APPENDICES

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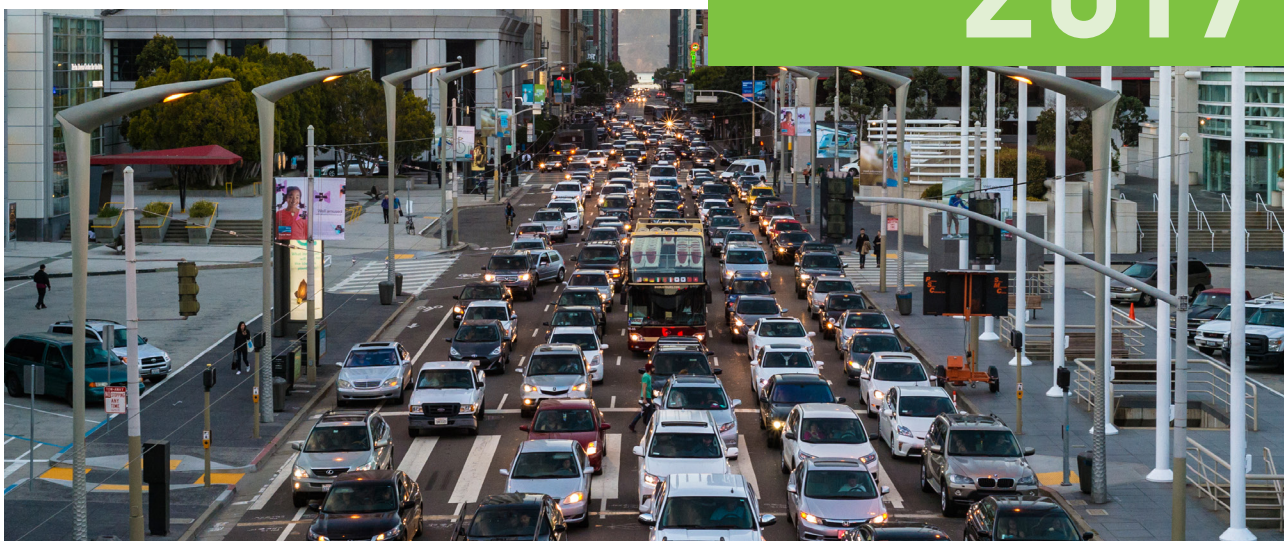

CONGESTION MANAGEMENT PROGRAM

SAN FRANCISCO COUNTY TRANSPORTATION AUTHORITY

APPENDIX 1

MTC Guidance





METROPOLITAN
TRANSPORTATION
COMMISSION

Joseph P. Bort MetroCenter
101 Eighth Street
Oakland, CA 94607-4700
Tel: 510.464.7700
TDD/TTY: 510.464.7769
Fax: 510.464.7848

Memorandum

TO: Planning Committee DATE: October 2, 2015

FR: Executive Director

RE: 2015 Congestion Management Program Guidance: MTC Resolution No. 3000, Revised

Background

Congestion Management Programs (CMPs) were established by State law in 1990, and created a cooperative context for transportation planning by cities within California counties. However, the specified approach creates some unintended consequences and is out of sync with modern approaches to land use/transportation planning, as per AB 32 and SB 375.

Many affected jurisdictions throughout the state have chosen to opt out of the CMP process, as provided for in the law; CMPs are not required in a county if a majority of local governments representing a majority of the population and the Board of Supervisors adopt resolutions electing to be exempt from this requirement (AB 2419 (Bowler) Chapter 293, Statutes of 1996). MTC encourages local consideration of the option to opt out, in order to more effectively focus limited resources on planning efforts of the highest importance. For counties that opt out of preparing a CMP, MTC will directly work with the appropriate county agencies to establish project priorities for funding.

This Guidance is for those counties that prepare a CMP in accordance with state statutes. 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 for inclusion of CMP projects in the Regional Transportation Improvement Program (RTIP) subject to funding constraints.

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. Given that the last CMP Guidelines, adopted in 2013, already incorporated the direction and performance measures of a draft of Plan Bay Area, there are only minor revisions made to this update. Projects proposed for the Regional Transportation Improvement Program (RTIP) will be reviewed for consistency with MTC's Plan Bay Area. Note that the current approved fund estimate for the 2016 Statewide Transportation Improvement Program is $46 million statewide, so new funding capacity is essentially zero.

Recommendation

MTC Resolution No. 3000, Revised, delegates to this Committee the responsibility for approving amendments to the CMP Guidance (MTC Resolution No. 3000, Revised). Staff recommends

that the committee approve the revisions to Attachments A and B of MTC Resolution No. 3000, Revised, for the purpose of providing guidance for the development of the 2015 CMPs consistent with Plan Bay Area.

Steve Heminger

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Table 1

MTC's 2015 CMP Review Process and Schedule

Date	Activity	Responsible Party
October 9, 2015	Approval of updates to CMP Guidance	MTC's Planning Committee
October 14	CMAs submit RTIP projects summary listings and identification of projects requiring project-level performance measure analysis to MTC. Deadline to submit Complete Streets Checklist for new projects.	CMAs
October 14-November 2	Review of consistency of CMPs with the Regional Transportation Plan (RTP)	MTC staff
November 4	Final Project Programming Request (PPR) forms due to MTC. Final RTIP project listing and performance measure analysis due to MTC. Final PSR (or PSR equivalent), Resolution of Local Support, and Certification of Assurances due to MTC (final complete applications due)	CMAs
December 9	Policy Advisory Council scheduled review of RTIP and referral to Commission for approval	MTC's Policy Advisory Council
December 15	2016 RTIP due to the California Transportation Commission (CTC) (PAC approved project list will be submitted)	MTC staff
December 16	MTC's scheduled Consistency Findings on 2015 CMPs MTC's scheduled approval of the 2016 RTIP	MTC Commission

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
10/09/15-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.

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.

Attachments A and B of this resolution were revised on October 9, 2015 to reflect the final Plan Bay Area document, revisions to the Modeling Consistency Requirements and Transportation Control Measures, and to include minor updates to descriptive language.

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
10/09/15-PC

GUIDANCE FOR CONSISTENCY OF

CONGESTION MANAGEMENT PROGRAMS

WITH THE REGIONAL TRANSPORTATION PLAN

Metropolitan Transportation Commission

October 2015

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 representing a majority of the population 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 can play a role in the countywide and regional transportation planning processes (although these functions can be achieved without an official CMP as well):

- CMPs can be used to 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 can be used to establish a link between local land use decision making and the transportation planning process.
- CMPs can be used as 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, also address the 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 is the 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.

1) Goals and objectives established in the RTP

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 as quantifiable measures against which progress may be evaluated, as shown below:

PLAN BAY AREA PERFORMANCE TARGETS

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 percentage points (to 56 percent, from 66 percent) 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 110%, an average annual growth rate of approximately 2% (in current dollars) *Source: Bay Area Business Community*
TRANSPORTATION SYSTEM EFFECTIVENESS	**9**	• Increase non-auto mode share by 10% (to 25% of trips) • 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% (Note baseline year is 2012) *Source: Regional and state plans*

Unless noted, the Performance Target increases or reductions are for 2040 compared to a year 2005 baseline.

Regional Transit Expansion Program

The Regional Transit Expansion Program – adopted by the Commission as Resolution 3434 –calls for a nearly $18 billion investment in new rail and bus projects that will improve mobility and enhance connectivity for residents throughout the Bay Area. Further Plan Bay Area identified Next Generation transit priorities to include the BART extensions from Berryessa to San Jose, Santa Clara, Transbay Transit Center/Caltrain Downtown Extension: Phase 2; as well as several bus rapid transit projects. and Downtown. 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 improves how engineers and planners assess the traffic and environmental effects of highway projects over previous versions 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.

Note that the State of California Office of Planning and Research (OPR) is in the process of developing an alternative to the LOS approach as it relates to the California Environmental Quality Act (CEQA) , in response to SB 734 (Steinberg, 2013); this new approach will be of great interest for land use/transportation planning purposes.

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 2015 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.

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 for the Plan and the Proposed Final 2015 Transportation Improvement Program" at http://files.mtc.ca.gov/pdf/final_pba_and_2015_tip_air_quality_conformity_analysis.pdf (page 19) 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 (PM_{10} and $PM_{2.5}$), and carbon dioxide (CO_2) 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 CMAs, 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 the *Plan Bay Area* land use data. 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, 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, 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, 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, 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* 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 9 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	BART/CCTA	Commuter Rail	No	Yes
(b) Future phases			No	No
BART – Downtown Fremont to San Jose / Santa Clara				Not yet determined; planning is underway
(a) Fremont to Berryessa	(a) BART	BART extension	No	
(b) Berryessa to San Jose/Santa Clara	(b) VTA		No	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				Not yet determined; planning is underway
(a) Phase 1 downtown San Rafael to downtown Santa Rosa				
(b) Future phases tbd	SMART	Commuter Rail	No	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

* 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.

[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.

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.

APPENDIX 3

Congestion Management Program Roadway Network Segmentation and Changes





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).

METROPOLITAN
TRANSPORTATION
COMMISSION

Joseph P. Bort MetroCenter
101 Eighth Street
Oakland, CA 94607-4700
TEL 510.817.5700
TTY/TDD 510.817.5769
FAX 510.817.5848
E-MAIL info@mtc.ca.gov
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.

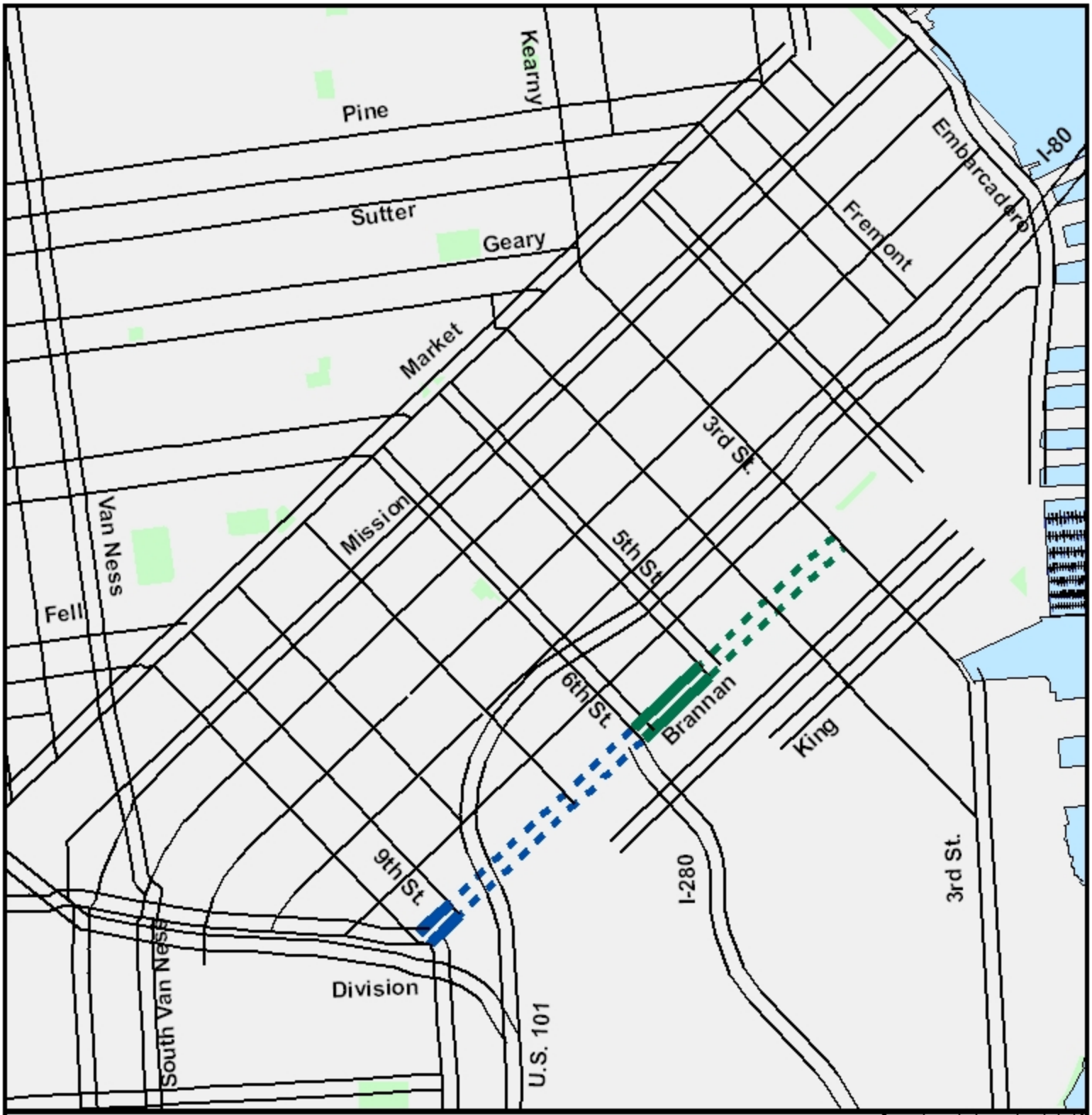
MTC expects monitoring on Brannan will take place on Brannan from Division to 6th Street and from 6th Street to 3rd Street effective spring 2007. Please let me know if there are any questions.

