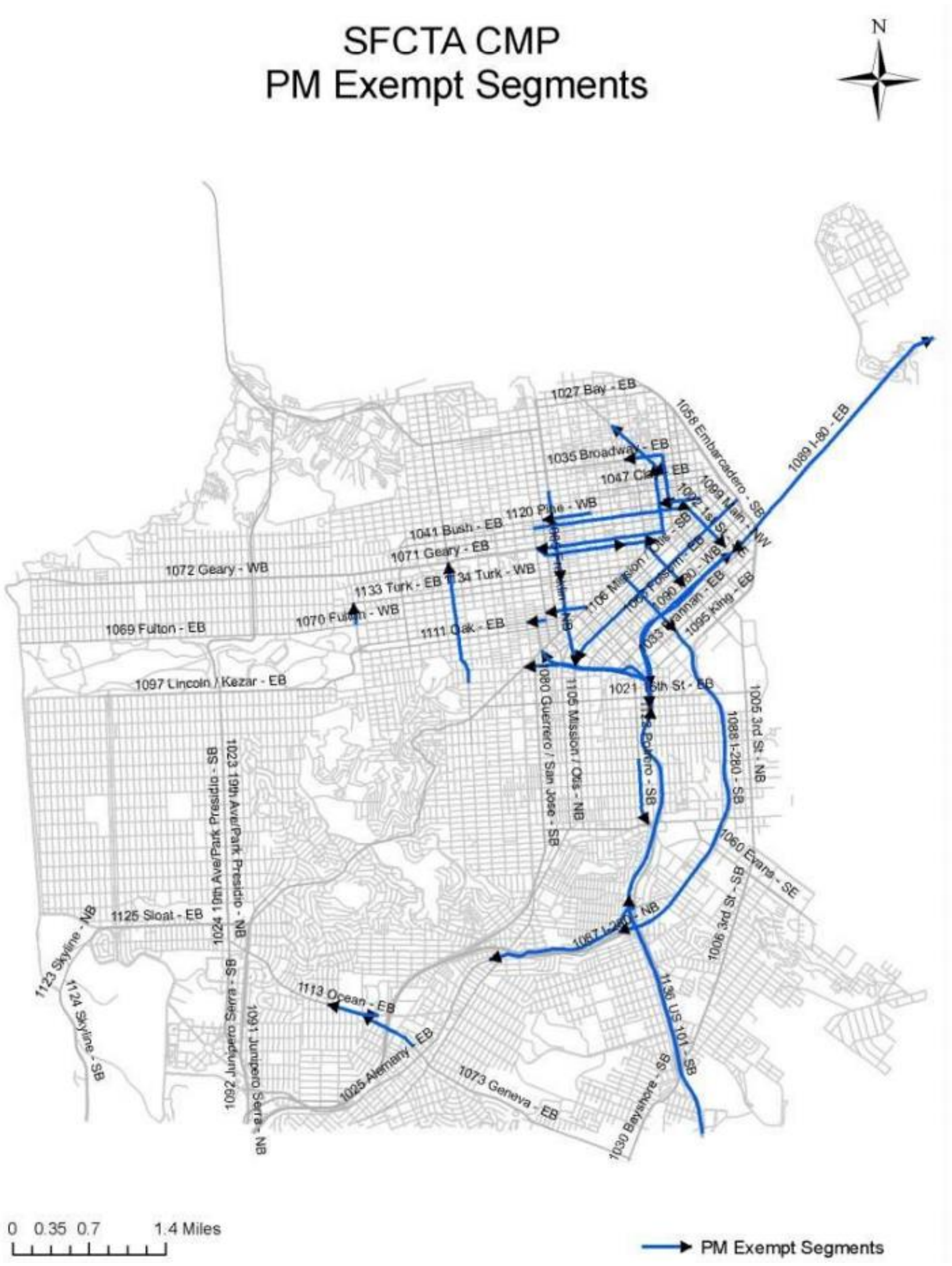


Figure 7 Segments Exempt in PM Due to Monitoring at LOS F in Inaugural Cycle

E8B-79

Figure 8 Segments Exempt Due to Location with Infill Opportunity Zone

E8B-80

5. LOS F Segments

The segments monitored at LOS F (1985 HCM method) are shown in Tables 8 and 9. As noted above, the Transportation Authority uses the 1985 HCM for calculating LOS when making historical comparisons to the baseline cycle.

As shown in Table 8 2015 Roadway Monitoring Results – LOS F Segments (1985 HCM), AM Peak, four arterial CMP route segment and four freeway segments evaluated during the morning peak period were found to operate at LOS F. All of the arterial segments measured at LOS F are located within an IOZ and are therefore exempt from automobile LOS standards. These arterial segments have experienced a downward trend in speeds since 2011 and two of these segments have dropped two grades from D to F since the last monitoring cycle in 2013. The freeway segments on US 101 and I-280 measured LOS F during the baseline 1991 monitoring cycle and are therefore exempt from constituting a deficiency. The segments on US 101 monitored at LOS F in the previous cycle in 2013 as well. The freeway segment on I-280 dropped one grade from E to F relative to the last monitoring cycle.

Table 9 shows the 2015 CMP route segments that had LOS F during the afternoon peak based on HCM 1985. Twenty arterial segments and six freeway segments evaluated during the evening peak period were found to operate at LOS F. All twenty arterial segments are either located with IOZ zones or were monitored as LOS F in their base monitoring year. Thus all arterial segments are exempt. Ten of these arterial segments were also monitored at LOS F in 2013 and six segments dropped two or more grades. Similarly, the six freeway segments are also exempt due to one of the above reasons. All but one of the freeway segments that operated at LOS F in 2015 also were operating at LOS F in 2013.

Source: Sergio Ruiz via Flickr

Figure 9 visualizes the number of segments operating at LOS F in both 2013 and 2015. The most significant increase is for arterial segments in the afternoon peak period; 11 segments in 2013 and 20 segments in 2015. Many of the new LOS F segments are occurring in the downtown region. The number of 2015 LOS F segments on freeways is similar to 2013 as is the number of LOS F arterial segments in the morning peak period.

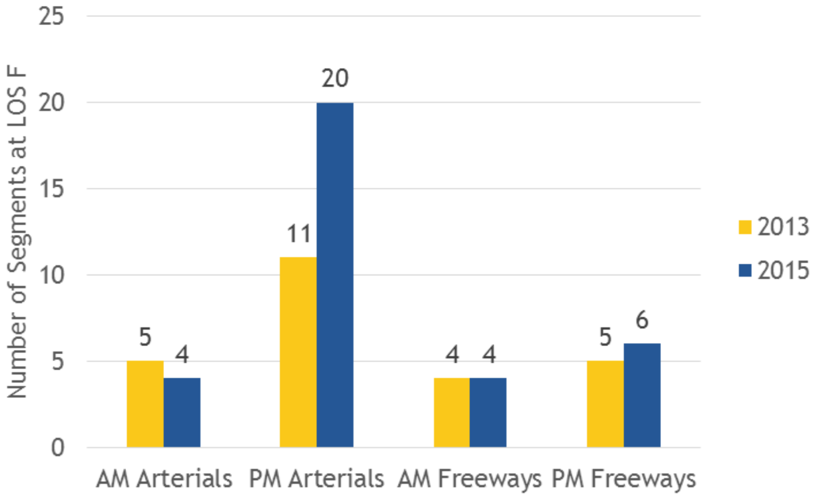


Figure 9 Change in the Number of LOS F Segments between 2013 and 2015

All arterial and freeway segments operating at LOS F in the 2015 monitoring cycle are exempt from constituting deficiencies, either because there were operating at LOS F during the baseline 1991 monitoring cycle or because they are located within an IOZ.

Table 8 2015 Roadway Monitoring Results - LOS F Segments (1985 HCM), AM Peak

NAME	FROM	TO	DIR	AVE SPEED (MPH)	LOS	STATUS / COMMENTS
Broadway	Larkin	Powell	E	1991: N/A 1992/3*: 22.5 2009: 32.8 2011: 23.2 2013: 14.0 2015: 8.4	- B B C E F	Exempt: Segment is within an IOZ and therefore does not constitute a deficiency.
Guerrero / San Jose	Monterey	29th	N	1991: N/A 1992/3*: 17.3 2009: 25.6 2011: 24.4 2013: 21.2 2015: 12.7	- C C C D F	Exempt: Segment is within an IOZ and therefore does not constitute a deficiency.
Main	Mission	Market	N	1991: N/A 1992/3*: 9.9 2009: 10.7 2011: 21.7 2013: 12.0 2015: 5.3	- D D B D F	Exempt: Segment is within an IOZ and therefore does not constitute a deficiency.

NAME	FROM	TO	DIR	AVE SPEED (MPH)	LOS	STATUS / COMMENTS
Octavia	Fell	Market	S	1991: N/A 2006*: 14.5 2009: 10.4 2011: 7.5 2013: 3.3 2015: 2.8	- C D E F F	Exempt: Segment is within an IOZ and therefore does not constitute a deficiency.
I-280	J. Serra	Weldon	N	1991: 22.9 2009: 47.6 2011: 37.5 2013: 35.2 2015: 29.9	F D E E F	Exempt: Segment monitored at LOS F during the baseline monitoring and therefore does not constitute a deficiency.
US 101 / Central Freeway	C & C Limit	Cortland	N	1991: 10.9 2009: 50.6 2011: 43.0 2013: 25.9 2015: 25.8	F C D F F	Exempt: Segment monitored at LOS F during the baseline monitoring and therefore does not constitute a deficiency.
US 101 / Central Freeway	Cortland	I-80	N	1991: 21.4 2009: 41.7 2011: 36.9 2013: 29.6 2015: 28.2	F D E F F	Exempt: Segment monitored at LOS F during the baseline monitoring and therefore does not constitute a deficiency.
US 101 / Central Freeway	I-80	Market	N	1991: 18.7 2009: 21.9 2011: 13.9 2013: 24.6 2015: 23.6	F F F F F	Exempt: Segment monitored at LOS F during the baseline monitoring and therefore does not constitute a deficiency.

Table 9 2015 Roadway Monitoring Results – LOS F Segments (1985 HCM), PM Peak

NAME	FROM	TO	DIR	AVE SPEED (MPH)	LOS	STATUS / COMMENTS
1st	Market	Harrison	S	1991: 1.2 2009: 13.1 2011: 18.2 2013: 13.2 2015: 4.8	F C C C F	Exempt: Segment monitored at LOS F during the baseline monitoring and therefore does not constitute a deficiency.
2nd	Brannan	Market	N	1991: N/A 2006*: 9.5 2009: 10.4 2011: 13.3 2013: 3.1 2015: 5.3	N/A D D C F F	Exempt: Segment is within an IOZ and therefore does not constitute a deficiency.
2nd	Market	Brannan	S	1991: N/A 2006*: 13.4 2009: 10.6 2011: 12.2 2013: 6.0 2015: 6.9	N/A C D D F F	Exempt: Segment is within an IOZ and therefore does not constitute a deficiency.
5th	Market	Brannan	S	1991: 7.9 2009: 13.1 2011: 13.8 2013: 5.4	E C C F	Exempt: A majority of the segment is within an IOZ and therefore does not constitute a deficiency. Construction impacts on parallel street (4th Street).

NAME	FROM	TO	DIR	AVE SPEED (MPH)	LOS	STATUS / COMMENTS
				2015: 6.7	F	
5th	Brannan	Market	N	1991: 7.9 2009: 15.6 2011: 15.7 2013: 4.0 2015: 6.5	E C C F F	Exempt: A majority of the segment is within an IOZ and therefore does not constitute a deficiency. Construction impacts on parallel street (4th Street).
Beale/ Davis	Clay	Mission	S	1991: N/A 92/93*: 13.4 2009: 11.2 2011: 11.7 2013: 5.3 2015: 5.4	N/A C D D F F	Exempt: Segment is within an IOZ and therefore does not constitute a deficiency.
Broadway	Montgomery	Powell	W	1991: 6.2 2009: 7.7 2011: 11.8 2013: 6.6 2015: 5.3	F E D F F	Exempt: Segment is within an IOZ and therefore does not constitute a deficiency.
Broadway	Montgomery	Embarcadero	E	1991: N/A 92/93*: 13.1 2009: 14.7 2011: 13.2 2013: 6.8 2015: 5.0	N/A C C C F F	Exempt: Segment is within an IOZ and therefore does not constitute a deficiency.
Drumm	Market	Washington	N	1991: N/A 92/93*: 12.8 2009: 16.2 2011: 17.2 2013: 8.0 2015: 6.3	N/A D C C E F	Exempt: Segment is within an IOZ and therefore does not constitute a deficiency.
Drumm	Washington	Market	S	1991: N/A 92/93* 9.3 2009: 7.9 2011: 17.7 2013: 5.5 2015: 6.0	N/A D E C F F	Exempt: Segment is within an IOZ and therefore does not constitute a deficiency.
Folsom	4th	1st	E	1991: N/A 2006*: 18.3 2009: 15.0 2011: 16.9 2013: 14.8 2015: 6.4	- C C C C F	Exempt: Segment monitored at LOS F during the baseline monitoring and therefore does not constitute a deficiency.
Golden Gate	Franklin	Market	E	1991: 12.2 2009: 12.8 2011: 8.9 2013: 9.5 2015: 3.5	D D E D F	Exempt: Segment is within an IOZ and therefore does not constitute a deficiency.
J. Serra	Brotherhood	19th	N	1991: N/A 92/93*: 19.1 2009: 15.2 2011: 10.5 2013: 13.8	- D E F E	Exempt: Segment is within an IOZ and therefore does not constitute a deficiency.

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NAME	FROM	TO	DIR	AVE SPEED (MPH)	LOS	STATUS / COMMENTS
				2015: 12.9	F	
Main	Mission	Market	N	1991: N/A 92/93*: 9.8 2009: 19.3 2011: 14.3 2013: 3.2 2015: 5.0	N/A D B C F F	Exempt: Segment is within an IOZ and therefore does not constitute a deficiency.
Montgomery	Broadway	Bush	S	1991: 6.2 2009: 9.2 2011: 7.2 2013: 12.8 2015: 5.5	F D E D F	Exempt: Segment is within an IOZ and therefore does not constitute a deficiency.
Octavia	Fell	Market	S	1991: N/A 2006*: 14.2 2009: 11.6 2011: 9.9 2013: 9.8 2015: 4.0	N/A C D D D F	Exempt: Segment is within an IOZ and therefore does not constitute a deficiency.
Pine	Market	Kearny	W	1991: 4.6 2009: 8.9 2011: 13.2 2013: 4.2 2015: 6.7	F E C F F	Exempt: Segment is within an IOZ and therefore does not constitute a deficiency.
Pine	Leavenworth	Franklin	W	1991: 4.8 2009: 14.3 2011: 14.5 2013: 8.5 2015: 5.2	F C C E F	Exempt: Segment is within an IOZ and therefore does not constitute a deficiency.
Potrero	21st	Division	N	1991: N/A 92/93*: 21.4 2009: 15.6 2011: 23.2 2013: 15.3 2015: 6.3	N/A B C B C F	Exempt: A majority of the segment is within an IOZ and therefore does not constitute a deficiency.
Potrero	21st	Cesar Chavez	S	1991: 4.8 2009: 19.4 2011: 18.0 2013: 8.5 2015: 3.9	F B C E F	Exempt: Segment is within an IOZ and therefore does not constitute a deficiency.
US 101 / Central Freeway	Cortland	I-80	N	1991: 24.6 2009: 23.6 2011: 18.3 2013: 13.3 2015: 12.8	F F F F F	Exempt: Segment monitored at LOS F during the baseline monitoring and therefore does not constitute a deficiency.
US 101 / Central Freeway	I-80	Market	N	1991: 12.2 2009: 22.8 2011: 30.5 2013: 31.8 2015: 24.6	F F E E F	Exempt: Segment is within an IOZ and therefore does not constitute a deficiency.

NAME	FROM	TO	DIR	AVE SPEED (MPH)	LOS	STATUS / COMMENTS
US 101 / Central Freeway	Market	I-80	S	1991: 18.8 2009: 21.3 2011: 13.1 2013: 13.4 2015: 12.6	F F F F F	Exempt: A majority of the segment is within an IOZ and therefore does not constitute a deficiency.
I-80	Treasure Island	Fremont Exit	S	1991: 27.5 2009: 26.8 2011: 30.3 2013: 23.8 2015: 19.5	F F E F F	Exempt: Segment is within an IOZ and therefore does not constitute a deficiency.
I-80	Fremont Exit	US 101	SW	1991: 18.6 2009: 24.5 2011: 19.9 2013: 17.4 2015: 15.9	F F F F F	Exempt: Segment monitored at LOS F during the baseline monitoring and therefore does not constitute a deficiency.
I-80	US 101	Fremont Exit	N	1991: 19.0 2009: 7.0 2011: 10.8 2013: 9.7 2015: 7.6	F F F F F	Exempt: Segment monitored at LOS F during the baseline monitoring and therefore does not constitute a deficiency.

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Attachment 5.1 - AM CMP Segments Level of Service Monitoring

(1991 - 2015)

Name	From	To	Class	Travel Dir.	2006 Dist. (mi)	Dist. (mi)	Ave Speed 91	LOS 91	Ave Speed 92/3	LOS 92/3	Ave Speed 95	LOS 95	Ave Speed 97	LOS 97	Ave Speed 99	LOS 99	Ave Speed 2001	LOS 2001	Ave Speed 2004	LOS 2004	Ave Speed 2006	LOS 2006	Ave Speed 2007	LOS 2007	Ave Speed 2009	LOS 2009	Ave Speed 2011	LOS 2011	Ave Speed 2013	LOS 2013	Ave Speed 2015	LOS 2015	2015 LOS Changes
1st	Market	Harrison	3	S	0.47	0.48		*	15.1	C							12.5	D	11.2	D	20.8	B	16.3	C	14.2	C	13.8	C	18.5	C	11.8	D	C to D
2nd	Market	Brannan	3	N	0.72	0.72															14.3	C	18.6	C	16.3	C	20.8	B	9.6	D	11.9	D	
	Brannan	Market	3	S	0.72	0.72															10.1	D	10.8	D	12.2	D	13.9	C	11.1	D	9.7	D	
3rd	Jamestown	Evans	3	N	1.61	1.62		*	25.4	B							23.5	B			17.9	C	20.5	B	24.6	B	23.9	B	18.1	C	17.1	C	
	Evans	Jamestown	3	S	1.61	1.62		*	22.3	C							20.9	B			23.7	B	21.9	B	23.2	B	25.4	A	19.2	B	18.4	C	B to C
	Evans	Terry Francois	3	N	2.40	2.33	10.3	D	24.0	B							23.6	B			24.7	B	23.1	B	28.4	A	27.6	A	20.9	B	17.5	C	B to C
	Terry Francois	Evans	3	S	2.40	2.33	10.3	D	24.1	B							23.8	B			20.2	B	28.9	A	28.6	A	27.3	A	21.7	B	18.7	C	B to C
	Terry Francois	Market	3	N	1.00	1.08	12.1	D	12.1	D	15.3	C			10.8	D	9.2	D	6.2	F	8.1	E	9.7	D	20.0	B	15.1	C	13.6	C	12.1	D	C to D
4th / Stockton	O'Farrell	Harrison	3	S	0.47	0.56		*	11.6	D	8.1	E	14.6	C							11.3	D	9.4	D	13.4	C	17.0	C	13.6	C	13.9	C	
	Harrison	Channel	3	S		0.62																	16.0	C	13.8	C	16.8	C	12.8	D	11.4	D	
5th	Market	Brannan	3	S	0.72	0.72	7.9	E	11.6	C							9.9	D	10.6	D	11.8	D	11.4	D	19.3	B	16.1	C	11.7	D	10.8	D	
	Brannan	Market	3	N	0.72	0.72	7.9	E	10.5	D	10.7	D	12.1	D	10.5	D	11.8	D	8.6	E	10.9	D	11.8	D	14.7	C	16.3	C	9.5	D	10.0	D	
6th	Market	Brannan	3	S	0.71	0.72		*	22.4	B							10.0	D	8.3	E	13.6	C	14.2	C	15.1	C	16.5	C	17.5	C	14.6	C	
	Brannan	Market	3	N	0.71	0.72		*	13.8	C							4.7	F	5.5	F	12.6	D	10.3	D	11.2	D	15.7	C	13.6	C	10.6	D	C to D
7th	Brannan	Market	3	N	0.72	0.72	8.9	E	13.9	C					14.2	C			6.8	F	13.4	C	19.1	B	18.9	C	19.3	B	15.4	C	10.8	D	C to D
8th	Market	Bryant	3	S	0.59	0.60		*	17.1	C					17.7	C			15.9	C	16.6	C	18.7	C	15.0	C	17.9	C	15.9	C	13.5	C	
9th	Brannan	Market	3	N	0.72	0.72	9.9	D	12.5	D	13.3	C					10.3	D	9.6	D	14.2	C	13.0	C	11.4	D	13.8	C	14.4	C	10.2	D	C to D
10th	Market	Brannan	3	S	0.71	0.73	12.1	D	20.5	B							16.3	C	9.7	D	17.0	C	26.1	A	21.9	B	21.4	B	23.8	B	18.1	C	B to C
16th	Market	Mission	3	E	0.74	0.74															19.0	B	18.5	C	12.1	D	13.7	C	16.3	C	13.1	C	
	Mission	Market	3	W	0.74	0.74															12.9	D	13.7	C	13.4	C	12.7	D	16.0	C	13.3	C	
	Mission	Potrero	3	E	0.66	0.67															15.9	C	13.6	C	14.1	C	13.6	C	14.7	C	13.3	C	
	Potrero	Mission	3	W	0.66	0.67															13.4	C	11.5	D	13.5	C	12.1	D	14.1	C	13.0	C	
19th Avenue/ Park Presidio	US 101	Lake	1	S	1.20	1.33		*	38.3	A							47.2	A			42.2	A	40.3	A	40.7	A	24.4	C	42.9	A	39.7	A	
	Lake	US 101	1	N	1.20	1.21		*	38.8	A							28.6	B			34.7	B	44.0	A	45.3	A	43.6	A	49.6	A	37.4	A	
	Lake	Lincoln	3	S	1.83	1.84		*	20.9	B					22.0	B					25.1	A	26.1	A	26.3	A	28.1	A	26.4	A	22.8	B	A to B
	Lincoln	Lake	3	N	1.83	1.84		*	21.9	B					19.7	B					19.9	B	20.4	B	19.9	B	22.1	B	24.5	B	21.7	B	
	Lincoln	Sloat	3	S	2.12	2.13	11.1	D	17.2	C					18.4	C					21.8	B	22.2	B	19.2	B	19.3	B	17.8	C	17.4	C	
	Sloat	Lincoln	3	N	2.12	2.13	11.1	D	19.2	B					15.0	C					17.9	C	18.6	C	13.8	C	15.4	C	17.0	C	13.1	C	
	Sloat	Junipero Serra	3	S	1.25	1.25		*	20.2	B					21.2	B					20.2	B	17.2	C	21.6	B	23.6	B	23.8	B	23.2	B	
	Junipero Serra	Sloat	3	N	1.25	1.25		*	19.2	B					23.1	B					22.1	B	16.4	C	18.2	C	16.9	C	15.7	C	17.6	C	
Alemany	Junipero Serra	Lyell	3	E	2.79	2.94		*	25.6	B							20.0	C			20.9	B	21.5	B	28.3	A	23.2	B	23.0	B	20.0	B	
	Lyell	County Line	3	W	2.79	3.03		*	25.6	B							15.1	C			19.1	B	21.4	B	25.3	A	21.4	B	25.9	A	22.4	B	A to B
	Lyell	Bayshore	3	E	1.58	1.59		*	28.5	A							19.0	C			23.7	B	28.5	A	26.1	A	28.5	A	29.7	A	22.3	B	A to B
	Bayshore	Lyell	3	W	1.58	1.52		*	35.4	A							28.4	A			37.5	A	25.4	A	30.7	A	28.1	A	29.8	A	31.2	A	
Bay	Van Ness	Embarcadero	3	E	1.06	1.09	12.7	D	22.4	B							16.8	C			19.7	B	21.0	B	18.9	C	14.1	C	21.3	B	14.8	C	B to C
	Embarcadero	Van Ness	3	W	1.06	1.09	12.7	D	19.7	B							22.8	B			18.3	C	19.6	B	19.3	B	20.1	B	20.6	B	17.1	C	B to C
Bayshore	Jerrold	Industrial	3	S	0.83	0.72			21.0	B							17.5	C			17.6	C	29.9	A	25.4	A	19.4	B	22.1	B	24.4	B	
	Industrial	Cesar Chavez	3	N	0.83	0.82			20.2	B							14.8	C			11.2	D	19.0	B	17.5	C	12.6	D	15.8	C	16.2	C	
	Industrial	County Line	3	S	2.24	2.26			27.4	A							23.3	B			25.7	A	30.1	A	27.8	A	24.1	B	24.5	B	22.5	B	
	County Line	Industrial	3	N	2.24	2.27			20.9	B							25.3	B			18.4	C	26.2	A	17.4	C	19.1	B	13.9	C	10.8	D	C to D
Beale/Davis	Clay	Mission	3	S	0.31	0.32		*	11.3	D	10.0	D	16.6	C	16.6	C					15.6	C	14.1	C	12.8	D	12.3	D	8.8	E	9.2	D	E to D
Brannan	Division	6th	3	E		0.54																	15.7	C	13.8	C	11.7	D	20.3	B	16.2	C	B to C
	6th	Division	3	W		0.54																	16.3	C	16.9	C	14.1	C	22.9	B	15.9	C	B to C
	6th	3rd	3	E		0.52																	21.8	B	15.8	C	14.7	C	19.3	B	13.2	C	B to C
	3rd	6th	3	W		0.52																	15.9	C	17.0	C	12.8	D	20.4	B	14.4	C	B to C
Broadway	Gough	Larkin	3	E	0.37	0.36		*	19.2	B					9.0	D	10.6	D	12.3	D	11.4	D	14.7	C	15.1	C	16.3	C	8.8	E	11.6	D	E to D
	Larkin	Gough	3	W	0.37	0.36		*	10.6	D	11.2	D	12.9	D	15.2	C	17.1	C	14.4	C	14.4	C	17.9	C	19.5	B	15.0	C	11.6	D	8.8	E	D to E
	Larkin	Powell	1	E	0.54	0.55		*	22.5	B					15.1	E	16.6	E	16.3	E	36.8	A	18.2	D	32.8	B	23.2	C	14.0	E	8.4	F	E to F
	Powell	Larkin	1	W	0.54	0.55		*	35.6	A					16.0	E	20.0	D	16.3	E	34.1	B	34.6	B	32.9	B	31.6	B	27.8	C	33.1	B	C to B
	Powell	Montgomery	3	E	0.34	0.35		*	16.8	C					8.0	E	10.9	D	11.8	D	13.9	C	15.4	C	20.1	B	15.8	C	11.4	D	11.2	D	
	Montgomery	Powell	3	W	0.34	0.35		*	15.2	C					10.0	D	8.9	E	13.5	C	14.5	C	11.5	D	13.3	C	11.7	D	11.1	D	11.2	D	
	Montgomery	Embarcadero	3	E	0.35	0.35		*	11.2	D	9.4	D	15.1	C	12.2	E	11.6	D	8.8	F	10.8	D	11.3	D	13.9	C	15.3	C	11.3	D	9.9	D	
	Embarcadero	Montgomery	3	W	0.35	0.35		*	17.7	C					14.8	C	11.2	D	12.1	D	17.0	C	17.5	C	19.9	B	17.1	C	12.7	D	17.1	C	D to C
Brotherhood	Junipero Serra	Alemany	3	E		0.44																	21.3	B	25.8	A	29.2	A	28.7	A	23.0	B	A to B
	Alemany	Junipero Serra	3	W		0.47																	31.8	A	29.7	A	28.8	A	28.7	A	23.3	B	A to B
Bryant	Division	4th	3	E	0.99	0.99	7.7	E	12.2	D	13.2	C			12.9	D	13.2	C			12.2	D	11.2	D	13.1	C	19.4	B	15.9	C	14.9	C	
	4th	Embarcadero	3	E	0.78	0.77		*	21.8	B					14.4	C					18.3	C		B	21.2	B	18.9	C	21.5	B	16.6	C	B to C
Bush	Masonic	Gough	3	E	1.23	1.24		*	17.3	C							22.4	B			18.2	C	17.2	C	18.0	C	23.3	B	20.4	B	16.6	C	B to C
	Gough	Market	3	E	1.36	1.46	3.2	F	10.9	D	9.6	D	11.4	D	11.6	D	12.6	D	8.7	E	10.7	D	11.7	D	10.9	D	13.8	C	16.4	C	12.1	D	C to D
Castro/ Divisadero	Pine	Geary	3	S	0.27	0.27		*	14.2	C					13.2	C	7.3	E	7.8	E	11.7	D	15.6	C	14.5	C	13.0	D	13.6	C	11.1	D	C to D
	Geary	Pine	3	N	0.27	0.27		*	10.8	D	7.7	E	7.5	E	7.4	E	7.3	E	8.4	E	7.1	E	6.1	F	11.1	D	8.1	E	13.0	C	10.3	D	C to D
	Geary	14th	3	S	1.16	1.13		*	14.8	C					14.0	C	11.5	D	9.8	D	12.3	D	15.8	C	16.6	C	12.8	D	14.9	C	11.7	D	C to D
	14th	Geary	3	N	1.16	1.13	4.5	F	14.0	C					10.6	D	11.2	D	8.8	E	11.2	D	11.3	D	15.0	C	14.9	C	14.4	C	11.7	D	C to D
	14th	Market	3	S	0.34	0.32		*	11.9	D	10.4	D	13.3	C	14.2	C					10.3	D	16.4	C	9.9	D	16.0	C	15.0	C	12.5	D	C to D
	Market	14th	3	N	0.34	0.32		*	17.5	C					11.9	D	10.1	D	10.7	D	16.0	C	9.0	E	14.8	C	15.6	C	14.0	C	12.5	D	C to D

E8B-87

Attachment 5.1 - AM CMP Segments Level of Service Monitoring

(1991 - 2015)

Name	From	To	Class	Travel Dir.	2006 Dist. (mi)	Dist. (mi)	Ave Speed 91	LOS 91	Ave Speed 92/3	LOS 92/3	Ave Speed 95	LOS 95	Ave Speed 97	LOS 97	Ave Speed 99	LOS 99	Ave Speed 2001	LOS 2001	Ave Speed 2004	LOS 2004	Ave Speed 2006	LOS 2006	Ave Speed 2007	LOS 2007	Ave Speed 2009	LOS 2009	Ave Speed 2011	LOS 2011	Ave Speed 2013	LOS 2013	Ave Speed 2015	LOS 2015	2015 LOS Changes
Cesar Chavez	Guerrero	Bryant	3	E	0.75	0.75			19.0	B							14.3	C			16.6	C	17.2	C	18.8	C	17.0	C	17.4	C	12.7	D	C to D
	Bryant	Guerrero	3	W	0.75	0.75			19.6	B							16.2	C			19.3	B	16.0	C	13.8	C	14.8	C	15.2	C	13.1	C	
	Kansas	Bryant	3	W	0.37	0.37			17.7	C							31.9	A			30.1	A	26.2	A	23.5	B	25.3	A	22.8	B	20.4	B	
	Bryant	Kansas	3	E	0.37	0.37			19.9	B							28.9	A			28.3	A	31.3	A	20.5	B	26.9	A	26.2	A	20.8	B	A to B
	Kansas	3rd	3	E	0.79	0.79			17.6	C							19.5	B			25.0	A	16.4	C	18.6	C	19.9	B	20.4	B	18.0	C	B to C
	3rd	Kansas	3	W	0.79	0.79			19.4	B							18.8	C			22.1	B	20.1	B	18.6	C	23.0	B	21.4	B	17.6	C	B to C
Clay	Kearny	Davis	3	E	0.37	0.38	11.7	D	3.7	E					12.5	D	10.6	D	9.2	D	10.8	D	14.3	C	19.1	B	19.0	B	12.4	D	9.9	D	
Columbus	North Point	Greenwich	3	S	0.43	0.42		*	18.6	C					16.9	C					15.9	C	12.5	D	18.7	C	18.4	C	13.4	C	12.8	D	C to D
	Greenwich	North Point	3	N	0.43	0.42		*	22.6	B					9.1	D	18.2	C			18.8	C	16.6	C	10.6	D	10.5	D	13.6	C	12.5	D	C to D
	Greenwich	Montgomery	3	S	0.67	0.67		*	16.3	C					11.1	D	9.2	D	9.3	D	11.7	D	12.3	D	11.6	D	12.0	D	12.9	D	11.8	D	
	Montgomery	Greenwich	3	N	0.67	0.67		*	14.0	C					14.9	C					13.3	C	14.3	C	14.9	C	12.6	D	13.3	C	12.4	D	C to D
Doyle/Lombard/ Richardson	Marin County	SF County	1	E		1.00																	47.9	A	48.7	A	Closed	Closed					
	SF County	Marin County	1	W		1.00																	48.6	A	45.3	A	Closed	Closed					
	County Line	SF Cemetery	1	S	0.76	1.13															27.3	C	38.3	A	42.7	A	Closed	Closed	32.3	B	25.4	C	B to C
	SF Cemetery	County Line	1	N	0.76	1.13															28.7	B	41.3	A	44.1	A	Closed	Closed	39.3	A	35.1	A	
	SF Cemetery	Lyon/Francisco	1	E	1.37	0.92															28.3	B	19.3	D	12.5	F	Closed	Closed	25.0	C	15.3	E	C to E
	Lyon/Francisco	SF Cemetery	1	W	1.37	0.92															31.4	B	40.3	A	37.8	A	Closed	Closed	37.5	A	32.3	B	A to B
	Lyon/Francisco	Van Ness	3	E	1.28	1.28			22.2	B							13.7	C			20.9	B	21.2	B	20.8	B	19.2	B	19.8	B	19.0	B	
	Van Ness	Lyon/Francisco	3	W	1.28	1.28			19.7	B							16.9	C			16.6	C	18.3	C	17.7	C	16.6	C	20.4	B	16.4	C	B to C
Drumm	Washington	Market	3	S	0.23	0.22		*	5.3	F	5.3	F					22.0	B			8.4	E	11.6	D	8.7	E	20.3	B	6.7	F	7.5	E	F to E
	Market	Washington	3	N	0.23	0.22		*	19.9	B							23.0	B			12.9	D	13.1	C	16.8	C	16.1	C	11.2	D	13.0	D	
Duboce/ Division	Market	Mission	3	E	0.34	0.34		*	7.7	E	9.1	D	3.0	F	8.8	E	5.5	F	5.8	F	12.0	D			9.7	D	16.6	C	19.6	B	13.3	C	B to C
	Mission	Market	3	W	0.34	0.34		*	10.7	D	11.7	D	9.4	D	13.5	C					14.7	C			14.6	C	14.1	C	16.6	C	11.2	D	C to D
	Mission	Potrero	3	E	0.64	0.64	9.9	D	12.0	D	11.5	D	10.4	D	12.6	D	13.0	C			15.1	C			13.8	C	23.5	B	12.7	D	13.7	C	D to C
	Potrero	Mission	3	W	0.64	0.64	9.9	D	17.1	C							11.3	D	5.8	F	12.7	D			12.8	D	18.0	C	11.8	D	13.5	C	D to C
	Market	Howard	3	E		0.47																	10.2	D	11.0	D	18.0	C					
	Howard	Market	3	W		0.47																	18.8	C	11.0	D	14.6	C					
	Howard	Brannan	3	E		0.54																	11.5	D	13.1	C	23.5	B					
	Brannan	Howard	3	W		0.54																	20.9	B	16.4	C	18.5	C					
Embarcadero	Townsend	North Point	3	N	2.15	2.17		*	21.2	B							14.5	C			12.3	D	22.4	B	21.1	B	20.4	B	17.5	C	16.0	C	
	North Point	Townsend	3	S	2.15	2.17		*	15.2	C							13.8	C			16.6	C	17.3	C	13.2	C	14.1	C	16.1	C	14.3	C	
Evans	Cesar Chavez	3rd	3	S	0.71	0.73			16.3	C							20.4	B			16.1	C	16.9	C	20.7	B	15.7	C	14.8	C	12.8	D	C to D
	3rd	Cesar Chavez	3	N	0.71	0.73			19.9	B							17.0	C			28.4	A	24.8	B	22.5	B	15.9	C	15.3	C	13.4	C	
Fell	Gough	Market	3	E	0.30	0.29		*	11.6	D	12.0	D	4.3	F	8.1	E	7.6	E	6.1	F	7.7	E	8.8	E	11.4	D	8.7	E	17.8	C	9.1	D	C to D
	Gough	Laguna	3	W	0.20	0.18		*	26.7	A							11.8	D	11.1	D	7.2	E	6.2	F	12.9	D	15.2	C	17.5	C	14.2	C	
	Laguna	Stanyan	3	W	1.55	1.56		*	19.0	B							24.5	B	16.2	C	23.2	B	27.9	A	26.4	A	26.3	A	23.8	B	20.0	B	
Folsom	13th	8th	3	E	0.48	0.48															10.2	D					18.2	C	19.4	B	14.8	C	B to C
	8th	4th	3	E	0.68	0.69															24.8	B	13.3	C	14.9	C	17.0	C	18.1	C	12.6	D	C to D
	4th	1st	3	E	0.56	0.52															19.5	B	17.0	C	20.7	B	18.8	C	18.9	C	15.1	C	
	1st	Embarcadero	3	E	0.35	0.35															11.5	D	18.6	C	13.2	C	10.8	D	16.4	C	12.2	D	C to D
	14th	8th	3	E		0.56																	12.7	D	15.2	C							
Franklin	Market	Pine	3	N	1.06	1.06	8.5	E	13.3	C							11.5	D	9.0	D	13.5	C	16.9	C	14.9	C	12.7	D	15.6	C	11.1	D	C to D
	Pine	Lombard	3	N	0.82	0.83		*	14.0	C							26.3	A			18.3	C	18.3	C	20.5	B	21.1	B	21.0	B	17.8	C	B to C
Fremont	Harrison	Market	3	N	0.49	0.48		*	6.4	F							11.3	D	10.7	D	12.4	D	12.7	D	12.9	D	13.6	C	16.3	C	11.2	D	C to D
Fulton	Park P.	10th Avenue	3	E		0.20		*	16.7	C							15.2	C					30.8	A	27.2	A	24.5	B	21.7	B	19.3	B	
	10th Avenue	Park P.	3	W		0.20			14.2	C							10.4	D	6.4	F			16.6	C	15.4	C	11.8	D	19.1	B	19.6	B	
	10th Avenue	Arguello	3	E		0.53			22.4	B							16.3	C					29.5	A	19.2	B	17.0	C	18.1	C	16.4	C	
	Arguello	10th Avenue	3	W		0.53			22.0	B							28.7	A					21.8	B	27.3	A	17.4	C	19.8	B	20.7	B	
	Arguello	Masonic	3	E	0.66	0.66	9.8	D	18.6	C							11.5	D	9.9	D	15.0	C	12.5	D	16.2	C	13.4	C	15.6	C	14.5	C	
	Masonic	Arguello	3	W	0.66	0.66		*	15.9	C							16.2	C			18.5	C	23.5	B	20.4	B	16.5	C	18.2	C	17.1	C	
Geary	Great Hwy.	25th Avenue	3	E	1.47	1.78		*	24.2	B							23.5	B	16.4	C	21.5	B	25.3	A	25.0	B	23.1	B	18.3	C	14.4	C	
	25th Avenue	Great Hwy.	3	W	1.47	1.78		*	28.3	A							26.0	A	14.7	C	23.3	B	24.3	B	23.9	B	24.5	B	18.3	C	15.4	C	
	25th Avenue	Arguello	3	E	1.42	1.42		*	21.6	B					10.6	D	20.7	B	10.3	D	16.7	C	25.1	A	23.9	B	20.3	B	16.7	C	13.6	C	
	Arguello	25th Avenue	3	W	1.42	1.42		*	21.3	B					13.7	C			11.0	D	15.5	C	23.0	B	22.1	B	19.8	B	16.4	C	14.2	C	
	Arguello	Gough	3	E	1.89	1.89		*	25.3	A					24.6	B			15.0	C	23.6	B	23.4	B	28.5	A	22.2	B	20.5	B	16.4	C	B to C
	Gough	Arguello	3	W	1.89	1.89		*	23.8	B					24.7	B			15.4	C	17.7	C	20.2	B	20.1	B	20.3	B	21.0	B	16.2	C	B to C
	Kearny	Gough	3	W	1.21	1.18		*	12.3	D	15.4	C			7.2	E	15.2	C	9.5	D	15.0	C	14.2	C	15.1	C	14.1	C	13.4	C	11.2	D	C to D
Geneva	Ocean	Cayuga	3	E	0.57	0.56		*	15.0	C							20.4	B			14.7	C	13.3	C	8.8	E	11.9	D	13.8	C	10.9	D	C to D
	Cayuga	Ocean	3	W	0.57	0.56		*	4.5	F	15.5	C					15.0	C			11.0	D	6.9	F	9.6	D	8.8	E	13.6	C	10.2	D	C to D
	Cayuga	Paris	3	E	0.33	0.33	10.4	D	11.7	D	13.0	C					16.1	D	8.8	E	11.8	D	11.1	D	13.4	C	15.3	C	14.7	C	11.7	D	C to D
	Paris	Cayuga	3	W	0.33	0.33	10.4	D	11.6	D	13.3	C					18.7	C			10.4	D	9.9	D	8.2	E	8.7	E	12.9	D	10.7	D	
	Paris	Santos	3	E	1.18	1.19		*	29.7	A							25.0	B			27.2	A	21.2	B	20.6	B	22.9	B	22.6	B	15.8	C	B to C
	Santos	Paris	3	W	1.18	1.19		*	27.4	A							27.3	A			26.7	A	22.8	B	23.4	B	22.7	B	20.0	B	16.6	C	B to C
Golden Gate	Masonic	Franklin	3	E	1.36	1.37		*	19.3	B							17.2	C			26.3	A	15.9	C	17.0	C	15.4	C	13.6	C	12.1	D	C to D

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Attachment 5.1 - AM CMP Segments Level of Service Monitoring

(1991 - 2015)

Name	From	To	Class	Travel Dir.	2006 Dist. (mi)	Dist. (mi)	Ave Speed 91	LOS 91	Ave Speed 92/3	LOS 92/3	Ave Speed 95	LOS 95	Ave Speed 97	LOS 97	Ave Speed 99	LOS 99	Ave Speed 2001	LOS 2001	Ave Speed 2004	LOS 2004	Ave Speed 2006	LOS 2006	Ave Speed 2007	LOS 2007	Ave Speed 2009	LOS 2009	Ave Speed 2011	LOS 2011	Ave Speed 2013	LOS 2013	Ave Speed 2015	LOS 2015	2015 LOS Changes
	Franklin	Market	3	E	0.65	0.65	12.2	D	16.9	C							13.2	C			12.2	D	12.4	D	10.7	D	12.3	D	10.9	D	8.1	E	D to E
Gough	Pine	Geary	3	S	0.27	0.26	9.5	D	25.6	A							28.4	A			21.5	B	23.6	B	20.6	B	16.4	C	19.1	B	13.5	C	B to C
	Geary	Golden Gate	3	S	0.34	0.33		*	20.1	B							20.1	B	20.9	B	15.3	C	22.5	B	23.2	B	19.1	B	16.8	C	12.7	D	C to D
	Golden Gate	Market	3	S	0.57	0.52	8.3	E	12.8	D	11.1	D	6.5	F	18.9	C			8.9	E	15.4	C	13.8	C	15.7	C	15.9	C	16.0	C	10.5	D	C to D
Guerrero/ San Jose	Cesar Chavez	29th	3	S	0.30	0.28		*	26.3	A							20.5	B			19.9	C	22.4	B	21.2	B	12.2	D	20.7	B	15.6	C	B to C
	29th	Cesar Chavez	3	N	0.30	0.28	6.2	F	19.3	B							15.2	C			22.6	C	19.9	B	24.5	B	10.2	D	17.1	C	15.1	C	
	29th	Monterey	1	S	0.97	1.19		*	23.7	B							31.6	B			23.1	C	26.1	C	30.3	B	30.0	B	27.8	C	24.3	C	
	Monterey	29th	1	N	1.24	1.19		*	17.3	C							33.8	B			28.3	B	27.3	C	25.6	C	24.4	C	21.2	D	12.7	F	D to F
Harrison	Embarcadero	1st	3	W	0.34	0.34			34.8	A							13.8	C			18.6	C	12.7	D	20.1	B	17.5	C	17.4	C	13.6	C	
	1st	4th	3	W	0.56	0.56			27.6	A							15.2	C			17.3	C	24.4	B	11.4	D	14.0	C	17.8	C	12.3	D	C to D
	4th	8th	3	W	0.68	0.69			28.9	A							26.2	A			19.1	B	16.0	C	15.8	C	19.5	B	17.9	C	17.2	C	
	8th	Division	3	W	0.40	0.40			14.4	C							13.6	C			14.3	C	15.3	C	13.3	C	14.4	C	15.8	C	14.0	C	
Hayes	Market	Gough	3	W	0.38	0.39		*	10.2	D	11.1	D	11.6	D	23.3	B			9.4	D	16.6	B	18.0	C	12.4	D	12.5	D	15.3	C	12.9	D	C to D
Howard	Embarcadero	SVanNess	3	W	2.20	2.11		*	14.9	C							14.2	C			15.6	D	16.2	C	14.2	C	15.0	C	16.2	C	13.3	C	
Junipero Serra	Sloat	19th	1	S	1.22	1.21		*	32.4	B							20.9	D	18.9	D	18.7	D	16.1	E	22.1	C	10.8	F	25.3	C	21.6	D	C to D
	19th	Sloat	1	N	1.22	1.21		*	27.0	C							19.4	D	17.3	D	18.8	D	24.7	C	24.9	C	19.8	D	21.6	D	20.6	D	
	19th	Brotherhood	1	S	0.32	0.31		*	19.9	B							30.7	B			43.0	A	39.4	A	39.6	A	42.3	A	42.7	A	39.3	A	
	Brotherhood	19th	1	N	0.32	0.31	9.7	D	23.8	C							36.7	A			32.8	B	29.2	B	22.1	C	10.8	F	12.8	F	13.1	E	F to E
	Brotherhood	County Line	1	S	0.30	0.32		*	41.9	A							38.7	A			40.4	A	42.5	A	43.5	A	44.1	A	49.0	A	48.7	A	
	County Line	Brotherhood	1	N	0.30	0.32		*	40.4	A							33.3	B			39.0	A	45.8	A	40.0	A	44.1	A	27.0	C	27.0	C	
Kearny	Market	Columbus	3	N	0.63	0.65	6.3	F	13.7	C					8.8	E	12.9	D	5.4	F	14.1	C	13.7	C	13.8	C	14.7	C	11.7	D	8.6	E	D to E
King	5th	2nd	3	E	0.52	0.52															16.9	C			19.2	B	22.2	B					
	2nd	5th	3	W	0.52	0.52															27.0	A			24.2	B	21.3	B					
	4th	2nd	3	E		0.34																	20.9	B					14.9	C	12.4	D	C to D
	2nd	4th	3	W		0.34																	18.3	C					15.9	C	13.6	C	
Lincoln/ Kezar	19th Avenue	5th Ave.	3	E	0.83	0.83		*	22.6	B							11.4	D	13.4	C	17.2	C	23.9	B	22.4	B	26.9	A	20.2	B	15.4	C	B to C
	5th Ave.	19th Avenue	3	W	0.83	0.83		*	25.2	A							10.6	D	13.8	C	26.3	A	27.7	A	25.9	A	29.2	A	23.6	B	21.6	B	
	5th Ave.	Stanyan	3	E	0.69	0.70		*	10.7	D	12.2	D	23.4	B							20.3	B	11.9	D	20.3	B	21.1	B	16.0	C	16.7	C	
	Stanyan	5th Ave.	3	W	0.69	0.70		*	31.7	A							9.9	D	15.4	C	25.0	A	25.4	A	24.4	B	24.3	B	25.5	A	24.4	B	A to B
Main	Mission	Market	3	N	0.13	0.12		*	9.9	D	9.8	D	8.4	E	11.5	D	11.8	D	9.1	D	13.9	C	16.8	C	10.7	D	21.7	B	12.0	D	5.3	F	D to F
Market/ Portola	Sloat	Santa Clara	3	E	0.41	0.43		*	16.0	C					18.9	C					13.8	C	16.8	C	20.3	B	25.1	A	21.8	B	14.0	C	B to C
	Santa Clara	Sloat	3	W	0.41	0.43		*	13.2	C					9.5	D	18.2	C			19.6	B	16.2	C	10.4	D	12.5	D	18.6	C	15.4	C	
	Santa Clara	Burnett	3	E	1.35	1.34		*	24.1	B					33.0	A					18.6	C	20.5	B	19.5	B	18.5	C	21.0	B	15.9	C	B to C
	Burnett	Santa Clara	3	W	1.35	1.34		*	22.8	B					30.2	A					19.0	B	22.0	B	21.2	B	23.5	B	20.3	B	18.5	C	B to C
	Burnett	Castro	3	E	1.67	1.62	7.0	F	33.0	A					22.0	B					20.9	B	25.4	A	26.5	A	21.1	B	23.5	B	18.8	C	B to C
	Castro	Burnett	3	W	1.67	1.62		*	28.0	B					27.5	B					22.6	B	25.1	A	25.3	A	22.4	B	23.3	B	19.9	B	
	Castro	Guerrero	3	E	0.80	0.79	8.7	E	20.0	B					Construction	C					13.2	C	10.1	D	15.7	C	9.2	D	13.6	C	10.4	D	C to D
	Guerrero	Castro	3	W	0.80	0.79		*	18.8	B					Construction	C					16.9	C	15.7	C	15.1	C	12.5	D	17.7	C	15.1	C	
	Guerrero	Van Ness	3	E	0.42	0.43	8.3	E	16.3	C					9.3	D	16.2	C			6.7	F	8.9	E	16.0	C	12.9	D	16.2	C	10.6	D	C to D
	Van Ness	Guerrero	3	W	0.42	0.43	8.3	E	17.8	C					7.3	E	23.3	B			13.6	C	13.9	C	14.2	C	13.8	C	15.2	C	14.3	C	
	Van Ness	Drumm	3	E	1.76	1.69	9.6	D	14.4	C							8.4	E	9.8	D	9.3	D	12.0	D	12.5	D	11.6	D	12.3	D	10.1	D	
	Drumm	Van Ness	3	W	1.76	1.77	9.6	D	15.3	C							12.0	D	11.4	D	12.8	D	13.6	C	14.9	C	15.7	C	13.1	C	11.8	D	C to D
Masonic	Presidio	Geary	3	S	0.27	0.29	8.5	E	11.2	D	15.7	C					10.3	D	7.7	E	13.5	C	18.3	C	19.7	B	10.0	D	17.5	C	14.9	C	
	Geary	Bush/Euclid	3	N	0.20	0.19	8.5	E	14.6	C							9.7	D	7.9	E	14.2	C	23.8	B	27.0	A	15.4	C	23.1	B	15.7	C	B to C
	Geary	Page	3	S	0.73	0.79	10.0	D	16.4	C							14.8	C			11.8	D	16.2	C	17.2	C	11.1	D	19.2	B	14.3	C	B to C
	Page	Geary	3	N	0.73	0.79	10.0	D	13.1	C							11.3	D	9.4	D	15.4	C	16.3	C	19.9	B	12.8	D	20.2	B	12.3	D	B to D
Mission/ Otis	Embarcadero	3rd	3	S	0.73	0.74	9.7	D	8.0	E	10.8	D	14.3	C	10.7	D	9.7	D	10.7	D	13.2	C	13.1	C	13.8	C	10.1	D	14.7	C	10.5	D	C to D
	3rd	Embarcadero	3	N	0.73	0.74	9.7	D	8.9	E	10.8	D	11.2	D	8.2	E	8.7	E	8.6	E	11.8	D	10.2	D	17.3	C	12.2	D	14.7	C	10.1	D	C to D
	3rd	9th	3	S	0.98	0.98		*	16.9	C					16.2	C			8.4	E	16.3	C	16.6	C	15.5	C	15.4	C	16.7	C	14.4	C	
	9th	3rd	3	N	0.98	0.98		*	13.7	C					13.4	C			9.1	D	18.4	C	13.0	D	17.1	C	16.2	C	16.2	C	13.2	C	
	9th	14th	3	S	0.67	0.68	9.7	D	12.8	D	12.8	D	10.7	D	11.7	D	8.7	E	5.8	F	14.1	C	15.2	C	15.8	C	19.4	B	14.4	C	12.0	D	C to D
	14th	9th	3	N	0.65	0.65		*	12.0	D	11.3	D	11.0	D	10.0	D	8.1	E	8.2	E	11.0	D	11.5	D	15.1	C	16.3	C	14.3	C	12.4	D	C to D
	14th	Cesar Chavez	3	S	1.37	1.39	10.9	D	17.9	C					14.8	C					16.0	C	13.5	C	17.9	C	15.0	C	14.1	C	13.2	C	
	Cesar Chavez	14th	3	N	1.37	1.39	10.9	D	19.8	B					14.3	C					13.6	C	14.6	C	18.5	C	15.7	C	13.7	C	12.7	D	C to D
	Cesar Chavez	Ocean	3	S	1.94	1.96		*	17.6	C					19.6	B					18.9	C	16.7	C	20.1	B	18.8	C	16.2	C	14.6	C	
	Ocean	Cesar Chavez	3	N	1.94	1.96		*	20.3	B					20.4	B	18.3	C			18.1	C	14.8	C	19.3	B	17.2	C	14.2	C	13.1	C	
	Ocean	Sickles	3	S	1.45	1.45		*	20.8	B					31.8	A					20.7	B	25.3	A	22.3	B	22.0	B	17.2	C	15.6	C	
	Sickles	Ocean	3	N	1.45	1.45		*	21.1	B					26.5	A					26.3	A	21.8	B	22.2	B	21.8	B	16.8	C	13.5	C	
Montgomery	Broadway	Bush	3	S	0.51	0.51	6.2	F	6.5	F							9.3	D	8.5	E	10.2	D	11.7	D	14.1	C	11.1	D	14.1	C	10.3	D	C to D
North Point	Van Ness	Columbus	3	E	0.38	0.38		*	15.2	C							12.5	D	10.8	D	18.9	C	13.1	C	17.5	C	18.9	C	14.4	C	13.3	C	
	Columbus	Van Ness	3	W	0.38	0.38		*	15.3	C							13.7	C			17.6	C	17.0	C	16.2	C	16.1	C	16.0	C	12.7	D	C to D
	Columbus	Embarcadero	3	E	0.62	0.61		*	14.9	C							15.4	C			17.6	C	23.5	B	18.7	C	22.2	B	21.4	B	12.2	D	B to D
	Embarcadero	Columbus	3	W	0.62	0.61		*	16.0	C							13.9	C			18.9	C	21.4	B	15.7	C	18.6	C	15.2	C	13.9	C	
Oak	Divisadero	Fillmore	3	E	0.36	0.37		*		~							25.2	A			24.7	B	26.7	A	19.7	B	20.4	B	14.9	C	12.6	D	C to D
	Fillmore	Laguna	3	E	0.27	0.27	8.2			~							8.8	E	15.3	C	16.5	C	21.4	B	17.0	C	8.8	E	11.8	D	12.9	D	

E8B-89

Attachment 5.1 - AM CMP Segments Level of Service Monitoring

(1991 - 2015)