Yours truly,

Doug Johnson

J:\Section\Planning\djohnson\SFCTA\CMP_modifications_Jan_2007.doc

cc: Sean Co, MTC
Valerie Knepper, MTC
Doug Kimsey, MTC



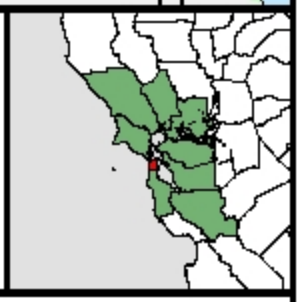
Existing Brannan Street segment from Division to 9th

New Brannan Street segment from Division to 6th

Existing Brannan Street segment from 6th to 5th

New Brannan Street segment from 6th to 3rd

Two-way street segments are represented by two parallel lines.



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

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APPENDIX 4

San Francisco Board of Supervisors Resolution Adopting Infill Opportunity Zones





[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.

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

APPENDIX 5

Level of Service Monitoring Methodology and Results





APPENDIX 5

LOS MONITORING METHODOLOGY & RESULTS

KEY TOPICS

- LOS Standard and Exempt Facilities
- CMP Network Changes
- Methodology
- Travel Speed Results
- LOS F Segments
- Future Monitoring Considerations

San Francisco County Transportation Authority (TA) has updated their Congestion Management Program (CMP) every two years since 1991. The TA monitors roadway performance with Level of Service (LOS) along its CMP network, which includes all state highways, principal arterials and several other roads as defined in previous LOS monitoring efforts[1]. The TA 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 2017 LOS monitoring effort was conducted on behalf of the Transportation Authority by Iteris Inc.

A.5.1. LOS Standards and Exempt Facilities

LOS E was the adopted standard in the initial (1991) CMP Monitoring. Since 1991, CMP Monitoring has been conducted biannually to ensure that the facilities within CMP network are operated at LOS E or better.

Image Source: SFCTA

[1] For more details about CMP network, please reference to Chapter 3 of the main report.

The TA is mandated to prepare a deficiency plan or monitoring follow-up, depending on the applicable exemption, to improve the performance of the facilities operated at F. The criteria to qualify for the exemption is outlined as below

- 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 Infill Opportunity Zone (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. Figures A5-1 and A5-2 show segments that are exempt from LOS standards because they were found to be LOS F in the inaugural CMP cycle, while Figure A5-3 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.

Figure A5-1 Segments Exempt in AM Due to Monitoring at LOS F in Inaugural Cycle

Figure A5-2 Segments Exempt in PM Due to Monitoring at LOS F in Inaugural Cycle

Figure A5-3 Segments Exempt Due to Location with Infill Opportunity Zone

A.5.2. CMP Network Changes

The CMP network is described in detail in Chapter 3 of the main report. There are no changes to the CMP network from 2015 to 2017. The CMP network is divided into shorter lengths of road called CMP segment hereafter.

A.5.3. Methodology

Since the 2013 CMP update, automobile LOS monitoring was conducted using commercial speed data from INRIX where available, and floating car runs were made to collect data for all other CMP segments for which INRIX data coverage was insufficient. INRIX provides travel time data at one-minute intervals on a unique set of roadway segments called Traffic Message Channels (TMCs). The INRIX data used in this monitoring cycle was aggregated to CMP segment spatially and the peak periods temporally. LOS was assigned based on the average speed observed in the AM and PM peak periods using both 1985 and 2000 Highway Capacity Manual (HCM) methodologies. Section 3.4 provides a detailed description of data processing steps.

The 1985 Highway Capacity Manual (HCM) methodology has been adopted since the baseline monitoring cycle. It is necessary to maintain 1985 HCM for historical comparisons, identifying exempt segments, and monitoring potential network deficiencies. Since 2009, all the arterial segments were also evaluated using the HCM 2000 classification. Therefore, 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.

A.5.3.1 | Monitoring Times

This section summarizes the monitoring days and the conditions that may affect the regular traffic pattern during the 2017 CMP Monitoring. The INRIX data collected, starting on April 4, 2017 and ending on May 16, 2017, was utilized to calculate the average speed reported against a CMP segment. The monitoring was conducted on Tuesdays, Wednesdays and Thursdays. This left 19 days for monitoring. The morning (AM) peak period was from 7:00 a.m. to 9:00 a.m. and the afternoon (PM) peak period was from 4:30 p.m. to 6:30 p.m.

These monitoring times were also used for transit speed monitoring (see Appendix 8).

PUBLIC HOLIDAYS AND SCHOOL BREAKS

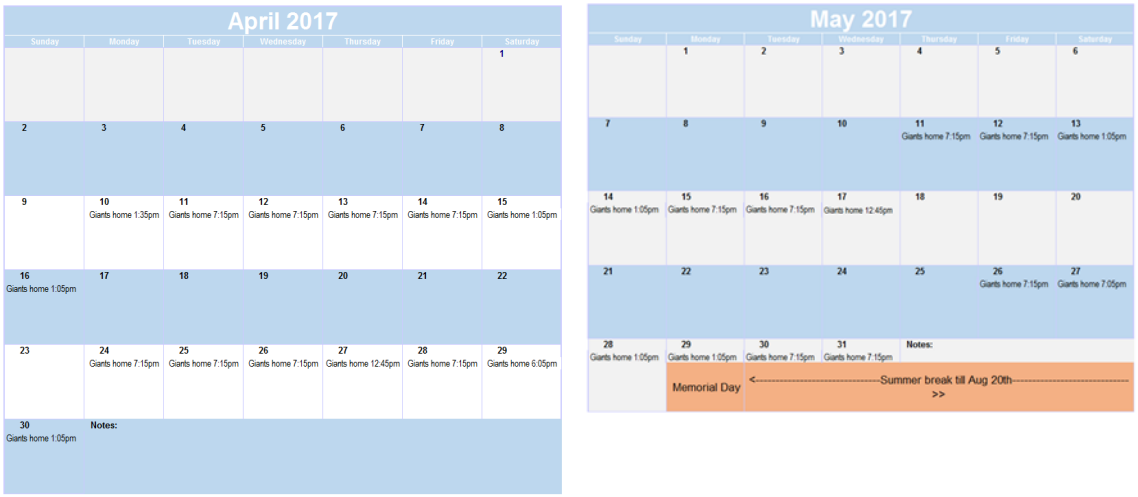
While there were some public holidays during the spring of 2017, none occurred on Tuesdays, Wednesdays and Thursdays. Local schools were also in session during this period.

SPECIAL EVENTS

The major events in San Francisco County were reviewed to see if they occurred during the Tuesday, Wednesday, and Thursday peak periods. Most events did not occur within the monitoring times.

Major league baseball (SF Giants) were the notable exception. Games started at 12:45 p.m. or at 7:15 p.m. Both 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 (Figure A5-4).

Figure A5-4 Planned events in San Francisco County, Spring 2017



CONSTRUCTION EVENTS

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);
- Social Media feeds (including 511 SF Bay traffic updates); and
- 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. INRIX 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 2017 analysis, one short term event was identified along Post Street between Franklin Street and Van Ness Avenue. There was a street closure at this location from Thursday, April 6 2017, 12:01 pm to Monday, April 10 2017, 6:00 am (Van Ness Campus Hospital Project). Given the short duration, the data for the affected CMP segments on these days were removed from the monitoring data. It was deemed that enough data remained to gain an appropriate sample size for monitoring.

Additionally, the following segments experienced major and ongoing construction throughout the entire monitoring period. In these instances, 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, corresponding data was retained in the analysis. Segments impacted by ongoing construction and maintenance are listed in Table A5-1.

Table A5-1 Long-term construction and maintenance projects during LOS monitoring

DESCRIPTIONS	CORRESPONDING IMPACTED ROADS CMP SEGMENTS
Potrero Avenue Roadway Improvement Project	200: Potrero NB from Cesar Chavez to 21st Street 201: Potrero NB from 21st Street to Division 202: Potrero SB from Division to 21st Street 203: Potrero SB from 21st Street to Cesar Chavez
101 NB and SB between Mission St and Lombard St	222: Van Ness/S. Van Ness NB from 13th to Golden Gate 223: Van Ness/S. Van Ness NB from Golden Gate to Washington 224: Van Ness/S. Van Ness NB from Washington to Lombard 225: Van Ness/S. Van Ness SB from Lombard to Washington 226: Van Ness/S. Van Ness SB from Washington to Golden Gate 227: Van Ness/S. Van Ness SB from Golden Gate to 13th
Transbay Transit Center	136: Howard WB from Embarcadero to S Van Ness

WEATHER EVENTS

There was one significant weather event observed during the monitoring period. On Thursday April 6, there was light to heavy rain observed during the PM monitoring period (source: Weather Underground Historical Weather Data www.wunderground.com). Therefore, INRIX data records for the afternoon of April 6th were removed in the analysis.

A.5.3.2 | 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 - INRIX.

As part of the 2011 CMP update, the TA explored the reliability of this new data source by comparing results computed from this source to those computed from floating car runs. 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. For more details about the pros and cons of using commercial speed data, refer to the 2013 CMP report.

In 2013, MTC contracted with INRIX to obtain region wide commercial speed data, and has made the data available to the Congestion Management Agency (CMA) 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 data point. However, for this CMP update, data that was based on historical data was discarded.

A.5.3.3 | Supplemental Travel Time Runs

Floating car surveys were conducted on CMP segments with insufficient TMC coverage. The surveys were conducted using conventional methodologies. Drivers were instructed to follow road rules including

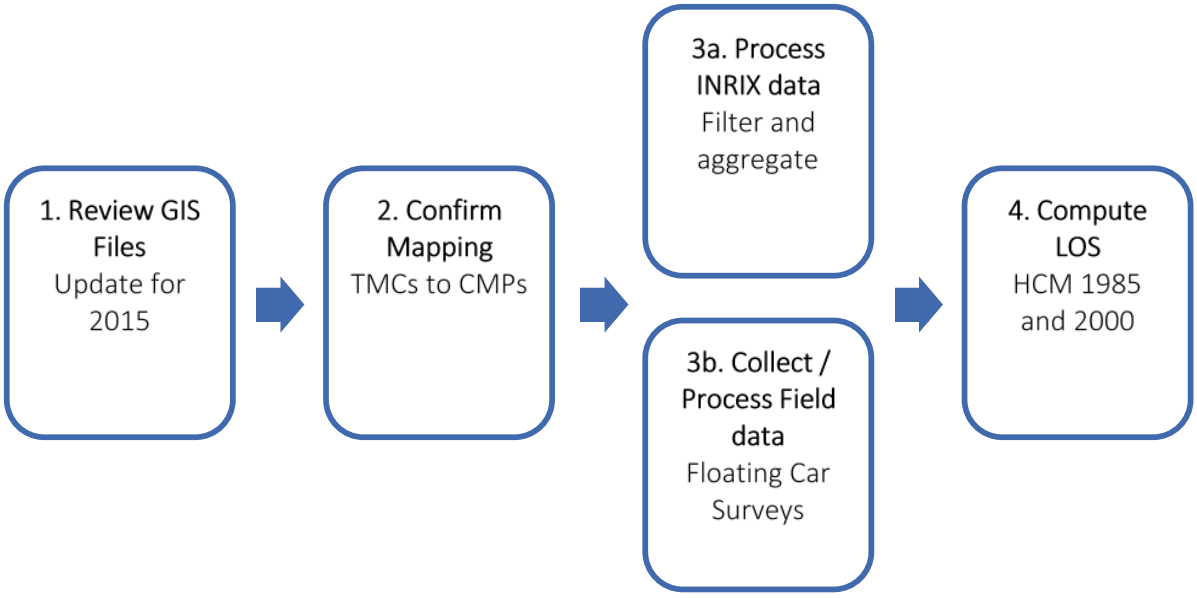
the speed limit, traffic signals and not blocking intersections. GPS coordinates were recorded as the floating car travels along the CMP segment. The temporal aggregation of multiple floating car runs on the corresponding CMP segment was performed in the same manner as for the INRIX data, explained in Section 3.4 below.

A.5.3.4 | Processing

The data processing was performed to ultimately obtain automobile LOS for each CMP segment during the morning and afternoon peak periods. The data processing consists of four steps as shown in Figure A5-5. The following summarizes the data processing steps:

- The ArcGIS shapefile was reviewed to prepare the base map of the CMP network for conflating the TMC links against CMP segments;
- In this step, TMCs were mapped to CMP segments to establish a relationship between TMC links and CMP segment. In the cases where the ends of the CMP did not align with the ends of the TMCs, travel time was interpolated linearly by using the overlapping portion;
- In the cleansing process, INRIX data points based on historical data or can be affected by the conditions mentioned earlier in Section 3.1 were dropped and will not be used in the ensuing analysis. With the floating car data, the timestamps from the GPS coordinates at the beginning and end of the CMP segment were identified and the CMP travel time was calculated;
- In the last step, 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 hourly average of the one-minute speeds was estimated for each CMP segment for each 15-minute interval in the peak periods. For example, the hourly average speed was estimated from 6:00 a.m. to 7:00 a.m., from 6:15 a.m. to 7:15 a.m., and so forth. The hour with lowest average speed was reported as the peak period speed. Finally, a LOS was assigned based upon the peak period speed. For the methodology of LOS assignment, please refer to the section below.

Figure A5-5 Data Processing Steps



A.5.3.5 | LOS Assignment

This section discusses the methodology for assigning a LOS (A to F) to each CMP segment for both morning and afternoon peak periods. The LOS assignments for arterials and freeways are consistent with previous reporting periods and legislative requirements from the California Government Code. Firstly, each CMP segment was classified as either an arterial or a freeway. The methodology slightly differs depending on this classification, as follows.

ARTERIALS

LOS for arterial segments was assigned twice using both 1985 and 2000 Highway Capacity Manual (HCM) methodologies. Both of these methods required identifying the class of the street (HCM 1985 Class I, II or III; HCM 2000 Class I, II, III or IV). Class was determined according to the free flow speed of the road. For example, the free flow speed may be the average speed at 6am when traffic volumes are light and travel speeds are not influenced by interactions with other vehicles.

For the HCM 1985 and 2000, the classification of streets was taken from previous LOS monitoring reports. Then, by knowing the average travel speed in the morning and afternoon peak periods and the class of the street, the LOS could be assigned according to the HCM 1985 and HCM 2000 methodologies. Refer to Tables A5-2 and A5-3 for the LOS look up tables.

FREEWAYS

Freeways followed a similar methodology as arterials, however it was not necessary to assign a class of freeway. The HCM-1985 method was used to calculate LOS for all freeway CMP segments. By knowing the average speed of the freeway in the morning and afternoon peaks, Table A5-4 was used to assign a LOS in each time period.

Table A5-2 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 A5-3 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)

Table A5-4 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: Adapted from Table 4-1, Special Report 209, HCM 1985

A.5.4. 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.

The comparison between speeds collected in the recent years can be used to determine current day variances. Tables A5-5 and A5-6 present summary statistics on the peak period speeds and the change in average travel speeds, total distance of CMP segments divided by total travel time, in CMP Network between 2015 and 2017, which were also documented in Chapter 4. As the table indicates there was an overall decrease in the average network speeds in 2017 compared to 2015. Furthermore, the statistical analysis shows a significant decrease in AM Speeds at $p < 0.05$ ($z = -3.9$, $p = 0.000048$, one-tailed), but

PM speeds remain similar, as the decrease in PM speeds is not statistically significant ($z = -1$, $p = 0.158655$, one-tailed).

Table A5-5 2017 CMP Average Travel Speed Results Summary Statistics

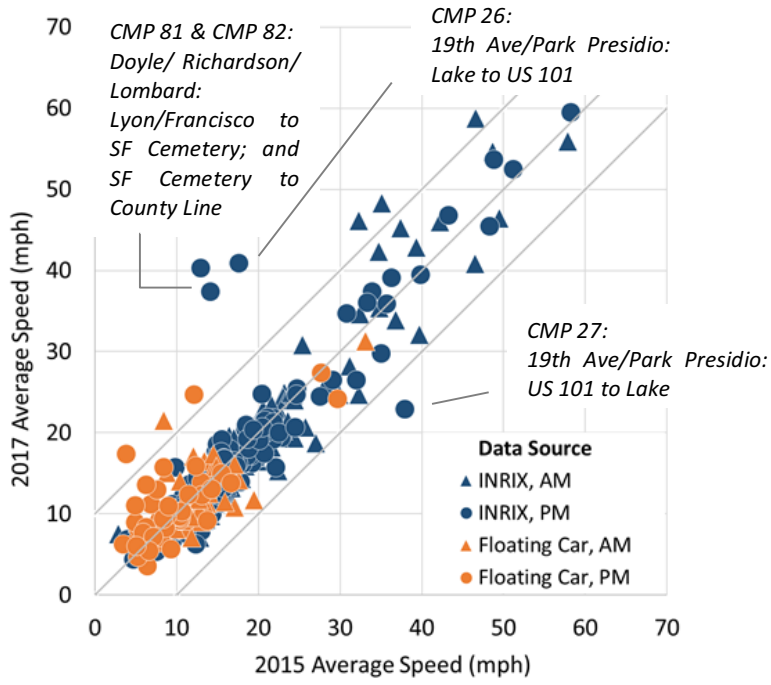
	NUMBER OF SEGMENTS	AVERAGE SPEED	STANDARD DEVIATION	MINIMUM SPEED	MAXIMUM SPEED
AM	245	15.90	9.42	6.5	64.8
PM	245	14.60	9.26	3.5	65

Table A5-6 CMP Network Average Travel Speed Comparison

CATEGORY	PEAK	2015	2017
Arterial	AM	14.6	13.6
	PM	12.7	12.2
Freeway	AM	38.8	35.8
	PM	26.2	26.4

Figure A5-6 presents the change in CMP average speeds between 2015 and 2017. The diagonal line from the lower left to the upper right indicating no change has been inserted. Data points in the lower right and upper left triangle are CMPs with significant speed changes, that is, average speeds have decreased or improved from 2015 to 2017, respectively. The pattern of speed changes indicates that data points cluster on the line of no change and most of the changes fall within the range of ±10 mph.

Figure A5-6 Comparison of 2015 and 2017 CMP Segment Speeds



A few CMP segments along Doyle/ Richardson/ Lombard between Lyon/Francisco Ave and County Line experienced great improvement in average speeds. This improvement is likely because of the completion of Presidio Parkway project in 2016. Significant change in average speeds were also observed for CMP segments along 19th Ave/Park Presidio between US 101 and Lake Ave. The average speed reduced in the SB direction and increased in the NB direction during the PM peak along these segments. While, no construction activities can be associated with this location, it should be noted that there were gaps in INRIX data coverage along the ramps between US 101 and 19th Ave in 2015. These gaps were improved in 2017 with the addition of new TMCs.

A.5.5. LOS F Segments

Tables A5-7 and A5-8 present the segments operated at LOS F (1985 HCM method) during the 2017 Monitoring. As noted above, the TA uses the 1985 HCM for calculating LOS when making historical comparisons to the baseline cycle.

As shown in Table A5-7, two arterial CMP route segments and five 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 exempt from automobile LOS standards, as described in Table A5-7. These arterial segments have experienced a downward trend in speeds and LOS from E to F since the last monitoring cycle in 2015. The four 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 segment on US-101 from Corland to Monster Pk Exit dropped from E to F is within an Infill Opportunity Zone and therefore exempt from a deficiency plan.

Table A5-8 shows the 2017 CMP route segments that had LOS F during the afternoon peak based on HCM 1985. There were 19 arterial segments and seven freeway segments evaluated during the evening peak period were found to operate at LOS F. All 19 arterial segments are either located with an IOZ zone 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 2015 and three segments dropped two or more grades. Similarly, the seven 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 2017 also were operating at LOS F in 2015.

Figure A5-7 visualizes the number of segments operating at LOS F in both 2015 and 2017. The number of 2017 LOS F segments on arterial were reduced slightly during morning and afternoon peak periods. In 2017, two new segments on US101 from Cortland to Monster Park Exit and US 208 from Weldon to 6th/Brannan had an LOS F during morning and afternoon peak periods, and the segment on US-101 dropped two grades from D to F.

All arterial and freeway segments operating at LOS F in the 2017 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 A5-7 2017 Roadway Monitoring Results – LOS F Segments (1985 HCM), AM Peak

NAME	FROM	TO	DIRECTION	LOS	AVE SPEED/LOS (1991)	IOZ (YES/NO)	STATUS / COMMENTS
J. Serra	Brotherhood	19th	N	F	9.7/D	Yes	Exempt: Segment is within an IOZ and therefore does not constitute a deficiency.
Pine	Market	Kearny	W	F	4.6/F	-	Exempt: Segment monitored at LOS F during the baseline monitoring and therefore does not constitute a deficiency.

NAME	FROM	TO	DIRECTION	LOS	AVE SPEED/LOS (1991)	IOZ (YES/NO)	STATUS / COMMENTS
I-280	Junipero Serra	Weldon	E	F	22.9/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	F	10.9/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	F	21.4/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	F	18.7/F	-	Exempt: Segment monitored at LOS F during the baseline monitoring and therefore does not constitute a deficiency.
US 101/Central Freeway	Cortland	Monster Park Exit	S	F	53.3/D	Yes	Exempt: Segment is within an IOZ and therefore does not constitute a deficiency.