Name	From	To	Class	Travel Dir.	2006 Dist. (mi)	Dist. (mi)	Ave Speed 91	LOS 91	Ave Speed 92/3	LOS 92/3	Ave Speed 95	LOS 95	Ave Speed 97	LOS 97	Ave Speed 99	LOS 99	Ave Speed 2001	LOS 2001	Ave Speed 2004	LOS 2004	Ave Speed 2006	LOS 2006	Ave Speed 2007	LOS 2007	Ave Speed 2009	LOS 2009	Ave Speed 2011	LOS 2011	Ave Speed 2013	LOS 2013	Ave Speed 2015	LOS 2015	2015 LOS Changes
	Laguna	Franklin	3	E	0.28	0.27		*	20.0	B							7.5	E	7.0	E	14.8	C	12.4	D	15.1	C	17.0	C	13.4	C	9.1	D	C to D
	Stanyan	Divisadero	3	E	0.91	0.91			23.1	B							23.5	B			27.7	A	25.4	A	23.6	B	25.0	A	19.7	B	17.0	C	B to C
Ocean	19th Avenue	Miramar	3	E	1.10	1.11		*	19.5	B							7.6	E	11.4	D	14.3	C	13.6	C	18.7	C	13.9	C	15.0	C	14.5	C	
	Miramar	19th Avenue	3	W	1.10	1.11		*	15.4	C							9.2	D	8.2	E	13.8	C	13.4	C	11.1	D	14.6	C	14.3	C	13.3	C	
	Miramar	Howth	3	E	0.47	0.48		*									7.6	E	8.2	E	12.6	D	12.9	D	11.1	D	11.4	D	14.1	C	11.9	D	C to D
	Howth	Miramar	3	W	0.47	0.48		*	9.4	D	16.3	C					8.6	E	8.4	E	13.4	C	11.3	D	14.8	C	15.8	C	13.4	C	11.4	D	C to D
Octavia	Fell	Market	3	S	0.28	0.27															14.5	C	6.8	F	10.4	D	7.5	E	3.3	F	2.8	F	
	Market	Fell	3	N	0.28	0.27															8.7	E	10.6	D	11.0	D	10.1	D	5.8	F	7.3	E	F to E
O'Farrell	Gough	Mason	3	E	0.93	0.85		*	16.6	C							13.5	C			11.9	D	12.7	D	13.4	C	12.2	D	14.6	C	11.9	D	C to D
	Mason	Market	3	E	0.27	0.28		*	18.7	C							10.9	D	8.3	E	8.2	E	9.1	D	11.6	D	9.6	D	13.3	C	9.9	D	C to D
Pine	Market	Kearny	3	W	0.38	0.38	4.6	F	9.9	D	7.3	E	8.1	E	8.3	E	7.9	E	7.2	E	7.5	E	7.3	E	8.8	E	10.5	D	6.9	F	7.4	E	F to E
	Kearny	Leavenworth	3	W	0.63	0.63		*	16.2	C							15.6	C			13.4	C	25.2	A	18.2	C	24.1	B	15.2	C	17.6	C	
	Leavenworth	Franklin	3	W	0.46	0.46		*	17.2	C							9.4	D	9.4	D	12.3	D	18.3	C	17.7	C	17.7	C	13.5	C	7.5	E	C to E
	Franklin	Presidio	3	W	1.26	1.27		*	20.0	B							20.4	B			23.7	B	21.0	B	21.3	B	21.8	B	17.3	C	17.1	C	
Potrero	Division	21st	3	S	0.80	0.80		*	24.8	B					18.2	C					21.5	B	20.5	B	23.9	B	19.0	B	19.2	B	14.4	C	B to C
	21st	Division	3	N	0.80	0.80		*	21.4	B					18.3	C					17.7	C	26.5	A	22.5	B	24.3	B	19.0	C	19.5	B	C to B
	21st	Cesar Chavez	3	S	0.61	0.62		*	20.1	B					13.5	C					19.1	B	25.5	A	22.0	B	23.3	B	17.2	C	14.5	C	
	Cesar Chavez	21st	3	N	0.61	0.62		*	25.2	A					15.5	C					17.8	C	26.6	A	21.2	B	23.5	B	15.2	C	10.4	D	C to D
Skyline	Sloat	County Line	3	S	1.91	1.94		*	41.6	A							41.6	A			48.7	C	39.2	A	42.1	A	40.6	A	41.0	A	32.4	A	
	County Line	Sloat	3	N	1.92	1.94		*	43.7	A							41.8	A			49.0	C	46.8	A	46.7	A	44.5	A	38.1	A	34.8	A	
Sloat	Skyline	Junipero Serra	1	E	1.36	1.38		*	19.8	D	21.5	D	14.5	E	18.1	D	23.4	C			22.8	C	18.2	D	22.6	C	19.0	D	24.3	C	23.0	C	
	Junipero Serra	Skyline	1	W	1.34	1.38		*	23.3	C							23.5	C			29.8	B	26.1	C	26.7	C	32.0	B	27.7	C	24.0	C	
Stanyan	Fulton	Turk	3	N	0.19	0.20		*	12.2	D	12.8	D	13.2	C					13.7	C	15.7	C	16.6	C	15.6	C	14.2	C	18.2	C	14.1	C	
	Turk	Fulton	3	S	0.19	0.20		*	11.6	D	7.4	E	16.7	C					11.7	D	16.6	C	12.3	D	11.1	D	11.2	D	19.2	B	16.2	C	B to C
Sutter	Market	Mason	3	W	0.56	0.56		*	11.6	D	10.2	D	13.2	C					11.2	D	11.2	D	16.9	C	17.5	C	17.8	C	13.4	C	12.6	D	C to D
	Mason	Gough	3	W	0.87	0.82	9.0	D	12.3	D	13.4	C					14.5	C			12.8	D	8.6	E	8.9	E	10.5	D	11.2	D	10.6	D	
	Gough	Divisadero	3	W	0.82	0.82		*	14.1	C							15.5	C			15.1	C	15.3	C	15.0	C	13.6	C	13.4	C	11.5	D	C to D
	Divisadero	Gough	3	E	0.82	0.82		*	13.9	C							12.4	D	16.1	C	15.7	C	14.6	C	16.2	C	14.5	C	15.9	C	10.9	D	C to D
Townsend	7th	2nd	3	E	0.87	0.86															16.6	C	15.8	C	19.6	B	17.3	C	17.2	C	14.1	C	
	2nd	7th	3	W	0.87	0.86															18.9	C	17.9	C	18.4	C	13.9	C	17.5	C	12.4	D	C to D
Turk	Market	Hyde	3	W	0.37	0.38		*	10.9	D	11.6	D	11.2	D	11.7	D	8.1	E	11.7	D	16.9	C	12.4	D	14.7	C	12.8	D	10.3	D	12.6	D	
	Hyde	Gough	3	W	0.45	0.46		*	14.1	C							10.1	D	8.0	E	11.2	D	14.0	C	12.8	D	12.8	D	14.1	C	12.6	D	C to D
	Gough	Divisadero	3	W	0.82	0.82		*	22.1	B							22.4	B			24.4	B	28.4	A	19.8	B	19.7	B	21.5	B	17.4	C	B to C
	Divisadero	Stanyan	3	W	0.91	0.91		*	17.1	C							23.1	B			17.1	C	20.0	B	21.3	B	16.3	C	18.4	C	18.4	C	
	Stanyan	Divisadero	3	E	0.91	0.91		*	21.0	B							15.5	C			17.7	C	20.8	B	18.0	C	17.7	C	17.7	C	15.7	C	
Van Ness/ SVanNess	Lombard	Washington	3	S	0.58	0.58	4.5	F	18.2	C					7.6	E	12.2	D	13.4	C	12.7	D	17.8	C	16.4	C	16.4	C	12.2	D	13.0	C	D to C
	Washington	Lombard	3	N	0.58	0.58		*	11.9	D	14.3	D	12.1	D	9.4	D	12.6	D	6.9	F	9.2	D	10.2	D	13.6	C	11.3	D	13.1	C	12.7	D	C to D
	Washington	Golden Gate	3	S	0.83	0.84		*	15.0	C					9.2	D	7.3	E	9.4	D	16.1	C	17.2	C	21.2	B	21.6	B	14.1	C	12.8	D	C to D
	Golden Gate	Washington	3	N	0.83	0.84		*	13.6	C					10.4	D	10.4	D	6.9	F	11.5	D	11.9	D	15.2	C	16.8	C	12.1	D	11.1	D	
	Golden Gate	13th	3	S	0.80	0.80		*	17.3	C					16.6	C			7.4	E	12.7	D	11.8	D	15.7	C	14.0	C	15.3	C	11.7	D	C to D
	13th	Golden gate	3	N	0.79	0.80		*	15.9	C					18.2	C			7.3	E	11.8	D	14.6	C	15.0	C	20.2	B	13.9	C	13.0	C	
	13th	Cesar Chavez	3	S	1.39	1.50	12.6	D	15.7	C					16.8	C			16.0	C	19.2	B	19.8	B	17.9	C	12.8	D	16.3	C	15.1	C	
	Cesar Chavez	13th	3	N		1.50																	17.0	C	20.1	B	18.4	C	18.8	C	16.0	C	
Washington	Drumm	Kearny	3	W	0.45	0.44		*	14.2	C					7.9	E	30.5	A			17.1	C	14.9	C	14.6	C	12.8	D	10.1	D	11.8	D	
West Portal	Ulloa	Sloat	3	S	0.55	0.54		*	16.1	C							12.4	D	12.1	D	16.1	C	15.1	C	17.5	C	17.4	C	17.2	C	14.8	C	
	Sloat	Ulloa	3	N	0.55	0.54		*	17.8	C							14.8	C			18.7	C	15.3	C	15.5	C	16.8	C	14.4	C	15.9	C	
FREEWAY SEGMENTS INBOUND																																	
I-280	Junipero Serra	Weldon	Fwy	E	4.06	4.29	22.9	F	43.0	E	27.3	F					43.2	D	43.6	D	31.9	E	56.7	B	47.6	D	37.5	E	35.2	E	29.9	F	E to F
	Weldon	6th/Brannan	Fwy	NE	3.42	3.37	section closed		29.1	F							30.5	E	31.2	E	27.7	F	34.3	E	41.6	D	28.1	F	35.4	E	36.8	E	
US 101	C & C Limit	Cortland	Fwy	N	1.25	2.31	10.9	F	47.2	D	31.0	E	30.1	E	35.7	E	44.8	D	37.1	E	57.5	B	59.0	B	50.6	C	43.0	D	25.9	F	25.8	F	
	Cortland	I-80	Fwy	N	2.75	1.90	21.4	F	21.2	F							28.1	F	27.8	F	38.0	E	35.4	E	41.7	D	36.9	E	29.6	F	28.2	F	
	I-80	Market	Fwy	NW	1.60	1.28	18.7	F	45.4	E	44.8	E	37.6	E	36.9	E	section closed		section closed		section closed		20.9	F	21.9	F	13.9	F	24.6	F	23.6	F	
I-80	Treasure Island	Fremont Exit	Fwy	S	2.20	2.71	17.5	F	32.2	E	26.5	F					28.8	F	22.3	F	36.8	E	34.4	E	50.8	C	44.5	D	46.4	D	42.2	D	
	Fremont Exit	US-101	Fwy	SW	1.38	1.66	48.1	D	33.3	E	37.9	E	32.7	E	40.4	E	25.9	F	24.0	F	51.6	A	50.0	C	55.3	B	48.7	D	50.4	C	49.5	C	
FREEWAY SEGMENTS OUTBOUND																																	
I-280	6th/Brannan	Weldon	Fwy	W	3.00	3.35	section closed		51.9	D	46.4	D	54.8	C			47.3	C	41.0	D	69.0	A	60.0	B	62.9	A	55.1	B	58.1	B	57.9	B	
	Weldon	Junipero Serra	Fwy	SW	4.30	4.29	55.7	C	57.5	B							51.5	C	50.5	C	65.5	A	66.5	A	65.2	A	60.6	A	64.3	A	63.5	A	
US 101	Market	I-80	Fwy	S	1.30	1.14	13.5	F	17.9	F							section closed		section closed		12.0	F	46.9	D	40.3	E	41.3	D	26.1	F	33.2	E	F to E
	I-80	Cortland	Fwy	S	2.16	1.99	45.8	E	53.6	D	36.4	E	42.3	E	44.7	D	40.1	E	31.7	E	40.3	E	54.8	C	54.6	C	51.8	C	40.9	E	46.5	D	E to D
	Cortland	Monster Pk Exit	Fwy	S	1.88	2.15	53.3	D	45.6	E	36.3	E	34.1	E	39.0	E	33.3	E	31.6	E	45.8	D	48.3	D	54.2	C	48.7	D	31.5	E	32.3	E	
I-80	US-101	Fremont Exit	Fwy	N	1.65	1.75	18.6	F	53.6	D	36.0	E	32.4	E	28.8	F	16.3	F	24.9	F	12.3	F	38.1	E	48.1	D	48.5	D	36.8	E	34.7	E	
	Fremont Exit	Treasure Island	Fwy	NE	2.15	2.70	50.6	D	50.8	D	39.9	E	40.3	E	30.5	F	36.5	E	20.2	F	43.7	D	50.2	C	56.0	B	51.4	C	44.2	D	46.6	D	

E8B-90

Attachment 5.2 - PM CMP Segments Level of Service Monitoring

(1991 - 2015)

Name	From	To	Class	Travel Dir.	Old Dist. (mi)	Dist. (mi)	Ave Speed 91	LOS 91	Ave Speed 92/3	LOS 92/3	Ave Speed 95	LOS 95	Ave Speed 97	LOS 97	Ave Speed 99	LOS 99	Ave Speed 2001	LOS 2001	Ave Speed 2004	LOS 2004	Ave Speed 2006	LOS 2006	Ave Speed 2007	LOS 2007	Ave Speed 2009	LOS 2009	Ave Speed 2011	LOS 2011	Ave Speed 2013	LOS 2013	Ave Speed 2015	LOS 2015	LOS Changes 2015
1st	Market	Harrison	3	S		0.48	1.2	F	15.5	C							2.1	F	2.6	F	4.2	F	12.8	D	13.1	C	18.2	C	13.2	C	4.8	F	C to F
2nd	Market	Brannan	3	N		0.72															13.4	C	11.9	D	10.6	D	12.2	D	6.0	F	6.9	F	
	Brannan	Market	3	S		0.72															9.5	D	11.8	D	10.4	D	13.3	C	3.1	F	5.3	F	
3rd	Jamestown	Evans	3	N		1.62		*	18.5	C							20.2	B			12.5	D	21.6	B	22.1	B	24.0	B	17.8	C	17.8	C	
	Evans	Jamestown	3	S		1.62		*	17.6	C							18.1	C			15.8	C	22.2	B	22.3	B	22.7	B	18.7	C	17.5	C	
	Evans	Terry Francois	3	N		2.33	10.3	D	18.5	C							20.5	B			24.0	B	26.1	A	30.1	A	30.0	A	20.4	B	14.1	C	B to C
	Terry Francois	Evans	3	S		2.33	10.3	D	17.0	C							20.2	B			21.8	B	30.7	A	27.8	A	29.5	A	20.5	B	16.6	C	B to C
	Terry Francois	Market	3	N		1.08	12.1	D	8.8	D	11.6	D	10.2	D	11.7	D	11.6	D	7.3	E	12.7	D	11.3	D	16.1	C	12.9	D	12.8	D	9.7	D	
4th / Stockton	O'Farrell	Harrison	3	S		0.56	4.7	F	8.4	E	10.5	D	10.5	D	5.9	F	10.5	D	9.8	D	8.9	E	9.1	D	8.5	E	15.1	C	11.5	D	9.8	D	
	Harrison	Channel	3	S		0.62																	14.1	C	14.3	C	14.9	C	12.6	D	8.7	E	D to E
5th	Market	Brannan	3	S		0.72	7.9	E	13.5	C							5.2	F	6.3	F	9.3	D	11.2	D	13.1	C	13.8	C	5.4	F	6.7	F	
	Brannan	Market	3	N		0.72	7.9	E	12.7	D	7.7	E	11.3	D	7.6	E	16.5	C			9.8	D	9.5	D	15.6	C	15.7	C	4.0	F	6.5	F	
6th	Market	Brannan	3	S		0.72	6.7	F	11.5	D	12.0	D	9.4	D	9.5	D	6.8	F	4.4	F	12.9	D	10.9	D	12.3	D	9.6	D	11.8	D	11.0	D	
	Brannan	Market	3	N		0.72		*	12.7	D	7.6	E	11.2	D	9.0	D	6.4	F	6.6	F	12.7	D	11.7	D	11.1	D	11.0	D	12.1	D	7.5	E	D to E
7th	Brannan	Market	3	N		0.72	8.9	E	16.8	C					13.7	C			10.4	D	15.4	C	14.9	C	16.4	C	20.9	B	13.7	C	8.3	E	C to E
8th	Market	Bryant	3	S		0.60		*	15.8	C					15.7	C			13.0	C	15.9	C	21.2	B	17.0	C	23.8	B	15.9	C	8.4	E	C to E
9th	Brannan	Market	3	N		0.72	9.9	D	12.4	D	9.7	D	13.8	C	11.2	D	9.1	D	11.8	D	13.3	C	11.2	D	14.6	C	13.4	C	12.9	D	8.7	E	D to E
10th	Market	Brannan	3	S		0.73	12.1	D	20.5	B							13.7	C			16.4	C	20.9	B	16.3	C	20.4	B	20.5	B	13.4	C	B to C
16th	Market	Mission	3	E		0.74															11.0	D	10.5	D	10.7	D	11.9	D	14.9	C	13.5	C	
	Mission	Market	3	W		0.74															10.6	D	14.1	C	12.3	D	8.4	E	17.0	C	11.7	D	C to D
	Mission	Potrero	3	E		0.67															13.1	C	9.8	D	12.8	D	11.7	D	14.8	C	11.9	D	C to D
	Potrero	Mission	3	W		0.67															11.2	D	13.6	C	15.2	C	13.4	C	12.5	D	11.1	D	
19th Avenue/ Park Presidio	U.S. 101	Lake	1	S	1.54	1.33		*	36.4	A							34.5	B			35.4	A	42.7	A	35.2	A	30.9	B	42.9	A	38.0	A	
	Lake	U.S. 101	1	N	1.57	1.21		*	35.9	A							15.6	E			34.7	B	44.2	A	46.0	A	43.0	A	44.6	A	17.7	D	A to D
	Lake	Lincoln	3	S		1.84		*	26.4	A					20.3	B					24.1	B	15.8	C	19.8	B	24.6	B	19.0	B	16.4	C	B to C
	Lincoln	Lake	3	N		1.84		*	25.4	A					19.8	B					27.2	A	27.2	A	28.5	A	29.3	A	28.1	A	22.9	B	A to B
	Sloat	Lincoln	3	N		2.13	11.1	D	21.9	B					17.5	C					20.5	B	24.3	B	23.6	B	27.7	A	20.2	B	19.8	B	
	Lincoln	Sloat	3	S		2.13	11.1	D	21.0	B					18.6	B					21.6	B	24.0	B	23.0	B	21.4	B	17.4	C	19.5	B	C to B
	Junipero Serra	Sloat	3	N		1.25		*	18.4	C					11.9	D			11.9	D	9.9	D	16.9	C	12.1	D	17.7	C	18.2	C	15.8	C	
	Sloat	Junipero Serra	3	S		1.25		*	17.5	C					21.5	B					14.8	C	16.0	C	13.5	C	23.2	B	16.9	C	15.2	C	
Alemany	J. Serra	Lyell	3	E		2.94		*	29.5	B							20.8	B			20.4	B	18.6	C	22.4	B	22.0	B	24.3	B	19.9	B	
	Lyell	County Line	3	W		3.03		*	22.1	C							23.9	B			19.5	B	19.8	B	22.2	B	22.5	B	29.6	A	22.2	B	A to B
	Lyell	Bayshore	3	E	1.42	1.59		*	32.9	A							12.7	D	14.7	C	32.1	A	23.7	B	29.9	A	30.2	A	33.0	A	29.2	A	
	Bayshore	Lyell	3	W	1.42	1.52	4.6	F	30.8	A							23.3	B			32.4	A	23.4	B	31.4	A	24.7	B	31.2	A	27.6	A	
Bay	Van Ness	Embarcadero	3	E	0.71	1.09	12.7	D	16.8	C							12.1	E			13.4	C	18.2	C	16.5	C	18.2	C	20.7	B	15.6	C	B to C
	Embarcadero	Van Ness	3	W	0.71	1.09	12.7	D	12.0	D	15.7	C					13.1	D	13.5	C	18.7	C	18.6	C	16.2	C	16.4	C	19.9	B	14.9	C	B to C
Bayshore	Jerrold	Industrial	3	S		0.72			21.0	B							28.4	A			21.1	B	19.1	B	22.3	B	15.3	C	20.5	B	19.3	B	
	Industrial	Cesar Chavez	3	N		0.82			26.4	A							16.4	C			13.1	C	22.1	B	14.4	C	15.5	C	17.6	C	17.3	C	
	Industrial	County Line	3	S		2.26			22.0	B							26.4	A			19.7	B	27.0	A	26.3	A	21.8	B	25.5	A	20.6	B	A to B
	County Line	Industrial	3	N		2.27			22.6	B							33.9	A			22.0	B	20.7	B	21.5	B	23.1	B	23.1	B	20.2	B	
Beale/Davis	Clay	Mission	3	S		0.32		*	13.4	C							8.4	E	8.4	E	14.6	C	10.7	D	11.2	D	11.7	D	5.2	F	5.4	F	
Brannan	Division	6th	3	E		0.54																	11.6	D	13.7	C	13.6	C	14.7	C	9.9	D	C to D
	6th	Division	3	W		0.54																	17.2	C	9.8	D	8.8	E	21.1	B	14.4	C	B to C
	6th	3rd	3	E		0.52																	9.9	D	10.3	D	17.2	C	14.1	C	8.5	E	C to E
	3rd	6th	3	W		0.52																	8.6	E	14.0	C	16.4	C	16.9	C	11.0	D	C to D
Broadway	Gough	Larkin	3	E		0.36		*	14.6	C					14.2	C	10.0	D	12.0	D	11.5	D	10.2	D	10.5	D	10.2	D	12.8	D	10.5	D	
	Larkin	Gough	3	W		0.36	7.7	E	14.6	C					7.8	E	9.9	D	8.8	E	7.3	E	10.9	D	11.3	D	11.1	D	12.6	D	8.1	E	D to E
	Larkin	Powell	1	E		0.55		*	38.9	A					25.5	C	11.0	F	12.7	F	26.1	C	31.8	B	36.1	A	33.6	B	25.2	C	29.8	B	C to B
	Powell	Larkin	1	W		0.55		*	24.7	C					25.3	C	11.0	F	10.6	F	32.7	B	31.0	B	32.3	B	29.6	B	25.5	C	27.8	C	
	Powell	Montgomery	3	E		0.35		*	16.3	C					12.4	D	10.4	D	11.2	D	12.8	D	11.2	D	13.3	C	14.2	C	9.0	E	10.6	D	E to D
	Montgomery	Powell	3	W		0.35	6.2	F	8.4	E	9.2	D	12.5	D	8.5	E	8.3	E	10.2	D	8.0	E	10.1	D	7.7	E	11.8	D	6.6	F	5.3	F	
	Montgomery	Embarcadero	3	E		0.35		*	13.1	C					8.4	E	7.9	E	7.2	E	9.0	D	9.4	D	14.7	C	13.2	C	6.8	F	5.0	F	
	Embarcadero	Montgomery	3	W		0.35		*	15.4	C					9.6	D	4.4	F	6.9	F	10.1	D	13.1	C	14.9	C	13.3	C	9.9	D	10.5	D	
Brotherhood	J. Serra	Alemany	3	E		0.44																	21.0	B	26.6	A	24.6	B	29.4	A	22.0	B	A to B
	Alemany	J. Serra	3	W		0.47																	26.2	A	33.4	A	31.5	A	31.6	A	24.8	B	A to B
Bryant	Division	4th	3	E		0.99	7.7	E	11.8	D	9.8	D	12.8	D	15.7	C	10.6	D	9.6	D	13.3	C	8.8	E	12.7	D	14.3	C	13.9	C	8.6	E	C to E
	4th	Embarcadero	3	E		0.77		*	13.2	C							9.5	D	10.2	D	19.5	B	16.0	C	15.7	C	14.0	C	18.2	C	13.3	C	
Bush	Masonic	Gough	3	E		1.24		*	20.0	B							20.5	B			19.0	B	19.6	B	21.2	B	21.9	B	22.7	B	19.1	B	
	Gough	Market	3	E		1.46	3.2	F	10.1	D	11.5	D	11.7	D	11.6	D	10.2	D	9.2	D	12.5	D	13.9	C	14.3	C	11.3	D	16.0	C	10.5	D	C to D
Castro/ Divisadero	Pine	Geary	3	S		0.27		*	11.6	D	8.1	E	11.0	D	8.3	E	12.6	D	7.9	E	11.7	D	8.6	E	13.5	C	10.1	D	13.0	C	10.2	D	C to D
	Geary	Pine	3	N		0.27		*	8.4	E	13.5	C			9.8	D	14.6	C			7.5	E	10.3	D	10.7	D	9.2	D	13.7	C	11.4	D	C to D
	Geary	14th	3	S		1.13		*	15.7	C					11.4	D	12.1	D	8.2	E	12.3	D	9.4	D	11.1	D	10.3	D	12.7	D	9.6	D	
	14th	Geary	3	N		1.13	4.5	F	12.8	D	11.2	D	12.3	D	11.8	D	11.1	D	9.5	D	9.4	D	13.8	C	12.3	D	11.6	D	14.0	C	11.4	D	C to D
	14th	Market	3	S		0.32		*	13.8	C					14.3	C	17.3	C			12.0	D	11.6	D	15.2	C	11.6	D	13.4	C	10.5	D	C to D
	Market	14th	3	N		0.32	7.7	E	16.7	C					12.1	D	16.1	C			15.2	C	10.0	D	15.7	C	15.2	C	14.7	C	12.8	D	C to D

E8B-91

Attachment 5.2 - PM CMP Segments Level of Service Monitoring

(1991 - 2015)

Name	From	To	Class	Travel Dir.	Old Dist. (mi)	Dist. (mi)	Ave Speed 91	LOS 91	Ave Speed 92/3	LOS 92/3	Ave Speed 95	LOS 95	Ave Speed 97	LOS 97	Ave Speed 99	LOS 99	Ave Speed 2001	LOS 2001	Ave Speed 2004	LOS 2004	Ave Speed 2006	LOS 2006	Ave Speed 2007	LOS 2007	Ave Speed 2009	LOS 2009	Ave Speed 2011	LOS 2011	Ave Speed 2013	LOS 2013	Ave Speed 2015	LOS 2015	LOS Changes 2015
Cesar Chavez	Guerrero	Bryant	3	E		0.75			20.7	B							15.1	C			18.2	C	14.1	C	15.1	C	10.6	D	15.6	C	10.8	D	C to D
	Bryant	Guerrero	3	W		0.75			16.5	C							15.8	C			18.8	C	12.8	D	16.8	C	11.6	D	16.2	C	12.2	D	C to D
	Kansas	Bryant	3	W		0.37			17.5	C											30.4	A	30.4	A	21.0	B	23.4	B	23.6	B	19.4	B	
	Bryant	Kansas	3	E		0.37			26.7	B							8.5	E			31.4	A	30.7	A	27.6	A	30.0	A	27.8	A	21.2	B	A to B
	Kansas	3rd	3	E		0.79			17.3	C							12.0	D	15.1	C	19.5	B	22.8	B	25.4	A	22.8	B	22.2	B	18.1	C	B to C
	3rd	Kansas	3	W		0.79			16.3	C											21.1	B	16.3	C	22.3	B	19.5	B	23.7	B	18.7	C	B to C
Clay	Kearny	Davis	3	E		0.38	11.7	D	7.0	E	8.7	E	10.4	D	10.4	D	9.4	D	6.5	F	8.7	E	16.3	C	11.7	D	16.2	C	6.6	F	8.7	E	F to E
Columbus	North Point	Greenwich	3	S	0.5	0.42		*	15.2	C					17.7	C					15.9	C	12.5	D	13.3	C	14.0	C	11.5	D	10.8	D	
	Greenwich	North Point	3	N	0.5	0.42		*	13.4	C					16.2	C					13.3	C	16.8	C	9.2	D	13.4	C	13.3	C	12.6	D	C to D
	Greenwich	Montgomery	3	S		0.67	6.3	F	16.0	C					10.2	D	9.3	D	8.7	E	9.2	D	10.4	D	7.1	E	12.3	D	11.9	D	10.2	D	
	Montgomery	Greenwich	3	N		0.67	6.3	F	12.8	D	12.9	D	10.3	D	11.1	D	15.0	C			12.8	D	21.0	B	14.1	C	12.7	D	12.4	D	12.5	D	
Doyle/Lombard/ Richardson	Marin County	SF County	1	E		1.00																	49.2	A	48.6	A	Closed	Closed					
	SF County	Marin County	1	W		1.00																	46.3	A	45.7	A	Closed	Closed					
	County Line	SF Cemetery	1	S		1.13															21.7	D	39.8	A	39.8	A	Closed	Closed	34.1	B	39.9	A	B to A
	SF Cemetery	County Line	1	N		1.13															24.2	C	38.8	A	41.0	A	Closed	Closed	22.4	C	14.2	E	C to E
	SF Cemetery	Francisco	1	E		0.92															23.8	C	32.7	B	35.8	A	Closed	Closed	38.9	A	35.1	A	
	Francisco	SF Cemetery	1	W		0.92															23.5	C	35.2	A	39.4	A	Closed	Closed	26.0	C	13.0	E	C to E
	Francisco	Van Ness	3	E		1.28			16.4	C							14.8	C			14.5	C	15.7	C	18.2	C	15.3	C	18.7	C	13.8	C	
	Van Ness	Francisco	3	W		1.28			20.5	B							22.4	B			15.3	C	16.0	C	15.7	C	16.4	C	18.0	C	13.3	C	
Drumm	Washington	Market	3	S		0.22		*	9.3	D	3.6	F					17.4	C			9.7	D	6.1	F	7.6	E	17.7	C	5.5	F	6.0	F	
	Market	Washington	3	N		0.22		*	12.8	D	13.5	C					24.7	B			11.7	D	11.2	D	16.2	C	17.2	C	8.0	E	6.3	F	E to F
Duboce/ Division	Market	Mission	3	E		0.34		*	10.0	D	15.4	C					7.5	E	6.3	F	9.4	D			14.8	C	16.7	C	22.5	B	15.5	C	B to C
	Mission	Market	3	W		0.34	6.3	F	6.2	F							7.4	E	6.0	F	6.5	F			10.6	D	9.6	D	14.7	C	8.3	E	C to E
	Mission	Potrero	3	E		0.64	9.9	D	14.1	C							14.2	C			14.1	C			13.3	C	18.5	C	10.5	D	10.7	D	
	Potrero	Mission	3	W		0.64	9.9	D	16.4	C							12.0	D	7.1	E	9.4	D			9.6	D	16.2	C	8.6	E	7.2	E	
	Market	Howard	3	E		0.47																	14.8	C	15.0	C	16.3	C					
	Howard	Market	3	W		0.47																	9.1	D	8.5	E	10.6	D					
	Howard	Brannan	3	E		0.54																	12.2	D	12.8	D	19.4	B					
	Brannan	Howard	3	W		0.54																	8.9	E	11.5	D	16.4	C					
Embarcadero	North Point	Townsend	3	S		2.17		*	9.0	D	16.4	C					14.7	C			16.0	C	15.2	C	14.0	C	8.9	E	14.0	C	11.8	D	C to D
	Townsend	North Point	3	N		2.17		*	16.7	C							6.4	F	12.3	D	15.2	C	18.5	C	20.2	B	17.6	C	13.8	C	9.0	D	C to D
Evans	Cesar Chavez	3rd	3	S		0.73			21.4	B							15.4	C			19.1	B	21.8	B	21.6	B	17.5	C	16.8	C	13.1	C	
	3rd	Cesar Chavez	3	N		0.73			20.3	B							15.2	C			23.8	B	22.7	B	20.1	B	21.5	B	16.9	C	12.2	D	C to D
Fell	Gough	Market	3	E		0.29		*	13.5	C							9.4	D	8.3	E	7.0	E	18.4	C	12.6	D	12.9	D	18.6	C	12.0	D	C to D
	Gough	Laguna	3	W		0.18	5.6	F	13.3	C	7.3	E	8.2	E	12.0	D	7.8	E	7.4	E	16.9	C	11.8	D	9.0	E	9.3	D	17.2	C	12.7	D	C to D
	Laguna	Stanyan	3	W		1.56		*	20.7	B							23.5	B			19.6	B	23.1	B	23.7	B	24.1	B	22.5	B	19.1	B	
Folsom	13th	8th	3	E		0.48															18.0	C					14.6	C	18.4	C	13.4	C	
	8th	4th	3	E		0.69															18.8	C	21.2	B	17.2	C	19.4	B	17.3	C	9.5	D	C to D
	4th	1st	3	E		0.52															18.3	C	20.0	B	15.0	C	16.9	C	14.8	C	6.4	F	C to F
	1st	Embarcadero	3	E		0.35															10.0	D	17.0	C	12.1	D	12.1	D	16.0	C	11.4	D	C to D
	14th	8th	3	E		0.56																	12.5	D	14.2	C							
Franklin	Market	Pine	3	N		1.06	8.5	E	18.8	C							14.6	C			14.5	C	15.9	C	15.6	C	13.4	C	17.9	C	12.0	D	C to D
	Pine	Lombard	3	N		0.83		*	16.4	C							7.3	E	7.7	E	17.5	C	21.7	B	23.8	B	20.8	B	21.3	B	16.1	C	B to C
Fremont	Harrison	Market	3	N	0.85	0.48		*	9.3	D	10.6	D	16.6	C			3.2	F	5.2	F	14.1	C	10.5	D	10.1	D	10.6	D	16.8	C	8.9	E	C to E
Fulton	Park P.	10th Ave	3	E		0.2																			25.7	A	25.0	B	23.4	B	20.6	B	
	10th Ave	Park Presidio	3	W		0.2																			8.5	E	11.3	D	18.1	C	14.7	C	
	10th Ave	Arguello	3	E		0.53																			23.5	B	15.0	C	18.6	C	17.4	C	
	Arguello	10th Ave	3	W		0.53																			22.1	B	17.7	C	18.1	C	17.6	C	
	Arguello	Masonic	3	E		0.66	9.8	D	13.2	C							14.8	C			15.0	C	10.9	D	13.6	C	12.2	D	14.8	C	15.2	C	
	Masonic	Arguello	3	W		0.66		*	18.9	C							14.7	C			20.7	B	23.9	B	20.6	B	13.8	C	18.0	C	15.8	C	
Geary	Great Hwy.	25th Avenue	3	E		1.78		*	26.2	A							20.1	B	16.0	C	23.6	B	23.0	B	21.4	B	23.8	B	18.2	C	14.0	C	
	25th Avenue	Great Hwy.	3	W		1.78		*	23.9	B							29.4	A	12.7	D	21.0	B	23.3	B	22.0	B	22.7	B	16.9	C	15.0	C	
	25th Avenue	Arguello	3	E		1.42		*	21.5	B					15.0	C			8.4	E	14.9	C	21.0	B	22.9	B	21.5	B	16.9	C	12.8	D	C to D
	Arguello	25th Avenue	3	W		1.42	11.3	D	20.3	B					15.8	C			10.6	D	15.1	C	18.1	C	17.0	C	17.1	C	15.9	C	11.8	D	C to D
	Arguello	Gough	3	E		1.89	11.3	D	22.6	B					20.7	B			14.7	C	22.4	B	27.4	A	20.3	B	20.1	B	18.5	C	14.9	C	
	Gough	Arguello	3	W		1.89		*	23.1	B					21.2	B			13.3	C	19.1	B	20.5	B	25.0	B	25.1	A	22.3	B	15.0	C	B to C
	Kearny	Gough	3	W		1.18	6.7	F	9.9	D	14.4	C			15.9	C	23.8	B	10.0	D	12.2	D	12.1	D	10.1	D	12.9	D	12.0	D	10.2	D	
Geneva	Ocean	Cayuga	3	E		0.56		*	12.0	D	17.2	C					14.6	C			12.9	D	11.6	D	8.4	E	12.9	D	14.2	C	9.6	D	C to D
	Cayuga	Ocean	3	W		0.56	6.7	F	10.4	D	12.0	D	9.6	D	14.2	C					7.9	E	6.9	F	9.2	D	10.2	D	13.1	C	9.7	D	C to D
	Cayuga	Paris	3	E	0.4	0.33	10.4	D	12.1	D	10.5	D	15.5	C							8.8	E	9.2	D	10.8	D	11.5	D	14.4	C	10.7	D	C to D
	Paris	Cayuga	3	W	0.4	0.33	10.4	D	12.3	D	10.7	D	11.9	D	12.8	D	12.7	D	10.6	D	10.1	D	9.7	D	10.5	D	8.1	E	13.2	C	10.8	D	C to D
	Paris	Santos	3	E		1.19		*	20.5	B							22.1	B			21.0	B	20.5	B	21.2	B	22.0	B	22.4	B	15.6	C	B to C
	Santos	Paris	3	W		1.19		*	22.6	B							31.3	A			25.2	A	21.2	B	23.6	B	23.4	B	20.4	B	15.5	C	B to C
Golden Gate	Masonic	Franklin	3	E		1.37		*	20.4	B							16.0	C			25.9	A	20.1	B	18.9	C	13.8	C	16.1	C	15.5	C	
	Franklin	Market	3	E		0.65	12.2	D	15.2	C							14.3	C			11.7	D	12.0	D	12.8	D	8.9	E	9.5	D	3.5	F	D to F

E8B-92

Attachment 5.2 - PM CMP Segments Level of Service Monitoring

(1991 - 2015)

Name	From	To	Class	Travel Dir.	Old Dist. (mi)	Dist. (mi)	Ave Speed 91	LOS 91	Ave Speed 92/3	LOS 92/3	Ave Speed 95	LOS 95	Ave Speed 97	LOS 97	Ave Speed 99	LOS 99	Ave Speed 2001	LOS 2001	Ave Speed 2004	LOS 2004	Ave Speed 2006	LOS 2006	Ave Speed 2007	LOS 2007	Ave Speed 2009	LOS 2009	Ave Speed 2011	LOS 2011	Ave Speed 2013	LOS 2013	Ave Speed 2015	LOS 2015	LOS Changes 2015
Gough	Pine	Geary	3	S		0.26	9.5	D	21.8	B							6.5	F	6.3	F	11.4	D	9.6	D	24.3	B	23.0	B	18.4	C	12.6	D	C to D
	Geary	Golden Gate	3	S		0.33		*	17.1	C							15.8	C	9.4	D	13.6	C	9.7	D	18.3	C	20.2	B	14.7	C	9.5	D	C to D
	Golden Gate	Market	3	S		0.52	8.3	E	16.4	C							7.6	E	6.4	F	7.0	E	7.2	E	8.7	E	12.3	D	12.6	D	7.9	E	D to E
Guerrero/ San Jose	Cesar Chavez	29th	3	S		0.28		*	24.0	B							24.9	A			20.1	B	20.5	B	14.3	C	20.8	B	18.7	C	12.7	D	C to D
	29th	Cesar Chavez	3	N		0.28		*	12.6	D	7.9	E	17.8	C			15.6	C			14.1	C	16.4	C	20.0	B	12.7	D	18.9	C	14.1	C	
	29th	Monterey	1	S		1.19		*	21.6	D	23.0	C					26.8	C			27.7	C	37.7	A	26.0	C	27.6	C	27.2	C	21.9	D	C to D
	Monterey	29th	1	N		1.19		*	30.8	B							41.2	A			27.0	C	26.3	C	23.7	C	24.2	C	27.0	C	14.5	E	C to E
Harrison	Embarcadero	1st	3	W		0.34			11.4	D	11.6	D	9.6	D	9.4	D	14.5	C			14.3	C	8.0	E	11.9	D	12.8	D	14.6	C	7.6	E	C to E
	1st	4th	3	W		0.56			20.5	B							14.0	C			20.0	B	22.4	B	16.7	C	18.9	C	16.5	C	13.1	C	
	4th	8th	3	W		0.69	12.7	D	19.1	B							16.0	C			19.0	B	19.0	C	11.6	D	14.9	C	16.0	C	14.3	C	
	8th	Division	3	W		0.40			13.6	C							13.0	C			12.4	D	12.7	D	13.2	C	11.6	D	16.1	C	12.8	D	C to D
Hayes	Market	Gough	3	W		0.39	5.6	F	11.7	D	15.7	C					10.9	D	7.1	E	11.8	D	13.3	C	9.6	D	8.8	E	11.5	D	11.2	D	
Howard	Embarcadero	S. Van Ness	3	W		2.11	5.4	F	13.6	C							13.0	C			12.7	D	14.6	C	12.6	D	12.2	D	15.5	C	11.1	D	C to D
J. Serra	Sloat	19th	1	S	0.91	1.21		*	18.0	D	20.6	D	11.8	F	12.0	F	18.1	D	14.7	E	18.8	D	14.9	E	16.7	E	16.8	E	26.3	C	18.5	D	C to D
	19th	Sloat	1	N	0.91	1.21		*	20.5	D	18.9	D	12.8	F	19.3	D	14.4	E	14.6	E	11.8	F	15.5	E	22.8	C	22.0	D	24.6	C	20.5	D	C to D
	19th	Brotherhood	1	S	0.63	0.31		*	22.1	C							16.6	E	19.0	D	35.3	A	40.4	A	39.2	A	40.3	A	38.0	A	34.0	B	A to B
	Brotherhood	19th	1	N	0.63	0.31		*	19.1	D	21.7	D	23.6	D	26.5	C					16.2	E	16.4	E	15.2	E	10.5	F	13.8	E	12.9	F	E to F
	Brotherhood	County Line	1	S	0.37	0.32		*	48.1	A							26.3	B			39.2	A	44.5	A	39.6	A	45.3	A	50.6	A	48.9	A	
	County Line	Brotherhood	1	N	0.37	0.32		*	40.4	A							26.3	B			41.8	A	41.0	A	35.6	A	47.1	A	26.0	C	20.8	D	C to D
Kearny	Market	Columbus	3	N		0.65	6.3	F	12.9	D	10.8	D	9.2	D	9.1	D	8.1	E	7.2	E	11.7	D	11.2	D	13.0	C	14.8	C	11.9	D	8.9	E	D to E
King	5th	2nd	3	E		0.52															13.2	C			17.8	C	19.8	B					
	2nd	5th	3	W		0.52															16.2	C			18.5	C	8.3	E					
	4th	2nd	3	E		0.34																	21.7	B					13.9	C	11.5	D	C to D
	2nd	4th	3	W		0.34																	7.7	E					12.0	D	8.7	E	D to E
Lincoln/ Kezar	19th Avenue	5th Ave.	3	E		0.83		*	16.4	C							14.5	C			12.3	D	24.0	B	23.1	B	20.6	B	21.5	B	18.9	C	B to C
	5th Ave.	19th Avenue	3	W		0.83	11.3	D	20.8	B							12.0	D	9.1	D	22.7	B	12.8	D	12.9	D	18.9	C	18.0	C	16.4	C	
	5th Ave.	Stanyan	3	E		0.70		*	22.8	B							14.0	C			22.8	B	21.8	B	21.7	B	22.8	B	22.0	B	21.1	B	
	Stanyan	5th Ave.	3	W		0.70		*	21.3	B							9.8	D	9.9	D	23.6	B	18.1	C	29.1	A	24.8	B	21.4	B	18.6	C	B to C
Main	Mission	Market	3	N		0.12		*	9.8	D	8.4	E	6.7	F	7.7	E	5.4	F	7.5	E	14.4	C	16.3	C	19.3	B	14.3	C	3.2	F	5.0	F	
Market/ Portola	Sloat	Santa Clara	3	E		0.43		*	16.5	C					15.9	C					21.0	B	16.0	C	20.2	B	21.1	B	22.1	B	16.5	C	B to C
	Santa Clara	Sloat	3	W		0.43	11.8	D	22.2	B					18.4	C					14.8	C	7.9	E	8.3	E	14.0	C	19.5	B	13.5	C	B to C
	Santa Clara	Burnett	3	E	2.45	1.34		*	23.6	B					37.4	A					20.6	B	22.2	B	24.0	B	20.0	B	23.1	B	20.2	B	
	Burnett	Santa Clara	3	W	2.45	1.34		*	19.6	B					35.7	A					24.0	B	22.0	B	20.4	B	21.4	B	22.0	B	17.2	C	B to C
	Burnett	Castro	3	E		1.62		*	34.1	A					30.9	A					22.0	B	24.5	B	22.0	B	23.5	B	24.6	B	20.9	B	
	Castro	Burnett	3	W		1.62		*	27.0	A					24.7	B					28.0	A	28.4	A	26.7	A	30.1	A	26.3	A	21.9	B	A to B
	Castro	Guerrero	3	E		0.79		*	15.0	C					9.2	Cons	14.8	C			10.0	D	10.6	D	9.9	D	10.3	D	13.9	C	11.4	D	C to D
	Guerrero	Castro	3	W		0.79		*	16.5	C					11.5	Cons	13.2	C			19.4	B	15.0	C	15.1	C	12.7	D	16.0	C	13.0	C	
	Guerrero	Van Ness	3	E		0.43	8.3	E	17.9	C					7.4	E	6.7	F	9.0	D	7.0	E	10.5	D	12.1	D	14.8	C	20.3	B	12.2	D	B to D
	Van Ness	Guerrero	3	W		0.43	8.3	E	12.5	D	8.0	E	10.8	D	11.1	D	24.8	B			12.1	D	8.3	E	12.2	D	11.3	D	12.9	D	10.9	D	
	Van Ness	Drumm	3	E		1.69	9.6	D	12.9	D	6.3	F					8.7	E	9.3	D	11.0	D	9.2	D	9.5	D	10.6	D	11.9	D	8.9	E	D to E
	Drumm	Van Ness	3	W		1.77	9.6	D	15.5	C							10.0	D	7.4	E	9.9	D	11.5	D	13.5	C	12.1	D	11.7	D	9.4	D	
Masonic	Presidio	Geary	3	S		0.29	8.5	E	9.3	D	12.7	D	16.9	C							11.4	D	10.5	D	14.5	C	9.2	D	15.9	C	9.5	D	C to D
	Geary	Bush	3	N		0.19	8.5	E	21.5	B							15.1	C			15.5	C	24.7	B	27.0	A	22.4	B	24.1	B	15.8	C	B to C
	Geary	Page	3	S		0.79	10.0	D	13.4	C							16.3	C			11.1	D	12.5	D	16.9	C	13.5	C	19.2	B	13.4	C	B to C
	Page	Geary	3	N		0.79	10.0	D	13.6	C							11.9	D	7.3	E	13.8	C	14.7	C	18.8	C	17.2	C	17.8	C	12.7	D	C to D
Mission/ Otis	Embarcadero	3rd	3	S		0.74	9.7	D	7.6	D	13.0	C			10.7	D	9.7	D	8.6	E	13.4	C	11.3	D	13.9	C	11.0	D	12.8	D	9.3	D	
	3rd	Embarcadero	3	N		0.74	9.7	D	15.9	C					5.1	F	10.7	D	9.2	D	7.6	E	8.9	E	13.0	D	10.9	D	14.3	C	8.3	E	C to E
	3rd	9th	3	S		0.98		*	19.1	B					12.1	D	12.3	D	8.4	E	18.3	C	13.2	C	15.1	C	14.4	C	14.5	C	11.1	D	C to D
	9th	3rd	3	N		0.98		*	19.9	B					13.5	C	9.7	D	9.8	D	12.7	D	14.2	C	13.7	C	12.4	D	15.1	C	10.3	D	C to D
	9th	14th	3	S		0.68	9.7	D	14.9	C					16.7	C					12.9	D	13.4	C	13.4	C	13.5	C	12.4	D	10.9	D	
	14th	9th	3	N		0.65		*	12.2	D	9.9	D	9.2	D	10.5	D	8.5	D	8.3	E	12.3	D	12.6	D	13.3	C	12.2	D	14.7	C	13.3	C	
	14th	Cesar Chavez	3	S		1.39	10.9	D	14.9	C					13.2	C					13.3	C	13.4	C	15.2	C	13.8	C	12.8	D	11.5	D	
	Cesar Chavez	14th	3	N		1.39	10.9	D	10.5	D	12.3	D	13.0	C	14.7	C					12.6	D	13.8	C	13.9	C	14.2	C	11.8	D	11.1	D	
	Cesar Chavez	Ocean	3	S		1.96		*	15.6	C					14.7	C					14.7	C	14.5	C	13.8	C	15.5	C	13.3	C	11.8	D	C to D
	Ocean	Cesar Chavez	3	N		1.96		*	17.3	C					18.5	C					19.1	B	15.3	C	17.8	C	16.3	C	14.1	C	13.9	C	
	Ocean	Sickles	3	S	1.88	1.45		*	15.1	C					24.9	B					21.3	B	16.6	C	20.3	B	19.4	B	15.9	C	13.8	C	
	Sickles	Ocean	3	N	1.88	1.45		*	18.1	C					22.0	B					23.0	B	19.8	B	22.4	B	20.3	B	17.3	C	14.2	C	
Montgomery	Broadway	Bush	3	S	0.38	0.51	6.2	F	2.4	F							12.4	D	8.2	E	8.2	E	5.5	F	9.2	D	7.2	E	12.8	D	5.5	F	D to F
North Point	Van Ness	Columbus	3	E		0.38		*	15.4	C							7.4	E	11.0	D	11.4	D	15.0	C	15.5	C	14.4	C	9.3	D	8.9	E	D to E
	Columbus	Van Ness	3	W		0.38	8.5	E	20.9	B							10.4	D	9.8	D	19.5	B	12.6	D	16.4	C	13.2	C	10.4	D	13.2	C	D to C
	Columbus	Embarcadero	3	E		0.61		*	14.5	C							11.4	D	9.9	D	12.8	D	20.3	B	15.9	C	16.3	C	17.7	C	8.4	E	C to E
	Embarcadero	Columbus	3	W		0.61		*	16.9	C							12.2	D	10.3	D	19.5	B	21.3	B	15.8	C	20.2	B	18.0	C	12.4	D	C to D
Oak	Divisadero	Fillmore	3	E		0.37		*		~							16.9	C			24.6	B	26.7	A	25.3	A	26.4	A	23.8	B	18.7	C	B to C
	Fillmore	Laguna	3	E		0.27	8.2	E		~							15.3	C	15.7	C	23.8	B	27.8	A	22.3	B	24.5	B	16.6	C	12.4	D	C to D
	Stanyan	Divisadero	3	E		0.91			21.6	B							15.6	C			23.0	B	27.4	A	21.5	B	22.6	B	17.9	C	11.0	D	C to D

Attachment 5.2 - PM CMP Segments Level of Service Monitoring

(1991 - 2015)

Name	From	To	Class	Travel Dir.	Old Dist. (mi)	Dist. (mi)	Ave Speed 91	LOS 91	Ave Speed 92/3	LOS 92/3	Ave Speed 95	LOS 95	Ave Speed 97	LOS 97	Ave Speed 99	LOS 99	Ave Speed 2001	LOS 2001	Ave Speed 2004	LOS 2004	Ave Speed 2006	LOS 2006	Ave Speed 2007	LOS 2007	Ave Speed 2009	LOS 2009	Ave Speed 2011	LOS 2011	Ave Speed 2013	LOS 2013	Ave Speed 2015	LOS 2015	LOS Changes 2015
	Laguna	Franklin	3	E		0.27		*	23.1	B							13.0	C	11.8	D	16.2	C	13.5	C	11.8	D	16.4	C	21.1	B	20.6	B	
Ocean	19th Avenue	Miramar	3	E		1.11		*	17.1	C							9.4	D	12.5	D	12.4	D	14.9	C	12.9	D	12.8	D	13.8	C	13.8	C	
	Miramar	19th Avenue	3	W		1.11		*	14.6	C							8.8	E	10.3	D	12.5	D	15.4	C	12.4	D	14.5	C	14.2	C	13.1	C	
	Miramar	Howth	3	E		0.48	0.8	F	21.0	B							10.7	D	13.2	C	14.2	C	13.7	C	14.8	C	12.7	D	14.2	C	11.1	D	C to D
	Howth	Miramar	3	W		0.48	6.1	F	14.9	C							9.1	D	11.2	D	8.4	E	10.7	D	13.0	D	11.9	D	12.5	D	8.6	E	D to E
Octavia	Fell	Market	3	S		0.27															14.2	C	12.6	D	11.6	D	9.9	D	9.8	D	4.0	F	D to F
	Market	Fell	3	N		0.27															8.2	E	14.5	C	16.1	C	13.6	C	10.9	D	10.4	D	
O'Farrell	Gough	Mason	3	E		0.85	5.7	F	13.7	C							12.6	D	14.6	C	9.9	D	10.0	D	11.2	D	11.2	D	13.3	C	10.8	D	C to D
	Mason	Market	3	E		0.28	6.9	F	7.9	E							4.2	F	6.7	F	6.7	F	6.1	F	9.0	E	8.0	E	12.5	D	8.5	E	D to E
Pine	Market	Kearny	3	W		0.38	4.6	F	10.8	D	7.3	E	10.3	D	6.7	F	8.0	E	4.3	F	8.9	E	5.9	F	8.9	E	13.2	C	4.3	F	6.7	F	
	Kearny	Leavenworth	3	W		0.63		*	12.9	D	19.8	B					17.1	C			16.2	C	13.6	C	16.8	C	16.2	C	12.1	D	13.8	C	D to C
	Leavenworth	Franklin	3	W		0.46	4.8	F	13.2	C							9.4	D	6.5	F	12.6	D	10.9	D	14.3	C	14.5	C	8.5	E	5.2	F	E to F
	Franklin	Presidio	3	W		1.27		*	15.3	C							19.2	B			20.3	B	23.4	B	22.4	B	22.0	B	14.5	C	16.7	C	
Potrero	Division	21st	3	S		0.80		*	22.6	B					18.8	C					16.5	C	20.5	B	25.2	A	22.6	B	14.0	C	8.5	E	C to E
	21st	Division	3	N		0.80		*	21.4	B					19.3	B					14.9	C	21.3	B	15.6	C	23.2	B	15.3	C	6.3	F	C to F
	21st	C. Chavez	3	S		0.62	4.8	F	13.7	C					19.1	B					15.5	C	15.8	C	19.4	B	18.0	C	8.5	E	3.9	F	E to F
	C. Chavez	21st	3	N		0.62		*	23.8	B					14.5	C					17.0	C	23.6	B	18.8	C	21.3	B	15.1	C	7.7	E	C to E
Skyline	Sloat	County Line	3	S	2.32	1.94		*	42.1	A							36.6	A			47.1	A	37.8	A	38.1	A	38.3	A	38.5	A	30.9	A	
	County Line	Sloat	3	N		1.94		*	44.9	A							42.6	A			49.3	A	41.7	A	46.8	A	42.2	A	42.6	A	35.8	A	
Sloat	Skyline	J. Serra	1	E		1.38		*	19.2	D	24.9	C					19.9	D	18.4	D	25.9	C	17.6	D	20.7	D	17.7	D	25.4	C	22.6	C	
	J. Serra	Skyline	1	W		1.38		*	23.2	C							27.4	C			24.8	C	27.2	C	26.9	C	29.6	B	29.5	B	24.7	C	B to C
Stanyan	Fulton	Turk	3	N		0.20	4.6	F	10.8	D	11.6	D	16.8	C							15.9	C	12.0	D	12.6	D	15.6	C	18.3	C	13.3	C	
	Turk	Fulton	3	S		0.20		*	7.6	D	10.5	D	8.0	E	13.3	C					18.9	C	6.4	F	9.2	D	8.6	E	15.9	C	11.5	D	C to D
Sutter	Market	Mason	3	W		0.56		*	7.3	E	12.4	D	12.7	D	8.0	E	12.7	C			11.6	D	13.5	C	11.3	D	12.7	D	11.9	D	10.4	D	
	Mason	Gough	3	W		0.82	9.0	D	17.0	C							14.6	C			13.3	C	12.4	D	14.6	C	11.8	D	12.3	D	10.9	D	
	Gough	Divisadero	3	W		0.82		*	16.6	C							14.3	C			13.3	C	15.6	C	14.9	C	13.6	C	13.0	C	11.8	D	C to D
	Divisadero	Gough	3	E		0.82		*	15.4	C							12.8	C			15.8	C	15.9	C	15.5	C	13.4	C	15.2	C	12.0	D	C to D
Townsend	7th	2nd	3	E		0.86															21.3	B	16.8	C	11.9	D	15.9	C	17.2	C	8.4	E	C to E
	2nd	7th	3	W		0.86															18.7	C	18.0	C	12.8	D	11.4	D	16.5	C	9.4	D	C to D
Turk	Market	Hyde	3	W		0.38		*	14.9	C							7.3	E	8.3	E	12.8	D	13.3	C	11.1	D	11.4	D	13.4	C	12.5	D	C to D
	Hyde	Gough	3	W		0.46	8.7	E	14.9	C							9.1	D	11.3	D	10.5	D	10.6	D	9.3	D	11.3	D	14.6	C	12.0	D	C to D
	Gough	Divisadero	3	W		0.82		*	27.1	A							18.0	C			19.3	B	21.7	B	19.4	B	18.3	C	22.1	B	16.7	C	B to C
	Divisadero	Stanyan	3	W		0.91		*	19.2	B							14.6	C			21.3	B	18.9	C	25.6	A	17.4	C	19.4	B	17.4	C	B to C
	Stanyan	Divisadero	3	E		0.91		*	14.9	C							16.4	C			18.4	C	19.1	B	17.2	C	17.2	C	19.5	B	17.9	C	B to C
Van Ness/ S VanNess	Lombard	Washington	3	S		0.58		*	17.7	C					14.5	C	12.8		11.7	D	13.5	C	19.9	B	12.4	D	17.1	C	13.7	C	12.3	D	C to D
	Washington	Lombard	3	N		0.58		*	13.2	C					18.0	C	26.1		9.2	D	22.4	B	26.6	A	26.4	A	24.5	B	17.6	C	16.4	C	
	Washington	Golden Gate	3	S		0.84	4.6	F	11.7	D	7.0	E	8.4	E	9.7	D	10.0	D	9.8	D	8.0	E	10.4	D	12.2	D	11.5	D	12.8	D	9.8	D	
	Golden Gate	Washington	3	N		0.84		*	15.1	C					11.4	D	12.8	D	9.8	D	16.6	C	16.9	C	17.4	C	21.9	B	14.8	C	11.7	D	C to D
	Golden Gate	13th	3	S	1.21	0.80	4.6	F	6.9	F					23.1	B			5.0	F	9.1	D	12.7	D	12.3	D	16.5	C	14.2	C	7.8	E	C to E
	13th	Golden Gate	3	N	1.21	0.80		*	13.7	C					18.3	C			6.6	F	10.2	D	12.8	D	14.7	C	13.7	C	13.4	C	9.7	D	C to D
	13th	Cesar Chavez	3	S		1.50	12.6		18.2	C					18.9	C					20.2	B	20.4	B	17.1	C	18.7	C	19.0	B	15.1	C	B to C
	Cesar Chavez	13th	3	N		1.50			22.4	B					16.9	C	26.1				16.3	C	15.5	C	14.7	C	13.9	C	18.5	C	14.7	C	
Washington	Drumm	Kearny	3	W	0.28	0.44		*	10.3	D	12.5	D	8.0	E	9.5	D	18.4	C			14.1	C	15.2	C	11.3	D	14.9	C	8.1	E	9.1	D	E to D
West Portal	Ulloa	Sloat	3	S	0.38	0.54		*	18.2	C							11.3	D	8.0	E	17.1	C	15.4	C	15.2	C	16.7	C	13.4	C	14.3	C	
	Sloat	Ulloa	3	N	0.38	0.54		*	17.1	C							11.6	D	10.0	D	15.1	C	15.1	C	12.6	D	15.4	C	13.7	C	11.6	D	C to D
FREEWAY SEGMENTS INBOUND																																	
I-280	J. Serra	Weldon	Fwy	E		4.29	54.9	C	59.1	B					0		45.0	D	43.7	D	67.4	A	60.4	A	64.6	A	61.3	A	65.9	A	63.8	A	
	Weldon	6th/Brannan	Fwy	NE		3.37	section closed		46.3	D	51	D	48.6	D	38.6	E	38.9	E	42.3	D	25.5	F	50.8	C	41.8	D	35.6	E	36.3	E	32.1	E	
US 101	C & C Limit	Cortland	Fwy	N		2.31	20.6	F	72.4	A							43.2	D	40.1	E	55.2	B	63.9	A	49.1	C	49.0	C	53.1	C	51.3	C	
	Cortland	I-80	Fwy	N		1.90	24.6	F	45.8	E	31.8	E	40.9	E	6.2	F	24.0	F	17.8	F	53.1	C	48.6	D	23.6	F	18.3	F	13.3	F	12.8	F	
	I-80	Market	Fwy	NW		1.28	12.2	F	15.3	F							section closed		section closed		section closed		32.6	E	22.8	F	30.5	E	31.8	E	24.6	F	E to F
I-80	Treasure Island	Fremont Exit	Fwy	S		2.71	27.5	F	26.3	F							31.6	E	21.7	F	41.9	D	21.9	F	26.8	F	30.3	E	23.8	F	19.5	F	
	Fremont Exit	US-101	Fwy	SW	2.13	1.66	18.6	F	21.5	F							24.9	F	13.8	F	22.4	F	18.2	F	24.5	F	19.9	F	17.4	F	15.9	F	
FREEWAY SEGMENTS OUTBOUND																																	
I-280	6th/Brannan	Weldon	Fwy	E		3.35	section closed		22.9	F							30.9	E	28.5	F	29.8	F	54.8	C	54.5	C	41.5	D	37.8	E	36.4	E	
	Weldon	J. Serra	Fwy	SW		4.29	51.9	D	56.6	B							44.5	D	31.4	E	54.3	C	53.5	C	45.7	D	50.6	C	52.1	C	48.4	D	C to D
US 101	Market	I-80	Fwy	S		1.14	18.8	F	13.4	F							section closed		section closed		section closed		18.9	F	21.3	F	13.1	F	13.4	F	12.6	F	
	I-80	Cortland	Fwy	S		1.99	31.6	E	46.3	D	47.2	D	35.5	E	32.4	E	44.4	D	21.4	F	30.3	E	45.2	D	45.6	D	46.9	D	49.6	C	43.3	D	C to D
	Cortland	Monster Pk Exit	Fwy	S		2.15	48.1	D	51.1	D	30.8	E	39.2	E	49	D	41.6	D	30.5	E	52.2	C	49.8	C	55.2	B	51.3	C	59.4	B	58.3	B	
I-80	US-101	Fremont Exit	Fwy	N	2.13	1.75	19.0	F	25.9	F							14.8	F	10.0	F	8.9	F	19.6	F	7.0	F	10.8	F	9.7	F	7.6	F	
	Fremont Exit	Treasure Island	Fwy	NE		2.70	29.3	F	37.7	E	34.6	E	45.6	E	23.1	F	21.6	F	14.6	F	41.5	D	45.7	D	36.0	E	32.0	E	35.2	E	33.4	E	

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Attachment 5.3: Average Speed and LOS for all Arterial HCM 2000 Segments

(2009 - 2015)