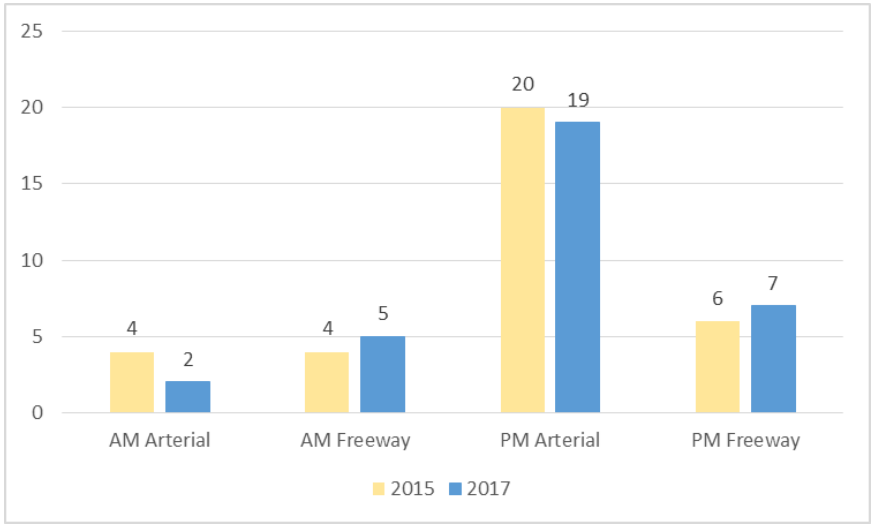
Table A5-8 2017 Roadway Monitoring Results – LOS F Segments (1985 HCM), PM Peak

NAME	FROM	TO	DIRECTION	LOS	AVE SPEED/LOS (1991)	IOZ (YES/NO)	STATUS / COMMENTS
1st St	Market	Harrison	S	F	1.2/F	-	Exempt: Segment monitored at LOS F during the baseline monitoring and therefore does not constitute a deficiency.
2nd St	Brannan	Market	N	F	NA	Yes	Exempt: Segment is within an IOZ and therefore does not constitute a deficiency.
5th St	Brannan	Market	N	F	7.9/E	Yes	Exempt: A majority of the segment is within an IOZ and therefore does not constitute a deficiency.
Broadway	Montgomery	Powell	W	F	6.2/F	-	Exempt: Segment monitored at LOS F during the baseline monitoring and therefore does not constitute a deficiency.
Duboce/Division	Mission	Market	W	F	6.3/F	-	Exempt: Segment monitored at LOS F during the baseline monitoring and therefore does not constitute a deficiency.
Golden Gate	Franklin	Market	E	F	12.2/D	Yes	Exempt: A majority of the segment is within an IOZ and therefore does not constitute a deficiency.
Gough	Geary	Golden Gate	S	F	NA	Yes	Exempt: Segment is within an IOZ and therefore does not constitute a deficiency.
Harrison	Embarcadero	1st	W	F	NA	Yes	Exempt: Segment is within an IOZ and therefore does not constitute a deficiency.

NAME	FROM	TO	DIRECTION	LOS	AVE SPEED/LOS (1991)	IOZ (YES/NO)	STATUS / COMMENTS
J. Serra	Brotherhood	19th	N	F	NA	Yes	Exempt: Segment is within an IOZ and therefore does not constitute a deficiency.
Market/Portola	Van Ness	Drumm	E	F	9.6/D	Yes	Exempt: Segment is within an IOZ and therefore does not constitute a deficiency.
Market/Portola	Drumm	Van Ness	W	F	9.6/D	Yes	Exempt: Segment is within an IOZ and therefore does not constitute a deficiency.
Mission/Otis	3rd	Embarcadero	N	F	9.7/D	Yes	Exempt: Segment is within an IOZ and therefore does not constitute a deficiency.
Montgomery	Broadway	Bush	S	F	6.2/F	-	Exempt: Segment monitored at LOS F during the baseline monitoring and therefore does not constitute a deficiency.
Oak	Fillmore	Laguna	E	F	8.2/E	Yes	Exempt: Segment is within an IOZ and therefore does not constitute a deficiency.
Octavia	Fell	Market	S	F	NA	Yes	Exempt: Segment is within an IOZ and therefore does not constitute a deficiency.
O'Farrell	Mason	Market	E	F	6.9/F	-	Exempt: Segment monitored at LOS F during the baseline monitoring and therefore does not constitute a deficiency.
Pine	Market	Kearny		F	4.6/F	-	Exempt: Segment monitored at LOS F during the baseline monitoring and therefore does not constitute a deficiency.
Pine	Leavenworth	Franklin	W	F	4.8/F	-	Exempt: Segment monitored at LOS F during the baseline monitoring and therefore does not constitute a deficiency.
Van Ness/S. Van Ness	Golden Gate	13th	S	F	4.6/F	-	Exempt: Segment monitored at LOS F during the baseline monitoring and therefore does not constitute a deficiency.
I-280	Weldon	6th/Brannan	N	F	NA	Yes	Exempt: Half of the segment is within an IOZ and therefore does not constitute a deficiency.
US 101/Central Freeway	Cortland	I-80	N	F	24.6/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	F	12.2/F	-	Exempt: Segment monitored at LOS F during the baseline monitoring and therefore does not constitute a deficiency.
I-80	Treasure Island	Fremont Exit	W	F	27.5/F	-	Exempt: Segment monitored at LOS F during the baseline monitoring and therefore does not constitute a deficiency.

NAME	FROM	TO	DIRECTION	LOS	AVE SPEED/LOS (1991)	IOZ (YES/NO)	STATUS / COMMENTS
I-80	Fremont Exit	US-101	W	F	18.6/F	-	Exempt: Segment monitored at LOS F during the baseline monitoring and therefore does not constitute a deficiency.
US 101/Central Freeway	Market	I-80	S	F	18.8/F	-	Exempt: Segment monitored at LOS F during the baseline monitoring and therefore does not constitute a deficiency.
I-80	US-101	Fremont Exit	E	F	19.0/F	-	Exempt: Segment monitored at LOS F during the baseline monitoring and therefore does not constitute a deficiency.

Figure A5-7 Change in the Number of LOS F Segments between 2015 and 2017



Appendix 5.1 - AM CMP Segments Level of Service Monitoring

(1991 - 2017)

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	Ave Speed 2017	LOS 2017	2017LOS 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	12.8	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	10.6	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	9.6	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	15.3	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	15.9	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	16.2	C	
	Terry Francois	Evans	3	S	2.40	2.33	10.3	D	24.1	B							23.8	B			28.9	A	28.6	A	27.3	A	21.7	B	18.7	C	17.5	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	10.6	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	11	D	C to D
	Harrison	Channel	3	S		0.62																	16.0	C	13.8	C	16.8	C	12.8	D	11.4	D	7.6	E	D to E
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	11.4	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	8.7	E	D to E
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	12.3	D	C to D
	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	10.4	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	8.6	E	D to E
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	12	D	C to D
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	9.1	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	16.5	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	9.3	D	C to D
	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	10.5	D	C to D
	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	10.2	D	C to D
	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	11.8	D	C to D
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	32.1	B	A to B
	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	45.2	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	22	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	19.9	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	18.1	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	13.4	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	24.9	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	17.8	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	16.5	C	B to C
	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	15.3	C	B to C
	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	21.3	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	28.2	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	13.8	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	16	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	19.3	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	15.1	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	19.3	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	12.3	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	9.3	D	
Brannan	Division	6th	3	E		0.54																	15.7	C	13.8	C	11.7	D	20.3	B	16.2	C	18.9	C	
	6th	Division	3	W		0.54																	16.3	C	16.9	C	14.1	C	22.9	B	15.9	C	12.2	D	C to D
	6th	3rd	3	E		0.52																	21.8	B	15.8	C	14.7	C	19.3	B	13.2	C	10.8	D	C to D
	3rd	6th	3	W		0.52																	15.9	C	17.0	C	12.8	D	20.4	B	14.4	C	12.4	D	C to D
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	10	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	15.1	C	E to C
	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	21.5	D	F to D
	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	31.3	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	8.2	E	D to E
	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	9.2	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	8.1	E	D to E
	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	10.8	D	C to D
Brotherhood	Junipero Serra	Alemany	3	E		0.44																	21.3	B	25.8	A	29.2	A	28.7	A	23.0	B	24.4	B	
	Alemany	Junipero Serra	3	W		0.47																	31.8	A	29.7	A	28.8	A	28.7	A	23.3	B	24	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	11.7	D	C to D
	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	12	D	C to D
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	15.7	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	10.4	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	12.1	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	7.9	E	D to E
	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	12.3	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	10	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	11.6	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	10.4	D	
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	12.6	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	9.4	D	C to D
	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	19.8	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	24.9	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	14.3	C	

Appendix 5.1 - AM CMP Segments Level of Service Monitoring

(1991 - 2017)

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	Ave Speed 2017	LOS 2017	2017LOS Changes
	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	15	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	10.7	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	11	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	11.5	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	11.2	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	11.6	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	30.8	B	C to B
	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	48.3	A	
	SF Cemetery	Lyon/Francisco	1	E	1.37	0.95															28.3	B	19.3	D	12.5	F	Closed	Closed	25.0	C	15.3	E	17.8	D	E to D
	Lyon/Francisco	SF Cemetery	1	W	1.37	0.98															31.4	B	40.3	A	37.8	A	Closed	Closed	37.5	A	32.3	B	46.1	A	B to A
	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	18.6	C	B to C
	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	13.5	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	7	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	9	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	9.2	D	C to D
	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	8.4	E	D to E
	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	11.3	D	C to D
	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	11	D	C to D
	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	13.2	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	13.2	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	10.4	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	16.5	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	8.1	E	D to E
	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	9.8	D	C to D
	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	20.5	B	
Folsom	13th	8th	3	E	0.48	0.48															10.2	D					18.2	C	19.4	B	14.8	C	12.5	D	C to D
	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	12.8	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	11.7	D	C to D
	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	7	E	D to E
	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	9.9	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	18	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	9.6	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	18.3	C	B to C
	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	17	C	B to C
	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	15.6	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	19.9	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	13.4	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	15.2	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	17.5	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	16.8	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	14.7	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	13.4	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	19.6	B	C to B
	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	17.5	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	10.3	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	10.1	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	8.2	E	D to E
	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	12.4	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	8.5	E	D to E
	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	18.6	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	18.4	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	17.1	C	D to C
	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	10.2	D	E to D
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	13.2	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	9.6	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	11	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	14.6	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	12.5	D	C to D
	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	24.7	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	13.4	E	F to E
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	9.3	D	C to D
	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	11.2	D	

Appendix 5.1 - AM CMP Segments Level of Service Monitoring

(1991 - 2017)

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	Ave Speed 2017	LOS 2017	2017LOS Changes
	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	16.9	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	10.1	D	C to D
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	9.1	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	10.9	D	C to D
	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	23.4	C	D to C
	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	22.9	C	D to C
Junipero Serra	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	42.8	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	10.2	F	E to F
	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	54.6	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	18.7	D	C to D
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	7.5	E	
	5th	2nd	3	E	0.52	0.52															16.9	C			19.2	B	22.2	B							
King	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	13	C	D to C
	2nd	4th	3	W		0.34																	18.3	C					15.9	C	13.6	C	11.7	D	C to D
	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	17.7	C	
Lincoln/ Kezar	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	18.2	C	B to C
	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	13.2	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	24	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	8.9	E	F to E
	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	13.4	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	13.6	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	15.7	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	16.9	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	20	B	C to B
	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	21.3	B	
Market/ Portola	Castro	Guerrero	3	E	0.80	0.79	8.7	E	20.0	B					Constru	C					13.2	C	10.1	D	15.7	C	9.2	D	13.6	C	10.4	D	12.8	D	
	Guerrero	Castro	3	W	0.80	0.79		*	18.8	B					Constru	C					16.9	C	15.7	C	15.1	C	12.5	D	17.7	C	15.1	C	12.4	D	C to D
	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	9.9	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	13.7	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	7.5	E	D to E
	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	7.1	E	D to E
	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	16.5	C	
Masonic	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	17.6	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	13.5	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	14.6	C	D to C
	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	8.7	E	D to E
	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	7.5	E	D to E
	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	13	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	14	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	10.5	D	
Mission/ Otis	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	10.3	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	14	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	11.4	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	12.9	D	C to D
	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	11.9	D	C to D
	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	16	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	13.4	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	8.9	E	D to E
	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	13.2	C	
North Point	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	11.8	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	13	C	D to C
	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	12.5	D	C to D
	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	11.5	D	
Oak	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	7.1	E	D to E
	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	9.9	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	19.3	B	C to B
	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	13.6	C	
Ocean	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	11.2	D	C to D
	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	11.9	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	10.1	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	7.5	E	F to E
	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	8.1	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	10.2	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	8.8	E	D to E
	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	6.5	F	E to F
Pine	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	14.2	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	9.9	D	E to D
	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	16.1	C	
	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	15.5	C	
Potrero	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	11.7	D	B to D

Appendix 5.1 - AM CMP Segments Level of Service Monitoring

(1991 - 2017)

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	Ave Speed 2017	LOS 2017	2017LOS Changes
Potrero	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	17.3	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	14	C	D to C
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	34.6	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	35.4	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	20.3	D	C to D
	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	24.9	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	14	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	13.5	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	8.9	E	D to E
	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	11.4	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	11.2	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	11	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	11.2	D	C to D
	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	10.4	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	10.5	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	10.3	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	16.5	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	16.3	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	12.8	D	C to D
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	11.3	D	C to D
	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	10	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	11.6	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	10.2	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	10.7	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	8.9	E	C to E
	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	15	C	
	Cesar Chavez	13th	3	N		1.50																	17.0	C	20.1	B	18.4	C	18.8	C	16.0	C	15.1	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	9.6	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	15.8	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	11.5	D	C to D
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	0	29.9	F	24.7	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	0	36.8	E	33.9	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	0	25.8	F	20.7	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	0	28.2	F	25.9	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	0	23.6	F	21.4	F	
I-80	Treasure Island	Fremont Exit	Fwy	S	2.20	2.72	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	0	42.2	D	46	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	0	49.5	C	46.4	D	C to D
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	0	57.9	B	55.9	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	0	63.5	A	64.8	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	0	33.2	E	31.2	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	0	46.5	D	40.8	E	D to E
	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	0	32.3	E	24.7	F	E to F
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	0	34.7	E	42.3	D	E to D
	Fremont Exit	Treasure Island	Fwy	NE	2.15	2.72	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	0	46.6	D	58.7	B	D to B

Appendix 5.2 - PM CMP Segments Level of Service Monitoring

(1991 - 2017)

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	Ave Speed 2017	LOS 2017	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	4.3	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	11.1	D	F to D
	Brannan	Market	3	S		0.72															9.5	D	11.8	D	10.4	D	13.3	C	3.1	F	5.3	F	6.6	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	16	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	15.6	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	13.8	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	17.9	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	8.8	E	D to E
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	9.8	D	
	Harrison	Channel	3	S		0.62																	14.1	C	14.3	C	14.9	C	12.6	D	8.7	E	7.3	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	7	E	F to E
	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	3.5	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	10.4	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	7.6	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	8.3	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	8.4	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	7.7	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	13.7	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	9.2	D	C to D
	Mission	Market	3	W		0.74															10.6	D	14.1	C	12.3	D	8.4	E	17.0	C	11.7	D	10.1	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	7.9	E	D to E
	Potrero	Mission	3	W		0.67															11.2	D	13.6	C	15.2	C	13.4	C	12.5	D	11.1	D	9.5	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	22.8	C	A to C
	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	40.8	A	D to A
	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	13.6	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	19.3	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	20.5	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	18.9	C	B to C
	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	16.6	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	17	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	16.8	C	B to C
	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	15.7	C	B to C
	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	26.4	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	24.4	B	A to B
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	13.3	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	14.4	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	16.2	C	B to C
	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	15.2	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	17.7	C	B to C
	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	18.9	C	B to C
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	8.1	E	F to E
Brannan	Division	6th	3	E		0.54																	11.6	D	13.7	C	13.6	C	14.7	C	9.9	D	15.7	C	D to C
	6th	Division	3	W		0.54																	17.2	C	9.8	D	8.8	E	21.1	B	14.4	C	9.9	D	C to D
	6th	3rd	3	E		0.52																	9.9	D	10.3	D	17.2	C	14.1	C	8.5	E	7.3	E	
	3rd	6th	3	W		0.52																	8.6	E	14.0	C	16.4	C	16.9	C	11.0	D	7.9	E	D to E
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	9.2	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	7.1	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	24.1	C	B to C
	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	27.3	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	9.5	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	4.6	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	8.9	E	F to E
	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	9.6	D	
Brotherhood	J. Serra	Alemany	3	E		0.44															21.0	B	26.6	A	24.6	B	29.4	A	22.0	B	21.7	B			
	Alemany	J. Serra	3	W		0.47															26.2	A	33.4	A	31.5	A	31.6	A	24.8	B	25.4	A	B to A		
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	8	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	10.1	D	C to D
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	17.1	C	B to C
	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	9.1	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	9.3	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	9.4	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	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	10.6	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	9.7	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	11.9	D	
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	9.9	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	10.3	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	18.3	C	B to C

Appendix 5.2 - PM CMP Segments Level of Service Monitoring

(1991 - 2017)

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	Ave Speed 2017	LOS 2017	LOS Changes 2015
Cesar Chavez	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	21.8	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	16.1	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	17.1	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	8.2	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	8.8	E	D to E
	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	12.4	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	8.9	E	D to E
	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	11.9	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	39.4	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	37.3	A	E to A
	SF Cemetery	Francisco	1	E		0.95															23.8	C	32.7	B	35.8	A	Closed	Closed	38.9	A	35.1	A	29.7	B	A to B
	Francisco	SF Cemetery	1	W		0.98															23.5	C	35.2	A	39.4	A	Closed	Closed	26.0	C	13.0	E	40.2	A	E to A
	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	12.1	D	C to D
	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	13.4	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	7.6	E	F to E
	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	8.3	E	F to E
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	11.3	D	C to D
	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	6.5	F	E to F
	Mission	Potrero	3	E		0.64	9.9	D	14.1	C							14.2	C							13.3	C	18.5	C	10.5	D	10.7	D	10.2	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	7.1	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	12.8	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	9.3	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	13.8	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	24.6	B	D to B
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	8.9	E	D to E
	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	10.1	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	18.7	C	B to C
Folsom	13th	8th	3	E		0.48															18.0	C					14.6	C	18.4	C	13.4	C	9.4	D	C to D
	8th	4th	3	E		0.69															18.8	C	21.2	B	17.2	C	19.4	B	17.3	C	9.5	D	8.2	E	D to E
	4th	1st	3	E		0.52															18.3	C	20.0	B	15.0	C	16.9	C	14.8	C	6.4	F	7.8	E	F to E
	1st	Embarcadero	3	E		0.35															10.0	D	17.0	C	12.1	D	12.1	D	16.0	C	11.4	D	7.5	E	D to E
	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	10.3	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	16.7	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	7.8	E	
Fulton	Park P.	10th Ave	3	E		0.2																			25.7	A	25.0	B	23.4	B	20.6	B	19.1	B	
	10th Ave	Park Presidio	3	W		0.2																			8.5	E	11.3	D	18.1	C	14.7	C	13.5	C	
	10th Ave	Arguello	3	E		0.53																			23.5	B	15.0	C	18.6	C	17.4	C	14.3	C	
	Arguello	10th Ave	3	W		0.53																			22.1	B	17.7	C	18.1	C	17.6	C	16.1	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	12.2	D	C to D
	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	13.1	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	15.6	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	17.1	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	14.7	C	D to C
	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	13.3	C	D to C
	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	17.6	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	18.5	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	7.9	E	D to E
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	10	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	9.1	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	10.6	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	9.5	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	19.1	B	C to B
	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	17.5	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	14.9	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	6.2	F	
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	11.6	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	6.5	F	D to F
	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	8.1	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	9.7	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	14.4	C	

Appendix 5.2 - PM CMP Segments Level of Service Monitoring

(1991 - 2017)

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	Ave Speed 2017	LOS 2017	LOS Changes 2015
San Jose	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	19.1	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	15.1	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	5.3	F	E to F
	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	7.8	E	C to E
	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	13.7	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	10.5	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	7.5	E	D to E
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	9.3	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	20.4	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	24.7	C	D to C
	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	37.3	A	B to A
	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	10.7	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	53.6	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	17.4	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	8.3	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	12.3	D	
	2nd	4th	3	W		0.34																	7.7	E					12.0	D	8.7	E	8	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	18	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	14.5	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	20	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	20.9	B	C to B
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	11	D	F to D
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	15.1	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	13.3	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	19	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	16.4	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	21.4	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	21.2	B	
	Castro	Guerrero	3	E		0.79		*	15.0	C					9.2	Cons Const	14.8	C			10.0	D	10.6	D	9.9	D	10.3	D	13.9	C	11.4	D	10	D	
	Guerrero	Castro	3	W		0.79		*	16.5	C					11.5		13.2	C			19.4	B	15.0	C	15.1	C	12.7	D	16.0	C	13.0	C	15.4	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	9.1	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	11	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	6.4	F	E to F
	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	5.6	F	D to F
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	11.1	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	16.8	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	12.6	D	C to D
	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	12.4	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	7.3	E	D to E
	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	6.7	F	E to F
	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	11.4	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	10.1	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	10.5	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	9.2	D	C to D
	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	10.5	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	9.6	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	11.1	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	13.3	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	14.4	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	14.1	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	5	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	9.7	D	E to D
	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	12.2	D	C to D
	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	9.3	D	E to D
	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	15.8	C	D to C
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	19.2	B	C to B
	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	6.2	F	D to F
	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	8.8	E	D to E
	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	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	12	D	C to D
	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	11.8	D	C to D
	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	10.7	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	8	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	6.8	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	10.3	D	

Appendix 5.2 - PM CMP Segments Level of Service Monitoring

(1991 - 2017)

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	Ave Speed 2017	LOS 2017	LOS Changes 2015
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	8.6	E	D to E
	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	6.8	F	E to F
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	5.4	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	9.1	D	C to D
	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	6	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	13.7	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	15.7	C	E to C
	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	13.5	C	F to C
	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	17.3	C	F to C
	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	12.9	D	E to D
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	34.6	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	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	19.9	D	C to D
	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	24.6	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	13.2	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	9.9	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	8	E	D to E
	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	10.8	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	11.2	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	11	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	9	D	E to D
	2nd	7th	3	W		0.86															18.7	C	18.0	C	12.8	D	11.4	D	16.5	C	9.4	D	9.1	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	9.2	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	9.9	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	15.9	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	15.8	C	
	Stanyan	Divisadero	3	E		0.91		*	14.9	C							16.4	C			18.4	C	17.2	C	17.2	C	19.1	B	17.9	C	13.9	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	11.4	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	15.5	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	7.9	E	D to E
	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	13.6	C	D to C
	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	6.9	F	E to F
	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	8.5	E	D to E
	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	14.7	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	14.6	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	10.9	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	13	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	12.3	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	0	63.8	A	65	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	0	32.1	E	26.4	F	E to F
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	0	51.3	C	52.4	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	0	12.8	F	14.8	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	0	24.6	F	20.6	F	
I-80	Treasure Island	Fremont Exit	Fwy	S		2.72	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	0	19.5	F	20.3	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	0	15.9	F	16.7	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	0	36.4	E	39	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	0	48.4	D	45.4	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	0	12.6	F	14.3	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	0	43.3	D	46.7	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	0	58.3	B	59.4	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	0	7.6	F	7.2	F	
	Fremont Exit	Treasure Island	Fwy	NE		2.72	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	0	33.4	E	36	E	