Route Name	Start Intersection	End Intersection	Dir	Length (mi)	HCM 2000 Class	2009				2011				2013				2015			
						AM Speed	AM LOS	PM Speed	PM LOS	AM Speed	AM LOS	PM Speed	PM LOS	AM Speed	AM LOS	PM Speed	PM LOS	AM Speed	AM LOS	PM Speed	PM LOS
1st St	Market	Harrison	S	0.48	4	14.2	C	13.1	C	13.8	C	18.2	C	18.5	C	13.2	C	11.8	D	4.8	F
2nd St	Brannan	Market	N	0.72	4	12.2	D	10.4	D	13.9	C	13.3	C	11.1	D	3.1	F	9.7	D	5.3	E
2nd St	Market	Brannan	S	0.72	4	16.3	C	10.6	D	20.8	B	12.2	D	9.6	D	6.0	E	11.9	D	6.9	E
3rd St	Jamestown	Evans	N	1.62	4	24.6	B	22.1	B	23.9	B	24.0	B	18.1	C	17.8	C	17.1	C	17.8	C
3rd St	Evans	Terry Francois	N	2.33	3	28.4	B	30.1	A	27.6	B	30.0	A	20.9	C	20.4	C	17.5	D	14.1	D
3rd St	Terry Francois	Berry	N	0.11	3	21.3	C	21.3	C	16.2	D	21.4	C								
3rd St	Berry	Market	N	0.97	4	19.9	B	15.7	C	15.0	C	12.3	D								
3rd St	Terry Francois	Evans	S	2.33	3	28.6	B	27.8	B	27.3	B	29.5	B	21.7	C	20.5	C	18.7	C	16.6	D
3rd St	Evans	Jamestown	S	1.62	4	23.2	B	22.3	B	25.4	A	22.7	B	19.2	B	18.7	C	18.4	C	17.5	C
4th St/Stockton	O'farrell	Harrison	S	0.56	4	13.4	C	8.5	E	17.0	C	15.1	C	13.6	C	11.5	D	13.9	C	9.8	D
4th St/Stockton	Harrison	Channel	S	0.62	4	13.8	C	14.3	C	16.8	C	14.9	C	12.8	D	12.6	D	11.4	D	8.7	E
5th St	Brannan	Market	N	0.72	4	14.7	C	15.6	C	16.3	C	15.7	C	9.5	D	4.0	F	10.0	D	6.5	E
5th St	Market	Brannan	S	0.72	4	19.3	B	13.2	C	16.1	C	13.8	C	11.7	D	5.4	E	10.8	D	6.7	E
6th St	Brannan	Market	N	0.72	4	11.2	D	11.1	D	15.7	C	11.0	D	13.6	C	12.1	D	10.6	D	7.5	E
6th St	Market	Brannan	S	0.72	4	15.1	C	12.3	D	16.5	C	9.6	D	17.5	C	11.8	D	14.6	C	11.0	D
7th St	Brannan	Market	N	0.72	4	18.9	C	16.4	C	19.3	B	20.9	B	15.4	C	13.7	C	10.8	D	8.3	E
8th St	Market	Bryant	S	0.60	3	15.0	D	17.0	D	17.9	D	23.8	C	15.9	D	15.9	D	13.5	E	8.4	E
9th St	Brannan	Market	N	0.72	4	11.4	D	14.6	C	13.8	C	13.4	C	14.4	C	12.9	D	10.2	D	8.7	E
10th St	Market	Brannan	S	0.73	3	21.9	C	16.3	D	21.4	C	20.4	C	23.8	C	20.5	C	18.1	C	13.4	E
16th St	Market	Mission	E	0.74	4	12.1	D	10.7	D	13.7	C	11.9	D	16.3	C	14.9	C	13.1	C	13.5	C
16th St	Mission	Potrero	E	0.67	4	14.1	C	12.8	D	13.6	C	11.7	D	14.7	C	14.8	C	13.3	C	11.9	D
16th St	Potrero	Mission	W	0.67	4	13.5	C	15.2	C	12.1	D	13.4	C	14.1	C	12.5	D	13.0	C	11.1	D
16th St	Mission	Market	W	0.74	4	13.4	C	12.3	D	12.7	D	8.4	E	16.0	C	17.0	C	13.3	C	11.7	D
19th Ave/Park Presidio	Junipero Serra	Sloat	N	1.25	3	18.2	C	12.1	E	16.9	D	17.7	D	15.7	D	16.9	D	17.6	D	15.2	D
19th Ave/Park Presidio	Sloat	Lincoln	N	2.13	3	13.8	E	23.6	C	15.4	D	27.7	B	17.0	D	17.4	D	13.1	E	19.5	C
19th Ave/Park Presidio	Lincoln	Fulton	N	0.93	2	20.0	D	32.5	B	22.3	C	30.1	B								
19th Ave/Park Presidio	Fulton	Lake	N	0.91	3	19.8	C	25.3	B	22.0	C	28.5	B								
19th Ave/Park Presidio	Lake	Us 101	N	1.21	1	45.3	A	46.0	A	43.6	A	43.0	A	49.6	A	44.6	A	37.4	B	17.7	E
19th Ave/Park Presidio	Us 101	Lake	S	1.32	1	40.7	B	35.2	B	24.4	D	30.9	C	42.9	A	42.9	A	39.7	B	38.0	B
19th Ave/Park Presidio	Lake	Fulton	S	0.91	3	24.0	B	21.7	C	25.6	B	23.4	C								
19th Ave/Park Presidio	Fulton	Lincoln	S	0.93	2	29.0	B	18.2	D	30.9	B	25.8	C								
19th Ave/Park Presidio	Lincoln	Sloat	S	2.13	3	19.2	C	23.0	C	19.3	C	21.4	C	17.8	D	20.2	C	17.4	D	19.8	C
19th Ave/Park Presidio	Sloat	Junipero Serra	S	1.25	3	21.6	C	13.5	E	23.6	C	23.2	C	23.8	C	18.2	C	23.2	C	15.8	D
Alemany	County Line	Lyell	E	3.01	2	28.3	B	22.4	C	23.2	C	22.0	C								
Alemany	Lyell	Bayshore	E	1.59	2	26.1	C	29.9	B	28.5	B	30.2	B	29.7	B	33.0	B	22.3	C	29.2	B
Alemany	Bayshore	Lyell	W	1.51	2	30.7	B	31.4	B	28.1	B	24.7	C	29.8	B	31.2	B	31.2	B	27.6	C
Alemany	Lyell	County Line	W	3.03	2	25.3	C	22.2	C	21.4	D	22.5	C	25.9	C	29.6	B	22.4	C	22.2	C
Bay	Van Ness	Embarcadero	E	1.08	4	18.9	C	16.5	C	14.1	C	18.2	C	21.3	B	20.7	B	14.8	C	15.6	C
Bay	Embarcadero	Van Ness	W	1.08	4	19.3	B	16.2	C	20.1	B	16.4	C	20.6	B	19.9	B	17.1	C	14.9	C
Bayshore	County Line	Industrial	N	2.26	3	17.4	D	21.5	C	19.1	C	23.1	C	13.9	E	23.1	C	10.8	E	20.2	C
Bayshore	Industrial	Cesar Chavez	N	0.83	3	17.5	D	14.4	D	12.6	E	15.5	D	15.8	D	17.6	D	16.2	D	17.3	D
Bayshore	Cesar Chavez	Industrial	S	0.83	3	25.4	B	22.3	C	19.4	C	15.3	D								
Bayshore	Industrial	County Line	S	2.26	3	27.8	B	26.3	B	24.1	B	21.8	C	24.5	B	25.5	B	22.5	C	20.6	C
Beale/Davis	Clay	Mission	S	0.33	4	12.8	D	11.2	D	12.3	D	11.7	D	8.8	E	5.2	E	9.2	D	5.4	E
Brannan	10th	6th	E	0.54	4	13.8	C	13.6	C	11.7	D	13.6	C								
Brannan	6th	3rd	E	0.52	4	15.8	C	10.3	D	14.7	C	17.2	C	19.3	B	14.1	C	13.2	C	8.5	E
Brannan	3rd	6th	W	0.52	4	17.0	C	14.0	C	12.8	D	16.4	C	20.4	B	16.9	C	14.4	C	11.0	D
Brannan	6th	10th	W	0.54	4	16.9	C	9.8	D	14.1	C	8.8	E								
Broadway	Gough	Larkin	E	0.36	4	15.1	C	10.5	D	16.3	C	10.2	D	8.8	E	12.8	D	11.6	D	10.5	D
Broadway	Larkin	Powell	E	0.55	1	32.8	C	36.1	B	23.2	D	33.6	C	14.0	E	25.2	D	8.4	E	29.8	C
Broadway	Powell	Montgomery	E	0.35	4	20.1	B	13.3	C	15.8	C	14.2	C	11.4	D	9.0	E	11.2	D	10.6	D
Broadway	Montgomery	Embarcadero	E	0.35	4	13.9	C	14.7	C	15.3	C	13.2	C	11.3	D	6.8	E	9.9	D	5.0	F
Broadway	Embarcadero	Montgomery	W	0.35	4	19.9	B	14.9	C	17.1	C	13.3	C	12.7	D	9.9	D	17.1	C	10.5	D

Attachment 5.3: Average Speed and LOS for all Arterial HCM 2000 Segments

(2009 - 2015)

Route Name	Start Intersection	End Intersection	Dir	Length (mi)	HCM 2000 Class	2009 AM Speed	2009 AM LOS	2009 PM Speed	2009 PM LOS	2011 AM Speed	2011 AM LOS	2011 PM Speed	2011 PM LOS	2013 AM Speed	2013 AM LOS	2013 PM Speed	2013 PM LOS	2015 AM Speed	2015 AM LOS	2015 PM Speed	2015 PM LOS
Broadway	Montgomery	Powell	W	0.35	4	13.3	C	7.7	E	11.7	D	11.8	D	11.1	D	6.6	E	11.2	D	5.3	E
Broadway	Powell	Larkin	W	0.55	1	32.9	C	32.3	C	31.6	C	29.6	C	27.8	C	25.5	D	33.1	C	27.8	C
Broadway	Larkin	Gough	W	0.36	4	19.5	B	11.3	D	15.0	C	11.1	D	11.6	D	12.6	D	8.8	E	8.1	E
Brotherhood	Junipero Serra	Alemany	E	0.44	3	25.8	B	26.6	B	29.2	B	24.6	B	28.7	B	29.4	B	23.0	C	22.0	C
Brotherhood	Alemany	Junipero Serra	W	0.47	3	29.7	B	33.4	A	28.8	B	31.5	A	28.7	B	31.6	A	23.3	C	24.8	B
Bryant	Division	4th	E	0.99	3	13.1	E	12.7	E	19.4	C	14.3	D								
Bryant	4th	2nd	E	0.34	3	24.5	B	19.1	C	26.4	B	20.9	C								
Bryant	2nd	Embarcadero	E	0.43	4	19.2	B	13.7	C	15.5	C	11.1	D								
Bush	Masonic	Gough	E	1.24	3	18.0	C	21.2	C	23.3	C	21.9	C	20.4	C	22.7	C	16.6	D	19.1	C
Bush	Gough	Market	E	1.46	3	10.9	E	14.3	D	13.8	E	11.3	E	16.4	D	16.0	D	12.1	E	10.5	E
Castro/Divisadero	Market	14th	N	0.32	4	14.8	C	15.7	C	15.6	C	15.2	C								
Castro/Divisadero	14th	Geary	N	1.13	4	15.0	C	12.3	D	14.9	C	11.6	D	14.4	C	14.0	C	11.7	D	11.4	D
Castro/Divisadero	Geary	Pine	N	0.27	4	11.1	D	10.7	D	8.1	E	9.2	D	13.0	C	13.7	C	10.3	D	11.4	D
Castro/Divisadero	Pine	Geary	S	0.27	4	14.5	C	13.5	C	13.0	D	10.1	D	13.6	C	13.0	C	11.1	D	10.2	D
Castro/Divisadero	Geary	14th	S	1.13	4	16.6	C	11.1	D	12.8	D	10.3	D	14.9	C	12.7	D	11.7	D	9.6	D
Castro/Divisadero	14th	Market	S	0.32	4	9.9	D	15.2	C	16.0	C	11.6	D	15.0	C	13.4	C	12.5	D	10.5	D
Cesar Chavez	Guerrero	South Van Ness	E	0.36	4	20.3	B	13.5	C	14.6	C	10.7	D								
Cesar Chavez	South Van Ness	Evans	E	1.03	4	18.6	C	22.1	B	22.6	B	16.8	C								
Cesar Chavez	Evans	Pennsylvania	E	0.27	4	21.3	B	30.8	A	24.3	B	24.0	B								
Cesar Chavez	Pennsylvania	3rd	E	0.26	4	17.5	C	20.5	B	15.8	C	22.4	B								
Cesar Chavez	3rd	Pennsylvania	W	0.26	4	13.6	C	16.3	C	21.0	B	11.6	D								
Cesar Chavez	Pennsylvania	Evans	W	0.27	4	22.2	B	25.7	A	23.6	B	26.9	A								
Cesar Chavez	Evans	South Van Ness	W	1.03	4	21.2	B	22.7	B	23.4	B	23.4	B								
Cesar Chavez	South Van Ness	Guerrero	W	0.36	4	10.9	D	13.7	C	11.2	D	8.0	E								
Clay	Kearny	Davis	E	0.38	4	19.1	B	11.6	D	19.0	B	16.2	C	12.4	D	6.6	E	9.9	D	8.7	E
Columbus	Montgomery	Greenwich	N	0.67	4	14.9	C	14.1	C	12.6	D	12.7	D	13.3	C	12.4	D	12.4	D	12.5	D
Columbus	Greenwich	North Point	N	0.42	4	10.6	D	9.2	D	10.5	D	13.4	C	13.6	C	13.3	C	12.5	D	12.6	D
Columbus	North Point	Greenwich	S	0.42	4	18.7	C	13.3	C	18.4	C	14.0	C	13.4	C	11.5	D	12.8	D	10.8	D
Columbus	Greenwich	Montgomery	S	0.67	4	11.6	D	7.1	E	12.0	D	12.3	D	12.9	D	11.9	D	11.8	D	10.2	D
Doyle/Richardson/Lombard	Francisco	Broderick	S	0.19	3	14.9	D	18.9	C	16.1	D	15.2	D								
Doyle/Richardson/Lombard	Broderick	Pierce	S	0.28	3	23.3	C	20.4	C	23.0	C	16.3	D								
Doyle/Richardson/Lombard	Pierce	Laguna	S	0.46	3	25.1	B	21.1	C	22.6	C	18.8	C								
Doyle/Richardson/Lombard	Laguna	Van Ness	S	0.36	3	19.1	C	14.3	D	15.8	D	12.0	E								
Doyle/Richardson/Lombard	Van Ness	Laguna	N	0.36	3	12.1	E	11.7	E	13.3	E	12.6	E								
Doyle/Richardson/Lombard	Laguna	Pierce	N	0.46	3	22.1	C	17.6	D	22.7	C	21.4	C								
Doyle/Richardson/Lombard	Pierce	Broderick	N	0.28	3	21.6	C	16.9	D	12.6	E	18.1	C								
Doyle/Richardson/Lombard	Broderick	Francisco	N	0.19	3	20.9	C	22.0	C	23.5	C	14.8	D								
Drumm	Market	Washington	N	0.22	4	16.8	C	16.2	C	16.1	C	17.2	C	11.2	D	8.0	E	13.0	D	6.3	E
Drumm	Washington	Market	S	0.22	4	8.7	E	7.6	E	20.3	B	17.7	C	6.7	E	5.5	E	7.5	E	6.0	E
Duboce/Division	Market	Mission	E	0.35	4	9.7	D	14.8	C	16.6	C	16.7	C	19.6	B	22.5	B	13.3	C	15.5	C
Duboce/Division	Mission	Brannan	E	0.66	4	13.8	C	13.3	C	23.5	B	18.5	C								
Duboce/Division	Brannan	Mission	W	0.66	4	12.8	D	9.6	D	18.0	C	16.2	C								
Duboce/Division	Mission	Market	W	0.35	4	14.6	C	10.6	D	14.1	C	9.6	D	16.6	C	14.7	C	11.2	D	8.3	E
Embarcadero	Townsend	Bay	N	2.06	3	20.9	C	21.0	C	20.6	C	17.5	D								
Embarcadero	Bay	North Point	N	0.10	4	26.7	A	11.4	D	16.8	C	21.0	B								
Embarcadero	North Point	Bay	S	0.10	4	13.7	C	11.6	D	9.0	D	17.5	C								
Embarcadero	Bay	Townsend	S	2.06	3	13.2	E	14.2	D	14.5	D	8.7	F								
Evans	3rd	Cesar Chavez	N	0.73	4	22.5	B	20.1	B	15.9	C	21.5	B	15.3	C	16.9	C	13.4	C	12.2	D
Evans	Cesar Chavez	3rd	S	0.73	4	20.7	B	21.6	B	15.7	C	17.5	C	14.8	C	16.8	C	12.8	D	13.1	C
Fell	Gough	10th	E	0.29	4	11.4	D	12.6	D	8.7	E	12.9	D								
Fell	Franklin	Gough	W	0.09	4	15.1	C	4.3	F	13.2	C	3.8	F								
Fell	Gough	Laguna	W	0.18	3	12.9	E	9.0	F	15.2	D	9.3	F	17.5	D	17.2	D	14.2	D	12.7	E
Fell	Laguna	Stanyan	W	1.56	3	26.4	B	23.7	C	26.3	B	24.1	B	23.8	C	22.5	C	20.0	C	19.1	C

Attachment 5.3: Average Speed and LOS for all Arterial HCM 2000 Segments

(2009 - 2015)

Route Name	Start Intersection	End Intersection	Dir	Length (mi)	HCM 2000 Class	2009				2011				2013				2015			
						AM Speed	AM LOS	PM Speed	PM LOS	AM Speed	AM LOS	PM Speed	PM LOS	AM Speed	AM LOS	PM Speed	PM LOS	AM Speed	AM LOS	PM Speed	PM LOS
Folsom	11th	8th	E	0.31	3	17.2	D	16.9	D	18.0	D	14.7	D								
Folsom	8th	4th	E	0.69	3	14.9	D	17.2	D	17.0	D	19.4	C	18.1	C	17.3	D	12.6	E	9.5	E
Folsom	4th	1st	E	0.52	3	20.7	C	15.0	D	18.8	C	16.9	D	18.9	C	14.8	D	15.1	D	6.4	E
Folsom	1st	Embarcadero	E	0.34	3	13.2	E	12.1	E	10.8	E	12.1	E	16.4	D	16.0	D	12.2	E	11.4	E
Franklin	Market	Pine	N	1.06	4	14.9	C	15.6	C	12.7	D	13.4	C	15.6	C	17.9	C	11.1	D	12.0	D
Franklin	Pine	Lombard	N	0.83	4	20.5	B	23.8	B	21.1	B	20.8	B	21.0	B	21.3	B	17.8	C	16.1	C
Fremont	Harrison	Market	N	0.48	4	12.9	D	10.1	D	13.6	C	10.6	D	16.3	C	16.8	C	11.2	D	8.9	E
Fulton	Park Presidio	Arguello	E	0.74	3	20.9	C	24.1	B	18.6	C	16.9	D								
Fulton	Arguello	Masonic	E	0.66	4	16.2	C	13.6	C	13.4	C	12.2	D	15.6	C	14.8	C	14.5	C	15.2	C
Fulton	Masonic	Arguello	W	0.66	4	20.4	B	20.6	B	16.5	C	13.8	C	18.2	C	18.0	C	17.1	C	15.8	C
Fulton	Arguello	Park Presidio	W	0.74	3	22.5	C	15.4	D	15.4	D	15.3	D								
Geary	Great Hwy.	25th Avenue	E	1.78	4	25.0	B	21.4	B	23.1	B	23.8	B	18.3	C	18.2	C	14.4	C	14.0	C
Geary	25th Avenue	Arguello	E	1.42	4	23.9	B	22.9	B	20.3	B	21.5	B	16.7	C	16.9	C	13.6	C	12.8	D
Geary	Arguello	Collins	E	0.48	4	27.7	A	13.2	C	18.4	C	15.2	C								
Geary	Collins	Gough	E	1.41	3	28.7	B	24.7	B	23.8	C	22.5	C								
Geary	Kearny	Gough	W	1.18	4	15.1	C	10.1	D	14.1	C	12.9	D	13.4	C	12.0	D	11.2	D	10.2	D
Geary	Gough	Collins	W	1.41	3	19.4	C	25.3	B	19.4	C	25.8	B								
Geary	Collins	Arguello	W	0.48	4	22.7	B	24.1	B	23.3	B	23.1	B								
Geary	Arguello	25th Avenue	W	1.42	4	22.1	B	17.0	C	19.8	B	17.1	C	16.4	C	15.9	C	14.2	C	11.8	D
Geary	25th Avenue	Great Hwy.	W	1.78	4	23.9	B	22.0	B	24.5	B	22.7	B	18.3	C	16.9	C	15.4	C	15.0	C
Geneva	Ocean	Cayuga	E	0.56	4	8.8	E	8.4	E	11.9	D	12.9	D	13.8	C	14.2	C	10.9	D	9.6	D
Geneva	Cayuga	Paris	E	0.33	4	13.4	C	10.8	D	15.3	C	11.5	D	14.7	C	14.4	C	11.7	D	10.7	D
Geneva	Paris	Moscow	E	0.36	4	15.8	C	13.4	C	15.0	C	17.4	C								
Geneva	Moscow	Santos	E	0.83	3	23.8	C	28.5	B	29.7	B	24.8	B								
Geneva	Santos	Moscow	W	0.83	3	24.5	B	27.7	B	27.1	B	25.6	B								
Geneva	Moscow	Paris	W	0.36	4	21.3	B	17.7	C	16.4	C	19.6	B								
Geneva	Paris	Cayuga	W	0.33	4	8.2	E	10.5	D	8.7	E	8.1	E	12.9	D	13.2	C	10.7	D	10.8	D
Geneva	Cayuga	Ocean	W	0.56	4	9.6	D	9.2	D	8.8	E	10.2	D	13.6	C	13.1	C	10.2	D	9.7	D
Golden Gate	Masonic	Divisadero	E	0.46	4	16.0	C	16.5	C	13.3	C	13.5	C								
Golden Gate	Divisadero	Franklin	E	0.91	3	17.6	D	20.5	C	16.7	D	14.0	D								
Golden Gate	Franklin	Market	E	0.65	4	10.7	D	12.8	D	12.3	D	8.9	E	10.9	D	9.5	D	8.1	E	3.5	F
Gough	Pine	Geary	S	0.26	4	20.6	B	24.3	B	16.4	C	23.0	B	19.1	B	18.4	C	13.5	C	12.6	D
Gough	Geary	Golden Gate	S	0.33	4	23.2	B	18.3	C	19.1	B	20.2	B	16.8	C	14.7	C	12.7	D	9.5	D
Gough	Golden Gate	Market	S	0.53	4	15.7	C	8.7	E	15.9	C	12.3	D	16.0	C	12.6	D	10.5	D	7.9	E
Guerrero/San Jose	Monterey	Randall	N	0.89	1	27.5	C	30.4	C	26.2	D	30.9	C								
Guerrero/San Jose	Randall	29th	N	0.29	2	21.3	D	14.2	E	20.0	D	14.6	E								
Guerrero/San Jose	29th	Cesar Chavez	N	0.29	4	24.5	B	20.0	B	10.2	D	12.7	D	17.1	C	18.9	C	15.1	C	14.1	C
Guerrero/San Jose	Cesar Chavez	29th	S	0.29	4	21.2	B	14.3	C	12.2	D	20.8	B	20.7	B	18.7	C	15.6	C	12.7	D
Guerrero/San Jose	29th	Randall	S	0.29	2	16.6	E	12.1	F	17.8	D	15.0	E								
Guerrero/San Jose	Randall	Monterey	S	0.89	1	41.6	B	41.9	B	38.7	B	38.2	B								
Harrison	Embarcadero	2nd	W	0.51	3	14.5	D	13.4	E	13.8	E	13.7	E								
Harrison	2nd	4th	W	0.34	3	12.8	E	16.3	D	17.9	D	20.8	C								
Harrison	4th	8th	W	0.69	3	15.8	D	11.6	E	19.5	C	14.9	D								
Harrison	8th	10th	W	0.21	3	12.8	E	13.5	E	12.1	E	13.2	E								
Harrison	10th	Division/13th	W	0.19	4	13.9	C	13.0	D	18.5	C	10.2	D								
Hayes	Market	Gough	W	0.39	4	12.4	D	9.6	D	12.5	D	8.8	E	15.3	C	11.5	D	12.9	D	11.2	D
Howard	Embarcadero	South Van Ness	W	2.11	3	14.2	D	12.6	E	15.0	D	12.2	E								
J. Serra	County Line	Brotherhood	N	0.31	1	40.0	B	35.6	B	44.1	A	47.1	A	27.0	C	26.0	D	27.0	C	20.8	E
J. Serra	Brotherhood	19th	N	0.31	1	22.1	D	15.2	F	10.8	F	10.5	F	12.8	E	13.8	E	13.1	E	12.9	E
J. Serra	19th	Sloat	N	1.21	2	24.9	C	22.8	C	19.8	D	22.0	D	21.6	D	24.6	C	20.6	D	20.5	D
J. Serra	Sloat	19th	S	1.21	2	17.8	D	16.7	E	21.4	D	16.8	E	25.3	C	26.3	C	21.6	D	18.5	D
J. Serra	19th	Brotherhood	S	0.31	1	39.6	B	39.2	B	42.3	A	40.3	B	42.7	A	38.0	B	39.3	B	34.0	B
J. Serra	Brotherhood	County Line	S	0.31	1	43.5	A	39.6	B	44.1	A	45.3	A	49.0	A	50.6	A	48.7	A	48.9	A

Attachment 5.3: Average Speed and LOS for all Arterial HCM 2000 Segments

(2009 - 2015)

Route Name	Start Intersection	End Intersection	Dir	Length (mi)	HCM 2000 Class	2009				2011				2013				2015			
						AM Speed	AM LOS	PM Speed	PM LOS	AM Speed	AM LOS	PM Speed	PM LOS	AM Speed	AM LOS	PM Speed	PM LOS	AM Speed	AM LOS	PM Speed	PM LOS
Kearny	Market	Columbus	N	0.65	4	13.8	C	13.0	C	14.7	C	14.8	C	11.7	D	11.9	D	8.6	E	8.9	E
King	5th	2nd	E	0.52	4	19.2	B	17.8	C	22.2	B	19.8	B								
King	2nd	5th	W	0.52	4	24.2	B	18.5	C	21.3	B	8.3	E								
Lincoln/Kezar	19th Avenue	5th Ave.	E	0.83	3	22.4	C	23.1	C	26.9	B	20.6	C	20.2	C	21.5	C	15.4	D	18.9	C
Lincoln/Kezar	5th Ave.	Martin Luther King Jr Dr	E	0.22	3	22.8	C	21.0	C	29.3	B	18.9	C								
Lincoln/Kezar	Martin Luther King Jr Dr	Stanyan	E	0.48	4	19.4	B	22.0	B	18.6	C	25.2	A								
Lincoln/Kezar	Stanyan	Martin Luther King Jr Dr	W	0.48	4	28.4	A	29.2	A	32.7	A	25.1	A								
Lincoln/Kezar	5th Ave.	19th Avenue	W	0.83	3	25.9	B	12.9	E	29.2	B	18.9	*	23.6	C	18.0	C	21.6	C	16.4	D
Main	Mission	Market	N	0.12	4	10.7	D	19.3	B	21.7	B	14.3	*	12.0	D	3.2	F	5.3	E	5.0	F
Market/Portola	Sloat	Vicente	E	0.43	3	20.3	C	20.2	C	25.1	B	21.1	C								
Market/Portola	Vicente	Burnett	E	1.34	3	19.5	C	24.0	C	18.5	C	20.0	C								
Market/Portola	Burnett	Eureka	E	1.43	3	29.8	B	23.4	C	28.7	B	24.5	B								
Market/Portola	Eureka	Castro	E	0.19	4	14.5	C	14.9	C	7.0	E	18.1	C								
Market/Portola	Castro	Laguna	E	0.79	3	15.7	D	9.9	F	9.2	F	10.3	E								
Market/Portola	Laguna	Franklin	E	0.32	3	17.7	D	11.0	E	13.6	E	16.3	D								
Market/Portola	Franklin	Van Ness	E	0.11	4	12.5	D	17.2	C	11.3	D	11.7	D								
Market/Portola	Van Ness	Drumm	E	1.77	4	12.5	D	9.5	D	11.6	D	10.6	D	12.3	D	11.9	D	10.1	D	8.9	E
Market/Portola	Drumm	Van Ness	W	1.77	4	14.9	C	13.5	C	15.7	C	12.1	D	13.1	C	11.7	D	11.8	D	9.4	D
Market/Portola	Van Ness	Franklin	W	0.11	4	23.9	B	10.1	D	22.8	B	12.8	D								
Market/Portola	Franklin	Laguna	W	0.32	3	12.4	E	13.1	E	12.1	E	10.9	E								
Market/Portola	Laguna	Castro	W	0.79	3	15.1	D	15.1	D	12.5	E	12.7	E								
Market/Portola	Castro	Eureka	W	0.19	4	21.8	B	25.6	A	28.0	A	22.8	B								
Market/Portola	Eureka	Burnett	W	1.43	3	25.9	B	26.9	B	21.8	C	31.4	A								
Market/Portola	Burnett	Vicente	W	1.34	3	21.2	C	20.4	C	23.5	C	21.4	C								
Market/Portola	Vicente	Sloat	W	0.43	3	10.4	E	8.3	F	12.5	E	14.0	D								
Masonic	Page	Geary	N	0.79	3	19.9	C	18.8	C	12.8	E	17.2	D	20.2	C	17.8	D	12.3	E	12.7	E
Masonic	Geary	Bush/Euclid	N	0.19	3	27.0	B	27.0	B	15.4	D	22.4	C	23.1	C	24.1	B	15.7	D	15.8	D
Masonic	Presidio	Geary	S	0.29	3	19.7	C	14.5	D	10.0	E	9.2	F	17.5	D	15.9	D	14.9	D	9.5	E
Masonic	Geary	Page	S	0.79	3	17.2	D	16.9	D	11.1	E	13.5	E	19.2	C	19.2	C	14.3	D	13.4	E
Mission/Otis	Sickles	Ocean	N	1.45	4	22.2	B	22.4	B	21.8	B	20.3	B	16.8	C	17.3	C	13.5	C	14.2	C
Mission/Otis	Ocean	Cesar Chavez	N	1.95	4	19.3	B	17.8	C	17.2	C	16.3	C	14.2	C	14.1	C	13.1	C	13.9	C
Mission/Otis	Cesar Chavez	14th	N	1.39	4	18.5	C	13.9	C	15.7	C	14.2	C								
Mission/Otis	14th	9th	N	0.65	4	15.1	C	13.3	C	16.3	C	12.2	D								
Mission/Otis	9th	3rd	N	0.98	4	17.1	C	13.7	C	16.2	C	12.4	D								
Mission/Otis	3rd	Embarcadero	N	0.74	4	17.3	C	13.0	D	12.2	D	10.9	D	14.7	C	14.3	C	10.1	D	8.3	E
Mission/Otis	Embarcadero	3rd	S	0.74	4	13.8	C	13.9	C	10.1	D	11.0	D								
Mission/Otis	3rd	9th	S	0.98	4	15.4	C	15.1	C	15.4	C	14.4	C								
Mission/Otis	9th	14th	S	0.68	4	15.8	C	13.4	C	19.4	B	13.5	C								
Mission/Otis	14th	Cesar Chavez	S	1.39	4	17.9	C	15.2	C	15.0	C	13.8	C	14.1	C	12.8	D	13.2	C	11.5	D
Mission/Otis	Cesar Chavez	Ocean	S	1.95	4	20.1	B	13.8	C	18.8	C	15.5	C	16.2	C	13.3	C	14.6	C	11.8	D
Mission/Otis	Ocean	Sickles	S	1.45	4	22.3	B	20.3	B	22.0	B	19.4	B	17.2	C	15.9	C	15.6	C	13.8	C
Montgomery	Broadway	Bush	S	0.51	4	14.1	C	9.2	D	11.1	D	7.2	E	14.1	C	12.8	D	10.3	D	5.5	E
North Point	Van Ness	Columbus	E	0.38	4	17.5	C	15.5	C	18.9	C	14.4	C	14.4	C	9.3	D	13.3	C	8.9	E
North Point	Columbus	Embarcadero	E	0.61	4	18.7	C	15.9	C	22.2	B	16.3	C	21.4	B	17.7	C	12.2	D	8.4	E
North Point	Embarcadero	Columbus	W	0.61	4	15.7	C	15.8	C	18.6	C	20.2	B	15.2	C	18.0	C	13.9	C	12.4	D
North Point	Columbus	Van Ness	W	0.38	4	16.2	C	16.4	C	16.1	C	13.2	C	16.0	C	10.4	D	12.7	D	13.2	C
Oak	Stanyan	Lyon	E	0.64	3	24.4	B	26.0	B	27.0	B	27.0	B								
Oak	Lyon	Divisadero	E	0.27	3	21.9	C	15.4	D	21.5	C	16.4	D								
Oak	Divisadero	Fillmore	E	0.37	3	19.7	C	25.3	B	20.4	C	26.4	B	14.9	D	23.8	C	12.6	E	18.7	C
Oak	Fillmore	Laguna	E	0.27	3	17.0	D	22.3	C	8.8	F	24.5	B	11.8	E	16.6	D	12.9	E	12.4	E
Oak	Laguna	Franklin	E	0.27	3	15.1	D	11.8	E	17.0	D	16.4	D	13.4	E	17.9	D	9.1	E	11.0	E
Ocean	19th Avenue	Miramar	E	1.11	4	18.7	C	12.9	D	13.9	C	12.8	D	15.0	C	13.8	C	14.5	C	13.8	C
Ocean	Miramar	Howth	E	0.48	4	11.1	D	14.8	C	11.4	D	12.7	D	14.1	C	14.2	C	11.9	D	11.1	D

E8B-98

Attachment 5.3: Average Speed and LOS for all Arterial HCM 2000 Segments

(2009 - 2015)

Route Name	Start Intersection	End Intersection	Dir	Length (mi)	HCM 2000 Class	2009				2011				2013				2015			
						AM Speed	AM LOS	PM Speed	PM LOS	AM Speed	AM LOS	PM Speed	PM LOS	AM Speed	AM LOS	PM Speed	PM LOS	AM Speed	AM LOS	PM Speed	PM LOS
Ocean	Howth	Miramar	W	0.48	4	14.8	C	13.0	D	15.8	C	11.9	D	13.4	C	12.5	D	11.4	D	8.6	E
Ocean	Miramar	19th Avenue	W	1.11	4	11.1	D	12.3	D	14.6	C	14.5	C	14.3	C	14.2	C	13.3	C	13.1	C
Octavia	Octavia	Fell	N	0.28	4	11.0	D	16.1	C	10.1	D	13.6	C								
Octavia	Fell	Octavia	S	0.28	4	10.4	D	11.6	D	7.5	E	9.9	D								
O'Farrell	Gough	Mason	E	0.85	4	13.4	C	11.2	D	12.2	D	11.2	D	14.6	C	13.3	C	11.9	D	10.8	D
O'Farrell	Mason	Market	E	0.28	4	11.6	D	9.0	E	9.6	D	8.0	E	13.3	C	12.5	D	9.9	D	8.5	E
Pine	Market	Kearny	W	0.38	3	8.8	F	8.9	F	10.5	E	13.2	E	6.9	E	4.3	F	7.4	E	6.7	E
Pine	Kearny	Leavenworth	W	0.63	3	18.2	C	16.8	D	24.1	B	16.2	D	15.2	D	12.1	E	17.6	D	13.8	E
Pine	Leavenworth	Franklin	W	0.46	3	17.7	D	14.3	D	17.7	D	14.5	D	13.5	E	8.5	E	7.5	E	5.2	E
Pine	Franklin	Presidio	W	1.27	3	21.3	C	22.4	C	21.8	C	22.0	C	17.3	D	14.5	D	17.1	D	16.7	D
Potrero	Cesar Chavez	21st	N	0.62	4	21.2	B	18.8	C	23.5	B	21.3	B	15.2	C	15.1	C	10.4	D	7.7	E
Potrero	21st	Division	N	0.80	4	22.5	B	15.6	C	24.3	B	23.2	B	19.0	C	15.3	C	19.5	B	6.3	E
Potrero	Division	21st	S	0.80	4	23.9	B	25.2	A	19.0	B	22.6	B	19.2	B	14.0	C	14.4	C	8.5	E
Potrero	21st	Cesar Chavez	S	0.62	4	22.0	B	19.4	B	23.3	B	18.0	C	17.2	C	8.5	E	14.5	C	3.9	F
Skyline	County Line	Sloat	N	1.94	1	46.7	A	46.8	A	44.5	A	42.2	A	38.1	B	42.6	A	34.8	B	35.8	B
Skyline	Sloat	County Line	S	1.94	1	42.1	A	38.1	B	40.6	B	38.3	B	41.0	B	38.5	B	32.4	C	30.9	C
Sloat	Skyline	Junipero Serra	E	1.37	2	22.6	C	20.7	D	19.0	D	17.7	D	24.3	C	25.4	C	23.0	C	22.6	C
Sloat	Junipero Serra	Skyline	W	1.37	2	26.7	C	26.9	C	32.0	B	29.6	B	27.7	C	29.5	B	24.0	C	24.7	C
Stanyan	Fulton	Turk	N	0.20	4	15.6	C	12.6	D	14.2	C	15.6	C	18.2	C	18.3	C	14.1	C	13.3	C
Stanyan	Turk	Fulton	S	0.20	4	11.1	D	9.2	D	11.2	D	8.6	E	19.2	B	15.9	C	16.2	C	11.5	D
Sutter	Divisadero	Gough	E	0.82	4	16.2	C	15.5	C	14.5	C	13.4	C	15.9	C	15.2	C	10.9	D	12.0	D
Sutter	Market	Mason	W	0.56	4	17.5	C	11.3	D	17.8	C	12.7	D	13.4	C	11.9	D	12.6	D	10.4	D
Sutter	Mason	Gough	W	0.82	4	8.9	E	14.6	C	10.5	D	11.8	D	11.2	D	12.3	D	10.6	D	10.9	D
Sutter	Gough	Divisadero	W	0.82	4	15.0	C	14.9	C	13.6	C	13.6	C	13.4	C	13.0	C	11.5	D	11.8	D
Townsend	7th	2nd	E	0.86	4	19.6	B	11.9	D	17.3	C	15.9	C								
Townsend	2nd	7th	W	0.86	4	18.4	C	12.8	D	13.9	C	11.4	D								
Turk	Stanyan	Divisadero	E	0.91	4	18.0	C	17.2	C	17.7	C	17.2	C	17.7	C	19.5	B	15.7	C	17.9	C
Turk	Market	Hyde	W	0.38	4	14.7	C	11.1	D	12.8	D	11.4	D	10.3	D	13.4	C	12.6	D	12.5	D
Turk	Hyde	Van Ness	W	0.27	4	18.1	C	9.2	D	16.8	C	12.2	D								
Turk	Van Ness	Gough	W	0.18	3	8.8	F	9.5	F	9.4	F	10.3	E								
Turk	Gough	Divisadero	W	0.82	3	19.8	C	19.4	C	19.7	C	18.3	C	21.5	C	22.1	C	17.4	D	16.7	D
Turk	Divisadero	Stanyan	W	0.91	4	21.3	B	25.6	A	16.3	C	17.4	C	18.4	C	19.4	B	18.4	C	17.4	C
Van Ness/S. Van Ness	Cesar Chavez	13th	N	1.49	4	20.1	B	14.7	C	18.4	C	13.9	C	18.8	C	18.5	C	16.0	C	14.7	C
Van Ness/S. Van Ness	13th	Golden Gate	N	0.79	4	15.0	C	14.7	C	20.2	B	13.7	C	13.9	C	13.4	C	13.0	C	9.7	D
Van Ness/S. Van Ness	Golden Gate	Washington	N	0.84	4	15.2	C	17.4	C	16.8	C	21.9	B	12.1	D	14.8	C	11.1	D	11.7	D
Van Ness/S. Van Ness	Washington	Lombard	N	0.58	4	13.6	C	26.4	A	11.3	D	24.5	B	13.1	C	17.6	C	12.7	D	16.4	C
Van Ness/S. Van Ness	Lombard	Washington	S	0.58	4	16.4	C	12.4	D	16.4	C	17.1	C	12.2	D	13.7	C	13.0	C	12.3	D
Van Ness/S. Van Ness	Washington	Golden Gate	S	0.84	4	21.2	B	12.2	D	21.6	B	11.5	D	14.1	C	12.8	D	12.8	D	9.8	D
Van Ness/S. Van Ness	Golden Gate	13th	S	0.79	4	15.7	C	12.3	D	14.0	C	16.5	C	15.3	C	14.2	C	11.7	D	7.8	E
Van Ness/S. Van Ness	13th	Cesar Chavez	S	1.49	4	17.9	C	17.1	C	12.8	D	18.7	C	16.3	C	19.0	B	15.1	C	15.1	C
Washington	Drumm	Kearny	W	0.44	4	14.6	C	11.3	D	12.8	D	14.9	C	10.1	D	8.1	E	11.8	D	9.1	D
West Portal	Sloat	Ulloa	N	0.54	4	15.5	C	12.6	D	16.8	C	15.4	C	14.4	C	13.7	C	15.9	C	11.6	D
West Portal	Ulloa	Sloat	S	0.54	4	17.5	C	15.2	C	17.4	C	16.7	C	17.2	C	13.4	C	14.8	C	14.3	C

* Construction Observed. SB direction partially closed.

Attachment 5.4 - Comparison of Revised and Original 2013 LOS Monitoring Results

CMP ID	Description	Dir	Dist (miles)	Original		Revised	
				AM	PM	AM	PM
1	1st St: Market to Harrison	S	0.48	19.7	15.3	18.5	13.2
2	2nd St: Brannan to Market	N	0.72	11.1	3.1	11.1	3.1
3	2nd St: Market to Brannan	S	0.72	9.6	6.0	9.6	6.0
4	3rd St: Jamestown to Evans	N	1.62	19.0	18.3	18.1	17.8
5	3rd St: Evans to Terry Francois	N	2.33	21.9	21.3	20.9	20.4
6	3rd St: Terry Francois to Market	N	1.08	16.4	15.4	13.6	12.8
7	3rd St: Terry Francois to Evans	S	2.33	22.6	21.4	21.7	20.5
8	3rd St: Evans to Jamestown	S	1.62	20.1	19.5	19.2	18.7
9	4th St/Stockton: O'Farrell to Harrison	S	0.56	15.6	13.9	13.6	11.5
10	4th St/Stockton: Harrison to Channel	S	0.62	14.4	14.2	12.8	12.6
11	5th St: Brannan to Market	N	0.72	9.5	4.0	9.5	4.0
12	5th St: Market to Brannan	S	0.72	11.7	5.4	11.7	5.4
13	6th St: Brannan to Market	N	0.72	15.4	14.2	13.6	12.1
14	6th St: Market to Brannan	S	0.72	19.9	14.4	17.5	11.8
15	7th St: Brannan to Market	N	0.72	18.0	17.0	15.4	13.7
16	8th St: Market to Bryant	S	0.6	18.1	18.1	15.9	15.9
17	9th St: Brannan to Market	N	0.72	16.5	15.8	14.4	12.9
18	10th St: Market to Brannan	S	0.73	25.9	23.3	23.8	20.5
19	16th St: Market to Mission	E	0.74	17.3	16.3	16.3	14.9
20	16th St: Mission to Potrero	E	0.67	16.0	15.9	14.7	14.8
21	16th St: Potrero to Mission	W	0.67	16.0	14.0	14.1	12.5
22	16th St: Mission to Market	W	0.74	17.1	17.5	16.0	17.0
23	19th Ave/Park Presidio: Junipero Serra to Sloat	N	1.25	17.9	20.0	15.7	16.9
24	19th Ave/Park Presidio: Sloat to Lincoln	N	2.13	21.7	21.0	17.0	17.4
25	19th Ave/Park Presidio: Lincoln to Lake	N	1.84	26.8	29.4	24.5	28.1
26	19th Ave/Park Presidio: Lake to US 101	N	1.21	50.3	46.4	49.6	44.6
27	19th Ave/Park Presidio: US 101 to Lake	S	1.33	45.5	43.7	42.9	42.9
28	19th Ave/Park Presidio: Lake to Lincoln	S	1.84	28.3	22.8	26.4	19.0
29	19th Ave/Park Presidio: Lincoln to Sloat	S	2.13	20.0	21.6	17.8	20.2
30	19th Ave/Park Presidio: Sloat to Junipero Serra	S	1.25	25.5	20.2	23.8	18.2
31	Alemany: Junipero Serra to Lyell	E	2.94	24.4	24.9	23.0	24.3
32	Alemany: Lyell to Bayshore	E	1.59	31.5	34.3	29.7	33.0
33	Alemany: Bayshore to Lyell	W	1.52	32.5	32.6	29.8	31.2
34	Alemany: Lyell to County Line	W	3.03	31.6	34.3	25.9	29.6
35	Bay: Van Ness to Embarcadero	E	1.09	21.5	21.0	21.3	20.7
36	Bay: Embarcadero to Van Ness	W	1.09	21.2	20.7	20.6	19.9
37	Bayshore: County Line to Industrial	N	2.27	22.4	28.7	13.9	23.1
38	Bayshore: Industrial to Cesar Chavez	N	0.82	18.9	20.9	15.8	17.6
39	Bayshore: Jerrold to Industrial	S	0.72	27.2	25.9	22.1	20.5
40	Bayshore: Industrial to County Line	S	2.26	26.3	27.3	24.5	25.5
41	Beale/Davis: Clay to Mission	S	0.32	8.8	5.2	8.8	5.2
42	Brannan: Division to 6th	E	0.54	21.3	18.0	20.3	14.7
43	Brannan: 6th to 3rd	E	0.52	20.4	15.8	19.3	14.1
44	Brannan: 3rd to 6th	W	0.52	21.6	19.3	20.4	16.9
45	Brannan: 6th to Division	W	0.54	23.3	22.5	22.9	21.1
46	Broadway: Gough to Larkin	E	0.36	8.8	12.8	8.8	12.8
47	Broadway: Larkin to Powell	E	0.55	14.0	25.2	14.0	25.2
48	Broadway: Powell to Montgomery	E	0.35	11.4	9.0	11.4	9.0
49	Broadway: Montgomery to Embarcadero	E	0.35	11.3	6.8	11.3	6.8
50	Broadway: Embarcadero to Montgomery	W	0.35	12.7	9.9	12.7	9.9

Attachment 5.4 - Comparison of Revised and Original 2013 LOS Monitoring Results

CMP ID	Description	Dir	Dist (miles)	Original		Revised	
				AM	PM	AM	PM
51	Broadway: Montgomery to Powell	W	0.35	11.1	6.6	11.1	6.6
52	Broadway: Powell to Larkin	W	0.55	27.8	25.5	27.8	25.5
53	Broadway: Larkin to Gough	W	0.36	11.6	12.6	11.6	12.6
54	Brotherhood: Junipero Serra to Alemany	E	0.44	30.4	30.3	28.7	29.4
55	Brotherhood: Alemany to Junipero Serra	W	0.47	29.8	32.5	28.7	31.6
56	Bryant: Division to 4th	E	0.99	17.5	16.4	15.9	13.9
57	Bryant: 4th to Embarcadero	E	0.77	22.5	21.6	21.5	18.2
58	Bush: Masonic to Gough	E	1.24	21.9	23.5	20.4	22.7
59	Bush: Gough to Market	E	1.46	17.7	17.4	16.4	16.0
60	Castro/Divisadero: Market to 14th	N	0.32	14.5	15.0	14.0	14.7
61	Castro/Divisadero: 14th to Geary	N	1.13	15.7	15.1	14.4	14.0
62	Castro/Divisadero: Geary to Pine	N	0.27	14.5	15.1	13.0	13.7
63	Castro/Divisadero: Pine to Geary	S	0.27	14.8	14.2	13.6	13.0
64	Castro/Divisadero: Geary to 14th	S	1.13	16.2	13.8	14.9	12.7
65	Castro/Divisadero: 14th to Market	S	0.32	15.4	13.9	15.0	13.4
66	Cesar Chavez: Guerrero to Bryant	E	0.75	18.3	17.2	17.4	15.6
67	Cesar Chavez: Bryant to Kansas	E	0.37	27.5	28.8	26.2	27.8
68	Cesar Chavez: Kansas to 3rd	E	0.79	21.8	23.1	20.4	22.2
69	Cesar Chavez: 3rd to Kansas	W	0.79	22.7	24.9	21.4	23.7
70	Cesar Chavez: Kansas to Bryant	W	0.37	23.7	22.7	22.8	23.6
71	Cesar Chavez: Bryant to Guerrero	W	0.75	16.5	17.2	15.2	16.2
72	Clay: Kearny to Davis	E	0.38	12.4	6.6	12.4	6.6
73	Columbus: Montgomery to Greenwich	N	0.67	14.2	12.8	13.3	12.4
74	Columbus: Greenwich to North Point	N	0.42	13.6	13.7	13.6	13.3
75	Columbus: North Point to Greenwich	S	0.42	13.2	11.4	13.4	11.5
76	Columbus: Greenwich to Montgomery	S	0.67	14.0	12.7	12.9	11.9
77	Doyle/ Richardson/ Lombard: County Line to SF Cemetery	E	1.13	37.7	41.0	32.3	34.1
78	Doyle/ Richardson/ Lombard: SF Cemetery to Lyon/Francisco	E	0.95	28.9	40.2	25.0	38.9
79	Doyle/ Richardson/ Lombard: Lyon/Francisco to Van Ness	E	1.28	21.7	20.9	19.8	18.7
80	Doyle/ Richardson/ Lombard: Van Ness to Lyon/Francisco	W	1.28	22.6	20.6	20.4	18.0
81	Doyle/ Richardson/ Lombard: Lyon/Francisco to SF Cemetery	W	0.98	38.4	30.6	37.5	26.0
82	Doyle/ Richardson/ Lombard: SF Cemetery to County Line	W	1.13	40.1	28.0	39.3	22.4
83	Drumm: Market to Washington	N	0.22	11.2	8.0	11.2	8.0
84	Drumm: Washington to Market	S	0.22	6.7	5.5	6.7	5.5
85	Duboce/Division: Market to Mission	E	0.34	20.6	23.0	19.6	22.5
86	Duboce/Division: Mission to Potrero	E	0.64	12.7	10.5	12.7	10.5
87	Duboce/Division: Potrero to Mission	W	0.64	11.8	8.6	11.8	8.6
88	Duboce/Division: Mission to Market	W	0.34	18.8	17.5	16.6	14.7
89	Embarcadero: Townsend to North Point	N	2.17	18.7	16.0	17.5	14.0
90	Embarcadero: North Point to Townsend	S	2.17	17.9	15.6	16.1	13.8
91	Evans: Cesar Chavez to 3rd	E	0.73	14.8	16.8	14.8	16.8
92	Evans: 3rd to Cesar Chavez	W	0.73	15.3	16.9	15.3	16.9
93	Fell: Gough to Market	E	0.29	19.5	20.1	17.8	18.6
94	Fell: Gough to Laguna	W	0.18	18.3	17.8	17.5	17.2
95	Fell: Laguna to Stanyan	W	1.56	25.4	24.0	23.8	22.5
96	Folsom: 13th to 8th	E	0.48	20.0	19.4	19.4	18.4
97	Folsom: 8th to 4th	E	0.69	19.9	19.1	18.1	17.3
98	Folsom: 4th to 1st	E	0.52	19.9	16.1	18.9	14.8
99	Folsom: 1st to Embarcadero	E	0.35	17.2	16.8	16.4	16.0
100	Franklin: Market to Pine	N	1.06	17.7	19.3	15.6	17.9

Attachment 5.4 - Comparison of Revised and Original 2013 LOS Monitoring Results

CMP ID	Description	Dir	Dist (miles)	Original		Revised	
				AM	PM	AM	PM
101	Franklin: Pine to Lombard	N	0.83	22.3	21.9	21.0	21.3
102	Fremont: Harrison to Market	N	0.48	19.1	18.4	16.3	16.8
103	Fulton: Park P. to 10th Avenue	E	0.2	22.9	24.4	21.7	23.4
104	Fulton: 10th Avenue to Arguello	E	0.53	19.2	19.8	18.1	18.6
105	Fulton: Arguello to Masonic	E	0.66	16.3	15.5	15.6	14.8
106	Fulton: Masonic to Arguello	W	0.66	18.6	18.6	18.2	18.0
107	Fulton: Arguello to 10th Avenue	W	0.53	20.5	19.0	19.8	18.1
108	Fulton: 10th Avenue to Park P.	W	0.2	19.9	19.3	19.1	18.1
109	Geary: Great Hwy. to 25th Avenue	E	1.78	19.1	18.8	18.3	18.2
110	Geary: 25th Avenue to Arguello	E	1.42	17.5	17.6	16.7	16.9
111	Geary: Arguello to Gough	E	1.89	21.7	19.7	20.5	18.5
112	Geary: Kearny to Gough	W	1.18	14.4	13.0	13.4	12.0
113	Geary: Gough to Arguello	W	1.89	22.5	23.7	21.0	22.3
114	Geary: Arguello to 25th Avenue	W	1.42	17.3	16.6	16.4	15.9
115	Geary: 25th Avenue to Great Hwy.	W	1.78	18.8	17.4	18.3	16.9
116	Geneva: Ocean to Cayuga	E	0.56	15.6	15.4	13.8	14.2
117	Geneva: Cayuga to Paris	E	0.33	16.4	15.5	14.7	14.4
118	Geneva: Paris to Santos	E	1.19	24.4	24.4	22.6	22.4
119	Geneva: Santos to Paris	W	1.19	21.9	21.5	20.0	20.4
120	Geneva: Paris to Cayuga	W	0.33	14.2	14.9	12.9	13.2
121	Geneva: Cayuga to Ocean	W	0.56	14.8	15.4	13.6	13.1
122	Golden Gate: Masonic to Franklin	E	1.37	13.6	16.1	13.6	16.1
123	Golden Gate: Franklin to Market	E	0.65	10.9	9.5	10.9	9.5
124	Gough: Pine to Geary	S	0.26	20.8	19.9	19.1	18.4
125	Gough: Geary to Golden Gate	S	0.33	19.2	17.3	16.8	14.7
126	Gough: Golden Gate to Market	S	0.52	18.1	14.6	16.0	12.6
127	Guerrero/San Jose: Monterey to 29th	N	1.19	24.9	28.7	21.2	27.0
128	Guerrero/San Jose: 29th to Cesar Chavez	N	0.28	18.9	20.0	17.1	18.9
129	Guerrero/San Jose: Cesar Chavez to 29th	S	0.28	22.4	21.3	20.7	18.7
130	Guerrero/San Jose: 29th to Monterey	S	1.19	32.4	32.8	27.8	27.2
131	Harrison: Embarcadero to 1st	W	0.34	17.9	15.8	17.4	14.6
132	Harrison: 1st to 4th	W	0.51	19.1	17.9	17.8	16.5
133	Harrison: 4th to 8th	W	0.69	19.7	17.8	17.9	16.0
134	Harrison: 8th to Division	W	0.4	18.2	17.5	15.8	16.1
135	Hayes: Market to Gough	W	0.39	17.3	13.5	15.3	11.5
136	Howard: Embarcadero to SVanNess	W	2.11	18.1	17.3	16.2	15.5
137	J. Serra: County Line to Brotherhood	N	0.32	34.5	30.2	27.0	26.0
138	J. Serra: Brotherhood to 19th	N	0.31	17.5	16.2	12.8	13.8
139	J. Serra: 19th to Sloat	N	1.21	23.7	25.8	21.6	24.6
140	J. Serra: Sloat to 19th	S	1.21	28.4	28.0	25.3	26.3
141	J. Serra: 19th to Brotherhood	S	0.31	44.6	41.7	42.7	38.0
142	J. Serra: Brotherhood to County Line	S	0.32	53.4	52.4	49.0	50.6
143	Kearny: Market to Columbus	N	0.65	13.3	13.3	11.7	11.9
144	King: 4th to 2nd	E	0.34	17.0	16.1	14.9	13.9
145	King: 2nd to 4th	W	0.34	19.5	16.2	15.9	12.0
146	Lincoln/Kezar: 19th Avenue to 5th Ave.	E	0.83	21.8	22.6	20.2	21.5
147	Lincoln/Kezar: 5th Ave. to Stanyan	E	0.7	18.4	23.3	16.0	22.0
148	Lincoln/Kezar: Stanyan to 5th Ave.	W	0.7	26.8	23.8	25.5	21.4
149	Lincoln/Kezar: 5th Ave. to 19th Avenue	W	0.83	25.8	20.0	23.6	18.0
150	Main: Mission to Market	N	0.12	12.0	3.2	12.0	3.2

Attachment 5.4 - Comparison of Revised and Original 2013 LOS Monitoring Results

CMP ID	Description	Dir	Dist (miles)	Original		Revised	
				AM	PM	AM	PM
151	Market/Portola: Sloat to Santa Clara	E	0.43	23.3	22.8	21.8	22.1
152	Market/Portola: Santa Clara to Burnett	E	1.34	23.0	24.7	21.0	23.1
153	Market/Portola: Burnett to Castro	E	1.62	25.1	25.7	23.5	24.6
154	Market/Portola: Castro to Guerrero	E	0.79	15.2	15.3	13.6	13.9
155	Market/Portola: Guerrero to Van Ness	E	0.43	21.8	28.1	16.2	20.3
156	Market/Portola: Van Ness to Drumm	E	1.77	15.7	15.9	12.3	11.9
157	Market/Portola: Drumm to Van Ness	W	1.77	14.5	13.6	13.1	11.7
158	Market/Portola: Van Ness to Guerrero	W	0.43	16.7	14.5	15.2	12.9
159	Market/Portola: Guerrero to Castro	W	0.79	18.7	17.8	17.7	16.0
160	Market/Portola: Castro to Burnett	W	1.62	24.1	26.9	23.3	26.3
161	Market/Portola: Burnett to Santa Clara	W	1.34	21.7	23.0	20.3	22.0
162	Market/Portola: Santa Clara to Sloat	W	0.43	19.6	20.4	18.6	19.5
163	Masonic: Page to Geary	N	0.79	22.4	18.8	20.2	17.8
164	Masonic: Geary to Bush/Euclid	N	0.19	23.8	24.4	23.1	24.1
165	Masonic: Presidio to Geary	S	0.29	18.4	17.1	17.5	15.9
166	Masonic: Geary to Page	S	0.79	20.7	20.9	19.2	19.2
167	Mission/Otis: Sickles to Ocean	N	1.45	17.1	17.6	16.8	17.3
168	Mission/Otis: Ocean to Cesar Chavez	N	1.96	15.2	15.2	14.2	14.1
169	Mission/Otis: Cesar Chavez to 14th	N	1.39	14.3	13.0	13.7	11.8
170	Mission/Otis: 14th to 9th	N	0.65	15.9	16.7	14.3	14.7
171	Mission/Otis: 9th to 3rd	N	0.98	18.0	16.8	16.2	15.1
172	Mission/Otis: 3rd to Embarcadero	N	0.74	16.1	15.2	14.7	14.3
173	Mission/Otis: Embarcadero to 3rd	S	0.74	15.6	14.0	14.7	12.8
174	Mission/Otis: 3rd to 9th	S	0.98	18.9	16.1	16.7	14.5
175	Mission/Otis: 9th to 14th	S	0.68	16.0	14.9	14.4	12.4
176	Mission/Otis: 14th to Cesar Chavez	S	1.39	15.0	13.6	14.1	12.8
177	Mission/Otis: Cesar Chavez to Ocean	S	1.96	17.3	14.5	16.2	13.3
178	Mission/Otis: Ocean to Sickles	S	1.45	17.5	16.5	17.2	15.9
179	Montgomery: Broadway to Bush	S	0.51	14.6	13.4	14.1	12.8
180	North Point: Van Ness to Columbus	E	0.38	14.4	9.3	14.4	9.3
181	North Point: Columbus to Embarcadero	E	0.61	21.4	17.7	21.4	17.7
182	North Point: Embarcadero to Columbus	W	0.61	15.2	18.0	15.2	18.0
183	North Point: Columbus to Van Ness	W	0.38	16.0	10.4	16.0	10.4
184	Oak: Stanyan to Divisadero	E	0.91	21.5	23.0	19.7	21.1
185	Oak: Divisadero to Fillmore	E	0.37	18.1	24.5	14.9	23.8
186	Oak: Fillmore to Laguna	E	0.27	13.4	17.1	11.8	16.6
187	Oak: Laguna to Franklin	E	0.27	16.2	18.8	13.4	17.9
188	Ocean: 19th Avenue to Miramar	E	1.11	15.8	14.6	15.0	13.8
189	Ocean: Miramar to Howth	E	0.48	15.1	15.2	14.1	14.2
190	Ocean: Howth to Miramar	W	0.48	14.5	13.3	13.4	12.5
191	Ocean: Miramar to 19th Avenue	W	1.11	14.5	14.4	14.3	14.2
192	Octavia: Market to Fell	N	0.27	5.8	10.9	5.8	10.9
193	Octavia: Fell to Market	S	0.27	3.3	9.8	3.3	9.8
194	O'Farrell: Gough to Mason	E	0.85	16.5	15.1	14.6	13.3
195	O'Farrell: Mason to Market	E	0.28	14.0	13.2	13.3	12.5
196	Pine: Market to Kearny	W	0.38	6.9	4.3	6.9	4.3
196	Pine: Market to Kearny		0.38	6.9	4.3	6.9	4.3
197	Pine: Kearny to Leavenworth	W	0.63	15.2	12.1	15.2	12.1
198	Pine: Leavenworth to Franklin	W	0.46	13.5	8.5	13.5	8.5
199	Pine: Franklin to Presidio	W	1.27	17.3	14.5	17.3	14.5