Appendix 5.3: Average Speed and LOS for all Arterial HCM 2000 Segments

(2009 - 2017)

Route Name	Start Intersection	End Intersection	Dir	Length (mi)	HCM 2000 Class	2009				2011				2013				2015				2017			
						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	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	12.8	D	4.3	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	9.6	D	6.6	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	F	11.9	D	6.9	E	10.6	D	11.1	D
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	15.3	C	16.0	C
3rd St	Evans	Terry Francois	N	2.33	3	28.4	B	30.1	A	27.6	B	30.0	A	20.9	B	20.4	B	17.5	D	14.1	D	16.2	D	13.8	E
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	B	20.5	B	18.7	C	16.6	D	17.5	D	17.9	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	15.9	C	15.6	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	11.0	D	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	7.6	E	7.3	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	8.7	E	3.5	F
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	F	10.8	D	6.7	E	11.4	D	7.0	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	10.4	D	7.6	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	12.3	D	10.4	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	8.6	E	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	C	15.9	C	13.5	E	8.4	E	12.0	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	9.1	D	7.7	E
10th St	Market	Brannan	S	0.73	3	21.9	C	16.3	D	21.4	C	20.4	C	23.8	B	20.5	B	18.1	C	13.4	E	16.5	D	13.7	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	9.3	D	9.2	D
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	10.2	D	7.9	E
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	11.8	D	9.5	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	10.5	D	10.1	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	C	16.9	C	17.6	D	15.2	D	17.8	D	17.0	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	C	17.4	C	13.1	E	19.5	C	13.4	E	18.9	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	45.2	A	40.8	B
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	32.1	C	22.8	D
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	C	20.2	B	17.4	D	19.8	C	18.1	C	20.5	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	B	18.2	C	23.2	C	15.8	D	24.9	B	16.6	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	A	33.0	A	22.3	C	29.2	B	21.3	D	26.4	C
Alemany	Bayshore	Lyell	W	1.51	2	30.7	B	31.4	B	28.1	B	24.7	C	29.8	A	31.2	A	31.2	B	27.6	C	28.2	B	24.4	C
Alemany	Lyell	County Line	W	3.03	2	25.3	C	22.2	C	21.4	D	22.5	C	25.9	A	29.6	A	22.4	C	22.2	C	15.3	E	15.7	E
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	13.8	C	13.3	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	16.0	C	14.4	C
Bayshore	County Line	Industrial	N	2.26	3	17.4	D	21.5	C	19.1	C	23.1	C	13.9	C	23.1	B	10.8	E	20.2	C	12.3	E	18.9	C
Bayshore	Industrial	Cesar Chavez	N	0.83	3	17.5	D	14.4	D	12.6	E	15.5	D	15.8	C	17.6	C	16.2	D	17.3	D	15.1	D	15.2	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	A	22.5	C	20.6	C	19.3	C	17.7	D
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	F	9.2	D	5.4	E	9.3	D	8.1	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	10.8	D	7.3	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	12.4	D	7.9	E
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	10.0	D	9.2	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	C	8.4	E	29.8	C	21.5	D	24.1	D
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	8.2	E	9.5	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	F	9.9	D	5.0	F	8.1	E	8.9	E
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	10.8	D	9.6	D
Broadway	Montgomery	Powell	W	0.35	4	13.3	C	7.7	E	11.7	D	11.8	D	11.1	D	6.6	F	11.2	D	5.3	E	9.2	D	4.6	F
Broadway	Powell	Larkin	W	0.55	1	32.9	C	32.3	C	31.6	C	29.6	C	27.8	C	25.5	C	33.1	C	27.8	C	31.3	C	27.3	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	15.1	C	7.1	E
Brotherhood	Junipero Serra	Alemany	E	0.44	3	25.8	B	26.6	B	29.2	B	24.6	B	28.7	A	29.4	A	23.0	C	22.0	C	24.4	B	21.7	C
Brotherhood	Alemany	Junipero Serra	W	0.47	3	29.7	B	33.4	A	28.8	B	31.5	A	28.7	A	31.6	A	23.3	C	24.8	B	24.0	B	25.4	B
Bryant	Division	4th	E	0.99	3	13.1	E	12.7	E	19.4	C	14.3	D	15.9	C	13.9	C					11.7	E	8.0	E
Bryant	4th	2nd	E	0.34	3	24.5	B	19.1	C	26.4	B	20.9	C												

Appendix 5.3: Average Speed and LOS for all Arterial HCM 2000 Segments

(2009 - 2017)

Route Name	Start Intersection	End Intersection	Dir	Length (mi)	HCM 2000 Class	2009				2011				2013				2015				2017			
						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	AM Speed	AM LOS	PM Speed	PM LOS
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	B	22.7	B	16.6	D	19.1	C	15.7	D	17.1	D
Bush	Gough	Market	E	1.46	3	10.9	E	14.3	D	13.8	E	11.3	E	16.4	C	16.0	C	12.1	E	10.5	E	10.4	E	9.1	E
Castro/Divisadero	Market	14th	N	0.32	4	14.8	C	15.7	C	15.6	C	15.2	C	14.0	C	14.7	C					10.4	D	11.9	D
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	10.0	D	10.6	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	7.9	E	9.4	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	12.1	D	9.3	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	12.3	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	11.6	D	9.7	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	F	9.9	D	8.7	E	10.7	D	8.2	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	11.6	D	11.9	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	11.5	D	12.4	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	11.0	D	8.8	E
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	11.2	D	8.9	E
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	9.0	D	8.3	E
Drumm	Washington	Market	S	0.22	4	8.7	E	7.6	E	20.3	B	17.7	C	6.7	F	5.5	F	7.5	E	6.0	E	7.0	E	7.6	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	9.2	D	11.3	D
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	8.4	E	6.5	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	16.5	C	24.6	B
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	10.4	D	13.8	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	C	17.2	C	14.2	D	12.7	E	9.8	E	10.1	E
Fell	Laguna	Stanyan	W	1.56	3	26.4	B	23.7	C	26.3	B	24.1	B	23.8	B	22.5	B	20.0	C	19.1	C	20.5	C	18.7	C
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	C	12.6	E	9.5	E	12.8	E	8.2	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	C	15.1	D	6.4	E	11.7	E	7.8	E
Folsom	1st	Embarcadero	E	0.34	3	13.2	E	12.1	E	10.8	E	12.1	E	16.4	C	16.0	C	12.2	E	11.4	E	7.0	E	7.5	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	9.9	D	10.3	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	18.0	C	16.7	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	9.6	D	7.8	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	13.4	C	12.2	D
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	15.2	C	13.1	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	17.5	C	15.6	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	14.7	C	14.7	C
Geary	Arguello	Collins	E	0.48	4	27.7	A	13.2	C	18.4	C	15.2	C												

Appendix 5.3: Average Speed and LOS for all Arterial HCM 2000 Segments

(2009 - 2017)

Route Name	Start Intersection	End Intersection	Dir	Length (mi)	HCM 2000 Class	2009				2011				2013				2015				2017			
						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	AM Speed	AM LOS	PM Speed	PM LOS
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	10.3	D	7.9	E
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	13.4	C	13.3	C
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	16.8	C	17.1	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	10.1	D	10.0	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	12.4	D	10.6	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	8.5	E	9.5	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	8.2	E	9.1	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	10.2	D	6.2	E
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	13.2	C	11.6	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	9.6	D	6.5	E
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	11.0	D	8.1	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	12.5	D	14.4	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	14.6	C	9.7	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	17.9	C	16.0	C					16.9	D	13.7	E
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	9.1	D	7.5	E
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	C	27.0	C	20.8	E	18.7	E	17.4	E
J. Serra	Brotherhood	19th	N	0.31	1	22.1	D	15.2	F	10.8	F	10.5	F	12.8	F	13.8	E	13.1	E	12.9	E	10.2	E	10.7	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	22.9	C	24.7	C
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	23.4	C	20.4	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	A	39.3	B	34.0	B	42.8	A	37.3	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	54.6	A	53.6	A
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	7.5	E	8.3	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	B	21.5	B	15.4	D	18.9	C	17.7	D	18.0	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	B	18.0	C	21.6	C	16.4	D	18.2	C	14.5	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	8.9	E	11.0	D
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	7.5	E	6.4	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	7.1	E	5.6	E
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												

Appendix 5.3: Average Speed and LOS for all Arterial HCM 2000 Segments

(2009 - 2017)

Route Name	Start Intersection	End Intersection	Dir	Length (mi)	HCM 2000 Class	2009				2011				2013				2015				2017			
						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	AM Speed	AM LOS	PM Speed	PM LOS
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	B	17.8	C	12.3	E	12.7	E	14.6	D	12.4	E
Masonic	Geary	Bush/Euclid	N	0.19	3	27.0	B	27.0	B	15.4	D	22.4	C	23.1	B	24.1	B	15.7	D	15.8	D	17.6	D	16.8	D
Masonic	Presidio	Geary	S	0.29	3	19.7	C	14.5	D	10.0	E	9.2	F	17.5	C	15.9	C	14.9	D	9.5	E	16.5	D	11.1	E
Masonic	Geary	Page	S	0.79	3	17.2	D	16.9	D	11.1	E	13.5	E	19.2	B	19.2	B	14.3	D	13.4	E	13.5	E	12.6	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	13.4	C	14.1	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	11.9	D	13.3	C
Mission/Otis	Cesar Chavez	14th	N	1.39	4	18.5	C	13.9	C	15.7	C	14.2	C	13.7	C	11.8	D					11.4	D	9.6	D
Mission/Otis	14th	9th	N	0.65	4	15.1	C	13.3	C	16.3	C	12.2	D	14.3	C	14.7	C					10.3	D	9.2	D
Mission/Otis	9th	3rd	N	0.98	4	17.1	C	13.7	C	16.2	C	12.4	D	16.2	C	15.1	C					14.0	C	10.1	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	7.5	E	6.7	E
Mission/Otis	Embarcadero	3rd	S	0.74	4	13.8	C	13.9	C	10.1	D	11.0	D	14.7	C	12.8	D					8.7	E	7.3	E
Mission/Otis	3rd	9th	S	0.98	4	15.4	C	15.1	C	15.4	C	14.4	C	16.7	C	14.5	C					13.0	C	11.4	D
Mission/Otis	9th	14th	S	0.68	4	15.8	C	13.4	C	19.4	B	13.5	C	14.4	C	12.4	D					10.5	D	10.5	D
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	14.0	C	10.5	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	12.9	D	11.1	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	16.0	C	14.4	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	8.9	E	5.0	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	13.2	C	9.7	D
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	13.0	C	9.3	D
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	12.5	D	15.8	C
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	11.8	D	12.2	D
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	C	23.8	B	12.6	E	18.7	C	11.5	E	19.2	C
Oak	Fillmore	Laguna	E	0.27	3	17.0	D	22.3	C	8.8	F	24.5	B	11.8	D	16.6	C	12.9	E	12.4	E	7.1	E	6.2	E
Oak	Laguna	Franklin	E	0.27	3	15.1	D	11.8	E	17.0	D	16.4	D	13.4	C	17.9	C	9.1	E	11.0	E	9.9	E	8.8	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	13.6	C	12.0	D
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	11.9	D	10.7	D
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	10.1	D	8.0	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	11.2	D	11.8	D
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	10.2	D	8.6	E
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	8.8	E	6.8	E
Pine	Market	Kearny	W	0.38	3	8.8	F	8.9	F	10.5	E	13.2	E	6.9	F	4.3	F	7.4	E	6.7	E	6.5	E	5.4	E
Pine	Kearny	Leavenworth	W	0.63	3	18.2	C	16.8	D	24.1	B	16.2	D	15.2	C	12.1	D	17.6	D	13.8	E	14.2	D	9.1	E
Pine	Leavenworth	Franklin	W	0.46	3	17.7	D	14.3	D	17.7	D	14.5	D	13.5	C	8.5	E	7.5	E	5.2	E	9.9	E	6.0	E
Pine	Franklin	Presidio	W	1.27	3	21.3	C	22.4	C	21.8	C	22.0	C	17.3	C	14.5	C	17.1	D	16.7	D	16.1	D	13.7	E
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	14.0	C	12.9	D
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	11.7	D	13.5	C
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	15.5	C	15.7	C
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	17.3	C	17.3	C
Skyline	County Line	Sloat	N	1.94	1	46.7	A	46.8	A	44.5	A	42.2	A	38.1	A	42.6	A	34.8	B	35.8	B	35.4	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	A	38.5	A	32.4	C	30.9	C	34.6	B	34.6	B
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	20.3	D	19.9	D
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	24.9	C	24.6	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	14.0	C	13.2	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	13.5	C	9.9	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	11.0	D	11.0	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	8.9	E	8.0	E
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	11.4	D	10.8	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	11.2	D	11.2	D
Townsend	7th	2nd	E	0.86	4	19.6	B	11.9	D	17.3	C	15.9	C	17.2	C	17.2	C					11.2	D	9.0	D
Townsend	2nd	7th	W	0.86	4	18.4	C	12.8	D	13.9	C	11.4	D	17.5	C	16.5	C					10.4	D	9.1	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	12.8	D	13.9	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	10.5	D	9.2	D

Appendix 5.3: Average Speed and LOS for all Arterial HCM 2000 Segments

(2009 - 2017)

Route Name	Start Intersection	End Intersection	Dir	Length (mi)	HCM 2000 Class	2009				2011				2013				2015				2017			
						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	AM Speed	AM LOS	PM Speed	PM LOS
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	B	22.1	B	17.4	D	16.7	D	16.5	D	15.9	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	16.3	C	15.8	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	15.1	C	14.6	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	8.9	E	8.5	E
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	10.2	D	13.6	C
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	10.0	D	15.5	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	11.3	D	11.4	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	11.6	D	7.9	E
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	10.7	D	6.9	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	15.0	C	14.7	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	9.6	D	10.9	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	11.5	D	12.3	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	15.8	C	13.0	C

* Construction Observed. SB direction partially closed.

APPENDIX 6

Deficiency Plans





APPENDIX 6

DEFICIENCY PLANS

KEY TOPICS

- Legislative Requirements
- Legislative Intent and Application to San Francisco
- Deficiency Planning Process
- Special Issues

A.6.1. 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.

[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.6.2. Legislative Intent and Application to San Francisco

This section provides background information on Deficiency Plans and their applicability to San Francisco.

A.6.2.1 | 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.

[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.6.2.2 | 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.6.3. 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.6.3.1 | 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.6.3.2 | 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

[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 interagency 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.6.3.3 | 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.

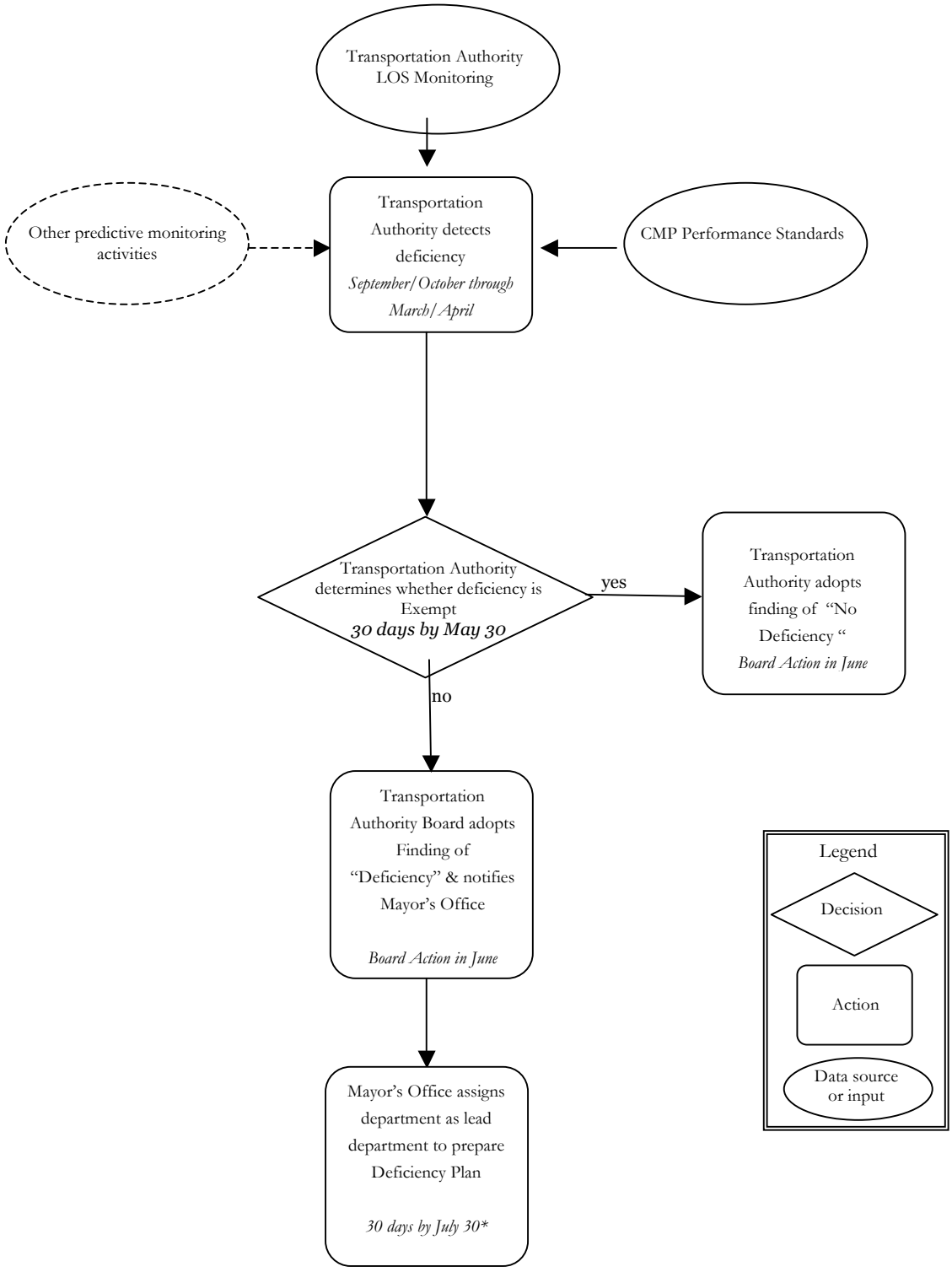
For deficiencies caused by large projects, some of the analysis required in these steps may have been completed through the projects' EIRs. While the analysis and any other relevant documentation may be used verbatim for the Deficiency Plan or Implementation Plan, the Final Deficiency Plan documentation 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

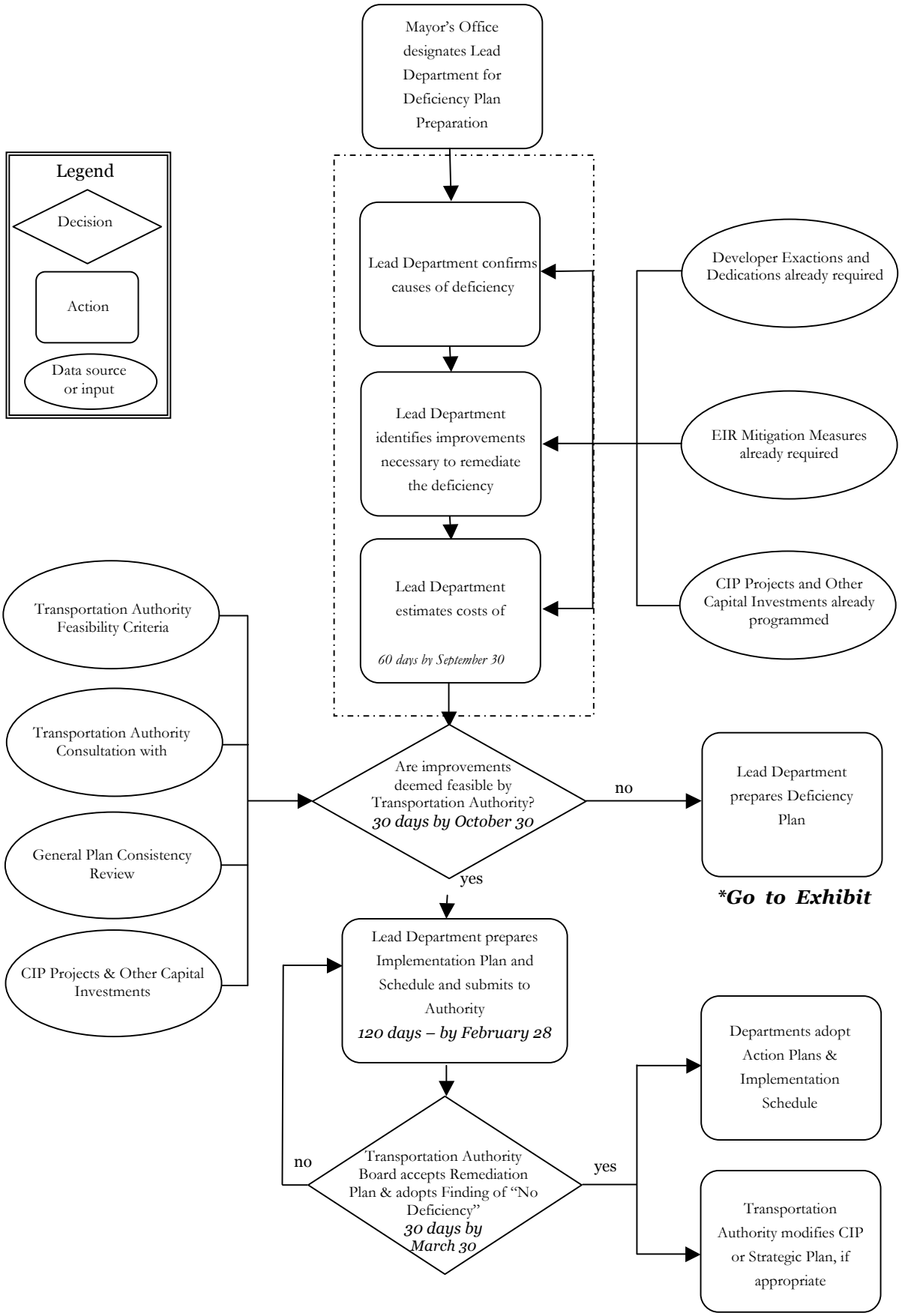
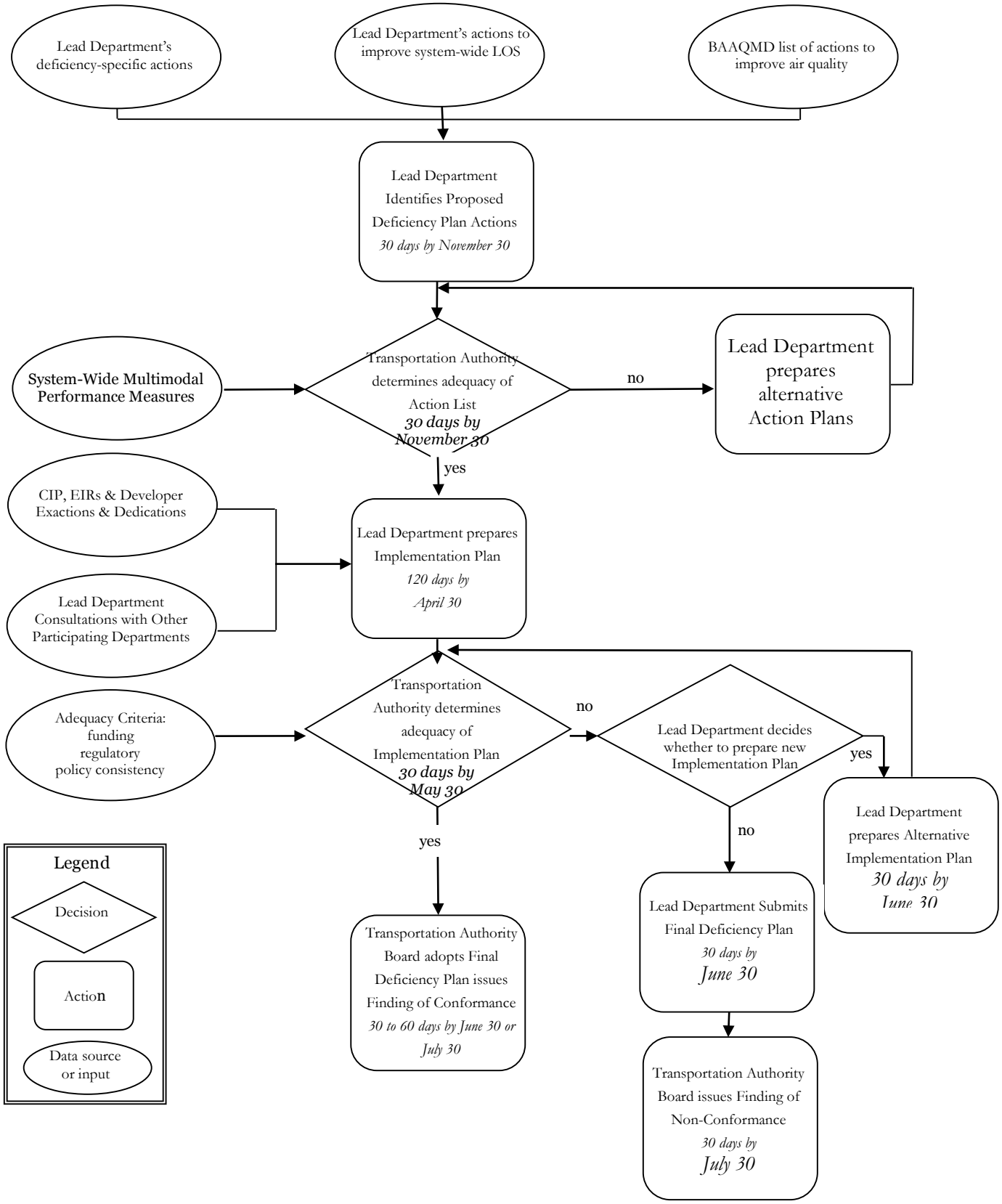