Attachment 5.4 - Comparison of Revised and Original 2013 LOS Monitoring Results

CMP ID	Description	Dir	Dist (miles)	Original		Revised	
				AM	PM	AM	PM
200	Potrero: Cesar Chavez to 21st	N	0.62	15.2	15.1	15.2	15.1
201	Potrero: 21st to Division	N	0.8	19.0	15.3	19.0	15.3
202	Potrero: Division to 21st	S	0.8	19.2	14.0	19.2	14.0
203	Potrero: 21st to Cesar Chavez	S	0.62	17.2	8.5	17.2	8.5
204	Skyline: County Line to Sloat	N	1.94	42.6	43.7	38.1	42.6
205	Skyline: Sloat to County Line	S	1.94	43.4	42.1	41.0	38.5
206	Sloat: Skyline to Junipero Serra	E	1.38	26.6	27.9	24.3	25.4
207	Sloat: Junipero Serra to Skyline	W	1.38	30.0	30.6	27.7	29.5
208	Stanyan: Fulton to Turk	N	0.2	18.6	18.7	18.2	18.3
209	Stanyan: Turk to Fulton	S	0.2	20.2	17.0	19.2	15.9
210	Sutter: Divisadero to Gough	E	0.82	16.4	15.8	15.9	15.2
211	Sutter: Market to Mason	W	0.56	14.6	13.3	13.4	11.9
212	Sutter: Mason to Gough	W	0.82	12.2	13.1	11.2	12.3
213	Sutter: Gough to Divisadero	W	0.82	14.2	13.5	13.4	13.0
214	Townsend: 7th to 2nd	E	0.86	18.2	18.7	17.2	17.2
215	Townsend: 2nd to 7th	W	0.86	18.6	17.7	17.5	16.5
216	Turk: Stanyan to Divisadero	E	0.91	18.0	19.8	17.7	19.5
217	Turk: Market to Hyde	W	0.38	12.1	14.6	10.3	13.4
218	Turk: Hyde to Gough	W	0.46	16.2	16.3	14.1	14.6
219	Turk: Gough to Divisadero	W	0.82	22.4	22.8	21.5	22.1
220	Turk: Divisadero to Stanyan	W	0.91	19.4	20.1	18.4	19.4
221	Van Ness/S. Van Ness: Cesar Chavez to 13th	N	1.5	19.2	18.8	18.8	18.5
222	Van Ness/S. Van Ness: 13th to Golden Gate	N	0.8	16.3	16.7	13.9	13.4
223	Van Ness/S. Van Ness: Golden Gate to Washington	N	0.84	14.1	17.0	12.1	14.8
224	Van Ness/S. Van Ness: Washington to Lombard	N	0.58	13.9	19.2	13.1	17.6
225	Van Ness/S. Van Ness: Lombard to Washington	S	0.58	13.9	15.2	12.2	13.7
226	Van Ness/S. Van Ness: Washington to Golden Gate	S	0.84	16.6	14.9	14.1	12.8
227	Van Ness/S. Van Ness: Golden Gate to 13th	S	0.8	18.6	17.4	15.3	14.2
228	Van Ness/S. Van Ness: 13th to Cesar Chavez	S	1.5	16.5	19.2	16.3	19.0
229	Washington: Drumm to Kearny	W	0.44	10.1	8.1	10.1	8.1
230	West Portal: Sloat to Ulloa	N	0.54	14.4	13.7	14.4	13.7
231	West Portal: Ulloa to Sloat	S	0.54	17.2	13.4	17.2	13.4
232	I-280: Junipero Serra to Weldon	N	4.29	47.5	66.0	35.2	65.9
233	I-280: Weldon to 6th/Brannan	N	3.37	45.1	50.8	35.4	36.3
234	US 101/Central Freeway: C & C Limit to Cortland	N	2.31	35.5	57.0	25.9	53.1
235	US 101/Central Freeway: Cortland to I-80	N	1.9	34.3	24.5	29.6	13.3
236	US 101/Central Freeway: I-80 to Market	N	1.28	30.1	36.4	24.6	31.8
237	I-80: Treasure Island to Fremont Exit	W	2.72	50.2	27.9	46.4	23.8
238	I-80: Fremont Exit to US-101	W	1.66	52.6	18.5	50.4	17.4
239	I-280: 6th/Brannan to Weldon	S	3.35	61.1	45.9	58.1	37.8
240	I-280: Weldon to Junipero Serra	S	4.17	64.7	57.3	64.3	52.1
241	US 101/Central Freeway: Market to I-80	S	1.14	33.9	19.3	26.1	13.4
242	US 101/Central Freeway: I-80 to Cortland	S	1.99	48.5	52.1	40.9	49.6
243	US 101/Central Freeway: Cortland to Monster Park Exit	S	2.29	39.2	61.4	31.5	59.4
244	I-80: US-101 to Fremont Exit	E	1.75	43.4	12.0	36.8	9.7
245	I-80: Fremont Exit to Treasure Island	E	2.72	48.4	39.4	44.2	35.2

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2015 CONGESTION MANAGEMENT PROGRAM

APPENDIX 6

Traffic, Bicycle, and Pedestrian Volume Data

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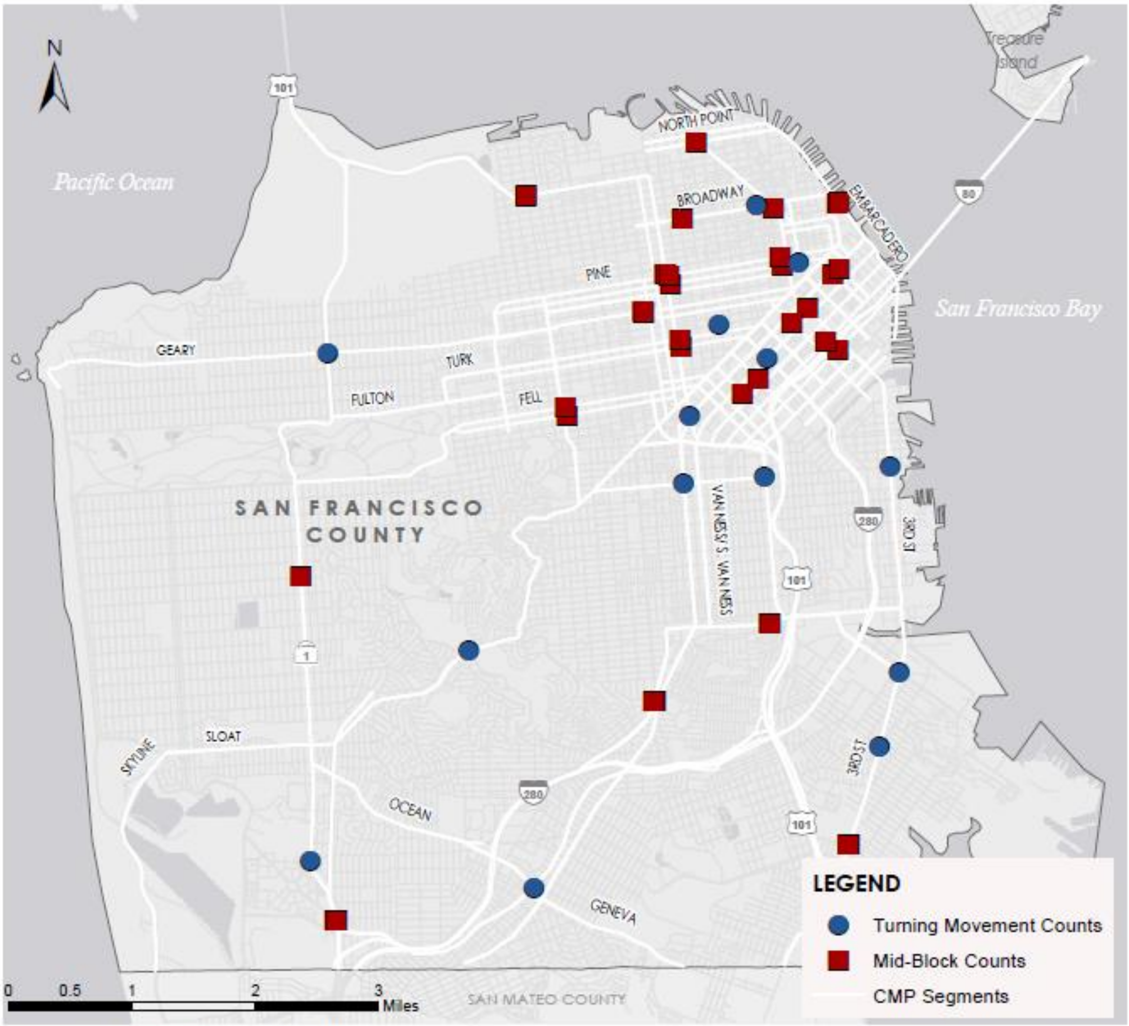
APPENDIX 6
TRAFFIC VOLUME DATA

KEY TOPICS

- Turning Movement Counts
- Mid-block Counts

In 2015, the Transportation Authority conducted mid-block and intersection volume counts. These counts are additional to the official CMP monitoring activities and are therefore not subject to deficiency analyses. Two types of field volume counts were conducted; turning movement counts and mid-block counts (Figure 10). The data collected with these counts is used by agencies for planning and operations activities.



Data Sources: Iteris, Inc. & 2015 SFCTA LOS Monitoring

This map is for planning purposes only.

Figure 10 Location of Turning Movement and Mid-Block Counts

1. Turning Movement Counts

Turning Movement Counts were conducted at 14 intersections during the defined peak periods on a single day within the monitoring period. The counts recorded vehicles, pedestrians and bicycle modes of travel.

Portola Drive & O'Shaughnessy / Woodside

Potrero & 16th St

16th St & 3rd St

South Van Ness & 13th

Geneva Ave & Alemany Blvd

Geary & Park Presidio

19th Ave & Holloway

Montgomery & Bush

16th & Mission

Eddy & Leavenworth

Stockton & Broadway

6th & Howard

Third Street & Evans Avenue

Third St & Palou Ave

2. Mid-block Counts

Mid-block counts were recorded at 37 locations for at least three days within the monitoring period. Four locations were extended beyond the monitoring period to record the following Friday, Saturday and Sunday for a total of six days.

Bay (btw Columbus and Leavenworth)

Embarcadero NB (btw Broadway & Washington)

Embarcadero SB (btw Broadway & Washington)

Bush (btw Grant & Kearny)

Junipero Serra Blvd (SB, just north of Brotherhood Way ramps)

1st (btw Mission & Minna)

Fremont (btw Mission & Natoma)

Bryant (btw 3rd and 4th)

Harrison (btw 3rd and 4th)

8th St (btw Tehama & Clementina)

7th St (btw Folsom & Howard)

Van Ness (SB btw Pine & California)

19th Ave (btw Noriega and Moraga St)

Oak St (btw Divisadero and Scott)

Fell St (btw Divisadero and Scott)

Pine (btw Grant & Kearny)

Junipero Serra Blvd (NB, just north of Brotherhood Way ramps)

San Jose Ave (NB, just south of Randall)

San Jose Ave (SB, just south of Randall)

3rd St, btw Minna & Howard

4th St, btw Minna & Howard

Geary WB (btw Gough & Laguna)

Geary EB (btw Gough & Laguna)

Cesar Chavez WB (btw York & Hampshire)

Van Ness (NB, btw Pine and California)

Golden Gate (btw Van Ness and Polk)

Turk St (btw Van Ness and Polk)

Columbus Ave (btw Broadway and Pacific)

Bush (btw Van Ness & Polk)

Pine (btw Van Ness & Polk)

Broadway Tunnel (just east of Larkin)

Cesar Chavez EB (btw York & Hampshire)

3rd St NB (btw Paul and Fitzgerald)

3rd St SB (btw Fitzgerald & Paul Ave)

EB Lombard (btw Divisadero & Broderick)

WB Lombard (btw Divisadero & Broderick)

Mission St (btw 24th & 25th)

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2015 CONGESTION MANAGEMENT PROGRAM

APPENDIX 7

2015 Transit Monitoring Methodology and Results

APPENDIX 7
TRANSIT MONITORING METHOLOGY & RESULTS

KEY TOPICS

- Methodology
- Transit Speed Results
- Discussion

1. Methodology

The transit speed monitoring was conducted using Automatic Passenger Count (APC) data from the San Francisco Municipal Transportation Agency (SFMTA), which tracks transit speeds, boardings, and alightings on SFMTA buses. SFMTA rail vehicles are not included. SFMTA has APC counters on a significant portion of the bus fleet at any given time, and rotates the counters between vehicles periodically to collect data on every bus run.

The APC data is valuable for detailed service planning purposes. For broader system performance monitoring and planning purposes, such as the CMP, the APC data can be aggregated to a weekday peak period and have a relatively large sample set. APC data was used to report transit speeds in 2009, 2011 and 2013. In 2011, transit speeds were reported on CMP segments for the afternoon peak alone; since the 2013 CMP update, the monitoring effort included both morning and afternoon peak results. For the 2015 CMP, the LOS monitoring consultants (Iteris) processed one and a half months of APC data collected on Muni's bus fleet. Muni light rail vehicles are not currently equipped with APCs, and were thus not included in the analysis.

After undergoing a quality control "cleaning" to eliminate faulty and outlier data samples, the data was filtered to include only weekday peak periods. The same morning and afternoon peak time periods were used as in the LOS Monitoring (7:00 a.m.-9:00 a.m. and 4:30 p.m.-6:30 p.m.) and were reviewed for the same special events, construction and weather events as the auto monitoring.

The APC equipment relies on GPS technology to recognize Muni's designated stop locations as a vehicle traverses its route. The processed dataset provides stop-to-stop travel speed, inclusive of dwell time[1]. Dwell time is assigned to the "upstream" stop: the segment-level data represents upstream stop-arrival point to downstream stop-arrival point. In this way, the processed data corresponds with the travel time and through-speed experience by a transit rider as he or she passes multiple stops while on-board. (This is comparable to manner in which automobile speed is reported by including fully-stopped intersection delay in the calculation of through-travel speed.). The transit travel time results have been mapped to the CMP segmentation, based on the bus segments or bus stop pairs that are within each CMP segment for a given bus route and direction.

2. Results

In the results, shown in Attachment 7.1, Iteris presents the Average Transit Speeds for the morning and afternoon peak periods. The results also include the 2013 morning and afternoon transit speeds for comparison. Figures 11 and 12 display all LOS results graphically for the morning and afternoon peak periods, respectively.

In 2013, the average afternoon transit speed was 8.1 mph and the average morning transit speed was 8.8 mph. In 2015, the average afternoon transit speed was 7.9 mph and the average morning transit speed was 8.7 mph. A statistical comparison of the 2013 and 2015 means indicates a significant decrease in afternoon peak speed in 2015 but not in morning peak speed. Additional summary statistics are presented in Table 10.

Table 10 Transit Results Summary Statistics

	YEAR	NUMBER OF SEGMENTS	AVERAGE SPEED (MPH)	STANDARD DEVIATION	MINIMUM SPEED (MPH)	MAXIMUM SPEED (MPH)
AM Peak Period	2013	134	8.8	3.1	3.4	21.8
	2015	133	8.7	3.0	4.8	19.9
PM Peak Period	2013	133	8.1	3.2	2.7	21.7
	2015	134	7.9	3.0	3.0	18.8

In the 2013 results, there were 134 and 133 CMP Segments with reported morning and afternoon peak period transit speeds, respectively. In the 2015 results, transit APC data was mapped onto 133 and 134 CMP Segments in the morning and afternoon peak periods, respectively. This difference in results is due to varied coverage between 2015 and 2013 for some of the segments. For example, during the 2015 monitoring period bus routes along 4th St/Stockton from Harrison to Channel were rerouted due to construction, resulting in insufficient APC data coverage for monitoring transit speeds.

In addition, twenty five (25) CMP Segments with calculated transit speeds were excluded from the 2015 results due to low transit route coverage. All except two of these CMP Segments were also excluded in the 2013 analysis due to low coverage.

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[1] Note that door dwell time was excluded for few bus stop pairs to filter out the layover time corresponding to end of the line operations.

Data Sources: Iteris, Inc. & SFMTA Automatic Passenger Counters

This map is for planning purposes only.

Figure 11 Average Muni Bus Speeds on CMP Segments, Weekday AM Peak Period

Data Sources: Iteris, Inc. & SFMTA Automatic Passenger Counters

This map is for planning purposes only.

Figure 12 Average Muni Bus Speeds on CMP Segments, Weekday PM Peak Period

3. Discussion

This section examines the slowest segments, the least reliable segments, and the segments with the highest auto-to-transit speed ratios. Finally, the results of 2013 and 2015 are compared.

3.1 | | Slowest Transit Segments

First, the CMP segments with the slowest transit speeds (under 5 mph) in the morning and afternoon peak periods are shown in Tables 11 and 12.

Table 11 Slowest Transit Segments (<5 mph), AM Peak

CMP ID	DESCRIPTION	DIR	AVERAGE TRANSIT SPEED (MPH)	S.D. TRANSIT SPEED (MPH)	SAMPLE SIZE
76	Columbus: Greenwich to Montgomery	S	4.8	0.6	621
120	Geneva: Paris to Cayuga	W	4.9	0.6	379

Table 12 Slowest Transit Segments (<5 mph), PM Peak

CMP ID	DESCRIPTION	DIR	AVERAGE TRANSIT SPEED (MPH)	S.D. TRANSIT SPEED (MPH)	SAMPLE SIZE
51	Broadway: Montgomery to Powell	W	3.0	0.8	159
11	5th St: Brannan to Market	N	3.8	1.7	154
12	5th St: Market to Brannan	S	4.2	0.4	1321
76	Columbus: Greenwich to Montgomery	S	4.2	0.5	424
190	Ocean: Howth to Miramar	W	4.3	0.6	149
73	Columbus: Montgomery to Greenwich	N	4.4	1.0	558
3	2nd St: Market to Brannan	S	4.6	1.5	120
97	Folsom: 8th Street to 4th Street	E	4.6	1.6	93
15	7th St: Brannan to Market	N	4.7	0.9	118
227	Van Ness/S. Van Ness: Golden Gate to 13th	S	4.7	0.6	444
158	Market/Portola: Van Ness to Guerrero	W	4.8	1.2	114
159	Market/Portola: Guerrero to Castro	W	4.8	0.7	37

One of the two slowest CMP segments in the morning peak, Columbus between Greenwich and Montgomery, appeared in the PM Slowest Segment table as well. This segment is in the downtown area.

In the afternoon peak, it is interesting to note that both directions of two segments (5th St between Brannan and Market, and Columbus between Montgomery and Greenwich) were in the list. Both segments are in the downtown area, where there may be heavy bi-directional auto volumes during peak periods.

Relative to 2013, there are fewer segments below 5 mph in the morning peak (5 and 2 in 2013 and 2015, respectively) and more segments below 5 mph in the afternoon peak (10 and 12 in 2013 and 2015, respectively). All of the slowest segments have sample sizes above 50, except Market/Portola from Guerrero to Castro in the afternoon peak.

3.2 | | Least Reliable Transit Segments

Second, the CMP segments with the least reliable transit speeds in the morning and afternoon peak periods are shown in Tables 13 and 14. In order to fairly compare the variability of speeds for segments that are fast on average and those that are slow on average, a reliability measure is needed that would not favor one or the other. If we used standard deviation alone, segments that have higher absolute standard deviations (i.e. most commonly segments with higher average speeds) would be ranked higher than segments that are slower on average. To prevent this, the Coefficient of Variation (CV), the ratio between the standard deviation and the average, is used to measure reliability. The CV is expressed as a percentage of the mean speed, thus both segments with high and low average speeds can be compared on the same scale. Segments with a CV of 30% or higher, indicating that speeds vary from average by more than 30% on about one in three trips, are shown below.

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Table 13 Least Reliable Transit Segments (CV>30%), AM Peak

CMP ID	DESCRIPTION	DIR	AVG. TRANSIT SPEED (MPH)	S.D. TRANSIT SPEED (MPH)	CV	SAMPLE SIZE
137	J. Serra: County Line to Brotherhood	N	9.8	7.7	79%	37
141	J. Serra: 19th to Brotherhood	S	18.9	12.2	65%	23
138	J. Serra: Brotherhood to 19th	N	7.2	4.3	60%	39
91	Evans: Cesar Chavez to 3rd Street	E	9.8	4.4	45%	73
215	Townsend: 2nd Street to 7th Street	W	9.2	3.9	42%	105
163	Masonic: Page to Geary	N	7.4	3.1	42%	162
81	Doyle/ Richardson/ Lombard: Lyon/Francisco to SF Cemetery	W	16.2	6.5	40%	19
82	Doyle/ Richardson/ Lombard: SF Cemetery to County Line	W	16.2	6.5	40%	19
2	2nd St: Brannan to Market	N	7.2	2.7	38%	91
158	Market/Portola: Van Ness to Guerrero	W	6.4	2.2	34%	110
77	Doyle/ Richardson/ Lombard: County Line to SF Cemetery	E	9.7	3.1	32%	21
78	Doyle/ Richardson/ Lombard: SF Cemetery to Lyon/Francisco	E	9.7	3.1	32%	21
103	Fulton: Park P. to 10th Avenue	E	9.2	2.9	32%	72
150	Main: Mission to Market	N	8	2.5	31%	108
39	Bayshore: Jerrold to Industrial	S	8.9	2.7	30%	382

Table 14 Least Reliable Transit Segments (CV>30%), PM Peak

CMP ID	DESCRIPTION	DIR	AVG. TRANSIT SPEED (MPH)	S.D. TRANSIT SPEED (MPH)	CV	SAMPLE SIZE
206	Sloat: Skyline to Junipero Serra	E	11.2	10.8	96%	183
150	Main: Mission to Market	N	6	5.5	92%	71
215	Townsend: 2nd Street to 7th Street	W	5.7	3.5	61%	101
181	North Point: Columbus to Embarcadero	E	7.9	3.8	48%	35
196	Pine: Market to Kearny	W	8.9	4.2	47%	95
108	Fulton: 10th Avenue to Park P.	W	6.7	3.1	46%	58
11	5th St: Brannan to Market	N	3.8	1.7	45%	154
2	2nd St: Brannan to Market	N	5.7	2.5	44%	71
26	19th Ave/Park Presidio: Lake to US 101	N	11.3	4.8	42%	32
103	Fulton: Park P. to 10th Avenue	E	8.8	3.3	38%	60
39	Bayshore: Jerrold to Industrial	S	7.5	2.8	37%	380
137	J. Serra: County Line to Brotherhood	N	13.2	4.9	37%	59
81	Doyle/ Richardson/ Lombard: Lyon/Francisco to SF Cemetery	W	10.8	4	37%	22
82	Doyle/ Richardson/ Lombard: SF Cemetery to County Line	W	10.8	4	37%	22
41	Beale/Davis: Clay to Mission	S	7.1	2.6	37%	104
141	J. Serra: 19th to Brotherhood	S	17.2	6.2	36%	28
132	Harrison: 1st Street to 4th Street	W	5.6	2	36%	18
97	Folsom: 8th Street to 4th Street	E	4.6	1.6	35%	93
214	Townsend: 7th Street to 2nd Street	E	5.1	1.7	33%	60

CMP ID	DESCRIPTION	DIR	AVG. TRANSIT SPEED (MPH)	S.D. TRANSIT SPEED (MPH)	CV	SAMPLE SIZE
3	2nd St: Market to Brannan	S	4.6	1.5	33%	120
66	Cesar Chavez: Guerrero to Bryant	E	6.8	2.2	32%	108
38	Bayshore: Industrial to Cesar Chavez	N	9.7	3.1	32%	239
49	Broadway: Montgomery to Embarcadero	E	5.6	1.7	30%	61

Relative to 2013, there are more segments above 30% CV in the morning peak (12 and 15 in 2013 and 2015, respectively) and more segments above 30% CV in the afternoon (11 and 23 in 2013 and 2015, respectively). It should be noted that while all three least reliable segments in the morning peak are on J. Serra, the results for these segments may be affected by low sample size (<50).

Since it is theoretically possible for segments to be reliably fast, reliably slow, unreliably fast, or unreliably slow, the ideal comparison of these results would show the results in two dimensions at the same time, as is shown in Figures 13 and 14 below.

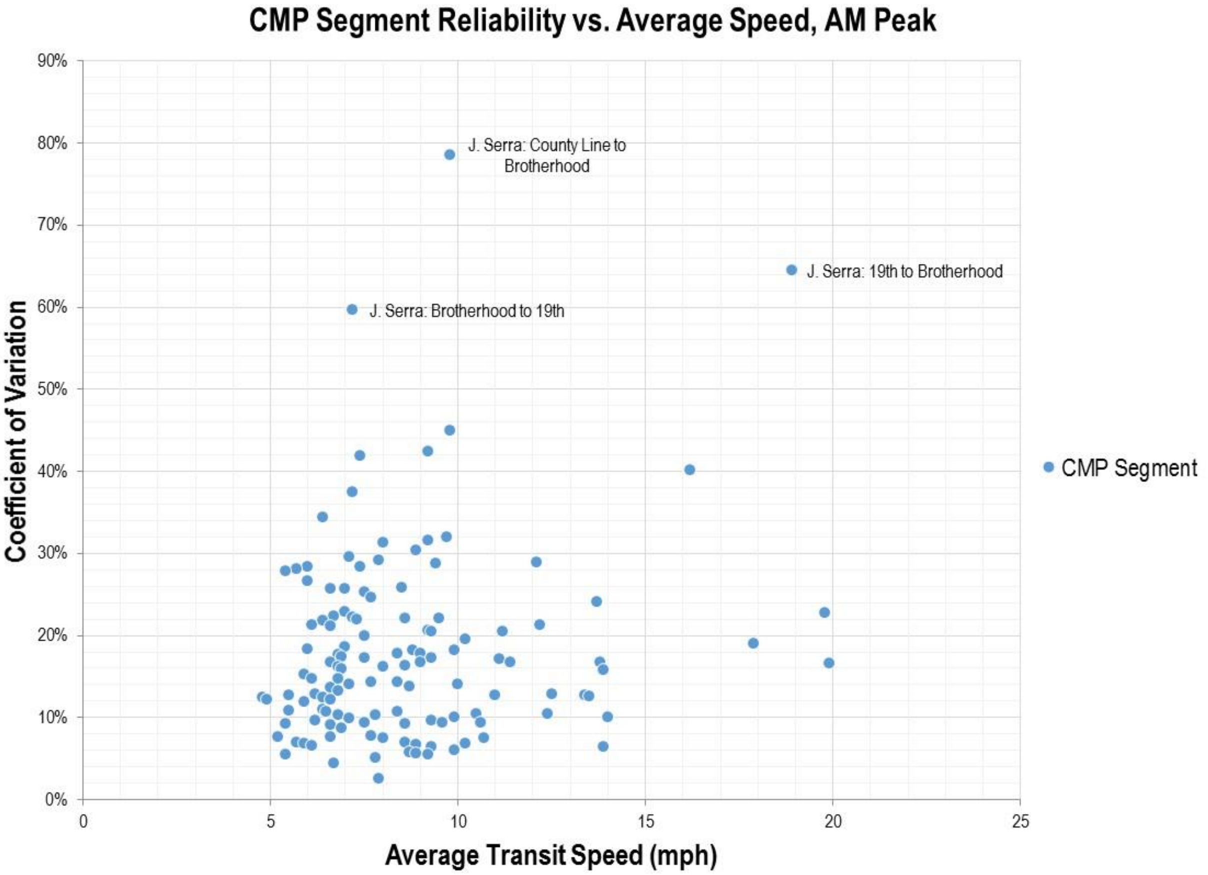


Figure 13 Reliability and Speed Matrix, AM Peak

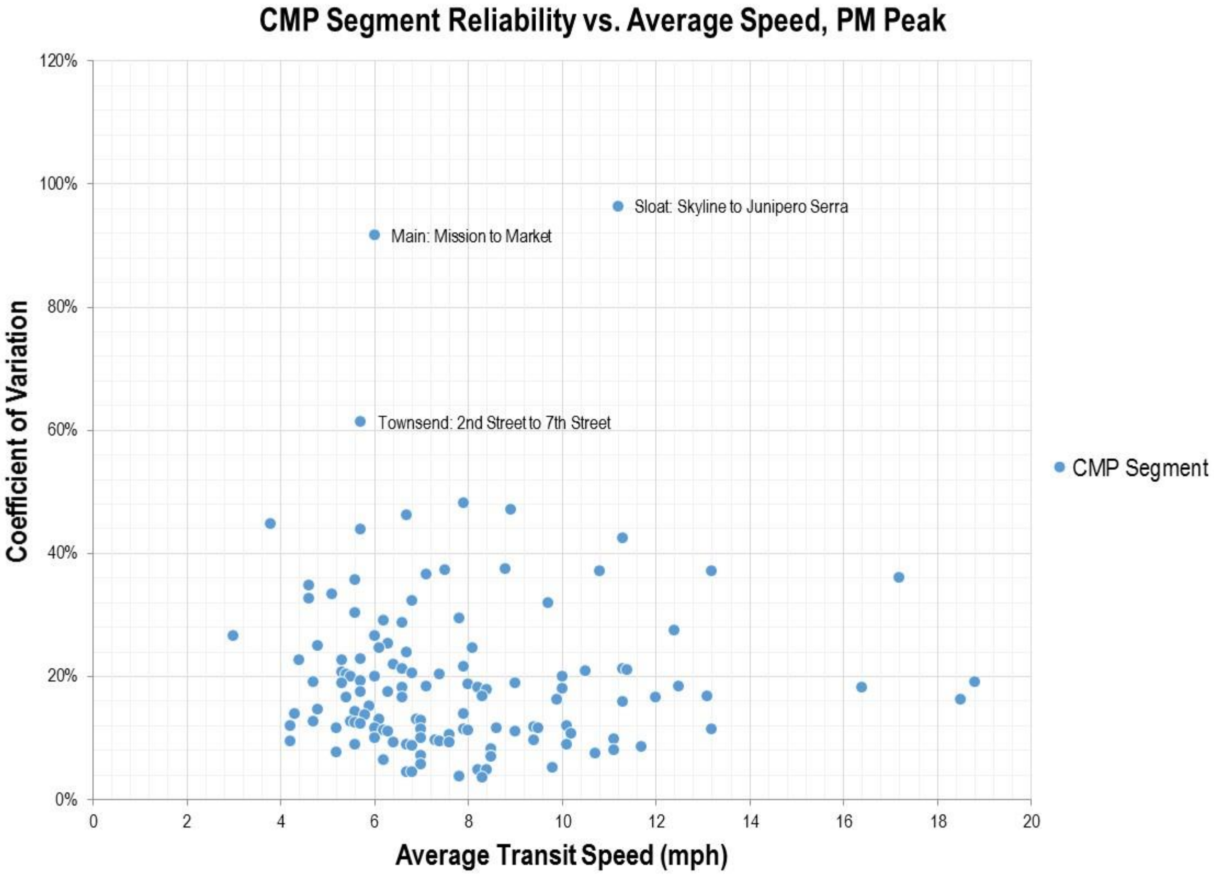


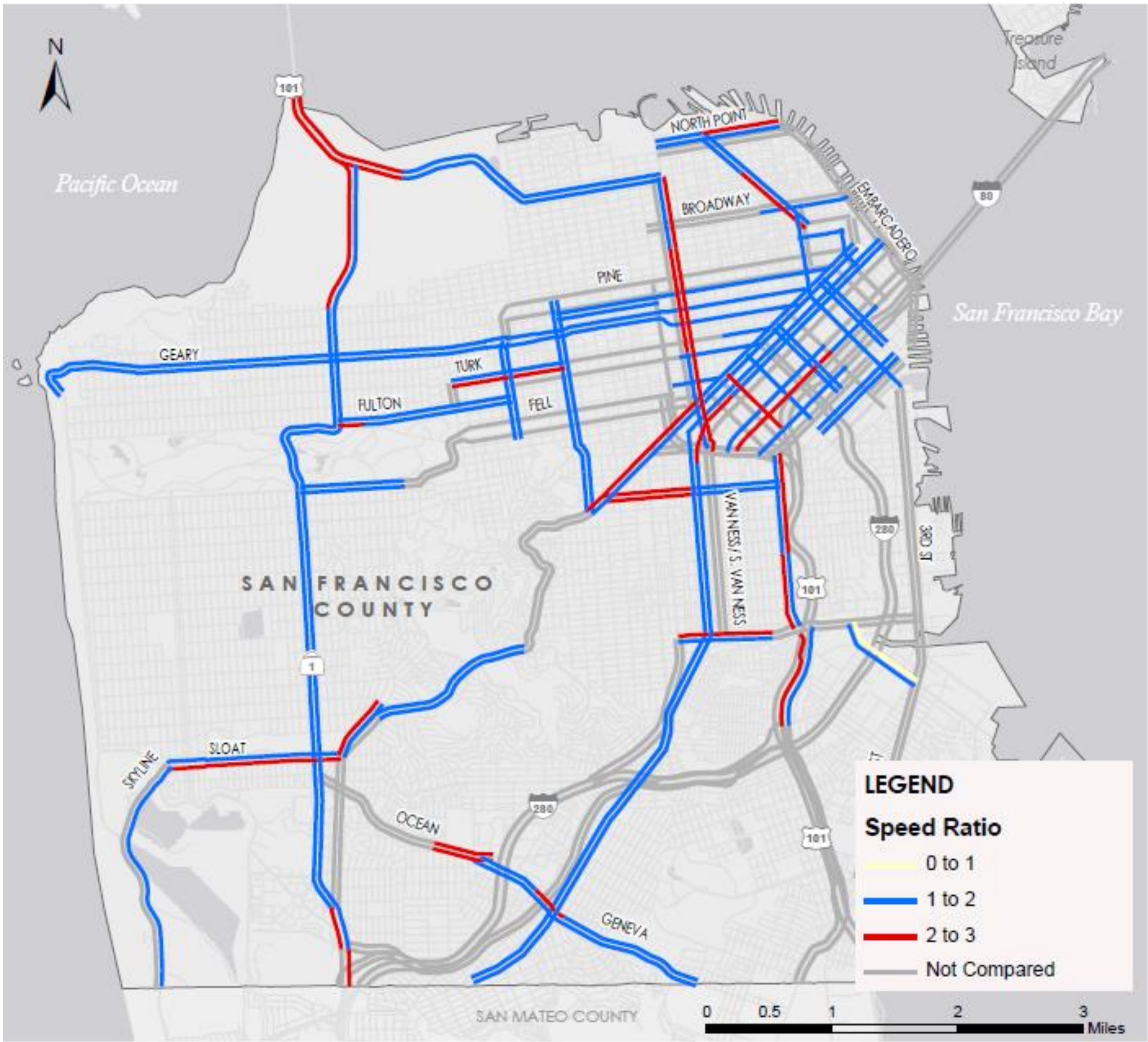
Figure 14 Reliability and Speed Matrix, PM Peak

We find in these results that the majority of segments fall into the 5 – 14 mph average speed range and the 5 – 40% CV range, having moderate speeds and moderate reliability on average.

3.3 | | Highest Auto to Transit Ratios

Since the APC dataset is from the same monitoring period as the roadway LOS monitoring effort, a comparison was possible of auto to transit speeds on the portions of the CMP network for which Muni data was available. This figure is equivalent to the ratio of transit travel time to auto travel time. A ratio of 2 would indicate that, for a particular route, on-board transit travel time is twice that of auto travel time. Figures 15 and 16 visualize the auto to transit ratio on a map.

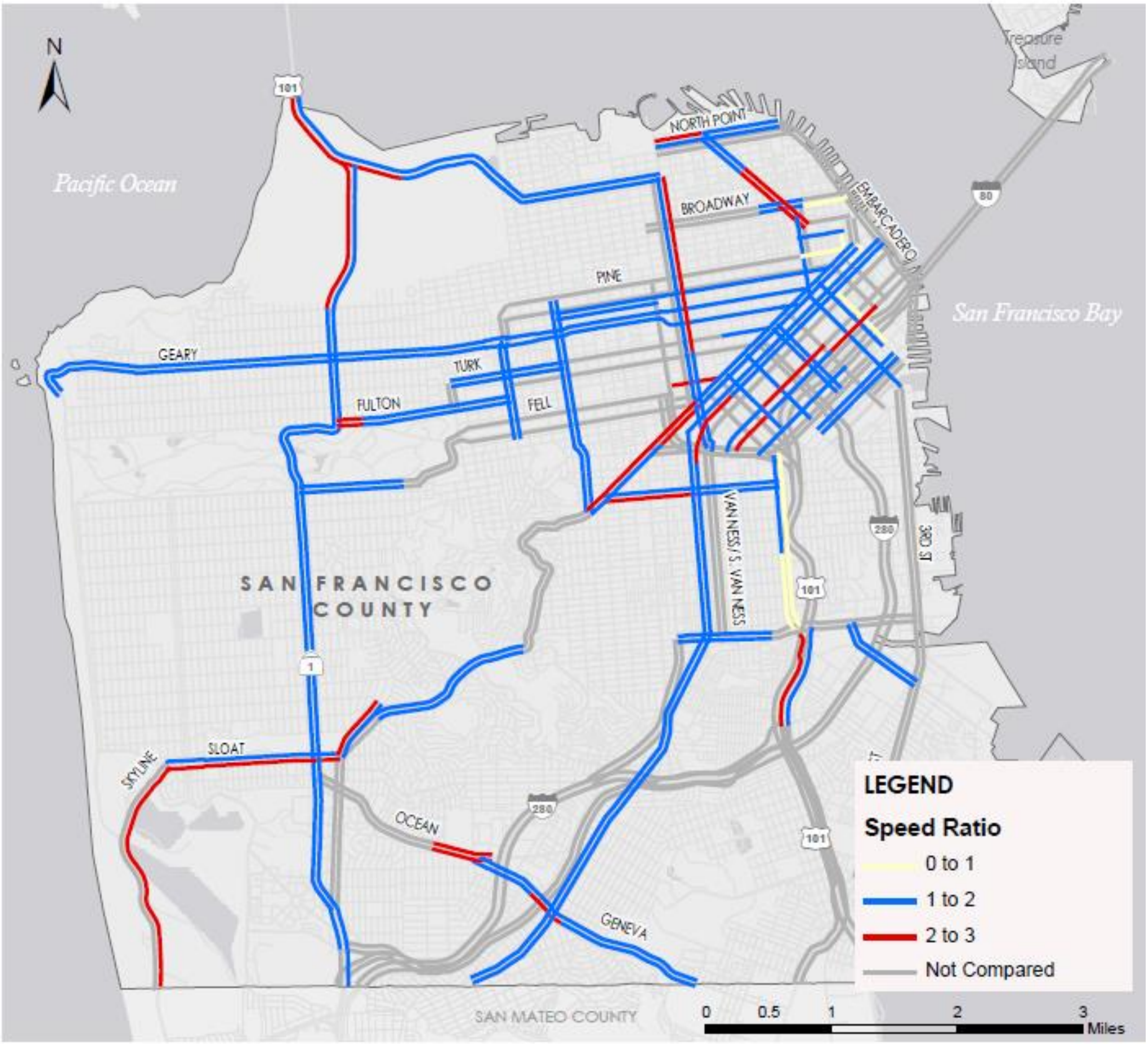
These maps show a small portion of the network where the speed ratio is between 0 and 1; indicating that transit is quicker than auto. These links are shown as cream on the maps. The red segments indicate that travel by transit is two to three times slower than by auto. These links are distributed throughout the county and are not clustered to any single district. However, many of the segments that are showing up as red, are red in both the morning and evening peak period.



Data Sources: Iteris, Inc., INRIX* Inc., & SFMTA Automatic Passenger Counters
*Onroutes where INRIX data is available

This map is for planning purposes only.

Figure 15 Auto:Transit Speed Ratio in 2015, Weekday AM Peak Period



Data Sources: Iteris, Inc., INRIX* Inc., & SFMTA Automatic Passenger Counters
*Onroutes where INRIX data is available

This map is for planning purposes only.

Figure 16 Auto:Transit Speed Ratio in 2015, Weekday PM Peak Period

Finally, the CMP Segments with auto to transit speed ratios of 2.0 or higher are listed in Tables 15 and 16 below.

Table 15 Segments with Auto to Transit Speed Ratio of 2.0 or higher, AM Peak

CMP ID	DESCRIPTION	DIR	AUTO:TRANSIT SPEED RATIO	AVG. AUTO SPEED (MPH)	AVG. TRANSIT SPEED (MPH)
159	Market/Portola: Guerrero to Castro	W	2.8	15.1	5.4
137	J. Serra: County Line to Brotherhood	N	2.8	27.0	9.8
39	Bayshore: Jerrold to Industrial	S	2.7	24.4	8.9
77	Doyle/ Richardson/ Lombard: County Line to SF Cemetery	E	2.6	25.4	9.7

CMP ID	DESCRIPTION	DIR	AUTO:TRANSIT SPEED RATIO	AVG. AUTO SPEED (MPH)	AVG. TRANSIT SPEED (MPH)
76	Columbus: Greenwich to Montgomery	S	2.5	11.8	4.8
224	Van Ness/S. Van Ness: Washington to Lombard	N	2.4	12.7	5.2
134	Harrison: 8th Street to Division	W	2.3	14.0	6
170	Mission/Otis: 14th Street to 9th Street	N	2.3	12.4	5.4
226	Van Ness/S. Van Ness: Washington to Golden Gate	S	2.2	12.8	5.7
158	Market/Portola: Van Ness to Guerrero	W	2.2	14.3	6.4
19	16th St: Market to Mission	E	2.2	13.1	5.9
27	19th Ave/Park Presidio: US 101 to Lake	S	2.2	39.7	17.9
120	Geneva: Paris to Cayuga	W	2.2	10.7	4.9
71	Cesar Chavez: Bryant to Guerrero	W	2.2	13.1	6
182	North Point: Embarcadero to Columbus	W	2.2	13.9	6.4
82	Doyle/ Richardson/ Lombard: SF Cemetery to County Line	W	2.2	35.1	16.2
189	Ocean: Miramar to Howth	E	2.2	11.9	5.5
203	Potrero: 21st Street to Cesar Chavez	S	2.1	14.5	6.8
216	Turk: Stanyan to Divisadero	E	2.1	15.7	7.4
231	West Portal: Ulloa to Sloat	S	2.1	14.8	7
103	Fulton: Park P. to 10th Avenue	E	2.1	19.3	9.2
201	Potrero: 21st Street to Division	N	2.1	19.5	9.3
141	J. Serra: 19th to Brotherhood	S	2.1	39.3	18.9
22	16th St: Mission to Market	W	2.1	13.3	6.4
206	Sloat: Skyline to Junipero Serra	E	2.1	23.0	11.1
223	Van Ness/S. Van Ness: Golden Gate to Washington	N	2.1	11.1	5.4
222	Van Ness/S. Van Ness: 13th to Golden Gate	N	2.0	13.0	6.4
16	8th St: Market to Bryant	S	2.0	13.5	6.7

Table 16 Segments with Auto to Transit Speed Ratio of 2.0 or higher, PM Peak

CMP ID	DESCRIPTION	DIR	AUTO:TRANSIT SPEED RATIO	AVG. AUTO SPEED (MPH)	AVG. TRANSIT SPEED (MPH)
73	Columbus: Montgomery to Greenwich	N	2.8	12.5	4.4
159	Market/Portola: Guerrero to Castro	W	2.7	13.0	4.8
39	Bayshore: Jerrold to Industrial	S	2.6	19.3	7.5
231	West Portal: Ulloa to Sloat	S	2.5	14.3	5.8
170	Mission/Otis: 14th Street to 9th Street	N	2.5	13.3	5.4
76	Columbus: Greenwich to Montgomery	S	2.4	10.2	4.2
103	Fulton: Park P. to 10th Avenue	E	2.3	20.6	8.8
132	Harrison: 1st Street to 4th Street	W	2.3	13.1	5.6
183	North Point: Columbus to Van Ness	W	2.3	13.2	5.7
155	Market/Portola: Guerrero to Van Ness	E	2.3	12.2	5.3
158	Market/Portola: Van Ness to Guerrero	W	2.3	10.9	4.8
19	16th St: Market to Mission	E	2.3	13.5	6

CMP ID	DESCRIPTION	DIR	AUTO:TRANSIT SPEED RATIO	AVG. AUTO SPEED (MPH)	AVG. TRANSIT SPEED (MPH)
223	Van Ness/S. Van Ness: Golden Gate to Washington	N	2.3	11.7	5.2
224	Van Ness/S. Van Ness: Washington to Lombard	N	2.2	16.4	7.4
108	Fulton: 10th Avenue to Park P.	W	2.2	14.7	6.7
204	Skyline: County Line to Sloat	N	2.2	35.8	16.4
77	Doyle/ Richardson/ Lombard: County Line to SF Cemetery	E	2.2	39.9	18.5
135	Hayes: Market to Gough	W	2.1	11.2	5.4
97	Folsom: 8th Street to 4th Street	E	2.1	9.5	4.6
134	Harrison: 8th Street to Division	W	2.1	12.8	6.2
27	19th Ave/Park Presidio: US 101 to Lake	S	2.0	38.0	18.8
117	Geneva: Cayuga to Paris	E	2.0	10.7	5.3
189	Ocean: Miramar to Howth	E	2.0	11.1	5.5
206	Sloat: Skyline to Junipero Serra	E	2.0	22.6	11.2

3.4 | | Comparison of 2015 and 2013 PM Peak Period Results

When comparing the CMP Segments common to both 2013 and 2015, there is a slightly lower average transit speed in 2015 (7.9 mph vs. 8.1 mph in 2013), and the maximum transit speed is lower in 2015 than in 2013. The lower average transit speed is statistically significant in the afternoon peak period.

Auto to transit speed ratios decreased on most segments, averaging 1.7 in 2015 compared to 2.1 in 2013 during afternoon peak period, indicating that transit is becoming more time-competitive with auto despite slightly lower average transit speeds in 2015. As discussed in Appendix 5, the 2015 auto speeds were lower than the 2013 auto speeds. The lower auto speeds more than offset the lower transit speeds, resulting in lower auto to transit speed ratios on many segments in 2015.

For individual CMP segments, a lower auto to transit speed ratio on the same segment can be the result of:

- Auto speeds decreasing while transit speeds remain constant;
- Auto speeds remaining constant while transit speeds increase;
- Auto speeds decreasing while transit speeds increase;
- Auto speeds decreasing more than transit speeds decrease; and
- Auto speeds increasing less than transit speeds increase.

As shown in Figure 17 below, auto to transit speed ratios changed from 2013 to 2015 for all of the above reasons on a segment by segment basis. The diagonal line in this figure indicates values at which the auto to transit speed ratio would be exactly the same in each year. Quadrant I represents auto and transit speeds increasing and similarly quadrant III represents auto and transit speeds decreasing. The narrow vertical band of results indicates a larger change in the auto results when compared to the transit results.

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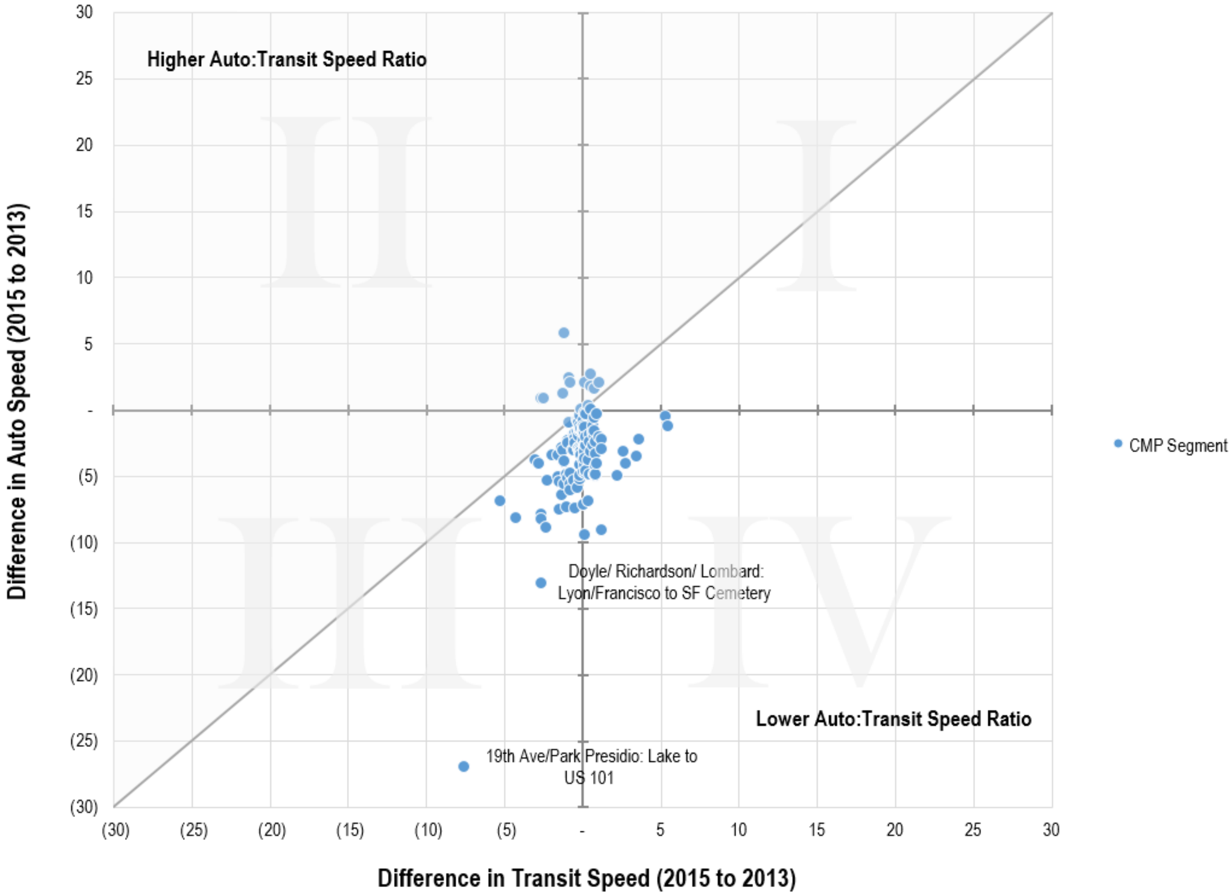

Figure 17 Change in Auto & Transit Speeds 2013 to 2011, Weekday PM Peak Period


Source: SFMTA

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			2015 AM Peak			2015 PM Peak			2013 AM Peak	2013 PM Peak
CMP ID	Description	Dir	Avg. Transit Speed (mph)	Sample Size	S.D. Transit Speed (mph)	Avg. Transit Speed (mph)	Sample Size	S.D. Transit Speed (mph)	Avg. Transit Speed (mph)	Avg. Transit Speed (mph)
1	1st St: Market to Harrison*	S								
2	2nd St: Brannan to Market	N	7.2	91	2.7	5.7	71	2.5	6.7	6.5
3	2nd St: Market to Brannan	S	7.5	113	1.5	4.6	120	1.5	9.3	7.1
4	3rd St: Jamestown to Evans	N								
5	3rd St: Evans to Terry Francois	N								
6	3rd St: Terry Francois to Market	N	7.7	870	0.6	7.1	808	1.3	7.4	6.6
7	3rd St: Terry Francois to Evans	S								
8	3rd St: Evans to Jamestown	S								
9	4th St/Stockton: O'Farrell to Harrison*	S								
10	4th St/Stockton: Harrison to Channel*	S							8.1	7.4
11	5th St: Brannan to Market	N	5.5	165	0.7	3.8	154	1.7	6.5	4.7
12	5th St: Market to Brannan	S	5.9	827	0.4	4.2	1321	0.4	7.1	5.5
13	6th St: Brannan to Market	N								
14	6th St: Market to Brannan	S								
15	7th St: Brannan to Market	N	6.6	100	1.4	4.7	118	0.9	5.8	6.2
16	8th St: Market to Bryant	S	6.7	77	1.5	5.7	82	1.3	6.7	7.2
17	9th St: Brannan to Market	N								
18	10th St: Market to Brannan	S								
19	16th St: Market to Mission	E	5.9	341	0.7	6	442	0.6	6.3	6.1
20	16th St: Mission to Potrero	E	7.3	721	1.6	6.3	859	1.1	6.4	6.2
21	16th St: Potrero to Mission	W	8	733	0.6	6.1	745	0.8	7.6	6.0
22	16th St: Mission to Market	W	6.4	360	0.7	6	420	0.6	6.3	6.6
23	19th Ave/Park Presidio: Junipero Serra to Sloat	N	12.2	155	2.6	9.5	153	1.1	9.8	10.0
24	19th Ave/Park Presidio: Sloat to Lincoln	N	7.9	434	2.3	10	492	2	9.8	9.0
25	19th Ave/Park Presidio: Lincoln to Lake	N	12.5	157	1.6	13.1	150	2.2	12.1	13.3
26	19th Ave/Park Presidio: Lake to US 101	N	19.9	21	3.3	11.3	32	4.8	19.3	18.9
27	19th Ave/Park Presidio: US 101 to Lake	S	17.9	20	3.4	18.8	32	3.6	17.3	19.0
28	19th Ave/Park Presidio: Lake to Lincoln	S	13.4	177	1.7	10	161	1.8	14.5	9.9
29	19th Ave/Park Presidio: Lincoln to Sloat	S	11	468	1.4	11.1	548	1.1	11.0	11.3
30	19th Ave/Park Presidio: Sloat to Junipero Serra	S	13.9	168	2.2	9.4	176	1.1	11.1	9.0
31	Alemany: Junipero Serra to Lyell	E								
32	Alemany: Lyell to Bayshore	E								
33	Alemany: Bayshore to Lyell	W								
34	Alemany: Lyell to County Line	W								
35	Bay: Van Ness to Embarcadero	E								
36	Bay: Embarcadero to Van Ness	W								

CMP ID	Description	Dir	2015 AM Peak Avg. Transit Speed (mph)	2015 AM Peak Sample Size	2015 AM Peak S.D. Transit Speed (mph)	2015 PM Peak Avg. Transit Speed (mph)	2015 PM Peak Sample Size	2015 PM Peak S.D. Transit Speed (mph)	2013 AM Peak Avg. Transit Speed (mph)	2013 PM Peak Avg. Transit Speed (mph)
37	Bayshore: County Line to Industrial	N								
38	Bayshore: Industrial to Cesar Chavez	N	9	270	1.6	9.7	239	3.1	9.3	9.5
39	Bayshore: Jerrold to Industrial	S	8.9	382	2.7	7.5	380	2.8	7.1	6.9
40	Bayshore: Industrial to County Line	S								
41	Beale/Davis: Clay to Mission	S	6.8	226	1	7.1	104	2.6	7.2	6.6
42	Brannan: Division to 6th	E								
43	Brannan: 6th to 3rd	E								
44	Brannan: 3rd to 6th	W								
45	Brannan: 6th to Division	W								
46	Broadway: Gough to Larkin	E								
47	Broadway: Larkin to Powell	E								
48	Broadway: Powell to Montgomery	E	7.2	58	1.6	6.8	60	1.4	6.9	6.1
49	Broadway: Montgomery to Embarcadero	E	6	58	1.7	5.6	61	1.7	5.9	6.2
50	Broadway: Embarcadero to Montgomery	W								
51	Broadway: Montgomery to Powell	W				3	159	0.8		
52	Broadway: Powell to Larkin	W								
53	Broadway: Larkin to Gough	W								
54	Brotherhood: Junipero Serra to Alemany	E								
55	Brotherhood: Alemany to Junipero Serra	W								
56	Bryant: Division to 4th Street	E	9.2	656	1.9	6.1	471	1.5	9.2	8.4
57	Bryant: 4th Street to Embarcadero	E								
58	Bush: Masonic to Gough	E								
59	Bush: Gough to Market	E								
60	Castro/Divisadero: Market to 14th Street	N	7.1	218	0.7	7.6	213	0.7	6.7	6.9
61	Castro/Divisadero: 14th to Geary	N	6.6	508	0.5	6.7	509	0.6	6.4	6.1
62	Castro/Divisadero: Geary to Pine	N	6.1	146	1.3	6.6	144	1.4	6.6	7.6
63	Castro/Divisadero: Pine to Geary	S	6.8	143	1.1	5.5	138	1.1	6.2	5.4
64	Castro/Divisadero: Geary to 14th	S	6.9	509	0.6	5.6	509	0.5	7.1	5.7
65	Castro/Divisadero: 14th Street to Market	S	9.3	145	1.6	8.3	149	1.4	9.7	8.6
66	Cesar Chavez: Guerrero to Bryant	E	8	125	1.3	6.8	108	2.2	4.8	6.0
67	Cesar Chavez: Bryant to Kansas	E								
68	Cesar Chavez: Kansas to 3rd Street	E								
69	Cesar Chavez: 3rd Street to Kansas	W								
70	Cesar Chavez: Kansas to Bryant	W								
71	Cesar Chavez: Bryant to Guerrero	W	6	273	1.6	6.3	254	1.6	3.4	5.4
72	Clay: Kearny to Davis	E	7.5	620	1.3	6.6	452	1.9	7.2	6.5

			2015 AM Peak			2015 PM Peak			2013 AM Peak	2013 PM Peak
CMP ID	Description	Dir	Avg. Transit Speed (mph)	Sample Size	S.D. Transit Speed (mph)	Avg. Transit Speed (mph)	Sample Size	S.D. Transit Speed (mph)	Avg. Transit Speed (mph)	Avg. Transit Speed (mph)
73	Columbus: Montgomery to Greenwich	N	6.6	534	1.1	4.4	558	1	6.1	4.5
74	Columbus: Greenwich to North Point	N	8	191	1.3	7	323	0.9	7.4	7.3
75	Columbus: North Point to Greenwich	S	6.5	162	0.7	6.3	298	0.7	6.6	6.7
76	Columbus: Greenwich to Montgomery	S	4.8	621	0.6	4.2	424	0.5	4.7	4.1
77	Doyle/ Richardson/ Lombard: County Line to SF Cemetery	E	9.7	21	3.1	18.5	32	3	11.8	19.7
78	Doyle/ Richardson/ Lombard: SF Cemetery to Lyon/Francisco	E	9.7	21	3.1	18.5	32	3	11.8	19.7
79	Doyle/ Richardson/ Lombard: Lyon/Francisco to Van Ness	E	13.7	131	3.3	12.5	149	2.3	11.4	10.3
80	Doyle/ Richardson/ Lombard: Van Ness to Lyon/Francisco	W	9.5	95	2.1	8.1	108	2	9.4	8.9
81	Doyle/ Richardson/ Lombard: Lyon/Francisco to SF Cemetery*	W	16.2	19	6.5	10.8	22	4	21.8	13.5
82	Doyle/ Richardson/ Lombard: SF Cemetery to County Line	W	16.2	19	6.5	10.8	22	4	21.8	13.5
83	Drumm: Market to Washington	N								
84	Drumm: Washington to Market	S								
85	Duboce/Division: Market to Mission	E								
86	Duboce/Division: Mission to Potrero	E								
87	Duboce/Division: Potrero to Mission	W								
88	Duboce/Division: Mission to Market	W								
89	Embarcadero: Townsend to North Point	N								
90	Embarcadero: North Point to Townsend	S								
91	Evans: Cesar Chavez to 3rd Street	E	9.8	73	4.4	10.5	71	2.2	11.2	13.6
92	Evans: 3rd Street to Cesar Chavez	W	13.5	76	1.7	12	57	2	12.8	11.8
93	Fell: Gough to Market	E								
94	Fell: Gough to Laguna	W								
95	Fell: Laguna to Stanyan	W								
96	Folsom: 13th Street to 8th Street	E	8.6	24	1.9	7.8	26	2.3	9.2	9.4
97	Folsom: 8th Street to 4th Street	E	7.1	96	2.1	4.6	93	1.6	7.5	7.3
98	Folsom: 4th Street to 1st Street	E								
99	Folsom: 1st Street to Embarcadero*	E								
100	Franklin: Market to Pine	N								
101	Franklin: Pine to Lombard	N								
102	Fremont: Harrison to Market*	N								
103	Fulton: Park P. to 10th Avenue	E	9.2	72	2.9	8.8	60	3.3	8.7	10.2
104	Fulton: 10th Avenue to Arguello	E	8.8	360	1.6	9.9	300	1.6	6.7	4.5
105	Fulton: Arguello to Masonic	E	7.8	611	0.8	8.6	523	1	8.6	8.3
106	Fulton: Masonic to Arguello	W	9.9	467	1	8.5	512	0.7	8.6	7.3
107	Fulton: Arguello to 10th Avenue	W	13.8	253	2.3	11.3	261	1.8	10.9	10.6
108	Fulton: 10th Avenue to Park P.	W	12.1	73	3.5	6.7	58	3.1	11.5	8.7

			2015 AM Peak			2015 PM Peak			2013 AM Peak	2013 PM Peak
CMP ID	Description	Dir	Avg. Transit Speed (mph)	Sample Size	S.D. Transit Speed (mph)	Avg. Transit Speed (mph)	Sample Size	S.D. Transit Speed (mph)	Avg. Transit Speed (mph)	Avg. Transit Speed (mph)
109	Geary: Great Hwy. to 25th Avenue	E	10.6	618	1	10.2	439	1.1	9.5	9.4
110	Geary: 25th Avenue to Arguello	E	8.6	1279	0.6	8.4	823	0.4	9.4	8.3
111	Geary: Arguello to Gough	E	9.2	1478	0.5	8.3	1213	0.3	9.4	8.2
112	Geary: Kearny to Gough	W	8.4	909	0.9	7.3	1007	0.7	8.3	6.9
113	Geary: Gough to Arguello	W	9.3	1021	0.6	8.5	1292	0.6	8.8	9.6
114	Geary: Arguello to 25th Avenue	W	8.9	755	0.6	7.8	1124	0.3	8.0	8.0
115	Geary: 25th Avenue to Great Hwy.	W	10.7	665	0.8	10.7	1006	0.8	11.0	11.0
116	Geneva: Ocean to Cayuga	E	6.9	473	1.1	5.9	580	0.9	7.4	5.7
117	Geneva: Cayuga to Paris	E	6.9	227	1.2	5.3	275	1	6.3	5.0
118	Geneva: Paris to Santos	E	10	340	1.4	9.4	441	0.9	10.4	9.1
119	Geneva: Santos to Paris	W	10.2	650	0.7	11.1	694	0.9	10.3	10.3
120	Geneva: Paris to Cayuga	W	4.9	379	0.6	5.6	311	0.7	4.3	4.8
121	Geneva: Cayuga to Ocean	W	6.6	719	0.6	6.4	523	0.6	7.2	6.5
122	Golden Gate: Masonic to Franklin	E								
123	Golden Gate: Franklin to Market	E	7.5	113	1.9				9.3	
124	Gough: Pine to Geary	S								
125	Gough: Geary to Golden Gate	S								
126	Gough: Golden Gate to Market	S								
127	Guerrero/San Jose: Monterey to 29th Street	N								
128	Guerrero/San Jose: 29th Street to Cesar Chavez	N								
129	Guerrero/San Jose: Cesar Chavez to 29th Street	S								
130	Guerrero/San Jose: 29th Street to Monterey	S								
131	Harrison: Embarcadero to 1st Street	W								
132	Harrison: 1st Street to 4th Street	W	8.5	18	2.2	5.6	18	2	9.3	7.2
133	Harrison: 4th Street to 8th Street	W	8.6	310	1.4	8.4	389	1.5	9.2	8.4
134	Harrison: 8th Street to Division	W	6	162	1.1	6.2	146	1.8	6.4	5.4
135	Hayes: Market to Gough	W	6.6	56	0.8	5.4	68	1.1	6.6	4.5
136	Howard: Embarcadero to S VanNess*	W								
137	J. Serra: County Line to Brotherhood	N	9.8	37	7.7	13.2	59	4.9		
138	J. Serra: Brotherhood to 19th	N	7.2	39	4.3	7.9	62	1.7	8.0	8.8
139	J. Serra: 19th to Sloat	N								
140	J. Serra: Sloat to 19th	S								
141	J. Serra: 19th to Brotherhood	S	18.9	23	12.2	17.2	28	6.2	18.2	14.5
142	J. Serra: Brotherhood to County Line	S								
143	Kearny: Market to Columbus	N	6.1	1054	0.4	6.8	629	0.6	7.2	7.5
144	King: 4th Street to 2nd Street	E								

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CMP ID	Description	Dir	Avg. Transit Speed (mph)	Sample Size	S.D. Transit Speed (mph)	Avg. Transit Speed (mph)	Sample Size	S.D. Transit Speed (mph)	Avg. Transit Speed (mph)	Avg. Transit Speed (mph)
145	King: 2nd Street to 4th Street	W								
146	Lincoln/Kezar: 19th Avenue to 5th Ave.	E	10.5	705	1.1	10.1	411	0.9	10.8	9.9
147	Lincoln/Kezar: 5th Ave. to Stanyan	E								
148	Lincoln/Kezar: Stanyan to 5th Ave.	W								
149	Lincoln/Kezar: 5th Ave. to 19th Avenue	W	13.9	433	0.9	11.7	687	1	14.0	11.1
150	Main: Mission to Market	N	8	108	2.5	6	71	5.5	5.8	5.5
151	Market/Portola: Sloat to Santa Clara	E								
152	Market/Portola: Santa Clara to Burnett	E	12.4	273	1.3	12.4	208	3.4	10.0	11.2
153	Market/Portola: Burnett to Castro	E								
154	Market/Portola: Castro to Guerrero	E	6.1	39	0.9	6.2	34	0.7	6.6	7.2
155	Market/Portola: Guerrero to Van Ness	E	5.9	114	0.9	5.3	110	1.2	10.1	9.6
156	Market/Portola: Van Ness to Drumm	E	6.7	3683	0.3	6	3465	0.7	7.5	6.6
157	Market/Portola: Drumm to Van Ness	W	7.9	3852	0.2	7	3686	0.5	8.1	7.0
158	Market/Portola: Van Ness to Guerrero	W	6.4	110	2.2	4.8	114	1.2	6.5	4.6
159	Market/Portola: Guerrero to Castro	W	5.4	42	1.5	4.8	37	0.7	6.5	6.1
160	Market/Portola: Castro to Burnett	W								
161	Market/Portola: Burnett to Santa Clara	W	11.2	177	2.3	11.3	133	2.4	10.0	10.6
162	Market/Portola: Santa Clara to Sloat	W								
163	Masonic: Page to Geary	N	7.4	162	3.1	6.6	91	1.2	7.5	7.6
164	Masonic: Geary to Bush/Euclid	N								
165	Masonic: Presidio to Geary	S								
166	Masonic: Geary to Page	S	7.7	141	1.1	7.4	109	1.5	7.5	7.8
167	Mission/Otis: Sickles to Ocean	N	9.9	1476	0.6	9.8	1041	0.5	9.5	7.2
168	Mission/Otis: Ocean to Cesar Chavez	N	7.5	3027	0.7	8.2	2931	0.4	7.7	8.1
169	Mission/Otis: Cesar Chavez to 14th Street	N	7.8	2262	0.4	6.8	2237	0.3	8.0	6.8
170	Mission/Otis: 14th Street to 9th Street	N	5.4	597	0.5	5.4	614	0.9	5.8	5.4
171	Mission/Otis: 9th Street to 3rd Street	N	8.4	595	1.2	7	588	0.7	9.6	8.1
172	Mission/Otis: 3rd Street to Embarcadero*	N	6.8	416	0.9	6	402	1.6	6.7	6.8
173	Mission/Otis: Embarcadero to 3rd Street*	S	6.2	617	0.8	6.9	694	0.9	3.8	3.5
174	Mission/Otis: 3rd Street to 9th Street	S	9.3	722	0.9	7	752	0.8	8.2	6.9
175	Mission/Otis: 9th Street to 14th Street	S	6.8	419	0.7	5.6	459	0.8	6.8	4.9
176	Mission/Otis: 14th Street to Cesar Chavez	S	8.9	2010	0.5	6.7	2369	0.3	8.6	6.6
177	Mission/Otis: Cesar Chavez to Ocean	S	8.7	3221	0.5	7	3469	0.4	8.7	7.2
178	Mission/Otis: Ocean to Sickles	S	9.6	1303	0.9	8.5	1346	0.6	10.1	9.0
179	Montgomery: Broadway to Bush	S								
180	North Point: Van Ness to Columbus	E	10.2	149	2	8	251	1.5	9.9	2.7

			2015 AM Peak			2015 PM Peak			2013 AM Peak	2013 PM Peak
CMP ID	Description	Dir	Avg. Transit Speed (mph)	Sample Size	S.D. Transit Speed (mph)	Avg. Transit Speed (mph)	Sample Size	S.D. Transit Speed (mph)	Avg. Transit Speed (mph)	Avg. Transit Speed (mph)
181	North Point: Columbus to Embarcadero	E	9.4	25	2.7	7.9	35	3.8	7.9	7.8
182	North Point: Embarcadero to Columbus	W	6.4	246	1.4	6.6	245	1.1	9.2	7.8
183	North Point: Columbus to Van Ness	W	7.7	264	1.9	5.7	410	1.1	7.5	5.2
184	Oak: Stanyan to Divisadero	E								
185	Oak: Divisadero to Fillmore	E								
186	Oak: Fillmore to Laguna	E								
187	Oak: Laguna to Franklin	E								
188	Ocean: 19th Avenue to Miramar	E								
189	Ocean: Miramar to Howth	E	5.5	193	0.6	5.5	232	0.7	5.5	5.4
190	Ocean: Howth to Miramar	W	5.7	183	1.6	4.3	149	0.6	7.1	5.5
191	Ocean: Miramar to 19th Avenue	W								
192	Octavia: Market to Fell	N								
193	Octavia: Fell to Market	S								
194	O'Farrell: Gough to Mason	E	8.6	492	0.8	8	446	0.9	9.1	8.5
195	O'Farrell: Mason to Market	E	7	160	1.6	5.3	155	1.1	10.1	8.1
196	Pine: Market to Kearny	W				8.9	95	4.2		
197	Pine: Kearny to Leavenworth	W								
198	Pine: Leavenworth to Franklin	W								
199	Pine: Franklin to Presidio	W								
200	Potrero: Cesar Chavez to 21st Street	N	7.1	283	1	7.9	259	0.9	8.3	8.4
201	Potrero: 21st Street to Division	N	9.3	433	1.9	9	389	1	9.3	7.8
202	Potrero: Division to 21st Street	S	10	522	1.4	8.2	518	1.5	10.2	9.0
203	Potrero: 21st Street to Cesar Chavez	S	6.8	360	1.2	6	359	1.2	7.4	6.0
204	Skyline: County Line to Sloat	N	19.8	134	4.5	16.4	164	3	19.8	21.7
205	Skyline: Sloat to County Line	S								
206	Sloat: Skyline to Junipero Serra	E	11.1	253	1.9	11.2	183	10.8	11.5	11.5
207	Sloat: Junipero Serra to Skyline	W	14	316	1.4	13.2	285	1.5	13.9	12.8
208	Stanyan: Fulton to Turk	N								
209	Stanyan: Turk to Fulton	S								
210	Sutter: Divisadero to Gough	E	9	155	1.5	7.9	155	1.1	9.0	8.1
211	Sutter: Market to Mason	W	6.6	264	1.7	5.7	286	1	7.2	5.7
212	Sutter: Mason to Gough	W	6.8	294	1	6.4	312	1.4	6.6	6.6
213	Sutter: Gough to Divisadero	W	8.7	215	1.2	7.6	240	0.8	8.1	7.6
214	Townsend: 7th Street to 2nd Street	E	8.4	90	1.5	5.1	60	1.7	8.2	7.5
215	Townsend: 2nd Street to 7th Street	W	9.2	105	3.9	5.7	101	3.5	9.7	5.7
216	Turk: Stanyan to Divisadero	E	7.4	411	2.1	10.1	202	1.2	9.3	10.5

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			2015 AM Peak			2015 PM Peak			2013 AM Peak	2013 PM Peak
CMP ID	Description	Dir	Avg. Transit Speed (mph)	Sample Size	S.D. Transit Speed (mph)	Avg. Transit Speed (mph)	Sample Size	S.D. Transit Speed (mph)	Avg. Transit Speed (mph)	Avg. Transit Speed (mph)
217	Turk: Market to Hyde	W	7	117	1.3	6.7	242	1.6	6.3	7.0
218	Turk: Hyde to Gough	W							9.7	8.0
219	Turk: Gough to Divisadero	W								
220	Turk: Divisadero to Stanyan	W	9.9	316	1.8	9	370	1.7	11.4	8.0
221	Van Ness/S. Van Ness: Cesar Chavez to 13th	N								
222	Van Ness/S. Van Ness: 13th to Golden Gate	N	6.4	430	0.8	5.7	383	0.7	6.7	5.7
223	Van Ness/S. Van Ness: Golden Gate to Washington	N	5.4	945	0.3	5.2	804	0.4	5.4	5.4
224	Van Ness/S. Van Ness: Washington to Lombard	N	5.2	435	0.4	7.4	367	0.7	5.3	7.6
225	Van Ness/S. Van Ness: Lombard to Washington	S	6.6	547	0.9	6.2	581	0.4	7.0	6.4
226	Van Ness/S. Van Ness: Washington to Golden Gate	S	5.7	448	0.4	5.2	549	0.6	5.9	5.4
227	Van Ness/S. Van Ness: Golden Gate to 13th	S	6.2	345	0.6	4.7	444	0.6	6.8	6.1
228	Van Ness/S. Van Ness: 13th to Cesar Chavez	S								
229	Washington: Drumm to Kearny	W								
230	West Portal: Sloat to Ulloa	N	11.4	55	1.9	11.4	75	2.4	9.7	7.8
231	West Portal: Ulloa to Sloat	S	7	52	1.8	5.8	63	0.8	11.2	8.5
232	I-280: Junipero Serra to Weldon	N								
233	I-280: Weldon to 6th/Brannan	N								
234	US 101/Central Freeway: C & C Limit to Cortland	N								
235	US 101/Central Freeway: Cortland to I-80	N								
236	US 101/Central Freeway: I-80 to Market	N								
237	I-80: Treasure Island to Fremont Exit	W								
238	I-80: Fremont Exit to US-101	W								
239	I-280: 6th/Brannan to Weldon	S								
240	I-280: Weldon to Junipero Serra	S								
241	US 101/Central Freeway: Market to I-80	S								
242	US 101/Central Freeway: I-80 to Cortland	S								
243	US 101/Central Freeway: Cortland to Monster Park Exit	S								
244	I-80: US-101 to Fremont Exit	E								
245	I-80: Fremont Exit to Treasure Island*	E								

** These CMP segments were impacted by long-term construction and maintenance projects during the current monitoring period*

APPENDIX 8

Deficiency Plans

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APPENDIX 8

DEFICIENCY PLANS

KEY TOPICS

- Legislative Requirements
- Legislative Intent and Application to San Francisco
- Deficiency Planning Process
- Special Issues

A.8.1. Legislative Requirements

The Transportation Authority, as Congestion Management Agency (CMA), is required by state law to ascertain the City's conformance with the CMP, including Deficiency Plans prepared by City departments. If the LOS of roadways on the CMP is not maintained to the established standard and they are not exempt from LOS standards, state CMP legislation requires that the local jurisdiction develop a Deficiency Plan to improve operating conditions on the segment.[1]

Deficiency Plans must contain the following components:

- An analysis of the causes of the deficiency;
- A list of improvements that would have to be made to remedy the deficiency, including cost estimates;
- A list of proposed improvements; and
- An implementation plan including a schedule.[2]

The Deficiency Plan must "measurably improve multimodal performance" on the designated CMP roadway network, and "contribute to significant improvements in air quality." Proposed improvements must be drawn from an inventory of acceptable actions compiled by the air quality management district. The statutes also require that the city or county forward the Deficiency Plan to the CMA, which must hold a public hearing within 60 days of receipt of the Deficiency Plan, and either accept or reject it, but not modify it. Rejection of a Deficiency Plan by the CMA will result in a finding of non-conformance with the CMP.

Unfortunately, the statutes make no provisions for funding City departments' deficiency plans, and similarly, CMAs do not receive state funding for their activities. In the absence of dedicated funding, the deficiency planning process has been designed to use existing data and coordinate with the City's budgetary process.

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[1] California Government Code section 65089.4(a) states *"A local jurisdiction shall prepare a Deficiency Plan when highway or roadway level of service standards are not maintained on segments or intersections of the designated system. The Deficiency Plan shall be adopted by the city or county at a noticed public hearing."*

[2] 65089.4(c)

A.8.2. Legislative Intent and Application to San Francisco

This section provides background information on Deficiency Plans and their applicability to San Francisco.

A.8.2.1 | About Deficiency Plans

In 1990, the California voters approved Proposition 111, increasing the gasoline tax by nine cents per gallon of gasoline sold in the state. The year prior to Proposition 111's approval, the State Legislature approved AB 471 (Katz), the original CMP legislation.3 AB 471 required all local jurisdictions to maintain the adopted LOS standard on all CMP roadways or risk losing their Proposition 111 gas tax revenues. The Legislature then revised the original legislation to allow jurisdictions to continue to receive their share of Proposition 111 gas tax moneys when the level of service (LOS) on a CMP road segment or intersection falls below LOS "E" provided local jurisdictions prepared Deficiency Plans for those segments. Deficiency Planning requirements do not apply for CMP segments that are exempt from the LOS standard.

The intent of Deficiency Plans, therefore, is to allow development to continue as long as any resulting traffic congestion is "offset." Deficiency Plans are reactive solutions applied after the impacts to LOS are actually measured.

The Deficiency Plan legislation offers local jurisdictions two alternatives:

1) Eliminate the problem (correct the deficiency where it manifests itself). This is known as *direct remediation*; or
2) Implement other actions that improve the overall performance of the CMP network, even if the actions do not directly improve the original deficiency. These are known as *offsetting actions*.

A Deficiency Plan may include both remediation and offsetting actions. Direct mitigation involves removing the deficiency such that the LOS is improved above LOS F. Direct mitigations of LOS impacts may have prohibitive costs, regulatory obstacles, or overwhelming environmental consequences. Offsetting actions provide alternative compensations that may leave the facility no less deficient from an LOS perspective, but provide improvements in other part of the system. Offsetting actions, as opposed to direct remediation, include capital improvements, transportation programs, services, or other activities that improve the average countywide level of service.

One major legislative change to the deficiency plan process is SB 1636 (Figueroa), which was enacted in September 2002 and then amended by SB 743 (Steinberg) in 2013. This bill allows local jurisdictions to designate areas meeting certain land use and transportation requirements as Infill Opportunity Zones (IOZs). Network segments within these zones would be exempt from automobile LOS standards.

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[3] The 1989 CMP legislation was part of the AB 471 legislation known as the Katz-Kopp-Baker-Campbell Transportation Blueprint for the 21st Century. Voter approval of Proposition 111 on June 5, 1990 effectively enacted the CMP legislation into law.

In December 2009, the Board of Supervisors adopted a resolution designating all eligible areas of San Francisco as an IOZ. CMP network segments within a designated IOZ are exempt from deficiency planning requirements.

A.8.2.2 | Deficiency Plans and Environmental Review

Deficiency Plans are distinct from City processes for review of development projects pursuant to the California Environmental Act (CEQA) and do not replace local Transportation Impact Analyses (TIAs). The San Francisco Planning Department requires project sponsors to prepare TIAs for projects that may have significant negative impacts on transportation conditions. The City's TIA guidelines include some analyses that may be relevant for preparing CMP deficiency plans. However, while environmental analysis conducted pursuant to CEQA may provide information useful in the preparation of Deficiency Plans, these Plans serve a separate and distinct purpose. The Deficiency Plan process should avoid duplicating past CEQA analyses; these guidelines should not create additional review processes for individual development or public construction projects.

One fundamental difference between a TIA and the CMP is that a TIA forecasts the severity of a project's expected impacts on facilities, while a Deficiency Plan implements actions to mitigate – or offset – problems already detected (i.e., deficiencies actually measured on a facility). A TIA or EIR is prepared prior to project implementation, in an attempt to predict a project's future negative impacts.

A TIA or EIR considers the cumulative impacts on a transportation facility of a proposed project in combination with other foreseeable similar projects. The Deficiency Plan, because its focus is on a facility rather than an individual project, considers multiple causes of the existing deficiency.

A.8.3. Deficiency Planning Process

This overview accompanies the flow charts in Figures 1, 2, and 3. These three figures represent the Deficiency Plan process from detection through Transportation Authority Board approval of the Plan.

A.8.3.1 | Deficiency Detection and City Notification

See Figure 1. The Transportation Authority monitors the CMP roadway network and reports a potential deficiency when the level of service (LOS) on any non-exempted segment of the CMP roadway network measures LOS F. LOS F is defined by travel speeds below a threshold set by the 1985 HCM for any of three specified arterial types.

The Transportation Authority determines whether a reported deficiency may have been caused by external, exempt, or temporary causes. State legislation requiring Deficiency Plans has specifically exempted the trips generated by specific activities [Government Code § 65089.4. (f)]. Exempt activities are:

- Inter-regional travel (i.e., pass through trips which have neither origin or destination in San Francisco);
- Construction, rehabilitation, or maintenance of facilities that impact the CMP roadway network;
- Impact of freeway ramp metering;
- Traffic signal coordination by the state or multi-jurisdictional agencies;

- Traffic generated by low- and very low-income housing;
- Traffic generated by high-density residential or mixed-use development located within a quarter mile of a fixed passenger rail station[4]; and
- Roadway segments located within infill opportunity zones.

A detected deficiency may be corrected when a roadway improvement already programmed in the CIP increases the capacity of the deficient roadway. If the lead department determines that the effects of any CIP improvement scheduled to begin within the seven year time horizon of the CIP will remove the deficiency, the Transportation Authority – after review – can make a Finding of No Deficiency. The lead department, however, must demonstrate this CIP improvements will be completed and functioning within ten years of the current CIP.

If any trips are exempt and if the deficiency still exists after removing the exempt trips from the deficient roadway segment, a Deficiency Plan must be prepared. The Transportation Authority will consult with MTC to determine whether external or pass through trips may have caused the deficiency. It will also review all relevant CEQA traffic analysis and/or TIAs of recently completed projects. It will then use the San Francisco Travel Demand Forecasting Model, GIS analysis, sketch planning techniques, and other means to isolate and examine the cause(s) in more detail. If modeling suggests that a deficiency is not caused by any of the above, then the Transportation Authority Board must adopt a finding of "Deficiency" and notify the City (Mayor's Office) of the nature and cause of the deficiency.

The Mayor's Office assigns a City department to act as the lead department for the preparation of a Deficiency Plan. The timelines in Figure 1 assume that LOS is monitored in September and October, and that all follow up verification monitoring is completed by the following April. This schedule allows City Departments to incorporate funding requests for Deficiency Plan activities into the City's budget process in April and May.

A.8.3.2 | Deficiency Analysis and Remediation Plan Preparation

Once the cause(s) of the deficiency have been determined, State law [Government Code § 65089.4 (c)(2)] requires that the lead department identify:

"A list of improvements necessary for the deficient segment or intersection to maintain the minimum level of service otherwise required and the estimated costs of the improvements."

The lead department will use sketch-planning methods consistent with both MTC and Transportation Authority practices and data to estimate the effects of capacity improvements on the level of service and whether the improvements provide capacity at an order-of-magnitude commensurate with the deficiency.

State law requires that a Deficiency Plan first seek direct action to correct a roadway LOS deficiency by preparing a Remediation Plan. The lead department prepares a Remediation Plan that includes: a) a description of the causes of the deficiency; b) a list of all improvements necessary to fully remediate the problem on the deficient roadway itself; and c) an estimate of the cost and available funding for those improvements. The lead department includes a statement as to the feasibility of the Remediation Plan

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[4] "High density residential development" means a minimum of 24 dwelling units per acre and equal to 120 percent of the maximum density allowed under the local general plan and zoning ordinance, or a minimum density of 75 dwelling units per acre. "Mixed use development" must have more than one half the land area or floor area used for high-density housing.

(Section 4.2.1). A Remediation Plan usually involves adding sufficient capacity to the roadway to allow traffic to flow at LOS "E" or better. The Remediation Plan should include any relevant projects included in the CIP or CEQA mitigation measures included in specific EIRs as mitigation requirements. A proposed Remediation Plan may include improvements already specified and funded in an EIR, the CIP, or developer exactions or dedications found to be relevant, including scheduled implementation, project characteristics, and funding sources. This gives the City credit for any required EIR mitigation measures to remediate the deficiency.

The lead department should also prepare cost estimates for improvements to mitigate the deficiency as well as of the funding sources.

If the lead department finds that the package of remediation measures is feasible, it must prepare an Implementation Plan.

The lead department submits the Remediation Plan and an Implementation Plan to the Transportation Authority for evaluation and approval. The Transportation Authority will evaluate Deficiency Plans based on effectiveness, financial feasibility, environmental compatibility, and consistency with the City's transportation planning priorities and policies. If the lead department finds it cannot remediate the deficiency and the Transportation Authority concurs, the lead department prepares a Deficiency Plan (presented in Figure 3).

The resulting Remediation Plan must include estimates of the following:

- Extra roadway capacity needed to remove the deficiency;
- Total costs of the capacity increases; and
- Improvements already funded through the CIP or developer exactions or dedications.

The Transportation Authority evaluates the feasibility of the Remediation Plan and accepts or rejects the lead department's findings. Within 30 days of receiving the Remediation Plan from the lead department, the Transportation Authority evaluates the adequacy of the Plan conclusions according to the following three criteria:

1) **Effectiveness:** Are the proposed improvements adding sufficient capacity to the roadway in question to increase the LOS to level "E" or better?
2) **Financially Reasonable:** Are the cost estimates for the proposed improvement reasonably accurate?
3) **Implementability:** In environmental, regulatory, and community terms? Is the Plan consistent with the General Plan?

The Lead Department prepares an Implementation Plan, identifying responsible departments, funding sources, and regulatory authority. If the Transportation Authority accepts the Implementation Plan, the Transportation Authority modifies the CIP to conform to reflect the remediation measures. All departments called upon to implement portions of the Remediation Plan must enter into an inter-agency agreement stating each department's responsibility and funding sources. If the Transportation Authority finds that the Remediation Plan is feasible, the lead department will prepare an Implementation Plan If the Transportation Authority finds that the Remediation Plan is not feasible, the lead department will prepare a Deficiency Plan Action List.

A.8.3.3 | Deficiency Plan Evaluation and Approval

If the Transportation Authority determines that the Remediation Plan is infeasible, the lead department prepares a list of offsetting actions that will improve the system-wide multimodal level of service but may have only limited effect on the deficient facility itself.

The lead department prepares a Deficiency Plan Action List. The lead department may select actions that have some direct mitigating effect on the deficiency; and/or actions that will improve system-wide LOS (as measured by the multi-modal performance measures). The Bay Area Air Quality Management District (BAAQMD) has prepared a list of approved Deficiency Plan actions. The CMP legislation requires that all Deficiency Plan actions come from that list.

The lead department may choose to prepare (or Transportation Authority may request) one or more alternative action plans to explore alternative approaches.

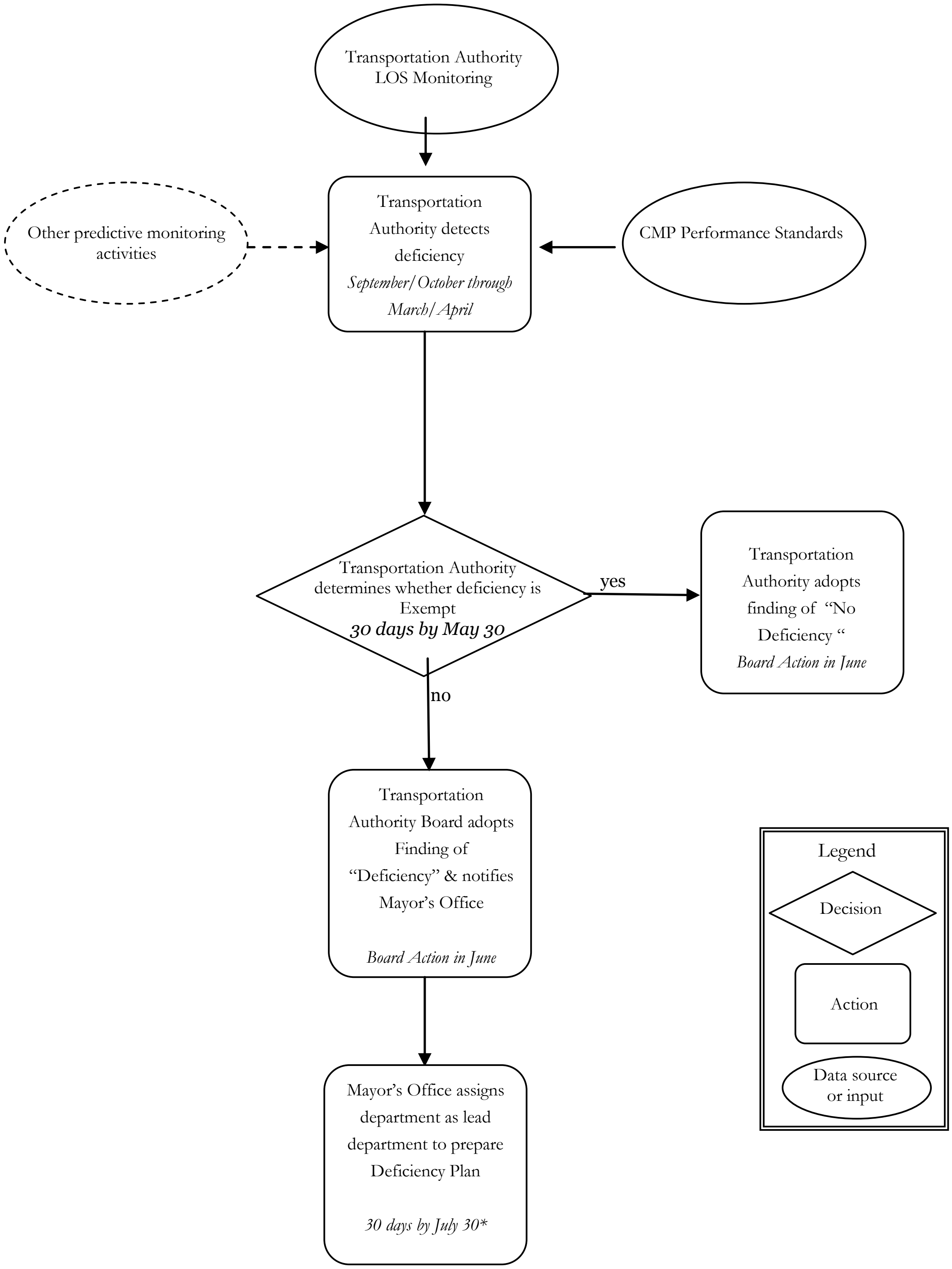
For deficiencies caused by large projects, some of the analysis required in these steps may have been completed through the projects' EIRs. While the analysis and any other relevant documentation may be used verbatim for the Deficiency Plan or Implementation Plan, the Final Deficiency Plan documentation must conform to the requirements outlined in the six steps above and described in more detail below.

The lead department has 60 days to prepare a Preferred Action Plan List. Each action on the list must show its estimated capital (or start-up) and operating (or on-going) costs. The lead department submits this list to the Transportation Authority for its consideration.

The Transportation Authority will review this proposed list and approve or reject it. The Transportation Authority will evaluate the preferred Deficiency Plan Action List, including each action's estimated cost within 30 days of submittal by the lead department. The Transportation Authority evaluates the effectiveness of the Action Plan and confirms General Plan consistency with the Planning Department. If the Transportation Authority accepts the lead department's proposed list of Deficiency Plan actions, the lead department prepares an Implementation Plan and submits this plan for the Transportation Authority's approval.

The Transportation Authority evaluates Implementation Plans using similar adequacy criteria as for Remediation Plans (Figure 2). If the Transportation Authority accepts the Implementation Plan, the Transportation Authority Board will hold a noticed public meeting and adopt a Finding of Conformance. If the Transportation Authority and the lead department are unable to agree on an Implementation Plan, the lead department may either try again, or submit its Final Deficiency Plan (including its Implementation Plan) to the Transportation Authority Board for Board action. If the Transportation Authority Board issues a Finding of Non-Conformance, the Transportation Authority must notify the State Controller to withhold funds. The funds are held in escrow for 12 months and then turned over to the Transportation Authority (as the City's Congestion Management Agency). Deficiency Plans must be completed within one year of the CMA's official notice of a deficiency.

Figure 1: Deficiency Detection and City Notification



**Go to Figure 2*

Figure 2: Deficiency Analysis and Mitigation Plan Preparation

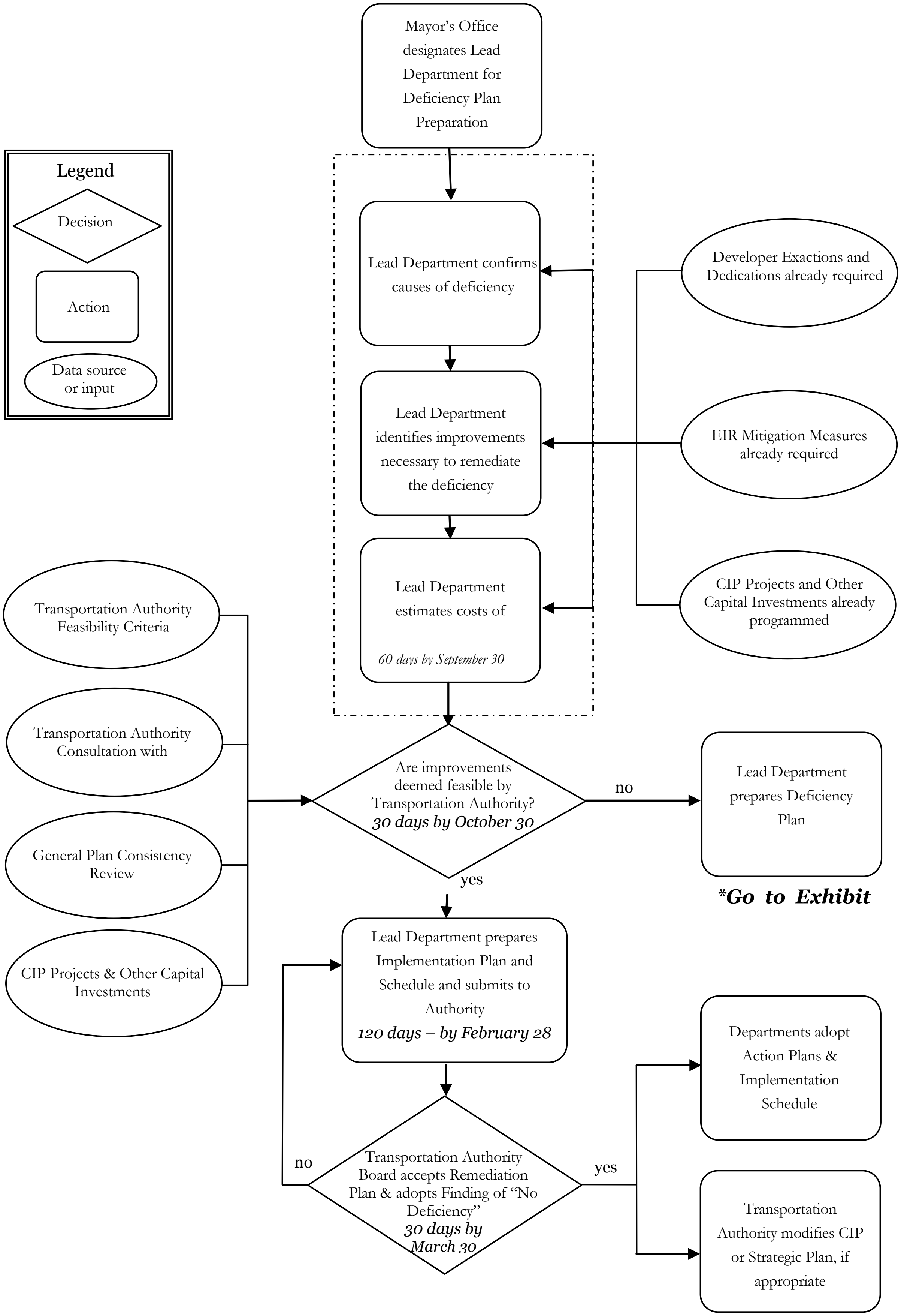
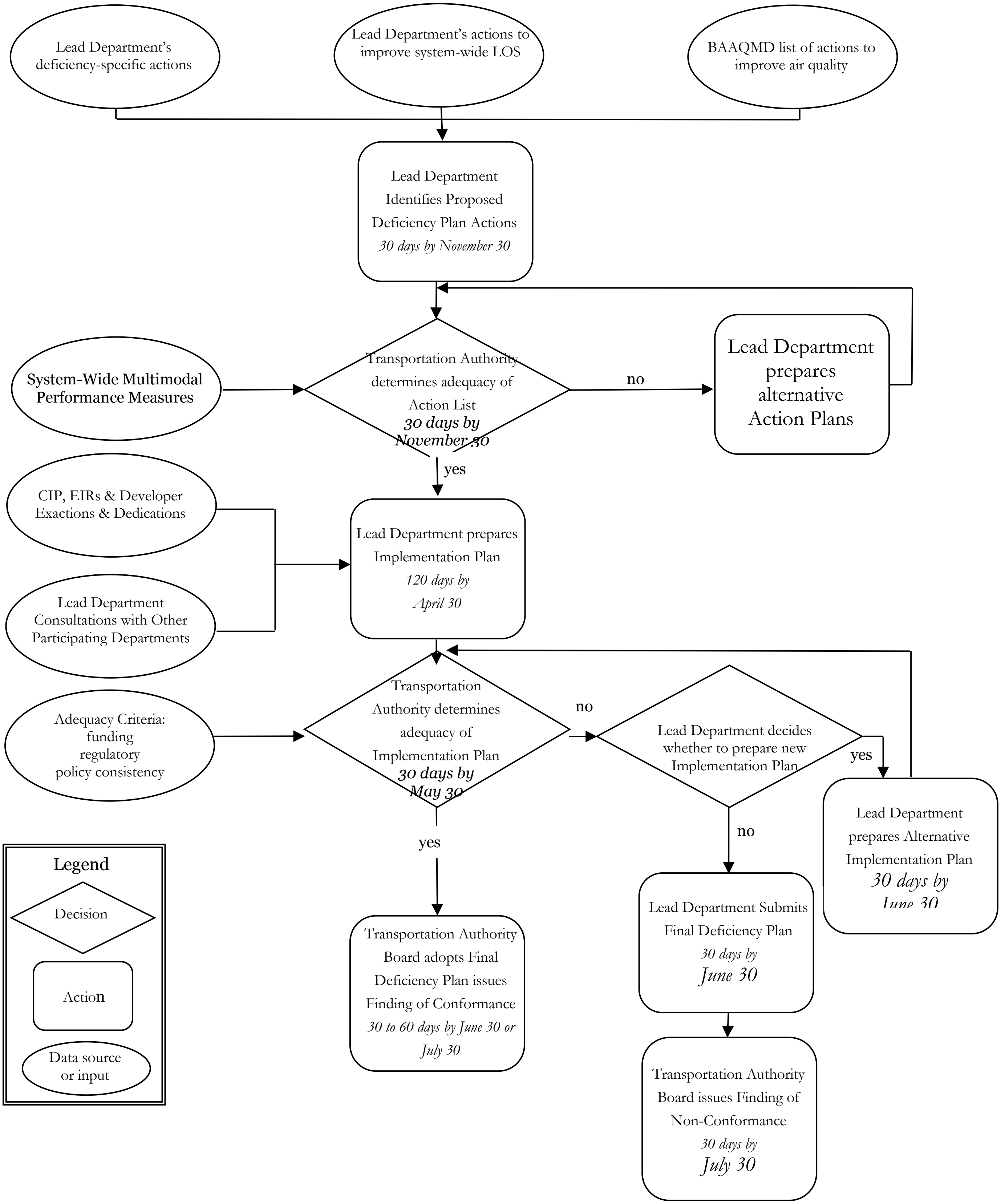


Figure 3: Deficiency Plan Evaluation and Approval



A.8.3.4 | Adequacy Criteria

The CMP legislation, as amended, includes three transit performance measures (in addition to the LOS performance measure) for the evaluation of current and future system performance and the effectiveness of Deficiency Action Plans [Government Code § 65089. (b)(2)]: transit frequency, routing, and service coordination among separate operators.

As required by CMP legislation, the Transportation Authority has developed multimodal performance measures beyond the traditional roadway Level of Service (LOS) measures. Our emphasis has been on user-based measures that help explain mode choice in the City. The Transportation Authority Board adopted the first set of multimodal performance measures in August 1998 (see Chapter 4). These include bicycle and pedestrian safety, transit speed and reliability and other measures. After these measures have been further refined and fully tested, they will then be used to evaluate the proposed list of Deficiency Plan Actions. Additional measures may be developed in the future.

A.8.3.5 | Implementation Plan

The Transportation Authority requires the lead department to prepare an Implementation Plan within 90 days of the Transportation Authority's finding as part of the Deficiency Plan Document. The Implementation Plan identifies the responsible implementing department(s) for each action, and the sources of funding.

I. IMPLEMENTATION PLAN DEVELOPMENT

The lead department is responsible for developing the Implementation Plan. For each action in the Deficiency Plan, the lead department must specify the following:

1. The final cost of the actions and the sources of capital (up-front) and operating (on-going) funds. Note any correspondence with EIR mitigation measures or CIP projects.
2. A monitoring program that conforms to CEQA monitoring requirements.
3. An implementation schedule. All actions must be implemented within the seven-year time horizon for the current CIP. If a Deficiency Plan action is programmed for funding in the sixth or seventh year of the CIP, it will need to be fully implemented within three years of its initiation in order to be considered a feasible action within the Deficiency Plan's ten-year horizon.
4. Identification of city departments responsible for the action's funding, implementation, and on-going operations.
5. Clear identification of all departments responsible for implementation, therefore, is essential for the Transportation Authority's approval of the Final Deficiency Plan. One way for partner agencies to demonstrate this would be through an interdepartmental agreement among all responsible implementing departments stating each department's agreement to fulfill their responsibilities for implementing Deficiency Plan actions.

II. IDENTIFICATION OF FUNDING

The Implementation Plan must include a detailed funding plan.

III. IMPLEMENTATION PLAN AND DEFICIENCY PLAN APPROVAL

Within 30 days of submittal by the lead department, the Transportation Authority will either accept or reject the Implementation Plan. The Transportation Authority will make its determination based on the required elements of the Implementation Plan discussed in 4.4.1. Implementation Plans without a funding plan will be rejected. Once the Transportation Authority has approved the Implementation Plan, the lead department will have additional 30 days to finalize and submit the Final Deficiency Plan for Transportation Authority Board approval. Upon submittal of the final Deficiency Plan by the lead department, the Transportation Authority Board will hold a noticed public meeting and either approve or reject it within 30 days. If the Transportation Authority rejects the Implementation Plan, the lead department may either propose an alternative Implementation Plan within 30 days, or choose to submit the Final Deficiency Plan with the Implementation Plan as is. In the latter case, the Transportation Authority will notify the Mayor's Office of its intent to reject the Final Deficiency Plan due to Implementation Plan inadequacy.

If the Transportation Authority Board rejects the Final Deficiency Plan and issues a finding of non-conformance, pursuant to the State law (Government Code 65089.5), the Transportation Authority must submit its findings to MTC and the State Controller for the withholding of State funds.

IV. DEFICIENCY PLAN DOCUMENT STRUCTURE

A Deficiency Plan Report must include the following sections:

1.0 Introduction Identification of the Deficiency's Causes, including:

1.1 Description of the Deficiency (i.e., road segment;

1.2 Description of the adjacent facilities;

1.3 Analysis of the causes of the deficiency;

1.4 Description of the existing traffic conditions within the boundaries;

1.5 Projection of future transportation conditions for at least the next 10 years; and

1.6 A map of the area, the deficiency, and adjacent facilities and transit routes.

2.0 Remediation Plan, consisting of:

2.1 An estimate of the extra roadway capacity needed to remove the deficiency;

2.2 An estimate of the total costs (operating and capital) of the capacity improvements; and

2.3 A description of improvements that are already programmed through individual project conditions of approval, the CIP, or developer exactions or dedications.

3.0 List of Actions, broken out into:

3.1 Deficiency-Specific Action; and

3.2 Global Actions To Improve System-wide LOS.

4.0 Implementation Plan, specifying the following:

4.1 The final cost of the actions and the sources of capital (up-front) and operating (on-going) funds;

4.2 A monitoring program to verify the action's implementation;

4.3 A schedule for implementation; and

4.4 Identification of city departments responsible for the action's funding, implementation, and on-going support/operation.

5.0 Identification of Other Departments' Responsibilities for Implementation

6.0 Identification of Funding

A.8.4. Special Issues

The following sections discuss special circumstances where the Deficiency Plan process, as described in Section 4.0, may have to be modified. Treatment of these issues is not intended to be exhaustive.

A.8.4.1 | Multi-County Deficiency Plans

Deficiencies may occur because of the activities of other counties or they may occur on a regional facility (e.g., the Bay Bridge). Under such circumstances, the Transportation Authority will take the lead in coordinating the preparation of a Deficiency Plan, following MTC's process and mutual agreements with other agencies. More specifically, the Transportation Authority will coordinate with other congestion management agencies (CMAs) and regional agencies (e.g., MTC, BAAQMD, ABAG, etc.). The Transportation Authority may request the Mayor's Office to designate other city departments to prepare the Remediation Plan, Deficiency Plan Action List, or the Implementation Plan. Furthermore, other departments may be designated as the responsible agencies for the implementation of the Deficiency Plan.

A.8.4.2 | Deficiency Plans Addressing Multiple Deficiencies

The Mayor's Office may request that the lead department prepare a Deficiency Plan that covers more than one deficient roadway segment.

Multiple deficiencies may be likely if an area or transportation corridor is impacted by large land use projects (e.g., Mission Bay), significant transportation infrastructure projects (e.g., demolition of the Central Freeway), or pronounced socioeconomic trends (e.g., increased commuting from the East Bay). When multiple deficiencies are within close geographical proximity, distributed along a single corridor (or parallel facility), or are functionally related, the Transportation Authority may encourage a single area-wide, or corridor Deficiency Plan.

The process would be similar to that described in Section 4.0. Nevertheless, the lead department must:

1. Review relevant EIRs for their assessment of impact and proposed mitigation measures;
2. Perform modeling of traffic within the area or corridor to determine the effectiveness of the Remediation Plan improvements;
3. Consider funding and/or regulatory feasibility of the proposed Implementation Plan; and

4. Coordinate with the CIP and other transportation programming and/or planning documents designed to address transportation planning for a subarea of the city, a specific corridor, or multiple facilities or modes.

A.8.4.3 | **Future Deficiencies**

The legislation does not require that local jurisdictions address future anticipated deficiencies. Deficiency Plans are only based on actual CMP network conditions.

Future changes to the transportation infrastructure or services may cause deficiencies. There are many potential causes of deficiencies, particularly changes to the transportation infrastructure in the City as well as land use changes.

The Planning Department is responsible for land use planning and development management. This role, stipulated in the City Charter, gives the Planning Department direct or oversight responsibility for every land use project from its initial design stages through environmental impact analysis, to final completion. Large-scale projects may have major impacts. Examples of such projects include, but are not limited to:

- Mission Bay;
- Rincon Point South Beach Redevelopment Area;
- Candlestick Point and Hunters Point Shipyard Development Plan;
- Revised South of Market Specific Plan; and
- Transbay Terminal Replacement.

In addition, the Planning Department oversees preparation of Transportation Impact Analyses (TIAs) and its Office of Environmental Review (OER) coordinates CEQA review and EIR preparation for development projects. All of these documents are intended to anticipate the impacts of a proposed project on the transportation system; thus, they have direct relevance to the Deficiency Plan if a project's impacts cause a deficiency.

2015 CONGESTION MANAGEMENT PROGRAM

APPENDIX 9

San Francisco Transportation Impacts Analysis Guidance

E8B-144

TRANSPORTATION IMPACT ANALYSIS GUIDELINES
FOR ENVIRONMENTAL REVIEW

October 2002

The Planning Department
City and County of San Francisco

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E8B-148

I. Introduction

These guidelines replace the Transportation Impact Analysis Guidelines which were originally prepared in 1991 and updated on an interim basis in 2000 to aid consultants in preparing transportation impact analysis for environmental evaluation in San Francisco, including both Environmental Impact Reports (EIRs) and Negative Declarations. In those cases where a transportation study is required for environmental analysis, it is normally necessary that a separate transportation report be prepared, based on these guidelines, as background for the Negative Declaration or EIR.

The Planning Department will make a determination whether a transportation study and report are necessary. In most cases, the department evaluates conditions in the PM peak hour of the PM peak period (4:00 to 6:00PM). This period was chosen because it is the time period when the maximum use of much the transportation system occurs. It is also the time when most of the transportation system capacity and service is at a maximum. Generally, a transportation report may be required for an environmental analysis if one or more of the following conditions apply. Not all conditions apply to all projects.

1) The project would potentially add at least 50 PM Peak Hour person trips;

2) The project would potentially increase existing traffic volumes on streets in its vicinity by at least 5 percent;

3) The project would potentially impact nearby intersections and/or arterials which are believed to presently operate at LOS "D" or worse;

4) The project would provide parking which would appear likely to be deficient relative to both the anticipated project demand and code requirements by at least 20 percent;

5) The project has elements which have potential to adversely impact transit operations or the carrying capacity of nearby transit services;

6) The project has elements which have potential to adversely affect pedestrian or bicycle safety or the adequacy of nearby pedestrian or bicycle facilities;

7) The project would not fully satisfy truck loading demand on-site, when the anticipated number of deliveries and service calls may exceed ten daily.

Transportation reports shall be prepared by qualified consultants, working at the direction of the Planning Department staff. The purpose of the transportation study is to provide the comprehensive information necessary to identify the transportation issues and impacts of a project (including those of importance and significance), and provide potential solutions or mitigations to problems and significant impacts in the context of the overall policies and objectives of the City.

II. Overview of Process and Procedures

These guidelines update and revise the *Guidelines for Environmental Review: Transportation Impacts* (July, 1991) *and Interim Transportation Impact Analysis Guidelines for Environmental Review* (January 2000), and supersede all previously published transportation analysis guidelines. This document reflects the most current data available regarding San Francisco travel characteristics. A major portion of the analysis guidance is based on the findings of the *Citywide Travel Behavior Survey - Employees and Employers* (May, 1993), the *Citywide Travel Behavior Survey - Visitor Travel Behavior* (August, 1993), and updates or enhancements to those reports. In addition, the *Guidelines* employ certain findings and assumptions from major San Francisco study reports, including those for: Mission Bay (Case No. 1996.771E; EIR certified September 17, 1998); Transbay Terminal/Caltrain Extension (Case No. 2000.048E); and Van Ness Avenue (Case No. 1987.586; EIR certified on December 17, 1987). The data in the Citywide Travel Behavior Study (CTBS) was subsequently confirmed by the *1995 Citywide Travel Behavior Study* that was sponsored by the San Francisco County Transportation Authority.

It should be noted that these are only guidelines. It must not be assumed that the information provided herein constitutes a complete scope of work for any transportation analysis. The *Guidelines* provide a broad overview, while individual transportation study scopes of work are required to provide a level of detail tailored to fit the size and complexity of transportation issues associated with particular projects. Moreover, once a scope of work is prepared and approved under the direction of the Planning Department, the specific direction contained within that scope will provide a more precise focus than that which appears in these *Guidelines*.

For clarification, the following represents an overview of the process involved in the preparation of a transportation impact analysis for environmental review purposes. No estimate or assumption is made or inferred regarding time lines for the various steps.

(1) The project sponsor or a designated representative files an Environmental Review (EE) application with the Planning Department following the instructions contained in that application form (available at the Department and on-line). When the application is accepted by the Department, a case number is assigned and a staff person from the Department's Major Environmental Analysis section is designated as the coordinator for environmental review. This individual will likely be different than the staff person handling the Transportation Impact Report. All Department staff assigned to the project will coordinate activities throughout the review process. Filing for environmental review generally (but not always) precedes starting the review of transportation issues.

2) Determination concerning whether a transportation impact report is required is based on the scale, location, and/or potential level of activity of the proposed

project. To make this determination and/or to prepare a transportation work scope, if one is required, the project sponsor should provide the following information to the assigned environmental coordinator or to a senior transportation planner in the Major Environmental Analysis section:

- existing and proposed specific gross square footage of space for each commercial use such as office, retail, restaurant, hotel (including number of rooms), industrial, etc;
- existing and proposed number and type of housing units (including live/work units) including the number of single and multiple bedroom units, and senior, affordable, rental, or owner-occupied designations;
- existing and proposed amount of off-street parking and loading space, including specification of supply relative to Planning Code requirements;
- existing and proposed location of driveways and site plan showing access to off-street parking and/or loading;
- location of bus stops, nearby curbside loading zones and designations for all curbside space along the frontage of the property.

Upon receipt of the above material, Department staff will determine whether a transportation study is required. This decision is generally based on factors such as those articulated in the introduction to these *Guidelines* and staff knowledge of transportation issues in the site vicinity.

(3) If it is determined that preparation of a transportation report is warranted, a transportation scoping meeting will be scheduled with the transportation planner, the environmental staff coordinator (other Department staff may also be involved), the project sponsor, and the transportation consultant and environmental consultant hired by the project sponsor. The scoping meeting will determine the specific issues to be examined in the transportation impact report and determine other parameters as defined in these guidelines.

All fees are to be paid by the project sponsor to the Planning Department for the review of the Transportation Impact Report prior to scheduling a transportation scoping meeting for the project. The amount of these fees can be obtained from Department staff. (See Appendix A, Figure A-1 for details on this process.)

(4) The transportation consultant will then prepare a draft transportation scope of work for Departmental review and revision(s), if necessary, for final approval. No work should be initiated by the transportation consultant until a written scope of work has been approved by the Department, including the

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assigned transportation and environmental planners, by transmittal to the consultant of the Planning Department approval form. (See Figure 2 in Appendix A)

The Department will make every reasonable effort to anticipate and include in the scope of work typical concerns of other City agencies. However, it is not possible for the Department to anticipate all issues and concerns which later may be raised by other City Departments such as the Municipal Railway (MUNI) or the Department of Parking and Traffic (DPT). Ultimately, the scope of work may need to be revised after its approval so that it adequately addresses relevant issues raised by all other City agencies and other relevant issues that may arise in the course of preparing the study report. Any contractual arrangement between the project sponsor and its consultant preparing the transportation report should reflect the flexibility to address the above issues as they are raised.

(5) Based on the approved scope of work, the transportation consultant conducts the required analysis independent of the project sponsor, and submits five copies of all drafts directly to the environmental project coordinator for review, comment, and approval. Three copies will be used within the Planning Department, one copy will be provided to MUNI, and another to the Department of Parking and Traffic. It is recognized that more than one submittal of preliminary transportation findings will normally be necessary in order to achieve a satisfactory final transportation report. Under normal circumstances, two drafts of a transportation study will be required before it is accepted as final. The Planning Department staff will provide consultants with a coordinated set of comments from all City reviewers on each draft. Consultants should revise draft reports to reflect City comments as directed, and should provide a detailed written explanation if any comments are not reflected in subsequent submittals.

(6) Pertinent information from the final transportation report will be summarized for inclusion in an Environmental Impact Report (EIR) or Negative Declaration. The specific information to be extracted and summarized for inclusion in an EIR or Negative Declaration, will be determined on a case-by-case basis under the direction and guidance from the environmental staff person assigned to the project.

The selection of the transportation consultant is at the discretion of the project sponsor, contingent upon submittal of an acceptable work scope to Department staff. The consultant's work effort is, however, to be entirely under the direction of the assigned Department staff. All submittals by the consultant are to be made directly to the assigned coordinator of the overall environmental review in the Department's Major Environmental Analysis section. Any comments by the project sponsor or its representatives must be directed to Department staff rather than to the environmental and/or transportation consultants to ensure the objectivity of the analysis. The role of the project sponsor and its representatives during the preparation of the transportation report should be limited to provision of details concerning the project, response to recommended changes affecting project circulation, and indication of support or lack of support for recommended mitigation measures and other transportation improvements identified in the impact report.

Transportation analysis can be a complex and lengthy process. The Department strongly advises that it begin as early as possible, to avoid unnecessary delays. The Department also recommends that the consultant follow the explicit parameters found in the scope of work.

III. Study Report Preparation Guidelines

Each transportation impact report is to follow a consistent format, as presented here, and include all of the elements and information presented in these *Guidelines*. The appropriate level of detail needed for each project's transportation impact analysis with respect to particular issues will be specified in the transportation work scope developed at the scoping meeting. When these *Guidelines* are referenced in a transportation study report, we suggest using either the full title and date, or the "2002 Transportation Guidelines" so the version is properly identified.

1. Project Description

All analyses must include a detailed project description. This information is to be presented as the first section of the document. The project description typically includes the following information:

- Case file number for the project, as assigned by the Department.
- Location of the project site, address, Assessor's Block and Lot number(s), cross streets, and Superdistrict or C-3 District (Refer to Appendix A for maps showing the Superdistricts and the C-3 District).
- Figure showing the site plan.
- Existing and proposed total gross square footage for each land use type and the number of units for residential, hotel/motel, and live/work projects including the net changes for each type of use.
- Existing and proposed estimated number of employees and/or dwelling units by type of use, including net changes, if available.
- Existing and proposed number of off-street parking spaces and whether any on-street or off-street parking spaces will be removed as a result of

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the project.

- Existing and proposed number of off-street and on-street freight loading spaces as well as any proposed changes affecting on-street loading spaces.

- Description and plans for use (if any) of public rights-of-way by present or proposed uses, either above or below grade (e.g., air rights, surface or subsurface revocable permits, etc.) including sidewalk width changes, changes in width or number of traffic lanes, function of lanes in terms of traffic channelization, and/or direction of travel.

- Detailed plans showing vehicular and pedestrian site access, including location of curb cuts for both existing and proposed uses, and internal vehicular circulation, presented in standard architectural or engineering scale.

- Figure identifying parking spaces, the proposed egress and ingress to the parking garage or lot, the circulation pattern within the parking facility and the number and location of parking spaces for the disabled.

- Figure showing the location, dimensions and access to the off-street freight loading spaces as well as the on-site location for trash and garbage storage.

- Identification of all transportation-related approval actions required by any City department including use permits, variances, encroachment permits, and changes in public rights-of-way. Describe the specific action.

- Identification of the location, number and type of bicycle parking spaces provided.

- Information regarding the project site's lot area, existing and proposed zoning, and a figure with the location of the lot on the Assessor's Block.

2. Project Setting

The setting information shall be presented immediately following the Project Description as a discrete chapter or report section. The goal is to provide a brief but complete description of existing transportation infrastructure and conditions in the vicinity of the project. Normally, the described vicinity is a radius between two blocks and 0.25 mile, however, a larger area may be determined in the scoping process.

The specific perimeters of the study area, for both setting and project impact analysis, are to be confirmed as part of the approval for the scope of work. It should be noted that when the boundaries of a study area are determined in a scope of work, the project area should include both sides of the streets designated as the project boundaries unless otherwise specified (e.g., for on-street parking surveys). Sometimes the study area differs for different purposes, e.g., traffic vs parking vs transit.

The Setting section typically includes the following text information but the level of detail to be provided should be according to specific direction in the transportation scoping meeting:

- Street designations and classifications as identified in the Transportation Element of the San Francisco General Plan. These designations can be found on the following maps in the General Plan: Vehicular Street Map; Congestion Management Network; Metropolitan Transportation System; Transit Preferential Streets; Citywide Pedestrian Network; Neighborhood Pedestrian Streets; and Bicycle Route Map.

- A description of the study area streets, including the number and width of lanes, direction of flow, and the presence of peak period tow-away lanes affecting roadway travel capacity, the presence of bicycle lanes, and any other significant street information.

- Access to regional highways and freeways, including location of, distance from, and routings to and from on-ramps and off-ramps.

- Description of public transit routes operating on streets within the study area, including: route character; service areas; hours of service; peak period headways; and type of vehicle (diesel coach, trolleybus, streetcar, light rail vehicle; etc.). For projects subject to Section 321 of the Planning Code (Office Development: Annual Limit), the report must specifically identify, by operator, all lines within 1/4, 1/3, and 1/2 mile radii of the site.

- Level of Service (LOS) analysis for existing conditions for the specific intersections identified in the scope of work for the PM peak hour or other hours if specified in the scope of work. Unless otherwise specified, the operations method of the 2000 Highway Capacity Manual (HCM) shall be used in the analysis of intersections. The date on which the data was collected for the analysis must be specified in the text and on the calculation sheets. The methodology for the calculation of the LOS for various types of intersection controls is provided in the Appendix B.

- Actual and effective widths of sidewalks immediately adjacent to the project site. For areas where the sidewalks are absent or known to be deficient, the official sidewalk width should be included. (Information on the official or legislated widths is available from Department of Public Works, Maps and Surveys.) For the streets immediately adjacent to the project site, this may include the location of fire hydrants, light poles, MUNI poles, traffic control devices, and other significant physical items between the curb and property line.

- Characteristics of parking within the study area (typically within a two-block radius of the site, but as determined in the approved scope of work), including the number of on-street parking spaces, control of on-street parking (e.g., meters, signed for time limit, neighborhood residential permit parking, etc.) number of off-street parking facilities and spaces (public and private), and whether off-street parking is provided as independently-accessible stalls or tandem/stacked valet operation. On-street and off-street parking occupancy information should be provided for the time period(s) specified in the scope of work. The data collection periods for peak parking occupancies typically are mid-afternoon for commercial uses and early evening for residential uses. The effects of any special circumstances affecting the availability of parking in the vicinity of the proposed project (e.g., periods of peaking in parking demand, and large generators of localized parking demand, such as a major institution) should be identified.

The Setting section typically also provides graphics, including:

- Street maps of the study area showing: street names, number and direction of lanes; transit service by line number and with stop locations identified; the location and amount of parking facilities, and the location and class of bicycle lanes. For projects subject to Section 321 of the Planning Code, the transit map is to show transit lines and stops within 1/4, 1/3 and 1/2 mile radii lines.

- When appropriate, include mapping and supporting tables which show both off-street and on-street parking conditions in study area. For off-street parking inventories, the parking supply should be based on how facilities are actually operated, i.e., the number of spaces should be based on valet parking when this is used and on striped spaces when this would be appropriate. For on-street parking only, inventories should include parking on each side of all the streets within the parking study area. On-street parking inventories should identify spaces subject to Residential Permit Parking (RPP) areas, whether the proposed project would be eligible to participate in the RPP, and what the project’s impact on area parking occupancy rates would be.

- All designated bicycle routes in the study area should be illustrated. The existing treatments for bicycles (e.g., Class 2 or Class 3) and any proposed treatments for bicycle routes as well as general characterization of the extent of bicycle usage should be described.

3. Travel Demand Analysis

Travel demand analysis shall include textual information, supported by tables or figures detailing the project's trip generation, trip distribution, trip assignment and modal split characteristics.

Net new travel demand generated by the project is to be estimated, based on the difference between existing and proposed land uses. Person trip generation rates per unit of square footage for each land use, or other unit as shown in Appendix C, are to be used for estimating levels of activity for the proposed project. The rates were developed by an examination of various studies and sources, including the Citywide Travel Behavior Study, the ITE Trip Generation manual and special purpose studies, many of which are specific to San Francisco. No single source or analysis provides, by itself, an adequate means to define trip generation for all the situations encountered in San Francisco. Trip generation rates may sometimes need to be determined by other means, such as surveys of similar land uses, if so specified in the scope of work.

To "net-out" existing land uses that will be replaced, the existing levels of trip activity should, in most cases, be based on actual observations rather than on estimates based on rates in these *Guidelines* or other sources.

Each analysis should apply the trip generation rates from the *Guidelines* individually to the proposed uses, compare the proposed trips to existing levels of trip activity, and show the differences ("net new") by land use and in aggregate.

The Travel Demand Analysis is to include the following, unless otherwise directed in the work scope (Note that different or additional analysis periods may be defined in the scope of work process.) :

- Trip Generation Information: Project trip generation information (total person trips) by land use for existing and proposed uses. The total unadjusted daily and P.M. peak hour trips by mode can be calculated. The number of daily and peak hour vehicles (autos) generated by the project should also be calculated by using the auto occupancy rates noted in the tables in Appendix E.

- Work and Non-Work Trip Generation Information: Since work and non-work trips have different characteristics in terms of distribution and the mode of travel, the number of work and non-work (visitor) trips should be calculated separately. Appendix C provides the methodology to compute the work and non-work (visitor) trips for a specific land use.

- Trip Distribution, Assignment and Modal Split Information: Net new person trips distributed to various directions of travel and assigned to the appropriate modes of travel (auto, transit, walk, and other) should be calculated, presented in tables and a graphic diagram (for vehicle and transit trips), and discussed in the text. Modal assignments should also be calculated for daily and the P.M. Peak Hour.

The weekday P.M. Peak Period is generally 4:00-6:00, and traffic counts shall generally be conducted during this period, unless otherwise specified in the scope of work. The peak hour must be determined from the counts (normally recorded in 15 minute intervals) for the entire peak period, and should represent the single hour within the peak period with the highest counts. The Planning Department may also request data for other periods to reflect the peak period of trip generation by the land use.

4. Transportation Impact Analysis

Analysis for all projects is to be conducted for project-specific impacts, and for cumulative impacts.

A. Traffic Impacts

Project-Specific Impacts. The project generated traffic impacts must be calculated for intersections identified in the scope of work using the methodologies explained in Appendix B. LOS levels for the specified intersections must be discussed in the text and presented in a table showing Existing, Existing plus Project and Cumulative intersection levels of service. The traffic attributable to the project is normally assumed to be included in the cumulative forecast, and should not be added to the cumulative totals. The percent contribution of the project should be shown both as a percentage of the total cumulative traffic and as a percentage of the growth in traffic (cumulative less existing) for each intersection.

The specific intersections to be analyzed will be identified in the approved scope of work for the transportation analysis, and based on an initial assessment of areas that could be impacted by the project. When a wide area may be impacted, the intersections selected for analysis may only be those that would experience the greatest change or have the greatest likelihood of degrading to an unacceptable LOS with the addition of the project traffic.

Cumulative (Horizon Year) Impacts. The transportation impact analysis should present and discuss the cumulative traffic impacts. The horizon year (normally 10 to 20 years in the future, depending on the location) should be used for the cumulative analysis year unless otherwise specified in the scope of work. The analysis is to assume a growth factor of one percent per year for "background" traffic, unless an areawide cumulative forecast is defined during the scoping process. Traffic generated by the project, and by nearby projects when applicable, are to be expressed as a percentage of this overall growth factor. If the localized share seems to represent an unreasonable share of the anticipated overall horizon year growth, the consultant will need to discuss the issue with Department staff who will determine the appropriate approach to determining the cumulative conditions.

Figures should be included for each intersection analyzed which clearly indicate growth for each movement generated by the project and from cumulative conditions compared to existing conditions. For each analysis scenario (i.e., typically, Existing, Existing plus Project, and Cumulative), each of the critical movements at each intersection should be clearly indicated in the intersection calculation sheets and preferably in the figures which show volumes for each movement. The presence or absence of significant traffic impacts shall be determined according to direction from MEA transportation staff.

B. Transit Impacts

The specific methodology for analyzing transit impacts is included in Appendix F. For projects within the greater downtown area (C-3, SOMA and Mission Bay districts), the methodology for the cumulative (horizon year) condition for MUNI and the regional transit operators uses an approach based on a screenline analysis. For projects outside the greater downtown area, the level of analysis will depend on the nature of the project and the transit service within the study area.

Transit trips, as determined by the travel demand analysis outlined in Section 3, need to be assigned to transit routes (aggregated or individual) based on the trip distribution data, and in accordance with the transit analysis methodology outlined in Appendix F. Trips on both MUNI and regional carriers must be accounted for. The normal evaluation requires a determination of the loading at maximum load points in relation to the available capacity for the Existing, Existing plus Project, and possibly a Cumulative condition. The frequency and load standards of the affected transit vehicles needs to be known if not contained within the aggregated data. Similar to traffic impact analyses, the focus is on conditions for the p.m. peak hour. Net new transit trips generated by the project should be cited and also expressed as a percentage of cumulative growth, by operator.

Any transit analysis needs to consider the access to transit service from the project site. Normally, transit riders need to walk to a transit stop or station from the project site. This walk trip can influence the choice of a particular line, or even the mode itself, especially if the walk link is a difficult or unpleasant experience due to inadequate sidewalks, unsafe pedestrian crossings or other related circumstances. The analysis should determine whether sidewalk improvements or other pedestrian-related improvements are necessary in order to provide adequate access to transit service.

Also, any potential transit conflicts or delays resulting from site-related activities need to be examined and described.

C. Parking Impacts

Parking supply, parking demand, and Code-required parking should be clearly distinguished. If there is already existing parking on the site, the amount of net new parking should be noted. The project's parking supply is the amount of on-site parking spaces provided by the project that will be available for use by the project's residents, employees or visitors. Parking demand is the amount of daily parking need generated by the proposed uses. The Code required parking is the number of parking spaces required by Section 151 of the San Francisco Planning Code for the proposed uses.

Project parking demand is to be calculated for long-term demand (employees) and short-term demand (visitors) for commercial projects, and for resident parking demand for residential projects.

In some situations (e.g., when overlapping work shifts of the project or adjacent uses cause an accumulation of parking demand greater than the daily average total), accumulated peak parking demand should also be quantified.

Parking demand for commercial projects should be generally calculated based on the number of auto trips and auto occupancy rates from Appendix E for each superdistrict. Turn-over rates should be taken into consideration in calculating the daily short-term parking demand. Appendix G explains the methodology for parking demand calculations in more detail. In cases where more accurate information about parking demand and employee shift changes are available, this information may be used instead of derived from Appendix E, if incorporated in the scope of work.

Residential parking demand should be calculated based on the information provided in Appendix G of this report.

If a proposed project would displace existing parking, the report should identify:

1) the amount of parking which is required parking for the current uses on-site;

2) the amount of parking which is accessory parking to an off-site use; and

3) the amount of parking which is available to the general public (specifically identify as: short term; long-term; independently accessible; or valet parking.)

Project parking demand (including, if appropriate, demand for parking displaced) should be compared to the amount of parking provided by the project (supply), and the parking required by the Planning Code.

Deficiencies or surpluses in the number of parking spaces relative to demand and/or Code requirements should be quantified. The manner in which any parking deficiency will be addressed, and its impact on the existing on-street and off-street parking supply in the study area, should also be identified.

The impact of any deficiency in parking supply relative to the estimated demand, including current users of public parking to be displaced by the project, should be quantified in terms of the estimated increase in occupancy of available on-street and off-street facilities.

The amount of parking to be provided for bicycles and the disabled should be cited and compared with Code requirements. Any designated on-street parking spaces for the disabled that may be used by those accessing the project should be noted.

Parking access (ingress and egress) should be identified and the dimensions noted. Any impacts or conflicts of parking access with Transit Preferential Streets, other streets identified in the General Plan, streets identified for full or partial priority for pedestrians or bicycles, and any potential conflicts affecting transit, pedestrian, bicycle or vehicular flow should be identified. In cases where there are exceptional peaks in the traffic entering or leaving a garage, a queuing analysis may be necessary.

Whenever on-site parking is proposed, sufficient details should be included to the extent possible in order to assess:

- potential for conflicts between ingress and egress traffic;
- location of control gates, ticket dispensing facilities, and payment/validation facilities;
- adequacy of on-site space to avoid the potential for queueing onto adjacent sidewalks and streets;
- potential for conflicts with pedestrians, transit, bicycles, autos, and access for other projects;
- measures to functionally separate parking spaces for residential and commercial uses;
- quantity, locations, access, safe and secure character, and provisions for associated showers and lockers for all bicycle parking spaces whenever required or provided; and quantity, dimensions and locations for all disabled parking spaces.

Any special circumstances affecting the availability of parking in the vicinity of the proposed project as identified in the Setting Section are to be taken into consideration in the analysis and noted.

D. Pedestrian Impacts

Pedestrian conditions and the project impact should be discussed qualitatively or quantitatively based on the project size and existing circumstances. The Planning Department will determine if a qualitative or quantitative analysis is necessary.

If a quantitative analysis is required, pedestrian trips generated by the proposed project should be estimated for P.M. Peak Hour, plus the peak period of pedestrian activity for the immediate area (often in the midday), and/or the proposed project's peak period of trip generation. Level of Service conditions, when appropriate, for existing and existing plus project scenarios are to be calculated. Pushkarev and Zupan *Pedestrian Level of Service Standards and Methodology for Average Flow Characteristics Related to Flow In Platoons,* or the 2000 Highway Capacity Manual methodology are considered acceptable methodologies for the analysis; appropriate references are to be included. Midblock sidewalk or corner pedestrian Level of Service analyses may, in some situations, be requested in addition to or instead of Level of Service analysis at pedestrian crosswalk (intersection) locations.

Pedestrian safety issues related to the project should be assessed. The study should examine potential conflicts between pedestrian movements at driveways, localized pedestrian hazards and, more generally, between pedestrians and vehicles. Any proposed changes affecting the public rights-of-way such as new or modified sidewalks or streets should be detailed and based on advance consultations with relevant City departments, including the Department of Public Works and the Department of Parking and Traffic.

Pedestrian access to the project by the disabled should be discussed. Points of ingress and egress that are accessible to the disabled should be identified. Also, accessible curb-cuts or ramps, and other on-street aids for the disabled, on the adjacent streets should be noted.

E. Bicycle Impacts

The existence of current or future bicycle facilities in the area should be identified from the San Francisco Bicycle Plan and by consultation with the Department of Parking and Traffic. The analysis should examine possible impacts on bicycle traffic on the streets in the vicinity of the project. This would include potential conflicts between auto, truck and bus traffic serving the project during loading and unloading, and potential conflicts due to turning movements across bicycle lanes or routes. Potential barriers or hazards to safe bicycle operations near the project should also be identified. Other conditions that may have a notable negative or positive impact on use, such as bicycle parking or the provision of shower facilities, should also be stated. Details regarding the location and access to any bicycle facilities included in the project should be described in the textual discussion and clearly shown on the site plan included in the background transportation report. The information provided needs to be sufficient to ascertain whether the proposed bicuycle facilities would be secure and practical for bicyclists to use.

If sufficient bicycle traffic exists or is anticipated on a study area street, it may be necessary to include a quantitative analysis of the impacts using the methodology in the 2000 Highway Capacity Manual or some similar technique.

F. Freight Loading and Service Impacts

Off-street truck loading requirements should be specified according to the Planning Code. The analysis should include a description of the frequency of the service deliveries and the estimated mix in the types of vehicles that will be utilized in the freight loading activities for the project. If it is expected that the project will attract a high level of courier and other service deliveries, the report should discuss how these will be accommodated. The analysis of the project should compare the amount of loading space provided by the project (supply) with truck loading demand generated by the project and with the off-street freight loading requirements in the Planning Code.

Project truck loading demand and service rate for the peak loading period (which should be specified) and the entire day should be estimated based on proposed uses on the site (using the data shown in Appendix H), and compared with Planning Code requirements and the proposed on-site facilities. The truck loading supply is the number and sizes of off-street truck loading spaces provided by the project on-site. It should be compared to the truck loading demand that the proposed use would generate. The number and sizes of off-street freight loading spaces required should be determined based on Section 152 of the San Francisco Planning Code.

The location, number and dimensions (including vertical clearance) of all spaces provided for freight and service functions, including van size spaces substituted for full size spaces, should be specified in the text and on a figure. The figure should indicate the location of freight elevators relative to all loading and service parking and clearly identify the circulation path between the loading/service stalls and elevators.

If truck loading demand exceeds supply and/or if no off-street loading facilities are proposed to be included as part of the project, a quantification of the resulting impacts (e.g., time of day, number of instances and duration of double-parked vehicles) should be provided, and details may be required regarding how service needs would be accommodated.

If truck movements would require backing into or out of the site on public rights-of-way, the resultant delays to traffic, transit vehicles and pedestrians should be characterized.

Truck loading access affecting a Transit Preferential Street, or any street identified in the General Plan for full or partial priority for pedestrians, and any potential conflicts affecting transit, pedestrian or vehicular flow should be identified.

In any case in which a project proposes to rely on curbside yellow loading zones, an occupancy and turnover analysis is to be conducted for existing curbside loading spaces in the immediate vicinity of the project site to estimate the probable availability of such spaces to serve the needs of the proposed project, based on the specific use(s) proposed and area conditions.

Details should be provided adequate for analysis of garbage needs including dedicated on-site storage independent of loading areas, measures to avoid use of public rights-of-way for garbage storage in accordance with DPW requirements, and well-defined access to accommodate garbage pick-up in order to minimize disruptions to streets and sidewalks.

G. Passenger Loading Zones

If applicable, the extent of taxi, tour bus, or other types of passenger loading and unloading needs should be specified including details regarding how these functions would be served. Where a porte cochere or other off-street passenger loading area is required or provided, plans should be included showing the location, traffic and parking lanes, adjacent sidewalks, circulation patterns, and all dimensions. Any plans to seek colored, marked curbside areas from the Department of Parking and Traffic should be noted.

For cases in which a project proposes to rely on curbside pedestrian loading zones, an occupancy and turnover analysis for similar curbside passenger loading spaces should be made to estimate the probable availability of such spaces to serve the needs of the proposed project, based on the specific use(s) proposed and area conditions.

H. Construction Impacts

The number of daily and peak period construction truck trips by construction phase should be cited, with proposed truck routings and operating hours indicated.

Any proposed closures or temporary use of pedestrian ways, parking lanes or traffic lanes are to be identified, as well as the extent and duration of such closure or temporary use. Impacts associated with such occupation of public rights-of-way should be identified, in terms of parking lost, effect on transit operations, loading needs, or temporary degradation in levels of service for intersections and/or pedestrians. The need to remove or move any transit stops should also be noted. For large projects, the staging plans of construction trucks for materials delivery should be cited, and methods for addressing the parking needs of construction workers should be identified.

5. Transportation Mitigation Measures

Transportation reports are frequently used not only for environmental evaluation but also in the conditional use and other permit processes. It is important to recognize the differences between these processes.

There are also cases in which the transportation analysis for a specific project may conclude that significant transportation impacts are unlikely and that mitigation is not required. If the project has impacts, but they are not considered “significant” as defined by CEQA standards, the analysis should clearly state this at the beginning of the significant impacts and mitigation section. These impacts may be referred to as “non-significant” impacts, and the corresponding measures to alleviate them, as “improvement” measures. They may include desirable measures to improve transportation conditions which may be recommended and subsequently included as conditions of approval. Any recommended improvement measures should be listed, accompanied by identification of the appropriate entity responsible for implementation. Such measures are not to be identified as "mitigation" measures.

Mitigation measures required to deal with impacts determined to be environmentally significant according to CEQA standards should be clearly identified as such.

If a mitigation or improvement is proposed for an intersection that will change the Level of Service (LOS), then the corresponding LOS calculation sheets need to be included in the report. The calculation sheet (or an attachment) should identify the parameters that were changed, and what specific changes are proposed, including consultation with DPT regarding the feasibility of the proposed changes.

Whenever either type of measure is identified, the following should be cited:

- If the implementation would be the responsibility of the project sponsor, indicate whether the project sponsor supports or fails to support each specific recommendation.
- If implementation would be the responsibility of the City or another agency, the responsible department or agency should be identified and its position on each recommendation should be stated.
- The timing and linkages for implementation of each measure, and whether a monitoring plan is needed, should be specified.

In some unique situations, a cost estimate for a mitigation or improvement measure may be required. Every attempt will be made to identify these cases during the scoping process. If an estimate is deemed necessary, it should be prepared at a “planning level” of detail, which would be more general and less rigorous than a construction cost estimate. Such estimates should indicate the month and year in which they were prepared, so they can be adequately assessed at some future date.

Typical transportation mitigation measures for downtown area projects, to address significant impacts as defined by CEQA standards, are shown in Appendix I. While some of these may be appropriate for projects outside of the downtown area, mitigation measures for such projects would generally be a function of the specific conditions and impacts identified by the transportation study for each project.

A transportation management program and on-site brokerage services are required for office developments of 100,000 square feet or larger (25,000 square feet in the SSO District) that are located in the C-3 or South of Market Districts. (Reference the Zoning Map of the City and County of San Francisco.) An agreement for the transportation brokerage services and a transportation management plan must be executed with the Planning Department prior to the issuance of a permit of occupancy. The transportation study report should recognize this requirement when applicable. The actual transportation management plan need not be included in the study report, but could be added at the discretion of the project sponsor. Appendix J contains the Planning Code requirements for the plan and services.

6. Appendices for Inclusion in Transportation Reports

As appropriate, all transportation analyses should include the following appendices:

- Transportation Study Acknowledgment and Approval form, (Appendix A, Figure A-2) completed by the Planning Department (signed and dated), and a copy of the approved scope of work.
- Complete sets of all required traffic and pedestrian counts and estimated volumes. These should include Existing, Existing plus Project, and Cumulative conditions, at a minimum. The counts should include the date on which the data were collected.
- Complete sets of all traffic and pedestrian Level of Service calculations. Each Calculation sheet should indicate the date on which the data was collected. A summary of the rationales for use of adjustments or default values for the variables used in the calculations should be included.
- Complete sets of all analysis assumptions (including trip generation rates, transit patronage and capacities, parking turnover rates, mode splits, trip distribution, trip assignment, auto occupancy, etc.)
- Intersection LOS definitions and descriptions.
- Pedestrian LOS definitions and descriptions.

APPENDIX 10

Downtown Transit Impact Development Fee Ordinance





E8B-168

FILE NO. 040141

Amendment of the whole
in committee. 07/12/04
ORDINANCE NO. 199-04

[Transit Impact Development Fee]

Ordinance repealing San Francisco Administrative Code Chapter 38 (Transit Impact Development Fee) and replacing it with a new Chapter 38 (Sections 38.1 through 38.14), to enact a new Transit Impact Development Fee.

Be it ordained by the People of the City and County of San Francisco:

Section 1. The San Francisco Administrative Code is hereby amended by repealing Chapter 38 in its entirety; provided, however, that any sponsor who has been issued a building or site permit to develop office use that was subject to the Transit Impact Development Fee imposed by Ordinance No. 224-81, as amended, shall remain subject to all the terms and conditions of that ordinance, as amended. Chapter 38 of the Administrative Code shall be replaced with a new Chapter 38 to read as follows:

SEC. 38.1. DEFINITIONS.

For the purposes of this Chapter, the following definitions shall apply:

A. Accessory Use. A related minor use which is either necessary to the operation or enjoyment of a lawful principal use or conditional use, or is appropriate, incidental and subordinate to any such use and is located on the same lot as the principal or conditional use.

B. Base Service Standard. The relationship between revenue service hours offered by the Municipal Railway and the number of automobile and transit trips estimated to be generated by certain non-residential uses, expressed as a ratio where the numerator equals the average daily revenue service hours offered by MUNI, and the denominator equals the daily automobile and transit trips generated by non-residential land uses as estimated by the TIDF Study or updated under Section 38.7 of this ordinance.

C. Base Service Standard Fee Rate. The transit impact development fee that would allow the City to recover the estimated costs incurred by the Municipal Railway to meet the demand for public transit resulting from new development in the economic activity categories for which the fee is charged, after deducting government grants, fare revenue, and costs for non-vehicle maintenance and general administration.

D. Board. The Board of Supervisors of the City and County of San Francisco.

E. Certificate of Final Completion and Occupancy. A certificate of final completion and occupancy issued by any authorized entity or official of the City, including the Director of the Department of Building Inspection, under the Building Code.

F. City. The City and County of San Francisco.

G. Covered Use. Any use subject to the TIDF.

H. Cultural/Institution/Education (CIE). An economic activity category that includes, but is not limited to, schools, as defined in subsections (g), (h), and (i) of Section 209.3 of the Planning Code and subsections (f) - (i) of Section 217 of the Planning Code; child care facilities, as defined in subsections (e) and (f) of Section 209.3 of the Planning Code and subsection (e) of Section 217 of the Planning Code; museums and zoos; and community facilities, as defined in Section 209.4 of the Planning Code and subsections (a) – (c) of Section 221 of the Planning Code.

I Director. The Director of Transportation of the MTA, or his or her designee.

J. Economic Activity Category. One of the following six categories of non-residential uses: Cultural/Institution/Education (CIE), Management, Information and Professional Services (MIPS), Medical and Health Services, Production/Distribution/Repair (PDR), Retail/Entertainment, and Visitor Services.

K. Gross Floor Area. The total area of each floor within the building's exterior walls, as defined in Section 102.9 of the San Francisco Planning Code.

L. Gross Square Feet of Use. The total square feet of gross floor area in a building and/or space within or adjacent to a structure devoted to all covered uses, including any common areas exclusively serving such uses and not serving residential uses. Where a structure contains more than one use, areas common to two or more uses, such as lobbies, stairs, elevators, restrooms, and other ancillary space included in gross floor area that are not exclusively assigned to one use shall be apportioned among the two or more uses in accordance with the relative amounts of gross floor area, excluding such space, in the structure or on any floor thereof directly assignable to each use.

M. Management, Information and Professional Services (MIPS). An economic activity category that includes, but is not limited to, office use as defined in Section 313.1(35) of the Planning Code; medical offices and clinics, as defined in Section 890.114 of the Planning Code; and business services, as defined in Section 890.111 of the Planning Code.

N. Medical and Health Services. An economic activity category that includes, but is not limited to, those non-residential uses defined in Sections 209.3(a) and 217(a) of the Planning Code; animal services, as defined in subsections (a) and (b) of Section 224 of the Planning Code; and social and charitable services, as defined in subsection (d) of Section 209.3 of the Planning Code and subsection (d) of Section 217 of the Planning Code.

O. Municipal Railway; MUNI. The public transit system owned by City and under the jurisdiction of the Municipal Transportation Agency.

P. Municipal Transportation Agency; MTA. The agency of City created under Article 8A of the San Francisco Charter.

Q. Municipal Transportation Agency Board of Directors; MTA Board. The governing board of the MTA.

R. New Development. Any new construction, or addition to or conversion of an existing structure under a building or site permit issued after the effective date of this ordinance that results in 3,000 gross square feet or more of a covered use. In the case of mixed use development that includes residential development, the term "new development" shall refer to only the non-residential portion of such development. "Existing structure" shall include a structure for which a sponsor already paid a fee under the prior TIDF ordinance, as well as a structure for which no TIDF was paid.

S. Planning Code. The Planning Code of the City and County of San Francisco, as it may be amended from time to time.

T. Production/Distribution/Repair (PDR). An economic activity category that includes, but is not limited to, manufacturing and processing, as defined in Section 226 of the Planning Code; those uses listed in Section 222 of the Planning Code; automotive services, as defined in Section 223(a) - (k) of the Planning Code; arts activities and spaces, as defined in Section 102.2 of the Planning Code; and research and development, as defined in Section 313.1(42) of the Planning Code.

U. Residential. Any type of use containing dwellings as defined in Section 209.1 of the Planning Code or containing group housing as defined in Section 209.2(a) - (c) of the Planning Code.

V. Retail/Entertainment. An economic activity category that includes, but is not limited to, retail use, as defined in Section 218 of the Planning Code; entertainment use, as defined in Section 313.1(15) of the Planning Code; massage establishments, as defined in Section 218.1 of the Planning Code; laundering, cleaning and pressing, as defined in Section 220 of the Planning Code; and wholesale sales, as defined in Section 890.54(b) of the Planning Code.

W. Revenue Service Hours. The number of hours that the Municipal Railway provides service to the public with its entire fleet of buses, light rail (including streetcars), and cable cars.

X. Sponsor. An applicant seeking approval for construction of new development subject to this Chapter, such applicant's successors and assigns, and/or any person or entity that controls or is under common control with such applicant.

Y. TIDF Study. The study commissioned by the San Francisco Planning Department and performed by Nelson/Nygaard Associates entitled "Transit Impact Development Fee Analysis - Final Report," dated May 2001, including all the Technical Memoranda supporting the Final Report and the Nelson/Nygaard update materials contained in Board of Supervisors File No. 040141.

Z. Transit Impact Development Fee; TIDF. The development fee that is the subject of this ordinance.

AA. Treasurer. Treasurer of the City and County of San Francisco.

BB. Trip Generation Rate. The total number of automobile and Municipal Railway trips generated for each 1,000 square feet of development in a particular economic activity category as established in the TIDF Study, or pursuant to the five-year review process established in Section 38.7 of this ordinance.

CC. Use. The purpose for which land or a structure, or both, are legally designed, constructed, arranged or intended, or for which they are legally occupied or maintained, let or leased.

DD. Visitor Services. An economic activity category that includes, but is not limited to, hotel use, as defined in Section 313.1(18) of the Planning Code; motel use, as defined in subsections (c) and (d) of Section 216 of the Planning Code; and time-share projects, as defined in Section 11003.5(a) of the California Business and Professions Code.

SEC. 38.2. FINDINGS.

A. In 1981, the City enacted an ordinance imposing a Transit Impact Development Fee ("TIDF") on new office development in the Downtown area of San Francisco. The ordinance established a rate of $5.00 for each square foot of new office development. The TIDF was based on studies showing that the development of new office uses places a burden on the Municipal Railway, especially in the downtown area of San Francisco during commute hours, known as "peak periods." The TIDF was based on two cost analyses: one by the Finance Bureau of the City's former Public Utilities Commission, performed in 1981, and one by the accounting firm of Touche-Ross, performed in March 1983 to defend a legal challenge to the TIDF. The studies showed that the cost per square foot of new office development to provide public transit service was $9.18 and $8.36, respectively. The California Court of Appeal upheld the TIDF ordinance against legal challenges in *Russ Bldg. Partnership v. City and County of San Francisco*, 199 Cal.App.3d 1496 (1987), reprinted as directed by the California Supreme Court in *Russ Bldg. Partnership v. City and County of San Francisco*, 44 Cal.3d 839, 845-55 (1988). Among other things, the Court of Appeal found that the TIDF was a valid condition of development of real property, and not a special tax requiring voter approval. The Court also upheld the TIDF against equal protection and substantive due process challenges. Additionally, the California Supreme Court upheld the constitutionality of the TIDF as applied to development of new office uses approved before passage of the TIDF ordinance, where the City had conditioned approval of the new development on the developer's payment of a contemplated, but yet unknown, transit mitigation fee.

B. In 2000, the City's Planning Department, with assistance from the Municipal Transportation Agency, commissioned a study of the TIDF. The Planning Department issued a request for proposals for a consultant to consider various issues involving the TIDF, including: (1) whether the TIDF should be expanded to include types of land uses in addition to offices; (2) whether the TIDF should be expanded geographically beyond the Downtown area; (3) whether fee amounts should vary by geographic or land use categories; (4) what standards should be used for measuring the baseline performance of the Municipal Railway

("MUNI"); and (5) the developer fees that would be necessary to fund public transit to meet the additional demand resulting from new development.

C. In 2001, the Planning Department selected Nelson/Nygaard Associates, a nationally recognized transportation consulting firm, to perform the study. Later in 2001, Nelson/Nygaard issued its final report ("TIDF Study"). Before issuing the TIDF Study, Nelson/Nygaard prepared several Technical Memoranda, which provided detailed analyses of the methodology and assumptions used in the TIDF Study.

D. The TIDF Study concluded that new non-residential uses in San Francisco will generate demand for a substantial number of auto and transit trips ~~on MUNI~~ by the year 2020. The TIDF Study confirmed that while new office construction will ~~generate~~ have a substantial ~~demand for~~ impact on MUNI services, new development in a number of other land uses will ~~generate more trips on~~ also require MUNI to increase the number of revenue service hours. The TIDF Study recommended that the TIDF be extended to apply to most non-residential land uses~~ to address the increased demand for impact on public transportation~~. The TIDF Study found that certain types of new development generate very few daily ~~transit~~ trips and therefore may not appropriately be charged a new TIDF.

E. The TIDF Study also determined that the need to expand MUNI services to accommodate new development extends to all times of the day, not just peak periods, and therefore recommended that any measure of the existing level of service and additional service required by new development include service at all times of the day.

F. The former TIDF Ordinance applied the fee to developments in the traditional "Downtown" area of the City. The TIDF Study noted that since 1981, however, development has expanded out of the Downtown area of the City, and that such development has required MUNI to build transit infrastructure in areas outside of the boundary defined in the former TIDF Ordinance.

G. To meet the increased demand for public transit projected by the TIDF Study, MUNI must build new infrastructure and add or adjust service. For example, MUNI's 2002 publication, "A Vision for Rapid Transit in San Francisco" ("Vision Plan"), proposes transit projects along 12 major corridors in San Francisco, covering all areas of the City.

H. Even where employees and others drawn to new development use private transportation, their trips will increase the cost of maintaining MUNI's existing service level ("base service standard") because increasing traffic congestion will result in slower travel speeds for MUNI and require MUNI to add more service hours to maintain its base service standard Accordingly, new development will require MUNI to add service hours to maintain schedules and reliability that extends beyond the new riders seeking to use MUNI service.

I. New development will directly and indirectly require MUNI to (a) maintain and expand service capacity through adding revenue service hours; (b) purchase, maintain and repair rolling stock; (c) install new lines; and (d) add service to existing lines.

J. The TIDF Study recommended that the City enact an ordinance to impose transit impact fees that would allow MUNI to maintain its base service standard as new development occurs throughout the City. The proposed ordinance would require sponsors of new development in the City to pay a fee that is reasonably related to the financial burden imposed on MUNI by the new development. This financial burden is measured by the cost that will be incurred by MUNI to provide increased service to maintain the applicable base service standard over the life of such new development.

K. The TIDF Study expressed the base service standard as a ratio in which the numerator is the number of hours that MUNI provides service to the public on its entire fleet of vehicles ("revenue service hours"), and the denominator is the number of trips generated by all non-residential land uses. An increase in trips resulting from new non-residential development will reduce the ratio of revenue service hours to overall trips generated by new development. To maintain the base service standard to accommodate the new development, MUNI must increase revenue service hours.

L. The TIDF Study developed a daily trip generation rate for each of six economic activity categories developed in the "Citywide Land Use Study," prepared for the Planning Department in 1998. The daily trip generation rate included automobile and public transit trips, but excluded non-motorized trips because such trips do not materially affect traffic congestion. The TIDF Study determined that the trip generation rates in each economic activity category do not vary geographically within the City. Therefore, the TIDF Study concluded that developer fee rates should not vary in different districts within the City. The trip generation rates contained in the TIDF Study represent the most reasonable rates available for the economic activity categories in the Study.

M. Using data obtained from MUNI and the fiscal year 2000 National Transit Database, the TIDF Study calculated the base service standard fee rates for each of the six economic activity categories in the following way:

(1) To calculate MUNI's total annual costs, the TIDF Study combined MUNI's fiscal year 2000 operating costs with an average annual capital budget, estimated by averaging the prior five years of MUNI's capital expenditures.

FY 2000 Operating Costs	$384,113,000
Average Annual Capital Costs	$310,000,000
Total Annual Costs	$694,113,000

(2) The Study calculated MUNI's net annual costs for fiscal year 2000 by subtracting fare box revenue and federal and state grant funds from MUNI's total costs.

Total Annual Costs	$ 694,113,000
FY 2000 Fare Box Revenue	($101,310,000)
FY 2000 Federal/State Grant Funds	($182,900,000)
Net Annual Costs	$ 409,903,000

(3) The Study then determined MUNI's net annual cost per revenue service hour by dividing MUNI's net annual costs by MUNI's average daily revenue service hours, as reported to the National Transit Database.

Net Annual Costs	**Average Daily Revenue Service Hours**	**Net Annual Cost Per Revenue Service Hour**
$ 409,903,000	÷ 8,436	$48,600

(4) The TIDF Study estimated the number of daily auto and transit trips within the City (9,035,282) by using trip generation rates and 2000 employment data supplied by the Planning Department. By dividing MUNI's average daily revenue service hours (8,436) by the estimated daily auto and transit trips within the City (9,035,282), the TIDF Study determined that MUNI provided approximately 0.9336 service hours for every 1,000 transit and auto trips. The TIDF Study multiplied the net annual cost per revenue service hour by 0.9336 to determine a net annual cost per trip.

Net Annual Cost Per Revenue Service Hour	**Revenue Service Hours Per 1,000 Trips**	**Net Annual Cost Per Trip**
$48,600	x 0.9336	$45.37

(5) The Study multiplied the net annual cost per trip by an adjusted daily trip rate per economic activity category to calculate a net annual cost per gross square foot (gsf) of new development for each economic activity category. The TIDF Study adjusted the daily trip rate to eliminate bicycle and pedestrian trips.

Economic Activity Category	Adjusted Daily Trip Rate Per 1,000 gsf	Net Annual Cost Per Trip	Net Annual Cost per gsf of Development
Cultural/Institution/Education	42.3	$45.37	$1.92
Management, Information and Professional Services	15.1	$45.37	$0.68
Medical and Health Services	23.9	$45.37	$1.08
Production/Distribution/Repair	9.6	$45.37	$0.44
Retail/Entertainment	166.8	$45.37	$7.57
Visitor Services	13.3	$45.37	$0.61

(6) Finally, the Study multiplied the net annual cost per gross square foot of development for each economic activity category by a net present value factor of 20.69 (based on a U.S. transportation industry index inflation rate of 2.05%, earning on an invested funds rate of 6.14%, and a building life span of 45 years) to establish the base service standard rates for each economic activity category that would be necessary to pay for increased transit services for the 45-year useful life of a new development.

Economic Activity Category	Net Present Value Factor	Net Annual Cost per gsf of Development	Base Service Standard Rates
Cultural/Institution/Education	20.69	$1.92	$39.67
Management, Information and Professional Services	20.69	$0.68	$14.17
Medical and Health Services	20.69	$1.08	$22.40
Production/Distribution/Repair	20.69	$0.44	$9.04
Retail/Entertainment	20.69	$7.57	$156.61
Visitor Services	20.69	$0.61	$12.53

N. In 2004, MUNI updated the base service standard rates established in the TIDF Study with fiscal year 2003 data (the "updated base service standard rates"). To calculate the updated base service standard rates, MUNI modified certain variables in the TIDF Study's formula to reflect current information, as follows.

(1) Rather than using an estimated average annual capital budget (the methodology employed in the TIDF Study), MUNI used its actual capital costs for fiscal years 1999-2003, as reported to the fiscal year 2003 National Transit Database, in determining the average annual capital costs.

Operating Costs	$449,283,888
Average Capital Costs	$192,468,200
Total Costs	$641,752,088

(2) California Government Code Section 65913.8 prohibits including costs for facility maintenance and operations in a fee imposed on a developer for a public capital facility improvement. It is not clear whether this limitation applies to the TIDF. To comply with Government Code Section 65913.8, if applicable, and to achieve a more conservative estimate of the recoverable costs, MUNI deducted its costs for non-vehicle (facility) maintenance and general administration. MUNI could not separate general administration attributable to facility operations, so MUNI deducted 100% of the general administration costs for the entire department. Accordingly, the updated base service standard rates are even more conservative than may be required under Section 65913.8.

(3) MUNI applied its updated assumptions to the TIDF Study's methodology by deducting non-vehicle maintenance and general administration (in addition to farebox revenues and grant funds) from its total costs to calculate its annual net costs:

Total Annual Costs FY 2003	$ 641,752,088
Farebox Revenue FY 2003	($97,779,333)
Federal/State Grant Funds FY 2003	($89,445,000)
Non-Vehicle Maintenance FY 2003	($34,173,560)
General Administration FY 2003	($92,197,116)
Net Annual Costs FY 2003	$ 328,157,079

(4) To determine the net annual cost per revenue service hour, MUNI used the average daily revenue service hours for Fiscal Year 2003 (10,062), as reported to the National Transit Database:

Net Annual Costs	Average Daily Revenue Service Hours	Net Annual Cost Per Revenue Service Hour
$ 328,157,079	÷ 10,062	$32,614

(5) MUNI then calculated the net annual cost per trip by multiplying the net annual cost per revenue service hour by the number of revenue service hours per 1,000 trips:

Net Annual Cost Per Revenue Service Hour	Revenue Service Hours Per 1,000 Trips	Net Annual Cost Per Trip
$32,614	x 1.1136	$36.32

(6) MUNI multiplied the net annual cost per trip by the adjusted daily trip rate for each economic activity category to arrive at a net annual cost per gross square foot of new development for each category:

Economic Activity Category	**Adjusted Daily Trip Rate Per 1,000 gsf**	**Net Updated Annual Cost Per Trip**	**Net Updated Annual Cost per gsf of Development**
Cultural/Institution/Education	42.3	$36.32	$1.54
Management, Information and Professional Services	15.1	$36.32	$0.55
Medical and Health Services	23.9	$36.32	$0.87
Production/Distribution/Repair	9.6	$36.32	$0.35
Retail/Entertainment	166.8	$36.32	$6.06
Visitor Services	13.3	$36.32	$0.48

(7) MUNI also updated the net present value factor the TIDF Study used to calculate the updated base service standard rates by calculating the lump sum amount needed to fund $1.00 (in today's dollars) in annual costs over 45 years, increasing at a current inflation rate of 3.50% (the five-year Bay Area Consumer Price Index as calculated by the Association for Bay Area Governments), with the remaining fund balance invested at a current interest rate of 4.93% (the five-year average interest rate earned by the City's Treasurer's Department on pooled funds). Both the TIDF Study and MUNI used the interest rate earned by the City's Treasurer for the respective years. But MUNI elected to use the Bay Area Consumer Price Index rather than the U.S. Transportation Index on which the TIDF Study relied because the Bay Area index more accurately reflects the local inflation rate. The use of the different net present value factor yields the following updated base service standard rates:

Economic Activity Category	Net Annual Cost per gsf of Development	Net Present Value Factor	Updated Base Service Standard Rates
Cultural/Institution/ Education	$1.54	33.36	$51.25
Management, Information and Professional Services	$0.55	33.36	$18.30
Medical and Health Services	$0.87	33.36	$28.96
Production/Distribution/Repair	$0.35	33.36	$11.63
Retail/Entertainment	$6.06	33.36	$202.10
Visitor Services	$0.48	33.36	$16.11

O. In setting the TIDF rates, the City considered the updated base service standard rates and input from a variety of stakeholders, including business groups, developers, and civic organizations. The City set the TIDF rates well below the updated base service standard rates to reduce the costs of the TIDF to sponsors of new developments, who are subject to other development fees imposed by the City, and to guarantee that the TIDF does not exceed the reasonable cost to fund the additional transit improvements necessitated by new development. The TIDF rates are as follows:

Economic Activity Category	Updated Base Service Standard Rates	TIDF Schedule (from Sec. 38.4)
Cultural/Institution/Education	$51.25	$10.00
Management, Information and Professional Services	$18.30	$10.00
Medical and Health Services	$28.96	$10.00
Production/Distribution/Repair	$11.63	$8.00
Retail/Entertainment	$202.10	$10.00
Visitor Services	$16.11	$8.00

P. Based on projected new development over the next 20 years, the TIDF will provide revenue to MUNI that is significantly below the costs that MUNI will incur to mitigate the transit impacts resulting from the new development.

Q. The TIDF is the most practical and equitable method of meeting a portion of the demand for additional Municipal Railway service and capital improvements for the City caused by new non-residential development.

R. Based on the above findings, the City determines that the TIDF satisfies the requirements of the Mitigation Fee Act, California Government Code Section 66001, as follows:

(1) The purpose of the fee is to meet a portion of the demand for additional Municipal Railway service and capital improvements for the City caused by new non-residential development.

(2) Funds from collection of the TIDF will be used to increase revenue service hours reasonably necessary to mitigate the impacts of new non-residential development on public transit and maintain the applicable base service standard.

(3) There is a reasonable relationship between the proposed uses of the TIDF and the impact on transit of the new developments on which the TIDF will be imposed.

(4) There is a reasonable relationship between the types of new development on which the TIDF will be imposed and the need to fund public transit for the uses specified in Section 38.8 of this ordinance.

(5) There is a reasonable relationship between the amount of the TIDF to be imposed on new developments and the impact on public transit from the new developments.

SEC. 38.3. IMPOSITION OF TRANSIT IMPACT DEVELOPMENT FEE.

A. Subject to the exceptions set forth in subsections D and E below, each sponsor of a new development in the City shall pay to the City and deliver to the Treasurer upon issuance of any temporary certificate of occupancy, and as a condition precedent to issuance for such new development of any certificate of final completion and occupancy, whichever occurs first, a TIDF. The TIDF shall be calculated on the basis of the number of gross square feet of new development, multiplied by the square foot rate then in effect for each of the applicable economic activity categories within the new development, as provided in Section 38.4 of this ordinance. An accessory use shall be charged at the same rate as the underlying use to which it is accessory. Whenever any new development or series of new developments results in more than 3,000 gross square feet of covered use within a structure, the TIDF shall be imposed on every square foot of such covered use (including any portion that was part of prior new development below the 3,000 square foot threshold).

B. No City official or agency, including the Department of Building Inspection ("DBI") and the Port of San Francisco, may issue a certificate of final completion and occupancy for any new development subject to the TIDF until it has received notification from the Treasurer that the TIDF in accordance with Section 38.4 of this Chapter has been paid.

C. Except as provided in Sections 38.3(D) and (E) below, the TIDF shall be payable with respect to any new development in the City for which a building or site permit is issued on or after the effective date of this ordinance.

D. The TIDF shall not be payable on new development, or any portion thereof, for which a transit impact development fee has been paid, in full or in part, under the prior Transit Impact Development Fee Ordinance adopted in 1981 (Ordinance No. 224-81; former Chapter 38 of this Administrative Code), except where (1) gross square feet of use is being added to the building; or (2) the TIDF rate for the new development is in an economic activity category with a higher fee rate than the rate set for MIPS, as set forth in Section 38.4.

E. No TIDF shall be payable on the following types of new development.

(1) New development on property owned (including beneficially owned) by the City, except for that portion of the new development that may be developed by a private sponsor and not intended to be occupied by the City or other agency or entity exempted under this ordinance, in which case the TIDF shall apply only to such non-exempted portion. New

development on property owned by a private person or entity and leased to the City shall be subject to the fee, unless the City is the beneficial owner of such new development or unless such new development is otherwise exempted under this Section.

(2) Any new development in Mission Bay North or South to the extent application of this ordinance would be inconsistent with the Mission Bay North Redevelopment Plan and Interagency Cooperation Agreement or the Mission Bay South Redevelopment Plan and Interagency Cooperation Agreement, as applicable.

(3) New development located on property owned by the United States or any of its agencies to be used exclusively for governmental purposes.

(4) New development located on property owned by the State of California or any of its agencies to be used exclusively for governmental purposes.

(5) New development for which an application for environmental evaluation or an application for a categorical exemption has been filed prior to April 1, 2004.

(6) The following types of new developments:

(a) Public facilities/ utilities, as defined in Section 209.6 of the Planning Code;

(b) Open recreation/horticulture, as defined in Section 209.5 of the Planning Code, including private noncommercial recreation open use, as referred to in Section 221(g) of the Planning Code;

(c) Vehicle storage and access, as defined in Section 209.7 of the Planning Code;

(d) Automotive services, as defined in Section 223(l) - (v) of the Planning Code;

(e) Wholesaling, storage, distribution, and open-air handling of materials and equipment, as defined in Section 225 of the Planning Code;

(f) Other Uses, as defined in Section 227 of the Planning Code;

In reviewing whether a development is subject to the fee, the Director shall consider the project in its entirety. A sponsor may not seek multiple building permits to evade paying the TIDF.

F. The sponsor shall pay, or cause to be paid, the TIDF to the Treasurer on the earliest of the following dates:

(1) The date when 50 percent of the net rentable area of the project has been occupied;

(2) The date of issuance of the first temporary permit of occupancy in the new development;

(3) Five days prior to the date of issuance of a final certificate of occupancy.

G. Upon payment of the fee in full to the Treasurer, and upon request of the sponsor, the Treasurer shall issue a certificate that the fee has been paid. The sponsor shall present such certification to DBI before the issuance of the final certificate of occupancy for the new development. DBI shall provide notice in writing to the Treasurer, the Planning Department, and MUNI at least five business days before issuing the final certificate of occupancy for any new development project. DBI may not issue a final certificate of occupancy for any new development until DBI has received notice from the Treasurer that the TIDF has been paid.

SEC. 38.4. TRANSIT IMPACT DEVELOPMENT FEE SCHEDULE.

A. TIDF Schedule. The TIDF Schedule shall be as follows:

Economic Activity Category	TIDF Per Gross Square Foot of Development
Cultural/Institution/Education	$10.00
Management, Information and Professional Services	$10.00
Medical and Health Services	$10.00
Production/Distribution/Repair	$8.00
Retail/Entertainment	$10.00
Visitor Services	$8.00

B. Biennial Adjustment. Biennially, beginning July 1, 2005, the TIDF Schedule shall be adjusted, without further action by the Board of Supervisors, to reflect the average annual change in the Bay Area Consumer Price Index for the prior two years, as reported by the Association of Bay Area Governments, and as determined by the Director.

SEC. 38.5. SETTING OF TIDF. Before obtaining the first building or site permit for any new development in the City after the effective date of this ordinance, each sponsor shall file with the Director, on such form as the Director may develop, a report indicating the number of gross square feet of use of the new development and any other information the Director may require to determine the sponsor's obligation to pay the TIDF. Each sponsor of a new development who had applied for a building or site permit, but who had not obtained an approval of the building permit or site permit before the effective date of this ordinance, shall file the same report prior to obtaining a final certificate of occupancy. Except where an exemption otherwise applies under this ordinance, the Director shall determine the number of gross square feet of use in each applicable economic activity category, disregarding the number of pre-existing gross square feet of use being retained in each such category, apply the fee schedule, and determine the fee. The Director shall mail a copy of his or her written determination to the sponsor. The sponsor may appeal the determination of the number of gross square feet of use subject to the fee, the economic activity category, or the credits described in Section 38.6, to the MTA Board. If the sponsor notifies the Director of its acceptance of the determination, or does not submit an appeal to the MTA Board within 15 days following the date of mailing of notice of the Director's determination, the Director's determination shall be final, and a notice of such determination shall be provided to DBI and the Treasurer. DBI may not issue a site or building permit for any new development until it has received notice from the MTA of the final determination of the amount of the Transit Impact Development Fee to be paid. The MTA shall not change the amount of the TIDF based on changes to the amount of gross square feet of new development during construction of the new development unless the sponsor applies for a new building permit to reflect such changes.

SEC. 38.6. CREDITS. In determining the number of gross square feet of use to which the TIDF applies, the Director shall provide a credit for prior uses eliminated on the site, provided that a TIDF has not been paid for any prior use of the property. The credit shall be calculated according to the following formula:

(a) There shall be a credit for the number of gross square feet of use being eliminated by the new development, multiplied by an adjustment factor to reflect the difference in the fee rate of the use being added and the use being eliminated. The adjustment factor shall be determined by the Director as follows:

(1) The adjustment factor shall be a fraction, the numerator of which shall be the fee rate which the Director shall determine, in consultation with the Department of City Planning, if necessary, applies to the economic activity category in the most recent calculation of the TIDF Schedule approved by the MTA Board for the prior use being eliminated by the project.

(2) The denominator of the fraction shall be the fee rate for the use being added, as set forth in the most recent calculation of the TIDF Schedule approved by the MTA Board.

(b) A credit for a prior use may be given only if the prior use was active on the site within five years before the date of the application for a building or site permit for the proposed use.

(c) As of the effective date of this ordinance, no sponsor shall be entitled to a refund of the TIDF on a building for which the fee was paid under the former Chapter 38.

SEC. 38.7. REVIEW OF FEE SCHEDULE.

A. Five-Year Review.

(1) Commencing five years after the effective date of this ordinance, and every five years thereafter, or more often as the MTA Board may deem necessary, the Director shall prepare a report for the MTA Board and the Board of Supervisors with recommendations regarding whether the TIDF for each economic activity category should be increased, decreased, or remain the same. In making such recommendations, and to the extent that new information is available, the Director shall update the following information and estimates that were used in the TIDF Study to calculate the base service standard fee rates, and any other information that the Director deems appropriate.

(a) The base service standard;

(b) Capital and operating costs;

(c) Federal and state grant funds received by MUNI;

(d) Passenger fare revenue;

(e) Daily revenue service hours;

(f) Cost per revenue service hour;

(g) Trip generation rates by economic activity category;

(h) Cost per trip;

(i) Cost per gross square foot of development by economic activity category;

(j) Net present value factor;

(k) Useful life period(s) for new development by economic activity category;

(l) Estimated annual rate of return on the proceeds of the fee;

(m) The placement of particular land uses in economic activity categories.

Where applicable, the Director shall use the most recent MUNI information as submitted to the National Transit Database. The denominator of the revised base service standard shall be calculated using the most recent estimates of daily automobile and transit trips developed by the City's Planning Department or other City or state agency.

(2) In the report, the Director shall (a) identify the base service standard fee rates per gross square foot in each economic activity category; and (b) propose a fee for each economic activity category.

(3) After receiving this report and making it available for public distribution, the Board of Supervisors shall conduct a public hearing in which it shall consider the Director's report, hear testimony from any interested members of the public, and receive such other evidence as it may deem necessary. At the conclusion of that hearing, the Board shall make findings regarding whether the revenues projected to be recovered under the proposed Fee Schedule would be reasonably related to and would not exceed the costs incurred by MUNI to maintain the applicable base service standard, in light of demands caused by new development. The Board of Supervisors shall then make any necessary or appropriate revisions to the TIDF Schedule.

(4) The Board shall consider the Director's report in light of the most recent five-year review of the Housing Fee (Planning Code § 313.15), Child Care Fee (Planning Code § 314.7) and Inclusionary Housing Fee (Planning Code § 315.8(e)). MUNI and the

Amendment of the whole in committee. 07/12/04

E8B-191

FILE NO. 040141

ORDINANCE NO. 199-04

[Transit Impact Development Fee]

Ordinance repealing San Francisco Administrative Code Chapter 38 (Transit Impact Development Fee) and replacing it with a new Chapter 38 (Sections 38.1 through 38.14), to enact a new Transit Impact Development Fee.

Be it ordained by the People of the City and County of San Francisco:

Section 1. The San Francisco Administrative Code is hereby amended by repealing Chapter 38 in its entirety; provided, however, that any sponsor who has been issued a building or site permit to develop office use that was subject to the Transit Impact Development Fee imposed by Ordinance No. 224-81, as amended, shall remain subject to all the terms and conditions of that ordinance, as amended. Chapter 38 of the Administrative Code shall be replaced with a new Chapter 38 to read as follows:

SEC. 38.1. DEFINITIONS.

For the purposes of this Chapter, the following definitions shall apply:

A. Accessory Use. A related minor use which is either necessary to the operation or enjoyment of a lawful principal use or conditional use, or is appropriate, incidental and subordinate to any such use and is located on the same lot as the principal or conditional use.

B. Base Service Standard. The relationship between revenue service hours offered by the Municipal Railway and the number of automobile and transit trips estimated to be generated by certain non-residential uses, expressed as a ratio where the numerator equals the average daily revenue service hours offered by MUNI, and the denominator equals the daily automobile and transit trips generated by non-residential land uses as estimated by the TIDF Study or updated under Section 38.7 of this ordinance.

C. Base Service Standard Fee Rate. The transit impact development fee that would allow the City to recover the estimated costs incurred by the Municipal Railway to meet the demand for public transit resulting from new development in the economic activity categories for which the fee is charged, after deducting government grants, fare revenue, and costs for non-vehicle maintenance and general administration.

D. Board. The Board of Supervisors of the City and County of San Francisco.

E. Certificate of Final Completion and Occupancy. A certificate of final completion and occupancy issued by any authorized entity or official of the City, including the Director of the Department of Building Inspection, under the Building Code.

F. City. The City and County of San Francisco.

G. Covered Use. Any use subject to the TIDF.

H. Cultural/Institution/Education (CIE). An economic activity category that includes, but is not limited to, schools, as defined in subsections (g), (h), and (i) of Section 209.3 of the Planning Code and subsections (f) - (i) of Section 217 of the Planning Code; child care facilities, as defined in subsections (e) and (f) of Section 209.3 of the Planning Code and subsection (e) of Section 217 of the Planning Code; museums and zoos; and community facilities, as defined in Section 209.4 of the Planning Code and subsections (a) – (c) of Section 221 of the Planning Code.

I Director. The Director of Transportation of the MTA, or his or her designee.

J. Economic Activity Category. One of the following six categories of non-residential uses: Cultural/Institution/Education (CIE), Management, Information and Professional Services (MIPS), Medical and Health Services, Production/Distribution/Repair (PDR), Retail/Entertainment, and Visitor Services.

K. Gross Floor Area. The total area of each floor within the building's exterior walls, as defined in Section 102.9 of the San Francisco Planning Code.

L. Gross Square Feet of Use. The total square feet of gross floor area in a building and/or space within or adjacent to a structure devoted to all covered uses, including any common areas exclusively serving such uses and not serving residential uses. Where a structure contains more than one use, areas common to two or more uses, such as lobbies, stairs, elevators, restrooms, and other ancillary space included in gross floor area that are not exclusively assigned to one use shall be apportioned among the two or more uses in accordance with the relative amounts of gross floor area, excluding such space, in the structure or on any floor thereof directly assignable to each use.

M. Management, Information and Professional Services (MIPS). An economic activity category that includes, but is not limited to, office use as defined in Section 313.1(35) of the Planning Code; medical offices and clinics, as defined in Section 890.114 of the Planning Code; and business services, as defined in Section 890.111 of the Planning Code.

N. Medical and Health Services. An economic activity category that includes, but is not limited to, those non-residential uses defined in Sections 209.3(a) and 217(a) of the Planning Code; animal services, as defined in subsections (a) and (b) of Section 224 of the Planning Code; and social and charitable services, as defined in subsection (d) of Section 209.3 of the Planning Code and subsection (d) of Section 217 of the Planning Code.

O. Municipal Railway; MUNI. The public transit system owned by City and under the jurisdiction of the Municipal Transportation Agency.

P. Municipal Transportation Agency; MTA. The agency of City created under Article 8A of the San Francisco Charter.

Q. Municipal Transportation Agency Board of Directors; MTA Board. The governing board of the MTA.

R. New Development. Any new construction, or addition to or conversion of an existing structure under a building or site permit issued after the effective date of this ordinance that results in 3,000 gross square feet or more of a covered use. In the case of mixed use development that includes residential development, the term "new development" shall refer to only the non-residential portion of such development. "Existing structure" shall include a structure for which a sponsor already paid a fee under the prior TIDF ordinance, as well as a structure for which no TIDF was paid.

S. Planning Code. The Planning Code of the City and County of San Francisco, as it may be amended from time to time.

T. Production/Distribution/Repair (PDR). An economic activity category that includes, but is not limited to, manufacturing and processing, as defined in Section 226 of the Planning Code; those uses listed in Section 222 of the Planning Code; automotive services, as defined in Section 223(a) - (k) of the Planning Code; arts activities and spaces, as defined in Section 102.2 of the Planning Code; and research and development, as defined in Section 313.1(42) of the Planning Code.

U. Residential. Any type of use containing dwellings as defined in Section 209.1 of the Planning Code or containing group housing as defined in Section 209.2(a) - (c) of the Planning Code.

V. Retail/Entertainment. An economic activity category that includes, but is not limited to, retail use, as defined in Section 218 of the Planning Code; entertainment use, as defined in Section 313.1(15) of the Planning Code; massage establishments, as defined in Section 218.1 of the Planning Code; laundering, cleaning and pressing, as defined in Section 220 of the Planning Code; and wholesale sales, as defined in Section 890.54(b) of the Planning Code.

W. Revenue Service Hours. The number of hours that the Municipal Railway provides service to the public with its entire fleet of buses, light rail (including streetcars), and cable cars.

X. Sponsor. An applicant seeking approval for construction of new development subject to this Chapter, such applicant's successors and assigns, and/or any person or entity that controls or is under common control with such applicant.

Y. TIDF Study. The study commissioned by the San Francisco Planning Department and performed by Nelson/Nygaard Associates entitled "Transit Impact Development Fee Analysis - Final Report," dated May 2001, including all the Technical Memoranda supporting the Final Report and the Nelson/Nygaard update materials contained in Board of Supervisors File No. 040141.

Z. Transit Impact Development Fee; TIDF. The development fee that is the subject of this ordinance.

AA. Treasurer. Treasurer of the City and County of San Francisco.

BB. Trip Generation Rate. The total number of automobile and Municipal Railway trips generated for each 1,000 square feet of development in a particular economic activity category as established in the TIDF Study, or pursuant to the five-year review process established in Section 38.7 of this ordinance.

CC. Use. The purpose for which land or a structure, or both, are legally designed, constructed, arranged or intended, or for which they are legally occupied or maintained, let or leased.

DD. Visitor Services. An economic activity category that includes, but is not limited to, hotel use, as defined in Section 313.1(18) of the Planning Code; motel use, as defined in subsections (c) and (d) of Section 216 of the Planning Code; and time-share projects, as defined in Section 11003.5(a) of the California Business and Professions Code.

SEC. 38.2. FINDINGS.

A. In 1981, the City enacted an ordinance imposing a Transit Impact Development Fee ("TIDF") on new office development in the Downtown area of San Francisco. The ordinance established a rate of $5.00 for each square foot of new office development. The TIDF was based on studies showing that the development of new office uses places a burden on the Municipal Railway, especially in the downtown area of San Francisco during commute hours, known as "peak periods." The TIDF was based on two cost analyses: one by the Finance Bureau of the City's former Public Utilities Commission, performed in 1981, and one by the accounting firm of Touche-Ross, performed in March 1983 to defend a legal challenge to the TIDF. The studies showed that the cost per square foot of new office development to provide public transit service was $9.18 and $8.36, respectively. The California Court of Appeal upheld the TIDF ordinance against legal challenges in *Russ Bldg. Partnership v. City and County of San Francisco*, 199 Cal.App.3d 1496 (1987), reprinted as directed by the California Supreme Court in *Russ Bldg. Partnership v. City and County of San Francisco*, 44 Cal.3d 839, 845-55 (1988). Among other things, the Court of Appeal found that the TIDF was a valid condition of development of real property, and not a special tax requiring voter approval. The Court also upheld the TIDF against equal protection and substantive due process challenges. Additionally, the California Supreme Court upheld the constitutionality of the TIDF as applied to development of new office uses approved before passage of the TIDF ordinance, where the City had conditioned approval of the new development on the developer's payment of a contemplated, but yet unknown, transit mitigation fee.

B. In 2000, the City's Planning Department, with assistance from the Municipal Transportation Agency, commissioned a study of the TIDF. The Planning Department issued a request for proposals for a consultant to consider various issues involving the TIDF, including: (1) whether the TIDF should be expanded to include types of land uses in addition to offices; (2) whether the TIDF should be expanded geographically beyond the Downtown area; (3) whether fee amounts should vary by geographic or land use categories; (4) what standards should be used for measuring the baseline performance of the Municipal Railway

("MUNI"); and (5) the developer fees that would be necessary to fund public transit to meet the additional demand resulting from new development.

C. In 2001, the Planning Department selected Nelson/Nygaard Associates, a nationally recognized transportation consulting firm, to perform the study. Later in 2001, Nelson/Nygaard issued its final report ("TIDF Study"). Before issuing the TIDF Study, Nelson/Nygaard prepared several Technical Memoranda, which provided detailed analyses of the methodology and assumptions used in the TIDF Study.

D. The TIDF Study concluded that new non-residential uses in San Francisco will generate demand for a substantial number of auto and transit trips ~~on MUNI~~ by the year 2020. The TIDF Study confirmed that while new office construction will ~~generate~~ have a substantial ~~demand for~~ impact on MUNI services, new development in a number of other land uses will ~~generate more trips on~~ also require MUNI to increase the number of revenue service hours. The TIDF Study recommended that the TIDF be extended to apply to most non-residential land uses~~ to address the increased demand for impact on public transportation~~. The TIDF Study found that certain types of new development generate very few daily ~~transit~~ trips and therefore may not appropriately be charged a new TIDF.

E. The TIDF Study also determined that the need to expand MUNI services to accommodate new development extends to all times of the day, not just peak periods, and therefore recommended that any measure of the existing level of service and additional service required by new development include service at all times of the day.

F. The former TIDF Ordinance applied the fee to developments in the traditional "Downtown" area of the City. The TIDF Study noted that since 1981, however, development has expanded out of the Downtown area of the City, and that such development has required MUNI to build transit infrastructure in areas outside of the boundary defined in the former TIDF Ordinance.

G. To meet the increased demand for public transit projected by the TIDF Study, MUNI must build new infrastructure and add or adjust service. For example, MUNI's 2002 publication, "A Vision for Rapid Transit in San Francisco" ("Vision Plan"), proposes transit projects along 12 major corridors in San Francisco, covering all areas of the City.

H. Even where employees and others drawn to new development use private transportation, their trips will increase the cost of maintaining MUNI's existing service level ("base service standard") because increasing traffic congestion will result in slower travel speeds for MUNI and require MUNI to add more service hours to maintain its base service standard Accordingly, new development will require MUNI to add service hours to maintain schedules and reliability that extends beyond the new riders seeking to use MUNI service.

I. New development will directly and indirectly require MUNI to (a) maintain and expand service capacity through adding revenue service hours; (b) purchase, maintain and repair rolling stock; (c) install new lines; and (d) add service to existing lines.

J. The TIDF Study recommended that the City enact an ordinance to impose transit impact fees that would allow MUNI to maintain its base service standard as new development occurs throughout the City. The proposed ordinance would require sponsors of new development in the City to pay a fee that is reasonably related to the financial burden imposed on MUNI by the new development. This financial burden is measured by the cost that will be incurred by MUNI to provide increased service to maintain the applicable base service standard over the life of such new development.

K. The TIDF Study expressed the base service standard as a ratio in which the numerator is the number of hours that MUNI provides service to the public on its entire fleet of vehicles ("revenue service hours"), and the denominator is the number of trips generated by all non-residential land uses. An increase in trips resulting from new non-residential development will reduce the ratio of revenue service hours to overall trips generated by new development. To maintain the base service standard to accommodate the new development, MUNI must increase revenue service hours.

L. The TIDF Study developed a daily trip generation rate for each of six economic activity categories developed in the "Citywide Land Use Study," prepared for the Planning Department in 1998. The daily trip generation rate included automobile and public transit trips, but excluded non-motorized trips because such trips do not materially affect traffic congestion. The TIDF Study determined that the trip generation rates in each economic activity category do not vary geographically within the City. Therefore, the TIDF Study concluded that developer fee rates should not vary in different districts within the City. The trip generation rates contained in the TIDF Study represent the most reasonable rates available for the economic activity categories in the Study.

M. Using data obtained from MUNI and the fiscal year 2000 National Transit Database, the TIDF Study calculated the base service standard fee rates for each of the six economic activity categories in the following way:

(1) To calculate MUNI's total annual costs, the TIDF Study combined MUNI's fiscal year 2000 operating costs with an average annual capital budget, estimated by averaging the prior five years of MUNI's capital expenditures.

FY 2000 Operating Costs	$384,113,000
Average Annual Capital Costs	$310,000,000
Total Annual Costs	$694,113,000

(2) The Study calculated MUNI's net annual costs for fiscal year 2000 by subtracting fare box revenue and federal and state grant funds from MUNI's total costs.

Total Annual Costs	$ 694,113,000
FY 2000 Fare Box Revenue	($101,310,000)
FY 2000 Federal/State Grant Funds	($182,900,000)
Net Annual Costs	$ 409,903,000

(3) The Study then determined MUNI's net annual cost per revenue service hour by dividing MUNI's net annual costs by MUNI's average daily revenue service hours, as reported to the National Transit Database.

Net Annual Costs	Average Daily Revenue Service Hours	Net Annual Cost Per Revenue Service Hour
$ 409,903,000	÷ 8,436	$48,600

(4) The TIDF Study estimated the number of daily auto and transit trips within the City (9,035,282) by using trip generation rates and 2000 employment data supplied by the Planning Department. By dividing MUNI's average daily revenue service hours (8,436) by the estimated daily auto and transit trips within the City (9,035,282), the TIDF Study determined that MUNI provided approximately 0.9336 service hours for every 1,000 transit and auto trips. The TIDF Study multiplied the net annual cost per revenue service hour by 0.9336 to determine a net annual cost per trip.

Net Annual Cost Per Revenue Service Hour	Revenue Service Hours Per 1,000 Trips	Net Annual Cost Per Trip
$48,600	x 0.9336	$45.37

(5) The Study multiplied the net annual cost per trip by an adjusted daily trip rate per economic activity category to calculate a net annual cost per gross square foot (gsf) of new development for each economic activity category. The TIDF Study adjusted the daily trip rate to eliminate bicycle and pedestrian trips.

Economic Activity Category	Adjusted Daily Trip Rate Per 1,000 gsf	Net Annual Cost Per Trip	Net Annual Cost per gsf of Development
Cultural/Institution/Education	42.3	$45.37	$1.92
Management, Information and Professional Services	15.1	$45.37	$0.68
Medical and Health Services	23.9	$45.37	$1.08
Production/Distribution/Repair	9.6	$45.37	$0.44
Retail/Entertainment	166.8	$45.37	$7.57
Visitor Services	13.3	$45.37	$0.61

(6) Finally, the Study multiplied the net annual cost per gross square foot of development for each economic activity category by a net present value factor of 20.69 (based on a U.S. transportation industry index inflation rate of 2.05%, earning on an invested funds rate of 6.14%, and a building life span of 45 years) to establish the base service standard rates for each economic activity category that would be necessary to pay for increased transit services for the 45-year useful life of a new development.

Economic Activity Category	Net Present Value Factor	Net Annual Cost per gsf of Development	Base Service Standard Rates
Cultural/Institution/Education	20.69	$1.92	$39.67
Management, Information and Professional Services	20.69	$0.68	$14.17
Medical and Health Services	20.69	$1.08	$22.40
Production/Distribution/Repair	20.69	$0.44	$9.04
Retail/Entertainment	20.69	$7.57	$156.61
Visitor Services	20.69	$0.61	$12.53

N. In 2004, MUNI updated the base service standard rates established in the TIDF Study with fiscal year 2003 data (the "updated base service standard rates"). To calculate the updated base service standard rates, MUNI modified certain variables in the TIDF Study's formula to reflect current information, as follows.

(1) Rather than using an estimated average annual capital budget (the methodology employed in the TIDF Study), MUNI used its actual capital costs for fiscal years 1999-2003, as reported to the fiscal year 2003 National Transit Database, in determining the average annual capital costs.

Operating Costs	$449,283,888
Average Capital Costs	$192,468,200
Total Costs	$641,752,088

(2) California Government Code Section 65913.8 prohibits including costs for facility maintenance and operations in a fee imposed on a developer for a public capital facility improvement. It is not clear whether this limitation applies to the TIDF. To comply with Government Code Section 65913.8, if applicable, and to achieve a more conservative estimate of the recoverable costs, MUNI deducted its costs for non-vehicle (facility) maintenance and general administration. MUNI could not separate general administration attributable to facility operations, so MUNI deducted 100% of the general administration costs for the entire department. Accordingly, the updated base service standard rates are even more conservative than may be required under Section 65913.8.

(3) MUNI applied its updated assumptions to the TIDF Study's methodology by deducting non-vehicle maintenance and general administration (in addition to farebox revenues and grant funds) from its total costs to calculate its annual net costs:

Total Annual Costs FY 2003	$ 641,752,088
Farebox Revenue FY 2003	($97,779,333)
Federal/State Grant Funds FY 2003	($89,445,000)
Non-Vehicle Maintenance FY 2003	($34,173,560)
General Administration FY 2003	($92,197,116)
Net Annual Costs FY 2003	$ 328,157,079

(4) To determine the net annual cost per revenue service hour, MUNI used the average daily revenue service hours for Fiscal Year 2003 (10,062), as reported to the National Transit Database:

Net Annual Costs	Average Daily Revenue Service Hours	Net Annual Cost Per Revenue Service Hour
$ 328,157,079	÷ 10,062	$32,614

(5) MUNI then calculated the net annual cost per trip by multiplying the net annual cost per revenue service hour by the number of revenue service hours per 1,000 trips:

Net Annual Cost Per Revenue Service Hour	Revenue Service Hours Per 1,000 Trips	Net Annual Cost Per Trip
$32,614	x 1.1136	$36.32

(6) MUNI multiplied the net annual cost per trip by the adjusted daily trip rate for each economic activity category to arrive at a net annual cost per gross square foot of new development for each category:

Economic Activity Category	Adjusted Daily Trip Rate Per 1,000 gsf	Net Updated Annual Cost Per Trip	Net Updated Annual Cost per gsf of Development
Cultural/Institution/Education	42.3	$36.32	$1.54
Management, Information and Professional Services	15.1	$36.32	$0.55
Medical and Health Services	23.9	$36.32	$0.87
Production/Distribution/Repair	9.6	$36.32	$0.35
Retail/Entertainment	166.8	$36.32	$6.06
Visitor Services	13.3	$36.32	$0.48

(7) MUNI also updated the net present value factor the TIDF Study used to calculate the updated base service standard rates by calculating the lump sum amount needed to fund $1.00 (in today's dollars) in annual costs over 45 years, increasing at a current inflation rate of 3.50% (the five-year Bay Area Consumer Price Index as calculated by the Association for Bay Area Governments), with the remaining fund balance invested at a current interest rate of 4.93% (the five-year average interest rate earned by the City's Treasurer's Department on pooled funds). Both the TIDF Study and MUNI used the interest rate earned by the City's Treasurer for the respective years. But MUNI elected to use the Bay Area Consumer Price Index rather than the U.S. Transportation Index on which the TIDF Study relied because the Bay Area index more accurately reflects the local inflation rate. The use of the different net present value factor yields the following updated base service standard rates:

Economic Activity Category	Net Annual Cost per gsf of Development	Net Present Value Factor	Updated Base Service Standard Rates
Cultural/Institution/ Education	$1.54	33.36	$51.25
Management, Information and Professional Services	$0.55	33.36	$18.30
Medical and Health Services	$0.87	33.36	$28.96
Production/Distribution/Repair	$0.35	33.36	$11.63
Retail/Entertainment	$6.06	33.36	$202.10
Visitor Services	$0.48	33.36	$16.11

O. In setting the TIDF rates, the City considered the updated base service standard rates and input from a variety of stakeholders, including business groups, developers, and civic organizations. The City set the TIDF rates well below the updated base service standard rates to reduce the costs of the TIDF to sponsors of new developments, who are subject to other development fees imposed by the City, and to guarantee that the TIDF does not exceed the reasonable cost to fund the additional transit improvements necessitated by new development. The TIDF rates are as follows:

Economic Activity Category	Updated Base Service Standard Rates	TIDF Schedule (from Sec. 38.4)
Cultural/Institution/Education	$51.25	$10.00
Management, Information and Professional Services	$18.30	$10.00
Medical and Health Services	$28.96	$10.00
Production/Distribution/Repair	$11.63	$8.00
Retail/Entertainment	$202.10	$10.00
Visitor Services	$16.11	$8.00

P. Based on projected new development over the next 20 years, the TIDF will provide revenue to MUNI that is significantly below the costs that MUNI will incur to mitigate the transit impacts resulting from the new development.

Q. The TIDF is the most practical and equitable method of meeting a portion of the demand for additional Municipal Railway service and capital improvements for the City caused by new non-residential development.

R. Based on the above findings, the City determines that the TIDF satisfies the requirements of the Mitigation Fee Act, California Government Code Section 66001, as follows:

(1) The purpose of the fee is to meet a portion of the demand for additional Municipal Railway service and capital improvements for the City caused by new non-residential development.

(2) Funds from collection of the TIDF will be used to increase revenue service hours reasonably necessary to mitigate the impacts of new non-residential development on public transit and maintain the applicable base service standard.

(3) There is a reasonable relationship between the proposed uses of the TIDF and the impact on transit of the new developments on which the TIDF will be imposed.

(4) There is a reasonable relationship between the types of new development on which the TIDF will be imposed and the need to fund public transit for the uses specified in Section 38.8 of this ordinance.

(5) There is a reasonable relationship between the amount of the TIDF to be imposed on new developments and the impact on public transit from the new developments.

SEC. 38.3. IMPOSITION OF TRANSIT IMPACT DEVELOPMENT FEE.

A. Subject to the exceptions set forth in subsections D and E below, each sponsor of a new development in the City shall pay to the City and deliver to the Treasurer upon issuance of any temporary certificate of occupancy, and as a condition precedent to issuance for such new development of any certificate of final completion and occupancy, whichever occurs first, a TIDF. The TIDF shall be calculated on the basis of the number of gross square feet of new development, multiplied by the square foot rate then in effect for each of the applicable economic activity categories within the new development, as provided in Section 38.4 of this ordinance. An accessory use shall be charged at the same rate as the underlying use to which it is accessory. Whenever any new development or series of new developments results in more than 3,000 gross square feet of covered use within a structure, the TIDF shall be imposed on every square foot of such covered use (including any portion that was part of prior new development below the 3,000 square foot threshold).

B. No City official or agency, including the Department of Building Inspection ("DBI") and the Port of San Francisco, may issue a certificate of final completion and occupancy for any new development subject to the TIDF until it has received notification from the Treasurer that the TIDF in accordance with Section 38.4 of this Chapter has been paid.

C. Except as provided in Sections 38.3(D) and (E) below, the TIDF shall be payable with respect to any new development in the City for which a building or site permit is issued on or after the effective date of this ordinance.

D. The TIDF shall not be payable on new development, or any portion thereof, for which a transit impact development fee has been paid, in full or in part, under the prior Transit Impact Development Fee Ordinance adopted in 1981 (Ordinance No. 224-81; former Chapter 38 of this Administrative Code), except where (1) gross square feet of use is being added to the building; or (2) the TIDF rate for the new development is in an economic activity category with a higher fee rate than the rate set for MIPS, as set forth in Section 38.4.

E. No TIDF shall be payable on the following types of new development.

(1) New development on property owned (including beneficially owned) by the City, except for that portion of the new development that may be developed by a private sponsor and not intended to be occupied by the City or other agency or entity exempted under this ordinance, in which case the TIDF shall apply only to such non-exempted portion. New

development on property owned by a private person or entity and leased to the City shall be subject to the fee, unless the City is the beneficial owner of such new development or unless such new development is otherwise exempted under this Section.

(2) Any new development in Mission Bay North or South to the extent application of this ordinance would be inconsistent with the Mission Bay North Redevelopment Plan and Interagency Cooperation Agreement or the Mission Bay South Redevelopment Plan and Interagency Cooperation Agreement, as applicable.

(3) New development located on property owned by the United States or any of its agencies to be used exclusively for governmental purposes.

(4) New development located on property owned by the State of California or any of its agencies to be used exclusively for governmental purposes.

(5) New development for which an application for environmental evaluation or an application for a categorical exemption has been filed prior to April 1, 2004.

(6) The following types of new developments:

(a) Public facilities/ utilities, as defined in Section 209.6 of the Planning Code;

(b) Open recreation/horticulture, as defined in Section 209.5 of the Planning Code, including private noncommercial recreation open use, as referred to in Section 221(g) of the Planning Code;

(c) Vehicle storage and access, as defined in Section 209.7 of the Planning Code;

(d) Automotive services, as defined in Section 223(l) - (v) of the Planning Code;

(e) Wholesaling, storage, distribution, and open-air handling of materials and equipment, as defined in Section 225 of the Planning Code;

(f) Other Uses, as defined in Section 227 of the Planning Code;

In reviewing whether a development is subject to the fee, the Director shall consider the project in its entirety. A sponsor may not seek multiple building permits to evade paying the TIDF.

F. The sponsor shall pay, or cause to be paid, the TIDF to the Treasurer on the earliest of the following dates:

(1) The date when 50 percent of the net rentable area of the project has been occupied;

(2) The date of issuance of the first temporary permit of occupancy in the new development;

(3) Five days prior to the date of issuance of a final certificate of occupancy.

G. Upon payment of the fee in full to the Treasurer, and upon request of the sponsor, the Treasurer shall issue a certificate that the fee has been paid. The sponsor shall present such certification to DBI before the issuance of the final certificate of occupancy for the new development. DBI shall provide notice in writing to the Treasurer, the Planning Department, and MUNI at least five business days before issuing the final certificate of occupancy for any new development project. DBI may not issue a final certificate of occupancy for any new development until DBI has received notice from the Treasurer that the TIDF has been paid.

SEC. 38.4. TRANSIT IMPACT DEVELOPMENT FEE SCHEDULE.

A. TIDF Schedule. The TIDF Schedule shall be as follows:

Economic Activity Category	TIDF Per Gross Square Foot of Development
Cultural/Institution/Education	$10.00
Management, Information and Professional Services	$10.00
Medical and Health Services	$10.00
Production/Distribution/Repair	$8.00
Retail/Entertainment	$10.00
Visitor Services	$8.00

B. Biennial Adjustment. Biennially, beginning July 1, 2005, the TIDF Schedule shall be adjusted, without further action by the Board of Supervisors, to reflect the average annual change in the Bay Area Consumer Price Index for the prior two years, as reported by the Association of Bay Area Governments, and as determined by the Director.

SEC. 38.5. SETTING OF TIDF. Before obtaining the first building or site permit for any new development in the City after the effective date of this ordinance, each sponsor shall file with the Director, on such form as the Director may develop, a report indicating the number of gross square feet of use of the new development and any other information the Director may require to determine the sponsor's obligation to pay the TIDF. Each sponsor of a new development who had applied for a building or site permit, but who had not obtained an approval of the building permit or site permit before the effective date of this ordinance, shall file the same report prior to obtaining a final certificate of occupancy. Except where an exemption otherwise applies under this ordinance, the Director shall determine the number of gross square feet of use in each applicable economic activity category, disregarding the number of pre-existing gross square feet of use being retained in each such category, apply the fee schedule, and determine the fee. The Director shall mail a copy of his or her written determination to the sponsor. The sponsor may appeal the determination of the number of gross square feet of use subject to the fee, the economic activity category, or the credits described in Section 38.6, to the MTA Board. If the sponsor notifies the Director of its acceptance of the determination, or does not submit an appeal to the MTA Board within 15 days following the date of mailing of notice of the Director's determination, the Director's determination shall be final, and a notice of such determination shall be provided to DBI and the Treasurer. DBI may not issue a site or building permit for any new development until it has received notice from the MTA of the final determination of the amount of the Transit Impact Development Fee to be paid. The MTA shall not change the amount of the TIDF based on changes to the amount of gross square feet of new development during construction of the new development unless the sponsor applies for a new building permit to reflect such changes.

SEC. 38.6. CREDITS. In determining the number of gross square feet of use to which the TIDF applies, the Director shall provide a credit for prior uses eliminated on the site, provided that a TIDF has not been paid for any prior use of the property. The credit shall be calculated according to the following formula:

(a) There shall be a credit for the number of gross square feet of use being eliminated by the new development, multiplied by an adjustment factor to reflect the difference in the fee rate of the use being added and the use being eliminated. The adjustment factor shall be determined by the Director as follows:

(1) The adjustment factor shall be a fraction, the numerator of which shall be the fee rate which the Director shall determine, in consultation with the Department of City Planning, if necessary, applies to the economic activity category in the most recent calculation of the TIDF Schedule approved by the MTA Board for the prior use being eliminated by the project.

(2) The denominator of the fraction shall be the fee rate for the use being added, as set forth in the most recent calculation of the TIDF Schedule approved by the MTA Board.

(b) A credit for a prior use may be given only if the prior use was active on the site within five years before the date of the application for a building or site permit for the proposed use.

(c) As of the effective date of this ordinance, no sponsor shall be entitled to a refund of the TIDF on a building for which the fee was paid under the former Chapter 38.

SEC. 38.7. REVIEW OF FEE SCHEDULE.

A. Five-Year Review.

(1) Commencing five years after the effective date of this ordinance, and every five years thereafter, or more often as the MTA Board may deem necessary, the Director shall prepare a report for the MTA Board and the Board of Supervisors with recommendations regarding whether the TIDF for each economic activity category should be increased, decreased, or remain the same. In making such recommendations, and to the extent that new information is available, the Director shall update the following information and estimates that were used in the TIDF Study to calculate the base service standard fee rates, and any other information that the Director deems appropriate.

(a) The base service standard;

(b) Capital and operating costs;

(c) Federal and state grant funds received by MUNI;

(d) Passenger fare revenue;

(e) Daily revenue service hours;

(f) Cost per revenue service hour;

(g) Trip generation rates by economic activity category;

(h) Cost per trip;

(i) Cost per gross square foot of development by economic activity category;

(j) Net present value factor;

(k) Useful life period(s) for new development by economic activity category;

(l) Estimated annual rate of return on the proceeds of the fee;

(m) The placement of particular land uses in economic activity categories.

Where applicable, the Director shall use the most recent MUNI information as submitted to the National Transit Database. The denominator of the revised base service standard shall be calculated using the most recent estimates of daily automobile and transit trips developed by the City's Planning Department or other City or state agency.

(2) In the report, the Director shall (a) identify the base service standard fee rates per gross square foot in each economic activity category; and (b) propose a fee for each economic activity category.

(3) After receiving this report and making it available for public distribution, the Board of Supervisors shall conduct a public hearing in which it shall consider the Director's report, hear testimony from any interested members of the public, and receive such other evidence as it may deem necessary. At the conclusion of that hearing, the Board shall make findings regarding whether the revenues projected to be recovered under the proposed Fee Schedule would be reasonably related to and would not exceed the costs incurred by MUNI to maintain the applicable base service standard, in light of demands caused by new development. The Board of Supervisors shall then make any necessary or appropriate revisions to the TIDF Schedule.

(4) The Board shall consider the Director's report in light of the most recent five-year review of the Housing Fee (Planning Code § 313.15), Child Care Fee (Planning Code § 314.7) and Inclusionary Housing Fee (Planning Code § 315.8(e)). MUNI and the

Planning Department shall make every effort to coordinate application of the TIDF with the City's other developer fees to avoid unnecessarily encumbering sponsors of new development.

B. Principles in Calculating Fee. The following principles have been and shall in the future be observed in calculating the TIDF:

(1) Actual cost information provided to the National Transit Database shall be used in calculating the fee rates. Where estimates must be made, those estimates should be based on such information as the Director or his or her delegate considers reasonable for the purpose.

(2) The rates shall be set at an actuarially sound level to ensure that the proceeds, including such earnings as may be derived from investment of the proceeds and amortization thereof, do not exceed the capital and operating costs incurred in order to maintain the applicable base service standard in light of the demands created by new development subject to the fee over the estimated useful life of such new development. For purposes of this Ordinance, the estimated useful life of a new development is 45 years.

SEC. 38.8. USE OF PROCEEDS FROM TRANSIT IMPACT DEVELOPMENT FEE.

Money received from collection of the TIDF, including earnings from investments of the TIDF, shall be held in trust by the Treasurer under Section 66006 of the Mitigation Fee Act (Cal. Gov. Code §§ 60000 *et seq.*) and shall be distributed according to the fiscal and budgetary provisions of the San Francisco Charter and the Mitigation Fee Act, subject to the following conditions and limitations. TIDF funds may be used to increase revenue service hours reasonably necessary to mitigate the impacts of new non-residential development on public transit and maintain the applicable base service standard, including, but not limited to: capital costs associated with establishing new transit routes, expanding transit routes, and increasing service on existing transit routes, including, but not limited to, procurement of related items such as rolling stock, and design and construction of bus shelters, stations, tracks, and overhead wires; operation and maintenance of rolling stock associated with new or expanded transit routes or increases in service on existing routes; capital or operating costs required to add revenue service hours to existing routes; and related overhead costs. Proceeds from the TIDF may also be used for all costs required to administer, enforce, or defend this ordinance.

SEC. 38.9. RULES AND REGULATIONS.

The MTA is empowered to adopt such rules, regulations, and administrative procedures as it deems necessary to implement this Chapter. In the event of a conflict between any MTA rule, regulation or procedure and this ordinance, this ordinance shall prevail.

SEC. 38.10. NONPAYMENT, RECORDATION OF NOTICE OF FEE AND NOTICE OF DELINQUENCY, ADDITIONAL REQUEST; NOTICE OF ASSESSMENT OF INTEREST, AND INSTITUTION OF LIEN PROCEEDINGS.

A. Upon the Director's determination that a development is subject to this ordinance, he or she may cause the County Recorder to record a notice that such development is subject to the TIDF. The County Recorder shall serve or mail a copy of such notice to the persons liable for payment of the fee and the owners of the real property described in the notice. The notice shall include (1) a description of the real property subject to the fee; (2) a statement that the development is subject to the imposition of the fee; and (3) a statement that the amount of the fee to which the building is subject is determined under Sections 38.4, 38.5 and related provisions of this ordinance.

B. When the Director determines that the fee is due, the Director shall notify the Treasurer, who shall send a request for payment to the sponsor.

C. Payment of the TIDF imposed by this ordinance is delinquent if (1) in the case of a fee not payable in installments, the fee is not paid within 30 days of request for payment; (2) in the case of a fee payable in installments (for a fee determined prior to the effective date of this Ordinance), the fee installment is not paid within 30 days of the date fixed for payment.

D. Where the TIDF is not paid within 30 days of request for payment, and where the TIDF is payable in installments (for a fee determined prior to the effective date of this Ordinance) and any installment is not paid within 30 days of the date fixed for payment:

(1) The Treasurer or his or her designee may cause the County Recorder to record a notice of delinquent TIDF which shall include: (a) the amount of the delinquent fee; (b) the amount of the entire fee as reflected on the final determination and a statement of whether the fee is payable in installments; (c) the fee interest and penalty then due; (d) the interest and penalties that shall accrue on the delinquent fee if not promptly paid; (e) a description of the real property subject to the fee; (f) notification that if the fee is not promptly paid proceedings will be instituted before the Board of Supervisors to impose a lien for the unpaid fee together with any penalties and interest against the real property described in the delinquency notice; (g) notification of the fee payer's right to appeal the delinquency determination to the MTA Board within 15 days of the notice to the fee payer.

(2) Where the Treasurer determines to record a notice of delinquency, he or she shall also serve or mail the notice of delinquent TIDF to the persons liable for the fee and to the owners of the real property described on the notice.

(3) Where a notice of TIDF delinquency has been recorded and the delinquent fee is paid or the Treasurer's determination of delinquency is reversed by appeal to the MTA Board or the delinquency is otherwise cured, the Treasurer shall promptly cause the County Recorder to record a notice that the TIDF delinquency has been cured. Said notice shall include: (a) description of the real property affected; (b) the book and page number of

the county record wherein the notice of delinquency was recorded; (c) the date the notice of delinquency was recorded; (d) notification that the delinquency reflected on the notice of delinquency was cured and the date of cure; (e) the amount of the entire fee as reflected on the final determination; (f) if applicable, the amount of the fee paid to effect the cure; and (g) if applicable, a statement that the fee was payable in installments and specification of the delinquency installments cured; (h) if applicable, the amount of the fee paid to effect the cure.

(4) The Treasurer shall serve or mail the notice that the TIDF delinquency has been cured, referred to in Section 38.10.D(3) of this ordinance, to the persons liable for the fee and to the owners of the real property described in such notice.

E. Where the TIDF, not payable in installments, is not paid within 30 days of request for payment, and where the TIDF is payable in installments (for a fee determined prior to the effective date of this Ordinance) and the installment is not paid within 30 days of the date fixed for payment, the Treasurer or his or her designee shall mail an additional request for payment and notice to the owner stating the following:

(1) If the amount due is not paid within 30 days of the date of mailing the additional request and notice, interest at the rate of one and one-half percent per month or portion thereof shall be assessed upon the fee or installment due.

(2) With respect to both non-installment and installment fees, if the account is not current within 60 days of the date of mailing the additional request and notice, the Treasurer shall institute proceedings to record a lien in accordance with Section 38.11 for the entire balance and any accrued interest against the property upon which the fee is owed.

F. Thirty days after mailing the additional request for payment, the Treasurer may assess interest as specified in paragraph 38.10.E(1) above. Sixty days after mailing the additional request for payment and notice, the Treasurer may institute lien proceedings as specified in Section 38.11.

G. The Treasurer shall submit a report to the Director on a quarterly basis of all fees collected for the previous quarter, which report shall include the property address, name of sponsor or owner of the property, and the amount of the fee, including interest, if any, collected.

SEC. 38.11. LIEN PROCEEDINGS; NOTICE. If payment of the fee not payable in installments is not received within 30 days following mailing of the additional request and notice, or if with respect to installment payments, the account is not brought current within 60 days of the mailing of the additional request and notice, the Treasurer shall initiate proceedings in accordance with Article XX of Chapter 10 of the San Francisco Administrative Code to make the entire unpaid balance of the TIDF, including interest on the unpaid fee or installments, a lien against all parcels used for the development project. The Treasurer shall send all notices required by that Article to the owner of the property as well as the sponsor. The Treasurer shall also prepare a preliminary report notifying the sponsor of a hearing to confirm such report by the Board of Supervisors at least 10 days before the date of the hearing. The report to the sponsor shall contain the sponsor's name, a description of the sponsor's development project, a description of the parcels of real property to be encumbered as set forth in the Assessor's Map Books for the current year, a description of the alleged violation of this ordinance, and shall fix a time, date, and place for hearing. The Treasurer shall cause this report to be mailed to the sponsor and each owner of record of the parcels of real property subject to lien. Except for the release of the lien recording fee authorized by Administrative Code Section 10.237, all sums collected by the Tax Collector under this ordinance shall be held in trust by the Treasurer and distributed as provided in Section 38.6 of this Chapter.

SEC. 38.12. MANNER OF GIVING NOTICES.

Any notice required to be given under this ordinance to a sponsor or owner shall be sufficiently given or served upon the sponsor or owner for all purposes under this ordinance if personally served upon the sponsor or owner, or if deposited, postage prepaid, in a post office letter box addressed in the name of the sponsor or owner at the official address of the sponsor or owner maintained by the Tax Collector of the City and County for the mailing of tax bills; or, if no such address is available, to the sponsor at the address of the development project, and to the applicant for the site or building permit at the address on the permit application.

SEC. 38.13. CHARITABLE EXEMPTIONS.

A. When the property or a portion thereof will be exempt from real property taxation or possessory interest taxation under California Constitution, Article XIII, Section 4, as implemented by California Revenue and Taxation Code Section 214, then the sponsor shall not be required to pay the TIDF attributed to the new development in the exempt property or portion thereof, so long as the property or portion thereof continues to enjoy the aforementioned exemption from real property taxation.

B. The TIDF shall be calculated for exempt structures in the same manner and at the same time as for all other structures. The sponsor may apply to the MTA for an exemption under the standards set forth in subsection A above. In the event the Agency determines that the sponsor is entitled to an exemption under this Section, it shall cause to be recorded a notice advising that the TIDF has been calculated and imposed upon the structure and that the structure or a portion thereof has been exempted from payment of the fee but that if the property or portion thereof loses its exempt status during the 10-year period commencing with the date of the imposition of the TIDF, then the building owner shall be subject to the requirement to pay the fee.

C. If within 10 years from the date of the issuance of the Certificate of Final Completion and Occupancy, the exempt property or portion thereof loses its exempt status, then the sponsor shall, within 90 days thereafter, be obligated to pay the TIDF, reduced by an amount reflecting the duration of the charitable exempt status in relation to the useful life estimate used in determining the TIDF for that structure. The amount remaining to be paid shall be determined by recalculating the fee using a useful life equal to the useful life used in the initial calculation minus the number of years during which the exempt status has been in effect. After the TIDF has been paid, the Agency shall record a release of the notice recorded under subsection B. above.

D. In the event a property owner fails to pay a fee within the 90-day period, a notice for request of payment shall be served by the Treasurer under Section 38.10.B of this Chapter. Thereafter, upon nonpayment, a lien proceeding shall be instituted under Section 38.11 of this Chapter.

SEC. 38.14. SEVERABILITY.

The provisions of this ordinance shall not apply to any person, association, corporation or to any property as to whom or which it is beyond the power of the City to impose the fee herein provided. If any sentence, clause, section or part of this ordinance, or any fee imposed upon any person or entity is found to be unconstitutional, illegal or invalid, such unconstitutionality, illegality, or invalidity shall affect only such clause, sentence, section or part of this ordinance, or person or entity; and shall not affect or impair any of the remaining provisions, sentences, clauses, sections or other parts of this ordinance, or its effect on other persons or entities. It is hereby declared to be the intention of the Board of Supervisors of the City that this ordinance would have been adopted had such unconstitutional, illegal or invalid sentence, clause, section or part of this ordinance not been included herein; or had such person or entity been expressly exempted from the application of this ordinance. To this end the provisions of this ordinance are severable.

Section 2. This ordinance shall become effective 60 days after the date of final approval of the ordinance.

APPROVED AS TO FORM:
DENNIS J. HERRERA, City Attorney

By:
Robin M. Reitzes
Deputy City Attorney

E8B-222

City and County of San Francisco

Tails

Ordinance

City Hall
1 Dr. Carlton B. Goodlett Place
San Francisco, CA 94102-4689

File Number: 040141 **Date Passed:**

Ordinance repealing San Francisco Administrative Code Chapter 38 (Transit Impact Development Fee) and replacing it with a new Chapter 38 (Sections 38.1, through 38.14), to enact a new Transit Impact Development Fee.

July 20, 2004 Board of Supervisors — PASSED ON FIRST READING

Ayes: 10 - Alioto-Pier, Ammiano, Daly, Dufty, Gonzalez, Ma, Maxwell, McGoldrick, Peskin, Sandoval
Noes: 1 - Hall

July 27, 2004 Board of Supervisors — FINALLY PASSED

Ayes: 10 - Alioto-Pier, Ammiano, Daly, Dufty, Gonzalez, Ma, Maxwell, McGoldrick, Peskin, Sandoval
Noes: 1 - Hall

File No. 040141

I hereby certify that the foregoing Ordinance was FINALLY PASSED on July 27, 2004 by the Board of Supervisors of the City and County of San Francisco.

Kay Gulbengay
Gloria L. Young
Clerk of the Board

AUG 05 2004

Date Approved

Mayor Gavin Newsom

2015 CONGESTION MANAGEMENT PROGRAM

APPENDIX 11

San Francisco Trip Reduction Efforts: Relationship to Regional TCMs

San Francisco Trip Reduction Efforts:
Relationship to Regional Transportation Control Measures (TCMs)
in the 2010 Clean Air Plan

Regional TCM	Local Implementation
A-1. Improve Local and Areawide Bus Service.	The San Francisco Municipal Transportation Agency (SFMTA) is currently implementing MuniForward, a major program to upgrade Muni service throughout the city. It includes service and route changes, capital upgrades, and other enhancements to nearly every major bus and rail transit route in the city. Upgrades are designed to make Muni faster and more reliable, and to improve safety. The city also has several major transit improvement projects underway, including the Van Ness Bus Rapid Transit Project, which will be constructed beginning in 2016; the Geary Bus Rapid Transit Project, which released a project Environmental Impact Report in 2015; and the Geneva-Harney Bus Rapid Transit project, which released a feasibility study in 2015. SFMTA is also in the process of replacing its fleet with a goal towards zero emissions.
A-2.Improve Local & Regional Rail Service	The Muni Forward project mentioned above includes numerous upgrades to Muni rail service. Five of the seven Muni rail line have capital projects underway (either in the study or implementation phase) to improve service quality and reliability. The Transportation Authority continues to advocate and program funds for local and regional rail improvement projects, such as Phase 2 of the Third Street Light Rail Project (Central Subway), Caltrain electrification and signal improvements, BART station improvements, and the downtown extension of Caltrain and High Speed Rail to the rebuilt Transbay Terminal. Construction on Central Subway began in 2011 while construction on the Transbay Terminal began in 2010. The Transportation Authority also recently completed the feasibility study for a major upgrade to the M-Ocean view line that would underground portions of the line and extend it to Park Merced.

San Francisco Trip Reduction Efforts:
Relationship to Regional Transportation Control Measures

TCM	Local Implementation
B-1. Freeway & Arterial Operations Strategies	Implementation of this TCM is being coordinated by Caltrans and the Metropolitan Transportation Commission (MTC). SFMTA's SFgo program is developing an integrated traffic management system managed from a centralized transportation control center. In addition, the Program is working with Caltrans to coordinate freeway improvements with the City's traffic management systems. As part of this project, SFMTA is working to replace aging signal controllers and install signals with transit priority capabilities on key transit routes.
B-2. Transit Efficiency & Use Strategies	Major transit operators in San Francisco, including Muni, BART, AC Transit, Golden Gate Transit, Caltrain, and SamTrans, all accept the Clipper card for fare payment. In addition, BART is upgrading signage at its downtown stations to ease wayfinding. San Francisco has also worked to have discounted or free transit passes be part of TDM and mitigation programs required of new developers such as Candlestick Point/Hunters Point Shipyard, Treasure Island, California Pacific Medical Center, and Park Merced.
B-3. Bay Area Express Lane Network	Implementation of this TCM is being led by MTC. An HOV pricing structure exists on the approaches to San Francisco via the San Francisco Oakland Bay Bridge and the Golden Gate Bridge during peak commute hours, with separate HOV lanes on the Bay Bridge. Express buses will continue to operate in San Francisco and will be prioritized through the new Transbay Terminal. The Transportation Authority is leading a study (the Freeway Corridor Management Study) to examine the potential for managed lanes (particularly high occupancy vehicle lanes) on portions of the U.S. 101 and I-280 south of the Bay Bridge.
B-4. Goods movement Improvements & Emission Reduction Strategies	Implementation of this TCM is being led by MTC and BAAQMD. San Francisco will work with BAAQMD to implement grant programs that fund diesel emission reduction programs.

San Francisco Trip Reduction Efforts: Relationship to Regional Transportation Control Measures

TCM	Local Implementation
C-1. Voluntary Employer-Based Trip Reduction Programs.	The San Francisco Department of the Environment (SFE) currently conducts many of the City's employer based Transportation Demand Management (TDM) activities, funded in part through Prop K. These activities currently include the commuter benefits program; Emergency Ride Home (ERH) program; bicycle fleet (e.g. CityCycle) program; and regional ridesharing program. The San Francisco Planning Department also conducts compliance monitoring of office buildings required to have a TDM program. The Transportation Authority has also led the TDM Partnership Project funded through the Metropolitan Transportation Commission's Climate Initiatives Innovative Grant Program, which pilot tested different approaches to employer outreach.
C-2. Safe Routes to School & Safe Routes to Transit	The San Francisco Department of Public Health manages San Francisco's Safe Routes to Schools program, which conducts outreach programs at 35 elementary schools, three middle schools, and two high schools in San Francisco. These programs are designed to encourage schoolchildren to walk and bicycle to school rather than driving in the family car.

San Francisco Trip Reduction Efforts:
Relationship to Regional Transportation Control Measures

TCM	Local Implementation
C-3. Rideshare Services & Incentives	SFE is the MTC-delegated agency that oversees the Regional Rideshare Program in the City, including introducing employers to TDM programs, promoting rideshare, and encouraging and assisting employers to implement rideshare. SFMTA promotes the use of carpools and vanpools during the morning and evening commutes. The City provides casual carpool pick-up locations on the east side of Beale Street between Howard and Folsom Streets. MTA also administers a program through which major employers may provide parking for employee carpool vehicles (3 or more riders) in City-owned garages at a reduced rate. The City also provides a limited amount of designated on-street parking in the downtown area for registered vanpool vehicles. Finally, buildings subject to Section 163 Planning Code Requirements are required to to encourage alternatives to driving alone, including through ridesharing and carpooling.
C-4. Conduct Public Outreach & Education	Implementation of this TCM (e.g., Spare the Air Days) is occurring through the Air District, MTC, and transit operators throughout the region, as well as through local agency activities, including the ongoing SF Moves pilot project to provide outreach and education to neighborhoods in San Francisco, and the recently completed TDM Partnership Project which involved employer outreach and education. Additionally, buildings subject to the Section 163 Planning Code requirement must engage in outreach and education activities, such as those provided by the downtown TMA.
C-5. Smart Driving	Implementation of this TCM is being led by MTC. San Francisco does have a traffic calming program, funded through Prop K and implemented by SFMTA, which includes speed reduction on arterials streets. However, speeding on freeways in San Francisco is generally not a major concern due to relatively dense traffic conditions within the city limits.

San Francisco Trip Reduction Efforts:
Relationship to Regional Transportation Control Measures

TCM	Local Implementation
D-1. Improve Bicycle Access and Facilities.	Since the Bicycle Plan injunction was lifted in 2010, the City and County have moved rapidly to implement it. The SFMTA has installed more than 50 miles of bicycle lanes since 2008, using Prop K as well as regional funding for many projects. Progress on the Plan has also included sharrows, separated and buffered bike lanes, bike boxes at intersections, bike racks and bicycle corrals, and colored pavement treatments to increase the visibility and safety of bicycling on City streets. Several major bicycling improvement projects have been recently completed or will be under construction soon, including implementation of a protected bicycle contraflow lane on Polk Street, a new protected cycle tracks on upper Market Street, and others.
D-2. Improve Pedestrian Access and Facilities.	The General Plan and Planning Code have supported pedestrian friendly, transit-oriented development for decades, which is referred to as the City's Transit First Policy. The Transportation Authority funds pedestrian-related projects through Prop K and programs other fund sources to support pedestrian improvements. Many of these projects fall under SFMTA's programs related to traffic calming, pedestrian and bicycle safety, and school area safety, and are also implemented through new development compliance with the Better Streets Plan which sets standards for street improvements associated with new development. Multi-agency efforts to coordinate major construction opportunities with pedestrian projects have also improved through the Follow-the-Paving process. In 2014, following a directive from the Transportation Authority Board, city agencies launched the Vision Zero program aimed to eliminate traffic injuries and fatalities by 2024. Because pedestrians typically make up more than half of fatalities in the city, work has involved focusing on improving conditions for pedestrians, especially on corridors identified as high injury pedestrian corridors through WalkFirst, a planning process to identify a framework for making pedestrian improvements on key streets throughout the city.

San Francisco Trip Reduction Efforts: Relationship to Regional Transportation Control Measures

TCM	Local Implementation
D-3. Local Land Use Strategies.	The Transportation Authority promotes legislative activities that encourage smart growth and more sustainable transportation and development-related investment decisions by the City and developers. ABAG and MTC have been working for years to encourage the region's municipalities to plan for compact, transit-oriented development to meet the region's sustainability goals. The most recent regional transportation plan (Plan Bay Area), called for focused growth around Priority Development Areas (PDAs), which largely center around existing or planned transit hubs. The Transportation Authority continues to work closely with City agencies to plan multimodal transportation improvements to support focused growth in San Francisco's 12 PDAs..
E-1. Value Pricing Strategies	The Transportation Authority is the Transportation Mobility Management Agency for Treasure Island, and in that capacity, is working to implement congestion pricing on Treasure Island, as required in the development agreement prepared for the island. Additionally, the Transportation Authority continues to study the potential for congestion pricing or alternative approaches to manage congestion in downtown San Francisco. Current work is focused on determining whether parking management techniques can serve as a feasible alternative to congestion pricing.

San Francisco Trip Reduction Efforts:
Relationship to Regional Transportation Control Measures

TCM	Local Implementation
E-2. Promote Parking Policies to Reduce Motor Vehicle Travel	In September 2009, the Transportation Authority adopted the San Francisco On-Street Parking Management and Pricing Study. SFMTA is implementing the study's key recommendations through the SF*park* program pilots. The pilots, launched in April 2011, utilize new pricing approaches and technology to improve the management of San Francisco's on- and off-street parking supply in eight neighborhoods in the city. The City has also addressed private off-street parking by eliminating minimum parking requirements downtown and in specific neighborhoods and commercial corridors, in some cases replacing them with maximum parking requirements. Unbundled parking, bicycle parking, and carshare parking requirements have also been implemented. The Transportation Authority is currently conducting a Parking Pricing and Regulation Study to consider further parking policy reform to manage auto trip demand.
E-3. Implement Transportation Pricing Reform.	The Authority continues to work with MTC and the Bay Area Partnership to identify new revenue sources. The Authority developed major transportation pricing studies, including the Mobility, Access, and Pricing Study and the Parking Pricing and Regulation Study, to examine the potential for pricing to be used in combination with new technology and transportation enhancements to improve system performance and reduce emissions.

2015 CONGESTION MANAGEMENT PROGRAM

APPENDIX 12

Discretionary Grants

San Francisco CMP Discretionary Grant Programs – Non-Prop K/AA

Project Grants Issued Since Publication of the 2013 CMP

San Francisco Transportation Fund for Clean Air (TFCA) – FY 2014/15 and 2015/16 County Program Manager Projects

TFCA Project	Sponsor [1]	TFCA Funds Programmed	Total Project Cost
Alternative Fuel Taxicab Vehicle Incentive Program	SFMTA	$199,500	$199,500
Bike Chalet	SFE	$16,935	$65,000
Bike Racks on Buses	GGBHTD	$100,000	$180,000
Bike Racks for SF Schools	SFUSD	$52,584	$52,584
Comprehensive TDM Program	SFMTA	$500,000	$600,000
Corridor Speed Reduction	SFMTA	$136,000	$208,000
Emergency Ride Home FY 2014/15	SFE	$31,220	$31,220
Emergency Ride Home FY 2015/16	SFE	$42,991	$42,991
New Resident Outreach	SFMTA	$243,500	$243,500
San Francisco General Hospital Shuttle: BART Loop Expansion Pilot	SFDPH	$41,919	$41,919
Short-Term Bicycle Parking	SFMTA	$366,925	$542,928
8th and Market Bikeway Improvement	SFMTA	$162,388	$175,401
	TOTAL	**$1,893,962**	**$2,383,043**

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[1] Project sponsor acronyms refer to the Golden Gate Bridge Highway and Transportation District (GGBHTD); San Francisco Department of Public Health (SFDPH); San Francisco Environment (SFE); the San Francisco Municipal Transportation Agency (SFMTA); and the San Francisco United School District (SFUSD).

San Francisco Share Cycle 4 Lifeline Transportation Program (LTP)

Funding Source[1]	**Project Sponsor**[2]	**Project Name**	**LTP Funds Programmed**	**Total Project Cost**
Programmed by the Authority				
FTA Sec. 5307	SFMTA	Expanding Late Night Transit Service to Communities in Need	$1,062,678	$5,947,860
STA[3]			$3,705,182	
		Potrero Hill Pedestrian Safety and Transit Stop Improvements	$159,854	$477,309
Prop 1B[4]			$216,000	
		Total – Transportation Authority	**$5,143,714**	**$8,904,057**

Programmed by Transit Operators, with the Transportation Authority's Concurrence				
Prop 1B	SFMTA	Van Ness Bus Rapid Transit	$6,189,054	$162,072,300
	BART	Wayfinding Signage and Pit Stop Initiative	$1,220,233	$2,525,291
		Total - Transit Operators	**$7,409,287**	**$168,322,882**

[1] Funding source acronyms include Federal Transit Administration (FTA) – Section 5307 and State Transit Assistance (STA) funds.

[2] Sponsor acronyms include the Bay Area Rapid Transit District (BART) and San Francisco Municipal Transportation Agency (SFMTA).

[3] In consideration of future projections, MTC requires CMAs to program 95% of the estimated STA amount and develop a contingency plan for the remaining 5% (i.e. $193,251 for San Francisco), which the Transportation Authority has programmed to the SFMTA's Expanding Late Night Transit Service project.

[4] $216,000 in State Prop 1B Infrastructure Bond funds has been freed up from the Cycle 2 LTP due to cancellation of the San Bruno Transit Preferential Streets (TPS) project. The San Bruno project is advancing as part of SFMTA's MuniForward.

San Francisco OneBayArea Grant (OBAG)

OBAG Project	Sponsor [1]	OBAG Funds Programmed	Total Project Cost
Chinatown Broadway Phase IV Street Design [2]	DPW	$3,410,537	$7,102,487
ER Taylor Safe Routes to School	DPW	$519,631	$604,573
Light Rail Vehicle (LRV) Procurement [3]	SFMTA	$10,227,540	$175,000,000
Lombard Street US-101 Corridor Improvement [2]	DPW	$1,910,000	$14,464,000
Longfellow Safe Routes to School	DPW	$670,307	$852,855
Mansell Corridor Improvement	SFMTA	$1,762,239	$6,807,348
Masonic Avenue Complete Streets [3]	SFMTA	$0	$ 18,227,540
Second Street Streetscape Improvements	DPW	$10,515,746	$ 13,378,173
Transbay Center Bike and Pedestrian Improvements	TJPA	$6,000,000	$ 11,480,440
Total Programmed		$ 35,016,000	

[1] Project sponsor acronyms include the Department of Public Works (DPW), San Francisco Municipal Transportation Agency (SFMTA), and the Transbay Joint Powers Authority (TJPA).

[2] $1.91 million in STIP Transportation Enhancement OBAG funds previously programmed to Broadway Phase IV was swapped with SFMTA local revenue bond funds because the OBAG project needed the funds sooner. In October 2015, the Transportation Authority reprogrammed the $1.91 million to the Lombard Street US-101 Corridor Improvement project as part of the 2016 Regional Transportation Improvement Program (RTIP) process. See San Francisco Draft 2016 RTIP Priorities table below.

[3] In order to minimize risk of losing federal funds due to project delays, in February 2015, the Transportation Authority reprogrammed $10,227,540 in OBAG funds from SFMTA's Masonic Avenue project to the LRV Procurement project, with the condition that SFMTA continue to follow OBAG reporting requirements for the Masonic Avenue project.

San Francisco Draft 2016 Regional Transportation Improvement Program (RTIP) Priorities

Project	Sponsor [1]	RIP Funds Programmed	Total Project Cost
Lombard Street US-101 Corridor Improvement	DPW	$1,910,000	$14,464,000
Planning, Programming, and Monitoring	MTC	$207,000	$207,000
Planning, Programming, and Monitoring	SFCTA	$1,114,000	$1,114,000
Total Programmed [2]		$3,231,000	

[1] Project sponsor acronyms include the Department of Public Works (DPW), the Metropolitan Transportation Commission (MTC), and the San Francisco County Transportation Authority (SFCTA).

[2] The proposed programming is subject to approval by MTC in December 2015 and the California Transportation Commission (CTC) in March 2016.

2015 CONGESTION MANAGEMENT PROGRAM

APPENDIX 13

Prop K Transportation Sales Tax Expenditure Plan Summary

E8B-237

SAN FRANCISCO COUNTY TRANSPORTATION AUTHORITY

Plan Summary
LAST UPDATED
January 2015

Proposition K Transportation Sales Tax Reauthorization and Expenditure Plan

San Francisco County Transportation Authority
1455 Market Street, 22nd Floor
San Francisco, CA 94103

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WEB www.sfcta.org

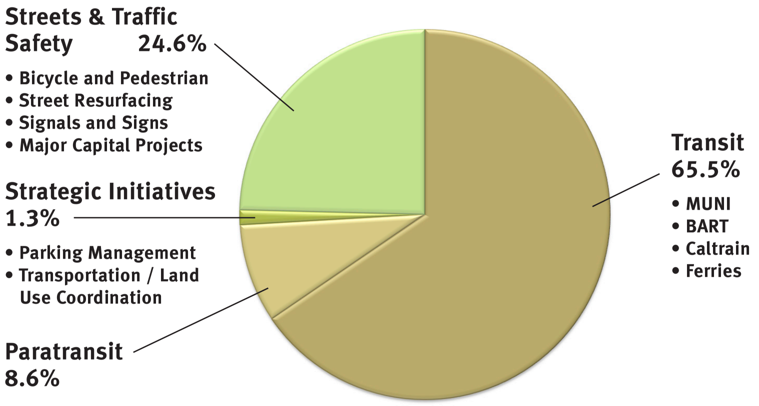
Commissioners

Scott Wiener
CHAIR

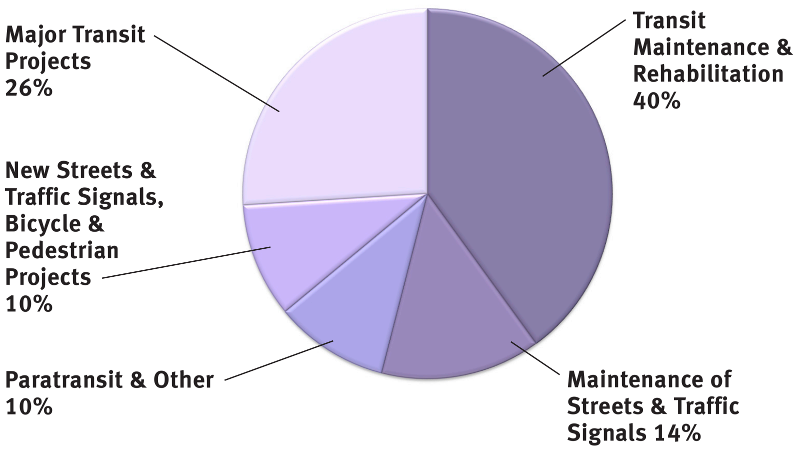
Malia Cohen
VICE CHAIR
John Avalos
London Breed
David Campos
Julie Christensen
Mark Farrell
Jane Kim
Eric Mar
Katy Tang
Norman Yee

Tilly Chang
EXECUTIVE DIRECTOR

EXPENDITURES BY CATEGORY



EXPENDITURES BY TYPE



Inside the Plan

MAJOR CAPITAL PROJECTS

- Create a citywide network of fast, reliable bus and rail transit
- Build the Central Subway from SOMA to Chinatown
- Extend Caltrain downtown to a rebuilt Transbay Terminal (Transbay Transit Center)
- Electrify the Caltrain line to downtown San Francisco
- Rebuild the South Access to the Golden Gate Bridge (Presidio Parkway)

PROJECTS AND PROGRAMS

- Transit: investments to improve and expand transit service, replace transit vehicles, and maintain transit infrastructure and facilities.
- Paratransit: support for door-to-door van and taxi services for seniors and people with disabilities who are unable to use fixed route transit.
- Streets and Traffic Safety: street resurfacing and repair; traffic signs and signals; pedestrian and bicycle safety projects; traffic calming; and tree planting and maintenance.
- Transportation System Management/Strategic Initiatives: support for neighborhood planning and parking studies and funds to increase land use/ transportation coordination.

E8B-238

SAN FRANCISCO COUNTY TRANSPORTATION AUTHORITY

SF Proposition K Expenditure Plan Summary

2003 $Millions	Total Prop K[1]	Percentage of Prop K Funding[2]	Other Expected Funds	Total Expected Funding[2]
A. TRANSIT	**1,781.1**	**65.5%**	**8163.2**	**9,944.3**
I. Major Capital Projects	**689.6**		**3059.1**	**3,748.7**
a. MUNI	361.0		1041.0	1,402.0
Bus Rapid Transit/MUNI Metro Network	110.0		490.0	600.0
3rd Street Light Rail (Phase 1)	70.0		30.0	100.0
Central Subway (3rd St. LRT Phase 2)	126.0		521.0	647.0
Geary LRT	55.0		0.0	55.0
b. Caltrain	313.1		1827.9	2,141.0
Downtown Extension to a Rebuilt Transbay Terminal	270.0		1615.0	1,885.0
Electrification	20.5		162.0	182.5
Capital Improvement Program	22.6		50.9	73.5
c. BART Station Access, Safety and Capacity	10.5		89.5	100.0
d. Ferry	5.0		100.7	105.7
ii. Transit Enhancements	**52.5**		**148.2**	**200.7**
iii. System Maintenance and Renovation	**1,039.0**		**4955.9**	**5,994.9**
a Vehicles	575.0		2911.0	3,486.0
b Facilities	115.7		830.0	945.7
c Guideways	348.3		1214.9	1,563.2
B. PARATRANSIT [4]	**291.0**	**8.6%**	**105.3**	**396.3**
C. STREETS AND TRAFFIC SAFETY	**714.7**	**24.6%**	**1318.3**	**2,033.0**
I Major Capital Projects	**117.5**		**422.2**	**539.7**
a. Golden Gate Bridge South Access (Doyle Drive)	90.0		330.0	420.0
b. New and Upgraded Streets	27.5		92.2	119.7
ii. System Operations, Efficiency and Safety	**60.6**		**94.9**	**155.5**
a. New Signals and Signs	41.0		14.5	55.5
b. Advanced Technology and Information Systems (SFgo)	19.6		80.4	100.0
iii. System Maintenance and Renovation	**281.6**		**605.9**	**887.5**
a. Signals and Signs	99.8		70.7	170.5
b. Street Resurfacing, Rehabilitation, and Maintenance	162.7		517.5	680.2
c Pedestrian and Bicycle Facility Maintenance	19.1		17.7	36.8
iv. Bicycle and Pedestrian Improvements	**255.0**		**195.3**	**450.3**
a. Traffic Calming	70.0		72.0	142.0
b. Bicycle Circulation/Safety	56.0		21.6	77.6
c. Pedestrian Circulation/Safety	52.0		17.7	69.7
d. Curb Ramps	36.0		30.0	66.0
e. Tree Planting and Maintenance	41.0		54.0	95.0
D. TRANSPORTATION SYSTEM MANAGEMENT/STRATEGIC INITIATIVES	**33.2**	**1.3%**	**29.3**	**62.5**
I. Transportation Demand Management/Parking Management	**13.2**		**15.7**	**28.9**
ii. Transportation/Land Use Coordination	**20.0**		**13.6**	**33.6**
TOTAL	**2,820**	**100%**	**9616.1**	**12,436**
Total Prop K Priority 1 (conservative forecast)	2,350			
Total Prop K Priority 1 + 2 (medium forecast; most likely to materialize)	2,626			
Total Prop K Priority 1+2+3 (optimistic forecast)[5]	2,820			

NOTES

[1] The "Total Prop K" column fulfills the requirements in Section 131051(d) of the Public Utilities Code.

[2] Percentages are based Prop K Priority 1 and 2 forecasts of $2.626 billion.

[3] Total Expected Funding represents project costs or implementable phases of multi-phase projects and programs based on a 30-year forecast of expected revenues from existing federal, state and local sources, plus $2.82B in reauthorized sales tax revenues, $230M from a BART General Obligation Bond, and approximately $199M from the proposed 3rd dollar toll on the Bay Area state-owned toll bridges. The amounts in this column are provided in fulfillment of Sections 131051 (a)(1), (b) and (c) of the Public Utilities Code.

[4] With very limited exceptions, the funds included in the 30-year forecast of expected revenues are for capital projects rather than operations. Of all the funding sources that make up the $12.4B in expected funding, paratransit operating support is only eligible for Prop K and and up to 10% of MUNI's annual share of Federal Section 5307 funds (currently about $3.5 M annually). Therefore, total expected funding for Paratransit only reflects Prop K and Section 5307. The remaining paratransit operating costs for the next 30-years will be funded using other sources of operating funds, such as those currently included in MUNI's $460M annual operating budget.

[5] Priority 3 projects will only be funded if the revenues materialize under the optimistic scenario for sales tax revenues. They are also included in case Priority 1 or 2 projects realize costs savings, identify other unanticipated sources of funding, experience delays or are canceled.

2015 CONGESTION MANAGEMENT PROGRAM

APPENDIX 14

Prop K Expenditure Plan Categories with 5-Year Prioritization Programs

Expenditure Plan Categories with 5-Year Prioritization Programs (5YPPs)

The Prop K Expenditure Plan requires that all programmatic categories have a 5YPP that includes among other elements a prioritization methodology and a 5-year program of projects with scope, schedule, cost, and funding (including funds to be leveraged by Prop K). The 5YPPs are intended to provide a stronger link between project selection and expected project performance, and to support on-time, on-budget project delivery, and timely and competitive use of matching funds. The 5YPPs are developed by eligible Prop K project sponsors and are approved by the Transportation Authority Board. Current and prior 5YPPs for all 21 Prop K programmatic categories can be found on the Transportation Authority's website at http://www.sfcta.org/node/434/proposition-k-5-year-prioritization-programs.

EP No.[1]	**Programmatic Category**	**Eligible Sponsors**[2]
1	Bus Rapid Transit/Transit Preferential Streets/MUNI Metro Network	SFMTA, DPW, SFCTA
7	Caltrain Capital Improvement Program	PCJPB
8	BART Station Access, Safety and Capacity	BART, DPW, SFMTA
9	Ferry	Port of San Francisco, GGBHTD
10 - 16	Transit Enhancements	SFMTA, BART, DPW, PCJPB
17	New and Renovated Vehicles	SFMTA, BART, PCJPB
20	Facilities	SFMTA, BART, PCJPB
22	Guideways	SFMTA, BART, PCJPB
26 - 30	New and Upgraded Streets	SFCTA, Caltrans, DPW, PCJPB, SFMTA
31	New Signals and Signs	SFMTA
32	Advanced Technology and Information Systems (SFgo)	SFMTA
33	Signals and Signs	SFMTA
34 - 35	Street Resurfacing, Rehabilitation, and Maintenance	DPW
37	Pedestrian and Bicycle Facility Maintenance	DPW, SFMTA
38	Traffic Calming	SFMTA, DPW
39	Bicycle Circulation/Safety	SFMTA, BART, DPW, PCJPB
40	Pedestrian Circulation/Safety	SFMTA, BART, DPW, PCJPB
41	Curb Ramps	DPW, SFMTA
42	Tree Planting and Maintenance	DPW
43	Transportation Demand Management/Parking Management	SFCTA, SFE/City Admin., Planning, SFMTA
44	Transportation/Land Use Coordination	Planning/SFCTA, BART, DPW, PCJPB, SFMTA

Notes:

[1] "EP Line No." corresponds to Expenditure Plan line numbers used in the 2014 Prop K Strategic Plan.

[2] The first sponsor listed is the lead agency responsible for coordinating development of the 5YPP. Sponsor acronyms include: Bay Area Rapid Transit District (BART), California Department of Transportation (Caltrans), City Administrator (formerly Department of Administrative Services), Department of Public Works (DPW), Golden Gate Bridge Highway and Transportation District (GGBHTD), Peninsula Corridor Joint Powers Board (PCJPB), Planning Department (Planning), San Francisco County Transportation Authority (SFCTA), San Francisco Environment (SFE), and San Francisco Municipal Transportation Agency (SFMTA).

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APPENDIX 15

2014 Prop K Strategic Plan Programming

2014 Prop K Strategic Plan

Appendix F. Pro-Rata Share of Available Revenues by Expenditure Plan Line Item (YOE $'s)

EP Line	Title	FY2014/15	FY2015/16	FY2016/17	FY2017/18	FY2018/19
1	Bus Rapid Transit/Transit Preferential Streets/MTA-MUNI Metro Network	$ 20,019,280	$ 42,802,484	$ 3,025,500	$ 2,529,000	$ -
2	3rd Street Light Rail (LRT)(Phase 1)	$ -	$ 2,029,582	$ 3,890,149	$ -	$ -
3	Central Subway (3rd St. LRT Phase 2)	$ 904,968	$ -	$ -	$ -	$ -
4	Geary Light Rail	$ -	$ -	$ -	$ -	$ -
5	Downtown Extension to a Rebuilt Transbay Terminal	$ 44,265,950	$ 13,215,624	$ 1,343,948	$ -	$ -
6	Electrification	$ 7,470,000	$ 3,400,000	$ -	$ -	$ -
7	Caltrain Capital Improvement Program	$ 1,002,747	$ 1,287,571	$ 1,095,729	$ 1,128,601	$ 1,162,459
8	BART Station Access, Safety and Capacity	$ 2,440,000	$ -	$ 327,025	$ -	$ 243,101
9	Ferry	$ 2,200,000	$ -	$ -	$ -	$ -
10	Extension of Trolleybus Lines/Motor Coach Conversion	$ -	$ -	$ -	$ 4,069,063	$ -
11	F-Line Extension to Fort Mason	$ -	$ 205,611	$ -	$ 535,269	$ -
12	Purchase/Rehabilitation Historic Street Cars	$ -	$ 267,929	$ -	$ -	$ -
13	Balboa Park BART/MTA-MUNI Station Access	$ 3,192,087	$ -	$ 750,000	$ -	$ -
14	Relocation of Paul Street Caltrain Station to Oakdale Avenue	$ 2,705,000	$ 118,000	$ -	$ 750,000	$ -
15	Purchase Additional Light Rail Vehicles	$ 4,592,490	$ -	$ -	$ -	$ -
16	Other Transit Enhancements	$ -	$ 1,496,000	$ 3,000,000	$ 2,754,000	$ -
17B	New and Renovated Vehicles - BART	$ -	$ -	$ -	$ -	$ -
17M	New and Renovated Vehicles - MUNI	$ 77,536,310	$ 136,719,650	$ 64,559,767	$ 5,858,783	$ 27,364,646
17P	New and Renovated Vehicles - PCJPB	$ 1,042,857	$ 1,670,455	$ 1,139,558	$ 1,173,745	$ 1,208,957
17U	New and Renovated Vehicles - Discretionary	$ 66,444,342	$ -	$ -	$ -	$ -
18	Trolleybus Wheelchair-lift Operations & Maintenance	$ -	$ -	$ -	$ -	$ -
19	F-Line Operations & Maintenance	$ -	$ -	$ -	$ -	$ -
20B	Rehab/Upgrade Existing Facilities - BART	$ 625,249	$ -	$ -	$ -	$ -
20M	Rehab/Upgrade Existing Facilities - MUNI	$ 17,277,000	$ -	$ -	$ -	$ -
20P	Rehab/Upgrade Existing Facilities - PCJPB	$ 210,989	$ 532,989	$ 394,462	$ 406,296	$ 418,485
20U	Rehab/Upgrade Existing Facilities - Discretionary	$ -	$ -	$ -	$ -	$ -
21	MTA-MUNI Metro Extension (MMX) Operations & Maintenance	$ -	$ -	$ -	$ -	$ -
22B	Guideways - BART	$ 250,000	$ 160,000	$ -	$ -	$ -
22M	Guideways - MUNI	$ -	$ 5,716,000	$ 5,680,012	$ 4,231,380	$ 13,392,656
22P	Guideways - PCJPB	$ 1,243,407	$ 1,319,130	$ 1,358,704	$ 1,399,465	$ 1,441,449
22U	Guideways - Discretionary	$ -	$ -	$ -	$ -	$ -
23	Paratransit	$ 9,670,000	$ 9,670,000	$ 9,670,000	$ 9,670,000	$ 9,670,000
24	Golden Gate Bridge South Access (Doyle Drive)	$ 21,150,000	$ 1,998,458	$ -	$ -	$ -
25	Bernal Heights Street System Upgrading	$ -	$ -	$ -	$ -	$ -
26	Great Highway Erosion Repair	$ 400,000	$ 1,300,000	$ -	$ -	$ -
27	Visitacion Valley Watershed	$ 228,830	$ 3,500,000	$ 500,000	$ -	$ 1,000,000
28	Illinois Street Bridge	$ -	$ -	$ -	$ -	$ -
29	Golden Gate Park/SR1 Traffic Study	$ -	$ -	$ -	$ -	$ -
30	Other Upgrades to Major Arterials	$ 500,000	$ 1,000,000	$ -	$ 1,000,000	$ -
31	New Signals and Signs	$ 525,000	$ 2,235,000	$ 4,368,473	$ -	$ 881,250
32	Advanced Technology and Information Systems (SFgo)	$ -	$ 2,000,000	$ -	$ 506,611	$ 500,000
33	Signals and Signs	$ 3,653,371	$ 13,540,229	$ 5,062,629	$ 657,950	$ 150,000
34	Street Resurfacing, Rehabilitation, and Maintenance	$ 8,602,785	$ 5,365,230	$ 3,907,668	$ 4,519,668	$ 4,634,668
35	Street Repair and Cleaning Equipment	$ 701,034	$ 738,072	$ 776,826	$ 817,375	$ 859,800
36	Embarcadero Roadway Incremental Operations & Maintenance	$ -	$ -	$ -	$ -	$ -
37	Pedestrian and Bicycle Facility Maintenance	$ 642,200	$ 664,349	$ 687,494	$ 711,682	$ 736,957
38	Traffic Calming	$ 4,268,627	$ 3,877,459	$ 2,247,022	$ 2,212,651	$ 1,697,254
39	Bicycle Circulation/Safety	$ 2,967,024	$ 2,047,091	$ 927,431	$ 1,097,848	$ 628,105
40	Pedestrian Circulation/Safety	$ 6,408,893	$ 850,000	$ 228,996	$ 300,000	$ 300,000
41	Curb Ramps	$ 725,632	$ 763,969	$ 804,084	$ 846,055	$ 889,968
42	Tree Planting and Maintenance	$ 1,000,000	$ 1,045,000	$ 1,092,025	$ 1,141,166	$ 1,192,519
43	Transportation Demand Management/Parking Management	$ 1,331,771	$ 1,339,872	$ 650,000	$ 400,000	$ 450,000
44	Transportation/Land Use Coordination	$ 2,359,639	$ 2,339,584	$ 1,950,000	$ 250,000	$ 350,000
	Total	**$ 318,557,482**	**$ 265,215,338**	**$ 119,437,502**	**$ 48,966,608**	**$ 69,172,274**

2015 CONGESTION MANAGEMENT PROGRAM

APPENDIX 16

Prop AA Strategic Plan Programming

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Prop AA Strategic Plan
Programming and Allocations to Date
Transportation Authority Board Approval 11.18.15

District	Project Name	Phase	Sponsor	Fiscal Year 2012/13	Fiscal Year 2013/14	Fiscal Year 2014/15	Fiscal Year 2015/16	Fiscal Year 2016/17	5-Year Total
Street Repair and Reconstruction									
			Funds Available in Category	**$ 4,358,888**	**$ 2,210,086**	**$ 2,210,086**	**$ 2,210,086**	**$ 2,210,086**	**$ 13,199,232**
6	9th Street Pavement Renovation	CON	DPW	$ 2,216,627					$ 2,216,627
4	28th Ave Pavement Renovation	CON	DPW	$ 1,174,260					$ 1,174,260
4		Deob	DPW	$ (4,417)					$ (4,417)
3	Chinatown Broadway St[4]	DES	DPW		$ 650,000				$ 650,000
9,10,11	Mansell Corridor Improvement Project[4]	DES	SFMTA		$ 202,228				$ 202,228
9,10,11	Mansell Corridor Improvement Project[4, 9]	CON	RPD/SFMTA			$ 2,325,624			$ 2,325,624
5,6	McAllister St Pavement Renovation	CON	DPW		$ 2,210,000				$ 2,210,000
8	Dolores St Pavement Renovation [9]	CON	DPW			$ 2,210,000			$ 2,210,000
6	Brannan St Pavement Renovation	CON	DPW					$ 2,210,000	$ 2,210,000
	Subtotal Programmed			**$ 3,386,470**	**$ 3,062,228**	**$ 4,535,624**	**$ -**	**$ 2,210,000**	**$ 13,194,322**
	(Over)/Under			**$ 972,418**	**$ (852,142)**	**$ (2,325,538)**	**$ 2,210,086**	**$ 86**	**$ 4,910**
	Cumulative Remaining			***$ 972,418***	***$ 120,276***	***$ (2,205,263)***	***$ 4,824***	***$ 4,910***	***$ 4,910***
Pedestrian Safety									
			Funds Available in Category	**$ 2,179,444**	**$ 1,365,043**	**$ 1,105,043**	**$ 1,105,043**	**$ 1,105,043**	**$ 6,859,616**
2	Arguello Gap Closure[2]	CON	Presidio		$ 350,000				$ 350,000
6	Mid-Block Crossing on Natoma/8th[4]	DES	SFMTA		$ 55,000				$ 55,000
		CON	SFMTA			$ 310,000			$ 310,000
6	Ellis/Eddy Traffic Calming Improvement[4, 5]	DES	SFMTA		$ 337,450	$ 27,550			$ 365,000
2,5	Franklin and Divisadero Signal Upgrades[4]	DES	SFMTA		$ 825,000				$ 825,000
	Franklin and Divisadero Signal Upgrades	Deob	SFMTA		$ (564,730)				$ (564,730)
	Franklin and Divisadero Signal Upgrades[4]	CON	SFMTA			$ 636,480			$ 636,480
	Franklin St Pedestrian Signals[4]	DES	SFMTA		$ 5,000				$ 5,000
	Franklin St Pedestrian Signals[4]	CON	SFMTA			$ 83,520			$ 83,520
1,2,3,5,6,8,9	Pedestrian Countdown Signals	CON	SFMTA	$ 1,683,000					$ 1,683,000
6	McAllister St Campus Streetscape[3]	DES	UC Hastings		$ 83,000				$ 83,000
6	McAllister St Campus Streetscape[8]	CON	UC Hastings			$ 1,762,206			$ 1,762,206
2,5	Webster St Pedestrian Signals[8]	DES	SFMTA			$ 260,000			$ 260,000
		CON	SFMTA				$ 104,794		$ 104,794
2,5	Gough St Pedestrian Signals	DES	SFMTA				$ 300,000		$ 300,000
		DES/CON	SFMTA				$ 37,000		$ 37,000
	Subtotal Programmed			**$ 1,683,000**	**$ 1,090,720**	**$ 3,079,756**	**$ 441,794**	**$ -**	**$ 6,295,270**
	(Over)/Under			**$ 496,444**	**$ 274,323**	**$ (1,974,713)**	**$ 663,249**	**$ 1,105,043**	**$ 564,346**
	Cumulative Remaining			***$ 496,444***	***$ 770,767***	***$ (1,203,946)***	***$ (540,697)***	***$ 564,346***	***$ 564,346***
Transit Reliability and Mobility Improvements									
			Funds Available in Category	**$ 2,179,444**	**$ 1,105,043**	**$ 1,105,043**	**$ 1,105,043**	**$ 1,105,043**	**$ 6,599,616**
3,6	Civic Center BART/Muni Bike Station	CON	BART		$ 248,000				$ 248,000
7	City College Pedestrian Connector[4]	DES	SFMTA		$ 42,000				$ 42,000
		CON	SFMTA			$ 891,000			$ 891,000
		CON	SFMTA			$ 4,000			$ 4,000
10	Hunters View Transit Connection[4,7]	CON	MOH		$ 195,000				$ 195,000
10	Hunters View Transit Connection	CON	MOH		$ 1,649,994				$ 1,649,994
9	24th St Mission SW BART Plaza and Pedestrian Improvements[1]	CON	BART	$ 1,217,811					$ 1,217,811
9	24th St Mission SW BART Plaza and Pedestrian Improvements	Deob	BART	$ (503,980)					$ (503,980)
TBD	Rapid Network Placeholder	DES/CON	SFMTA			$ 287,000	$ 965,000	$ 1,099,919	$ 2,351,919
	Subtotal Programmed			**$ 713,831**	**$ 2,134,994**	**$ 1,182,000**	**$ 965,000**	**$ 1,099,919**	**$ 6,095,744**
	(Over)/Under			**$ 1,465,612**	**$ (1,029,951)**	**$ (76,957)**	**$ 140,043**	**$ 5,124**	**$ 503,871**
	Cumulative Remaining			***$ 1,465,612***	***$ 435,661***	***$ 358,704***	***$ 498,747***	***$ 503,871***	***$ 503,871***
	Total Programmed			**$ 5,783,301**	**$ 6,287,942**	**$ 8,797,380**	**$ 1,406,794**	**$ 3,309,919**	**$ 25,585,336**
	(Over)/Under			**$ 2,934,474**	**$ (1,607,770)**	**$ (4,377,208)**	**$ 3,013,378**	**$ 1,110,253**	**$ 1,073,127**
	Cumulative			***$ 2,934,474***	***$ 1,326,704***	***$ (3,050,504)***	***$ (37,126)***	***$ 1,073,127***	
	Total Available Funds			**$ 8,717,775**	**$ 4,420,172**	**$ 4,420,172**	**$ 4,420,172**	**$ 4,420,172**	**$ 26,398,463**

🟦 **Allocated**

🟥 **Pending**

Prop AA Strategic Plan
Programming and Allocations to Date
Transportation Authority Board Approval 11.18.15

Strategic Plan Amendments & Notes

Project Name	Action	Resolution No.	Resolution Date
1 24th St Mission SW BART Plaza and Pedestrian Improvements	Reprogrammed $1,217,811 in FY 2013/14 funds to FY 2012/13. Cash flow remains as 100% in Fiscal Year 2013/14.	2013-030	01.29.2013
2 Arguello Gap Closure	Reprogrammed design funds ($75,000) from FY 2012/13 to FY 2013/14 for use on the construction phase and delayed cash flow by one fiscal year.	2014-005	09.24.2013
3 McAllister St Campus Streetscape	Reprogrammed design funds ($83,000) from FY 2014/15 to FY 2013/14. Changed cash flow to 100% in FY 2013/14.	2014-020	09.24.2013
4 Chinatown Broadway St	Reprogrammed design funds from FY 2012/13 to FY 2013/14.	2014-026	10.22.2013
Mid-block Crossing on Minna/7th & Natoma/8th	Removed Minna/7th from project scope; Reduced programming by half for design and construction; Reprogrammed Natoma/8th design funds from FY 2012/13 to FY 2013/14 and construction funds from FY 2013/14 to FY 2014/15.		
Ellis/Eddy Traffic Calming Improvement	Project added.		
Franklin St Pedestrian Signals	Reprogrammed design funds from FY 2012/13 to FY 2013/14 and construction funds from FY 2013/14 to FY 2014/15.		
Phelan Loop Pedestrian Connector	Added SFMTA as an eligible project sponsor; Reprogrammed design funds from FY 2012/13 to FY 2013/14 and construction funds from FY 2013/14 to FY 2014/15.		
Hunters View Transit Connection	Reprogrammed design funds ($195,000) from FY 2012/13 to FY 2013/14.		
Mansell Corridor Improvement Project	Added SFMTA as an eligible project sponsor.		
5 Ellis/Eddy Traffic Calming Improvement	Reprogrammed $337,450 from FY 2014/15 to FY 2013/14.	2014-057	02.25.2014
6 Hunters View Transit Connection	Reprogrammed funds for design for use on construction.	2014-063	03.25.2014
7 McAllister St Campus Streetscape	Project added.	2014-071	04.22.2014
Webster St Pedestrian Countdown Signals	Project added. $260,000 in Prop AA capital reserve funds programmed to design phase.		
Winston Drive Pedestrian Improvements	Reprogrammed $1,045,206 to McAllister St Campus Streetscape.		
Winston Drive Pedestrian Improvements	Reprogrammed $104,794 to Webster Street Pedestrian Countdown Signals		
8 Dolores Street Pavement Renovation	Advanced $707,199 from FY 2015/16 to FY 2014/15, and $910,253 from FY 2016/17 to FY 2015/16 to accommodate accelerated cash flow schedule	2015-001	07.22.2014
Mansell Corridor Improvement Project	Pushed out $707,199 from FY 2014/15 to FY 2015/16 and $910,253 from FY 2015/16 to FY 2016/17 to accommodate Dolores Street Pavement Renovation accelerated cash flow schedule.		

2015 CONGESTION MANAGEMENT PROGRAM

APPENDIX 17

Model Consistency Report

E8B-248

A. General Travel Modeling Approach

Product 1 – Description of the general approach to travel demand modeling.

The San Francisco County travel demand forecasting model (see the San Francisco Chained Activity Modeling Process, or "SF-CHAMP") was originally developed for the San Francisco County Transportation Authority (Authority) to provide detailed forecasts of travel demand for various planning applications. These applications included developing a countywide plan, providing input to microsimulation modeling for corridor and project-level evaluations, transit planning, neighborhood planning, and land use impacts analysis for Congestion Management Program purposes. The objective was to accurately represent the complexity of the destination, temporal and modal options and provide detailed information on travelers making discrete choices. These objectives led to the development of an activity-based model that uses synthesized population as the basis for decision-making rather than zonal-level aggregate data sources.

The Authority continually updates and refines the San Francisco Model. Since the creation of the original San Francisco Model in 2000, the model's geographic scope has been extended to the full nine-county Bay Area, along with significant improvements to pricing sensitivity and time-of-day modeling. The Metropolitan Transportation Commission (MTC) has also now developed an activity based model with a similar structure. Both models share a common population synthesizer, while the details of many model subcomponents differ in significant ways.

The consultant team originally estimated model components using household survey data collected in 1990 by MTC for San Francisco residents only. Each model component was first calibrated using various observed data sources, and then the full model was validated using traffic count and transit ridership data for each of five time periods. Some model components have been re-estimated using the 2000 MTC Bay Area Travel Survey (BATS), and calibrated using the most recent data available, including the California Household Travel Survey (CHTS) 2012, and 2006-2010 American Communities Survey (ACS) Data.

B. Demographic/Economic/Land Use Forecasts

Product 2 – A statement establishing that the differences between key ABAG land use variables and those of the CMA do not differ by more than one percent at the county level for the subject county. A statement establishing that no differences exist at the census-tract-level outside the county between the ABAG forecast or the ABAG/CMA revised forecast.

Product 3.1 – A table comparing the ABAG land use estimates with the CMA land use estimates by county for population, households, jobs, and employed residents for both the base year and horizon year.

Product 3.2 – If land use estimates within the CMA's county are modified from ABAG's projections, agendas, discussion summaries, and action items from each meeting held with cities, MTC, and/or ABAG at which the redistribution was discussed, as well as before/after census-tract level data summaries and maps.

The SF-CHAMP model has the capability to use a variety of land use inputs. Most recently, SF-CHAMP has used ABAG's 2013 Sustainable Communities Strategies (SCS), Jobs Housing Connection land use with Spring 2014 San Francisco Planning Department allocations within San Francisco. This report presents results derived by using this land use. Outside of San Francisco, ABAG land use forecasts are used. Within San Francisco, the San Francisco Planning Department allocates the countywide control totals for population, households, jobs, and employed residents to TAZs based on local knowledge of project build-out timelines. Some factoring is involved; therefore the San Francisco County land use inputs to the San Francisco Model are close (within the required 1%) but not exactly equal to Jobs Housing Connection control totals. No differences between the ABAG Projections and the San Francisco model inputs exist for the remaining eight counties for population, employed residents, and households. However, since the SF-CHAMP model uses a combination of SIC and NAICS codes to determine the number of jobs in eating and drinking establishments, there is some deviation between the total number of jobs input into SF-CHAMP and those summarized for Travel Model One. The San Francisco Planning Department adjustments to the distribution of households and jobs within San Francisco are depicted in Figures 1 and 2 respectively. The differences shown in these figures show the shift from more generically applied ABAG assumptions, to a land use set consistent with San Francisco's development pipeline. The development pipeline is dominated by several large projects evident in the figures including the collective Southeast Development Projects, Mission Bay, Transbay Center District Plan, Park Merced, Treasure Island, the Eastern Neighborhoods Plan, and the Market Octavia Plan.

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Table 1 ABAG County-Level Estimates for Population, Households, Jobs, and Employed Residents, Years 2010 and 2040, Plan Bay Area (v 0.3)

2010

	SF-CHAMP 5.0.0				Percent Difference Compared to ABAG			
County	Population	Households	Jobs	Employed Residents	Population	Households	Jobs	Employed Residents
San Francisco	802,300	345,892	569,926	413,463	0%	0%	0%	0%
San Mateo	714,888	257,837	340,867	346,658	0%	0%	-1%	0%
Santa Clara	1,772,291	604,207	937,500	822,738	0%	0%	1%	0%
Alameda	1,497,354	545,137	688,804	667,750	0%	0%	-1%	0%
Contra Costa	1,043,694	375,364	347,013	442,296	0%	0%	1%	0%
Solano	403,417	141,758	133,079	174,370	0%	0%	1%	0%
Napa	133,629	48,876	70,729	57,235	0%	0%	0%	0%
Sonoma	479,999	185,825	190,410	225,494	0%	0%	-1%	0%
Marin	246,105	103,210	108,148	118,435	0%	0%	-2%	0%
Bay Area	7,093,677	2,608,106	3,386,476	3,268,439	0%	0%	0%	0%

2040

	SF-CHAMP 5.0.0				Percent Difference Compared to ABAG			
County	Population	Households	Jobs	Employed Residents	Population	Households	Jobs	Employed Residents
San Francisco	1,056,501	444,111	771,330	546,942	-2%	-1%	1%	-2%
San Mateo	899,882	315,735	441,805	446,427	0%	0%	-1%	0%
Santa Clara	2,409,368	819,138	1,241,891	1,158,874	0%	0%	1%	0%
Alameda	1,965,549	705,289	940,010	891,298	0%	0%	-1%	0%
Contra Costa	1,325,650	463,062	468,497	579,093	0%	0%	1%	0%
Solano	494,202	168,643	180,768	223,933	0%	0%	0%	0%
Napa	158,635	56,285	88,832	69,372	0%	0%	-1%	0%
Sonoma	591,620	220,699	257,435	284,825	0%	0%	0%	0%
Marin	274,357	112,021	125,759	136,478	0%	0%	-3%	0%
Bay Area	9,175,764	3,304,983	4,516,327	4,337,242	0%	0%	0%	0%

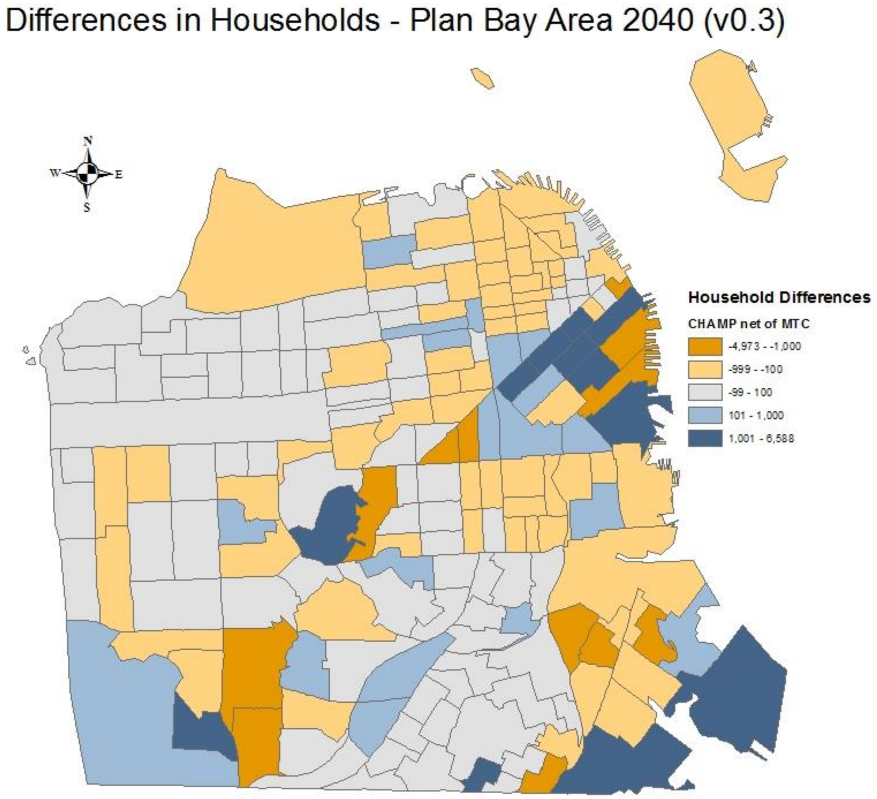

Figure 1: Difference in Households from Plan Bay Area for 2040

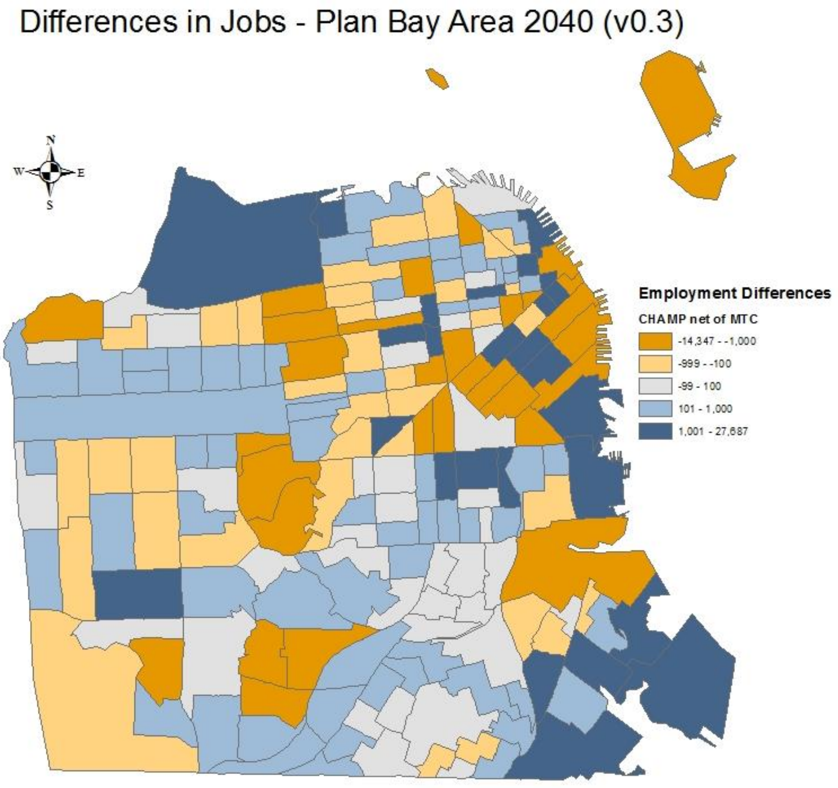

Figure 2: Difference in Jobs from Plan Bay Area for 2040

C. Pricing Assumptions

Product 4 – A table comparing the assumed automobile operating cost, key transit fares, and bridge tolls to MTC's values for the horizon year.

Auto operating costs are assumed to be 17 cents per mile in 2000 dollars, which was based off of the lower auto operating cost per mile that MTC used prior to Travel Model One. The runs summarized for this model consistency report also used transit fares and toll schedules that were based on values used previously. Both of these values will be updated in future model runs.

	MTC	CHAMP
Pricing Assumption	**2040 Value in 2000 Dollars**	**2040 Value in 2000 Dollars**
Auto Operating Cost per Mile	$0.231	$0.171
Bridge Tolls	Toll schedule starting July 1, 2015	Toll schedule starting July 1, 2015
Transit Fares		
Muni Local Bus	$1.61	$1.183
AC Transit Local Bus	$1.61	$1.511
VTA Local Bus	$1.61	$1.511
SamTrans Local Bus	$1.61	$1.511

	MTC	CHAMP
Pricing Assumption	**2040 Value in 2010 Dollars**	**2040 Value in 2010 Dollars**
Auto Operating Cost per Mile	$0.292	$0.219
Bridge Tolls	Toll schedule starting July 1, 2015	Toll schedule starting July 1, 2015
Transit Fares		
Muni Local Bus	$2.00	$1.518
AC Transit Local Bus	$2.00	$1.938
VTA Local Bus	$2.00	$1.938
SamTrans Local Bus	$2.00	$1.938

D. Network Assumptions

Product 5 – Statement establishing satisfaction of network assumptions consistency.

The San Francisco Model uses network assumptions consistent with Plan Bay Area with the following exceptions: (1) projects that have already been built have been coded in the base year 2010 networks such as some regional HOV lanes as well as the Market Street forced-right turn traffic calming; (2) projects were only included that were funded through construction in 2040; (3) projects local to San Francisco were updated based on updated local knowledge; and (4) Muni service levels were updated based on Fall 2012 schedules.

E. Auto Ownership

Product 6 – County-level table comparing estimates of households by auto ownership level to MTC's estimates for the horizon year.

The San Francisco auto ownership model is estimated based on BATS 2000 survey data and is a function of the mode choice and destination choice logsums as well as several household and person variables such as number of household adults, workers, income, age, presence of children, home zone parking cost, and land use characteristics of the home zone. Table 2 depicts the 2040 SF-CHAMP auto ownership model results compared to the MTC model. Note that the original MTC data included categories for three autos and for four-plus autos, whereas the SF-CHAMP data only includes three-plus autos. The MTC three-auto and four-plus auto categories were combined to match the SF-CHAMP categories for ease of comparison. Both the total households by auto ownership category and the shares of households in each auto ownership category are presented.

SF-CHAMP has historically predicted significantly higher zero auto households and lower one auto and two auto households in San Francisco County when compared with Travel Model One due to a discrepancy in calibration (the tour mode choice calibration was performed after vehicle availability calibration, and the vehicle availability calibration was not later revisited). This issue was addressed in the latest recalibration effort involving auto ownership and other models to match the more recent 2012 California Household Travel Survey. This has resulted in the difference between MTC and SF-CHAMP predicted shares of zero auto households in San Francisco County to a more reasonable value of 7%.

Table 2 Households by Number of Automobiles, by County, Year 2040, Plan Bay Area (v 0.3)

2040 - Totals	SF-CHAMP					Percent Difference from MTC				
County	Zero Autos	One Auto	Two Autos	Three -Plus Autos	Total	Zero Autos	One Auto	Two Autos	Three Autos	Total
San Francisco	190,786	167,812	78,322	25,990	462,910	19%	-13%	-15%	-4%	-2%
San Mateo	17,259	95,698	115,630	91,044	319,631	-10%	-12%	-8%	38%	0%
Santa Clara	53,466	241,204	306,753	240,846	842,269	-19%	-9%	-7%	32%	0%
Alameda	94,957	225,391	230,698	181,859	732,905	-3%	-4%	-12%	30%	0%
Contra Costa	24,802	151,071	172,359	119,645	467,877	42%	5%	-17%	20%	0%
Solano	6,686	52,639	63,204	48,556	171,085	-22%	11%	-14%	15%	0%
Napa	1,783	19,499	21,713	15,074	58,068	-34%	11%	-12%	13%	0%
Sonoma	8,781	78,773	87,130	52,600	227,283	-32%	20%	-9%	-2%	-1%
Marin	11,867	36,523	43,848	22,169	114,407	200%	0%	-18%	4%	-1%
Bay Area	410,385	1,068,609	1,119,658	797,783	3,396,435	5%	-4%	-12%	24%	0%

2040 - Shares	SF-CHAMP					Difference from MTC				
County	Zero Autos	One Auto	Two Autos	Three -Plus Autos	Total	Zero Autos	One Auto	Two Autos	Three Autos	Total
San Francisco	41%	36%	17%	6%	100%	7%	-4%	-3%	0%	0%
San Mateo	5%	30%	36%	28%	100%	-1%	-4%	-3%	8%	0%
Santa Clara	6%	29%	36%	29%	100%	-2%	-3%	-3%	7%	0%
Alameda	13%	31%	31%	25%	100%	0%	-1%	-4%	6%	0%
Contra Costa	5%	32%	37%	26%	100%	2%	2%	-8%	4%	0%
Solano	4%	31%	37%	28%	100%	-1%	3%	-6%	4%	0%
Napa	3%	34%	37%	26%	100%	-2%	4%	-5%	3%	0%
Sonoma	4%	35%	38%	23%	100%	-2%	6%	-4%	0%	0%
Marin	10%	32%	38%	19%	100%	7%	0%	-8%	1%	0%
Bay Area	12%	31%	33%	23%	100%	1%	-1%	-4%	5%	0%

F. Tour/Trip Generation

Product 7 - Region-level Tables comparing estimates of trip and/or tour frequency by purpose to MTC's estimates for the horizon year

Note that the trip purposes reported in the remainder of this report are consolidated to be the greatest common denominator between Travel Model One and SF-CHAMP trip purposes. The SF-CHAMP model predicts significantly more trips when compared with Travel Model One, particularly in the "Other" category. This is likely because SF-CHAMP was estimated on data local to San Francisco, where people are likely to work closer to home, allowing them to partake on separate "other" tour purposes separate from their commute.

Table 3 Number of Trips by Tour Purpose, Year 2040, Plan Bay Area (v 0.3)

Year 2040

Trips	MTC	SF-CHAMP	Percent Difference
Work/Commute	8,944,400	8,820,700	-1%
College/University	702,800	1,039,800	48%
Other School	3,178,000	2,822,200	-11%
Work-Based	1,981,500	1,673,600	-16%
Other	14,615,600	19,982,000	37%
Total	29,422,300	34,338,200	17%

Share	MTC	SF-CHAMP	Difference in Share
Work/Commute	30%	26%	-5%
College/University	2%	3%	1%
Other School	11%	8%	-3%
Work-Based	7%	5%	-2%
Other	50%	58%	9%

G. Activity/Trip Location

Product 8 – Region-level tables comparing estimates of average trip distance by tour/trip purpose to MTC's estimates for horizon year

SF-CHAMP uses a primary destination choice model to identify the primary destinations of all tours, then an intermediate stop model to identify any stops along the way. The results presented here are for the intermediate stop model, which is documented in the SF-CHAMP model documentation (SF-CHAMP documentation can be found here: http://www.sfcta.org/modeling-and-travel-forecasting). While most trip purposes have fairly similar average trip distances between the two models, Other School and Work-Based trips are 21% and 52% longer in SF-CHAMP than in Travel Model One. One plausible explanation for the Other School trip length difference is that SF-CHAMP was estimated primarily with San Francisco data, where school assignment policies differ significantly from the Bay Area as a whole and where students are frequently enrolled in schools that are not located in their home neighborhoods. Estimation of SF-CHAMP using primarily San Francisco data may also help explain the longer distances of Work-Based trips in SF-CHAMP. Greater availability of autos at the workplace outside of San Francisco may encourage longer Work-Based trip lengths because travel speeds are likely higher for auto Work-Based trips.

Table 4 Average Trip Distance by Tour Purpose, Year 2040, Plan Bay Area (v 0.3)

Year 2040

Average Trip Length, miles	MTC	SF-CHAMP	Percent Difference
Work/Commute	9.93	10.2	3%
College/University	6.69	5.75	-14%
Other School	3.43	4.14	21%
Work-Based	3.29	5.01	52%
Other	4.69	4.92	5%
Total	6.07	6.25	3%

Product 9 – County-to-county comparison of journey-to-work or home-based work flow estimates to MTC's estimates for the horizon year

The SF-CHAMP workplace location choice model is documented in the SF-CHAMP model documentation. The comparison between Travel Model One and SF-CHAMP is made here between the *shares of the total commuter flow* as opposed to the raw commuter flow due to discrepancies in the total commuter flow between the two models. There is a vast amount of concurrence between the two models. The only exceptions are intra-county commute flows in San Francisco and Alameda which SF-CHAMP estimates are respectively lower and higher relative to Travel Model One. It should be noted that SF-CHAMP's workplace location choice model was calibrated using a combination of data from the census journey to work, CHTS 2012, and peak travel counts along key corridor screenlines, which may differ slightly from Travel Model One.

Table 5 Journey to Work, County-to-County Usual Workplace, Year 2040, Plan Bay Area (v 0.3)

SF-CHAMP

	Destination County									
Origin County	San Francisco	San Mateo	Santa Clara	Alameda	Contra Costa	Solano	Napa	Sonoma	Marin	Bay Area
San Francisco	9.1%	1.4%	0.5%	1.2%	0.2%	0.1%	0.0%	0.0%	0.2%	12.7%
San Mateo	2.3%	5.5%	1.7%	0.6%	0.1%	0.0%	0.0%	0.0%	0.1%	10.4%
Santa Clara	0.4%	1.6%	22.6%	1.7%	0.3%	0.1%	0.0%	0.0%	0.1%	26.9%
Alameda	2.2%	1.0%	2.3%	13.3%	1.5%	0.1%	0.0%	0.1%	0.1%	20.6%
Contra Costa	1.6%	0.2%	0.4%	3.1%	7.3%	0.3%	0.1%	0.0%	0.1%	13.2%
Solano	0.3%	0.1%	0.0%	0.4%	0.7%	3.1%	0.3%	0.0%	0.0%	4.9%
Napa	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	1.2%	0.1%	0.0%	1.6 %
Sonoma	0.2%	0.0%	0.0%	0.1%	0.1%	0.1%	0.2%	5.3%	0.6%	6.6%
Marin	1.0%	0.1%	0.0%	0.2%	0.1%	0.0%	0.0%	0.1%	1.6%	3.2%
Bay Area	17.2%	9.8%	27.6%	20.7%	10.4%	3.9%	1.9%	5.7%	2.8%	100%

Difference from MTC

	Destination County									
Origin County	San Francisco	San Mateo	Santa Clara	Alameda	Contra Costa	Solano	Napa	Sonoma	Marin	Bay Area
San Francisco	-0.9%	0.1%	0.3%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.2%
San Mateo	0.2%	0.2%	0.0%	-0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%
Santa Clara	0.1%	0.1%	-0.1%	-0.3%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Alameda	-0.1%	-0.3%	-0.1%	0.6%	-0.1%	0.0%	0.0%	0.0%	-0.1%	0.1%
Contra Costa	0.3%	-0.1%	0.1%	-0.2%	0.1%	-0.1%	0.0%	0.0%	-0.1%	0.0%
Solano	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%	-0.1%	-0.2%
Napa	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	-0.1%	0.0%	0.1%
Sonoma	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%	0.1%	0.1%
Marin	0.3%	-0.1%	0.0%	-0.1%	-0.1%	0.0%	0.0%	-0.1%	0.0%	0.0%
Bay Area	0.0%	0.0%	0.2%	0.0%	0.0%	-0.1%	0.1%	-0.2%	-0.1%	0.0%

H. Mode Choice

Product 10 – Region-level tables comparing travel mode share estimates by tour/trip purpose to MTC's estimates for the horizon year

The San Francisco Model uses its own mode choice models. SF-CHAMP seems to predict a slightly higher rate of transit and non-motorized trips when compared with Travel Model One, and lower numbers for auto. SF-CHAMP uses a refined walk utility within San Francisco which accounts for hills, network connectivity, and land use density along the walk.

Table 6 Region-Level Trip Mode Share by Tour Purpose, Year 2040, Plan Bay Area (v 0.3)

MTC	Auto	Walk	Bicycle	Transit
Work/Commute	78.6%	6.3%	1.7%	13.4%
College/University	57.1%	15.3%	1.5%	26.1%
Other School	68.2%	21.3%	1.6%	9.0%
Work-Based	67.4%	30.7%	0.8%	1.0%
Other	85.6%	10.1%	1.1%	3.2%
Total	79.7%	11.7%	1.3%	7.3%

SF-CHAMP	Auto	Walk	Bicycle	Transit
Work/Commute	77.9%	2.7%	2.0%	17.4%
College/University	68.2%	4.5%	3.4%	23.8%
Other School	79.5%	13.3%	2.2%	5.0%
Work-Based	61.2%	36.8%	0.7%	1.2%
Other	79.0%	14.4%	2.4%	4.2%
Total	77.6%	12.1%	2.2%	8.1%

Difference from MTC	Auto	Walk	Bicycle	Transit
Work/Commute	-0.7%	-3.6%	0.3%	4.0%
College/University	11.1%	-10.8%	1.9%	-2.3%
Other School	11.4%	-8.0%	0.6%	-4.0%
Work-Based	-6.2%	6.1%	-0.1%	0.2%
Other	-6.6%	4.3%	1.3%	1.0%
Total	-2.1%	0.5%	0.9%	0.7%

1. Highway Assignment

Product 11 – Region-level, time-period-specific comparison of vehicle miles traveled and vehicle hours traveled estimates by facility type to MTC's estimates for the horizon year.

Product 12 – Region-level, time-period-specific comparison of estimated average speed on freeways and all other facilities, separately, to MTC's estimates for the horizon year.

Highway assignments are processed within the Cube/Voyager software environment for each of the five time periods. The time of day volume adjustment factor reduces the assigned link volume for the whole time period to an expected hourly volume for the purpose of relating volume to capacity in the congested travel time functions. The values were derived from total observed link counts during the busiest hour of the time period divided by total observed link counts over the entire time period. These values do not have to strictly adhere to the above definition, since obviously a typical hour is not the busiest hour. In addition, turn penalties and tow-away lanes are coded specific to each time period.

Vehicles are assigned to one of twelve user classes based on auto occupancy, vehicle type, and whether the vehicle *will not* pay a value-toll, *will* pay a value-toll, or *has already paid* a value toll in an area-based congestion pricing situation:

1. Drive Alone, No Value Toll
2. Shared-Ride Two, No Value Toll
3. Shared-Ride Three-Plus, No Value Toll
4. Drive Alone, Value Toll
5. Shared-Ride Two, Value Toll
6. Shared-Ride Three-Plus, Value Toll
7. Drive Alone, Already Paid Value Toll
8. Shared-Ride Two, Already Paid Value Toll
9. Shared-Ride Three-Plus, Already Paid Value Toll
10. Truck, No Value Toll
11. Truck, Value Toll
12. Truck, Already Paid Value Toll

Link impedance is defined as a generalized cost by four classes. The generalized cost is a function of the congested link travel time in minutes, the value of time, toll cost in cents, auto operating cost, and vehicle occupancy. The value of time is assumed to be $30 per hour for trucks, and $15 per hour for autos. Highway assignment iterations are run until the relative gap is less than 0.005.

Tables 7 through 9 show highway assignment results from SF-CHAMP compared with Travel Model One. It should be noted that Travel Model One and SF-CHAMP use different time periods. In particular, Travel Model One has a four-hour peak period for both the morning and afternoon peak commute periods, while SF-CHAMP has three-hour peak periods. Overall, SF-CHAMP shows higher vehicle miles travelled (VMT) and more congested vehicle operating speeds. This is consistent with the finding that SF-CHAMP has slightly longer trip distances. SF-CHAMP's three-hour peak periods have about 25% less VMT than Travel Model One's 4-hour peak periods. Meanwhile, SF-CHAMP's midday and evening off-peak periods have greater VMT than in Travel Model One. The summary tables highlight differences in the facility type designation. The definition of the expressway facility type appears to differ the most between the two models and is likely the result of the SF-CHAMP 5.0 development team categorizing additional facilities in San Francisco as "expressways". SF-CHAMP also has more local and collector roads explicitly coded within San Francisco whereas most of that traffic in Travel Model One is categorized as a centroid connector ("other").

Table 7 Region-Level VMT by Facility Type and Time Period, Year 2040, Plan Bay Area (v 0.3)

MTC			Facility Type			
Time Period	Freeways	Expressways	Major Arterials	Collectors	Other	All Facilities
Early AM (3 Hr)	5,490,922	555,072	1,191,716	334,311	348,451	7,920,472
AM Peak (4 Hr)	26,225,898	2,866,727	9,845,537	2,781,418	3,332,966	45,052,546
Midday (5 Hr)	26,438,610	3,022,363	10,998,863	2,825,048	4,296,401	47,581,284
PM Peak (4 Hr)	27,989,269	3,246,036	11,965,076	3,294,279	4,294,782	50,789,442
Evening (8 Hr)	16,749,237	1,790,134	5,799,274	1,556,541	2,158,192	28,053,377
Daily	102,893,935	11,490,332	39,800,466	10,791,597	14,430,791	179,397,121

SF-CHAMP			Facility Type			
Time Period	Freeways	Expressways	Major Arterials	Collectors	Other	All Facilities
Early AM (3 Hr)	4,223,597	670,075	969,338	331,159	318,445	6,512,614
AM Peak (3 Hr)	18,821,487	3,169,158	7,513,551	2,581,803	1,708,426	33,794,425
Midday (6.5 Hr)	40,329,872	6,555,924	15,964,378	5,573,771	3,949,613	72,373,558
PM Peak (3 Hr)	21,361,832	3,757,215	9,774,398	3,442,775	2,068,894	40,405,114
Evening (8.5 Hr)	24,351,581	4,047,028	8,292,058	2,891,291	2,344,033	41,925,992
Daily	109,088,368	18,199,400	42,513,723	14,820,800	10,389,411	195,011,702

Percent Difference			Facility Type			
Time Period	Freeways	Expressways	Major Arterials	Collectors	Other	All Facilities
Early AM	-23%	21%	-19%	-1%	-9%	-18%
AM Peak	-28%	11%	-24%	-7%	-49%	-25%
Midday	53%	117%	45%	97%	-8%	52%
PM Peak	-24%	16%	-18%	5%	-52%	-20%
Evening	45%	126%	43%	86%	9%	49%
Daily	6%	59%	7%	37%	-28%	9%

Table 8 Region-Level VHT by Facility Type and Time Period, Year 2040, Plan Bay Area (v 0.3)

MTC			Facility Type			
Time Period	Freeways	Expressways	Major Arterials	Collectors	Other	All Facilities
Early AM (3 Hr)	89,737	11,234	34,677	11,491	21,771	168,911
AM Peak (4 Hr)	522,922	66,335	316,564	114,434	198,541	1,218,796
Midday (5 Hr)	467,273	65,319	347,467	111,731	248,486	1,240,276
PM Peak (4 Hr)	561,528	76,031	392,731	141,665	247,375	1,419,330
Evening (8 Hr)	280,471	36,936	173,944	55,069	125,979	672,399
Daily	1,921,930	255,855	1,265,384	434,390	842,153	4,719,712

SF-CHAMP			Facility Type			
Time Period	Freeways	Expressways	Major Arterials	Collectors	Other	All Facilities
Early AM (3 Hr)	70,380	12,198	50,583	20,034	13,514	166,709
AM Peak (3 Hr)	489,611	85,062	452,636	180,501	90,910	1,298,719
Midday (6.5 Hr)	862,519	161,558	945,502	369,382	211,131	2,550,092
PM Peak (3 Hr)	593,552	109,574	632,887	257,483	119,509	1,713,005
Evening (8.5 Hr)	441,321	85,074	453,195	178,397	110,416	1,268,404
Daily	2,457,383	453,465	2,534,803	1,005,798	545,480	6,996,929

Percent Difference			Facility Type			
Time Period	Freeways	Expressways	Major Arterials	Collectors	Other	All Facilities
Early AM	-22%	9%	46%	74%	-38%	-1%
AM Peak	-6%	28%	43%	58%	-54%	7%
Midday	85%	147%	172%	231%	-15%	106%
PM Peak	6%	44%	61%	82%	-52%	21%
Evening	57%	130%	161%	224%	-12%	89%
Daily	28%	77%	100%	132%	-35%	48%

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Table 9 Region-Level Average Speed (VMT/VHT) by Facility Type and Time Period, Year 2040, Plan Bay Area (v 0.3)

Average Speed (mph) 2040 Projections

MTC		Facility Type	
Time Period	Freeways	All Other Facilities	All Facilities
Early AM (3 Hr)	61.2	30.7	46.9
AM Peak (4 Hr)	50.1	27.1	37.0
Midday (5 Hr)	56.6	27.3	38.3
PM Peak (4 Hr)	49.8	26.6	35.8
Evening (8 Hr)	59.7	28.8	41.7
Daily	53.5	27.3	38.0

SF-CHAMP		Facility Type	
Time Period	Freeways	All Other Facilities	All Facilities
Early AM (3 Hr)	60.0	23.8	39.1
AM Peak (3 Hr)	38.4	18.5	26.0
Midday (6.5 Hr)	46.8	19.0	28.4
PM Peak (3 Hr)	36.0	17.0	23.6
Evening (8.5 hr)	55.2	21.2	33.1
Daily	44.4	18.9	27.9

Percent Difference		Facility Type	
Time Period	Freeways	All Other Facilities	All Facilities
Early AM	-2%	-23%	-17%
AM Peak	-23%	-32%	-30%
Midday	-17%	-31%	-26%
PM Peak	-28%	-36%	-34%
Evening	-8%	-26%	-21%
Daily	-17%	-31%	-27%