Figure 3: Deficiency Plan Evaluation and Approval



A.6.3.4 | 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.6.3.5 | 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.6.4. 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.6.4.1 | 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.6.4.2 | 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.6.4.3 | 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.

APPENDIX 7

Transit Frequency and Coverage Standards





APPENDIX 7

TRANSIT FREQUENCY AND COVERAGE STANDARDS

Table A7-1

Transit Service

Frequency and Coverage Standards

MUNI

Frequency Standard (headway in minutes)

Route Type	Day	Weekday Evening	Late Night
Rapid/Frequent	10	15	20
Grid	20	20	30
Connector	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	60	--	60

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 A7-1 (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	--	20	6.7
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 A7-1 (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.

APPENDIX 8

Transit Monitoring Methodology and Results





APPENDIX 8

TRANSIT MONITORING METHOLOGY & RESULTS

KEY TOPICS

- Methodology
- Transit Speed Results
- Discussion

A.8.1. 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 2017 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. Overall, the methodology for the 2017 Transit Monitoring remains same as 2015 CMP.

The raw APC transit data utilized corresponded to the same morning and afternoon peak periods as the Automobile LOS monitoring. The date range used in the analysis was April 4, 2017 to May 16, 2017. The monitoring days were examined through a similar data cleansing, considering same special events, construction and weather events as in 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 the rider 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.

A.8.2. Results

Attachment 8.1 presents the Average Transit Speeds for the 2017 morning and afternoon peak periods. The results also include the 2015 morning and afternoon transit speeds for comparison.

Overall results for 2017 as shown in Table A8-1, indicate the average speed was 8.13 mph and 7.34 mph in the AM and PM peak, respectively. The changes in the transit speeds compared to 2015, was not proved to be statistically significant at .05 level using one-tail hypothesis test.

Table A8-1 Transit Results Summary Statistics

	NUMBER OF SEGMENTS	AVERAGE SPEED	STANDARD DEVIATION	MINIMUM SPEED	MAXIMUM SPEED
AM Peak Period	134	8.13	4.6	3.6	29.2
PM Peak Period	137	7.34	4.2	2.1	24.9

In 2017, 134 and 137 CMP segments were mapped to CMP segments and reported transit speeds during the AM and PM peak, respectively. In the 2015 results, there were 133 and 134 CMP segments in the AM and PM Peak, respectively. The difference between 2017 and 2015 can be explained as being the results of route realignment. For instance, SFMTA installed the contra-flow transit lanes on Sansome to shorten the trips on Broadway for Muni's 10-Townsend and 12 Folsom/Pacific during the 2017 CMP Monitoring. As such, transit coverage along CMP segment on Broadway was insufficient to report transit speeds.

In addition, the 24 CMP segments with calculated transit speeds were excluded from the 2017 results, which were deemed to have less than 50 percent overlap with transit routes.

A.8.3. 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 2015 and 2017 are compared.

[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.

A.8.3.1 | 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 A8-2 and A8-3.

Table A8-2 Slowest Transit Segments (<5 mph), AM Peak

CMP ID	NAME	FROM	TO	DIRECTION	AVG. TRANSIT SPEED (MPH)	SAMPLE SIZE	S.D TRANSIT SPEED (MPH)
120	Geneva	Paris	Cayuga	W	4.8	308	0.5
150	Main	Mission	Market	N	4.9	409	1.0
155	Market/Portola	Guerrero	Van Ness	E	4.6	174	0.5
175	Mission/Otis	9th Street	14th Street	S	3.6	121	0.8

Table A8-3 Slowest Transit Segments (<5 mph), PM Peak

CMP ID	NAME	FROM	TO	DIRECTION	AVG. TRANSIT SPEED (MPH)	SAMPLE SIZE	S.D TRANSIT SPEED (MPH)
11	5th St	Brannan	Market	N	2.8	250	0.6
12	5th St	Market	Brannan	S	4.6	853	0.5
51	Broadway	Montgomery	Powell	W	3.5	57	1.4
117	Geneva	Cayuga	Paris	E	4.9	295	0.5
135	Hayes	Market	Gough	W	4.8	100	0.8
150	Main	Mission	Market	N	4.8	229	1.0
155	Market/Portola	Guerrero	Van Ness	E	3.8	158	1.1
170	Mission/Otis	14th Street	9th Street	N	3.8	16	1.3
175	Mission/Otis	9th Street	14th Street	S	2.1	122	0.5
190	Ocean	Howth	Miramar	W	4.8	123	1.1
194	O'Farrell	Gough	Mason	E	4.6	86	1.8
227	Van Ness/S. Van Ness	Golden Gate	13th	S	4.2	563	0.4

Three segments operated at speed lower than 5 mph were common during morning and afternoon peak. The segment on 5th St between Brannan and Market, and Mission/Otis between 9th St and 14th St were evaluated as slowest transit speeds in both direction during afternoon peak. All the segments were operated at LOS E or better, except 5th between Brannan and Market.

In comparison with 2015, there are more segments below 5 mph in the morning peak (four 2017 compared to two in 2015) and same number of segments (12) below 5 mph in the afternoon peak. All of the slowest segments have sample sizes above 50, except Mission/Otis from 14th St to 9th St in the afternoon peak.

A.8.3.2 | Least Reliable Transit Segments

Tables A8-4 and A8-5 represents CMP segments with the least reliable transit speeds in the morning and afternoon peak periods. 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 the standard deviation alone was used, 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.

Table A8-4 Least Reliable Transit Segments (CV>30%), AM Peak

CMP ID	NAME	FROM	TO	DIR	AVG. TRANSIT SPEED (MPH)	S.D TRANSIT SPEED (MPH)	CV	SAMPLE
137	J. Serra	County Line	Brotherhood	N	7.9	2.6	33%	205
167	Mission/Otis	Sickles	Ocean	N	9.9	6.0	61%	375
170	Mission/Otis	14th Street	9th Street	N	6.5	3.4	52%	6
173	Mission/Otis	Embarcadero	3rd Street	S	6.4	2.4	38%	99
194	O'Farrell	Gough	Mason	E	6.8	2.1	31%	76
195	O'Farrell	Mason	Market	E	6.4	3.5	55%	12
217	Turk	Market	Hyde	W	6.4	2.2	34%	102

Table A8-5 Least Reliable Transit Segments (CV>30%), PM Peak

CMP ID	NAME	FROM	TO	DIR	AVG. TRANSIT SPEED (MPH)	S.D TRANSIT SPEED (MPH)	CV	SAMPLE
27	19th Ave/Park Presidio	US 101	Lake	S	16.3	4.9	30%	90
51	Broadway	Montgomery	Powell	W	3.5	1.4	41%	57
76	Columbus	Greenwich	Montgomery	S	5.7	2.1	37%	204
92	Evans	3rd Street	Cesar Chavez	W	12.4	3.9	31%	118
103	Fulton	Park P.	10th Avenue	E	8.6	5.3	62%	27
104	Fulton	10th Avenue	Arguello	E	7.5	2.4	31%	325
108	Fulton	10th Avenue	Park P.	W	7.2	4.2	59%	27
109	Geary	Great Hwy.	25th Avenue	E	12.3	5.0	41%	15
141	J. Serra	19th	Brotherhood	S	14.7	6.0	40%	75
155	Market/Portola	Guerrero	Van Ness	E	3.8	1.1	30%	158
170	Mission/Otis	14th Street	9th Street	N	3.8	1.3	34%	16

CMP ID	NAME	FROM	TO	DIR	AVG. TRANSIT SPEED (MPH)	S.D TRANSIT SPEED (MPH)	CV	SAMPLE
172	Mission/Otis	3rd Street	Embarcadero	N	7.6	2.2	30%	169
173	Mission/Otis	Embarcadero	3rd Street	S	8.9	2.7	30%	63
181	North Point	Columbus	Embarcadero	E	7.5	3.3	44%	144
194	O'Farrell	Gough	Mason	E	4.6	1.8	38%	86
195	O'Farrell	Mason	Market	E	5.3	3.1	58%	9
214	Townsend	7th Street	2nd Street	E	5.5	1.6	30%	282

Relative to 2015, there are fewer segments above 30% CV both in the morning peak (nine in 2015 and seven in 2017) and in the afternoon peak (23 in 2015 and 17 in 2017, respectively). It should be noted that the results for the two least reliable segments on Mission/Otis and O'Farrell 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 A8-1 and A8-2 below.

Figure A8-1 Reliability and Speed Matrix, AM Peak

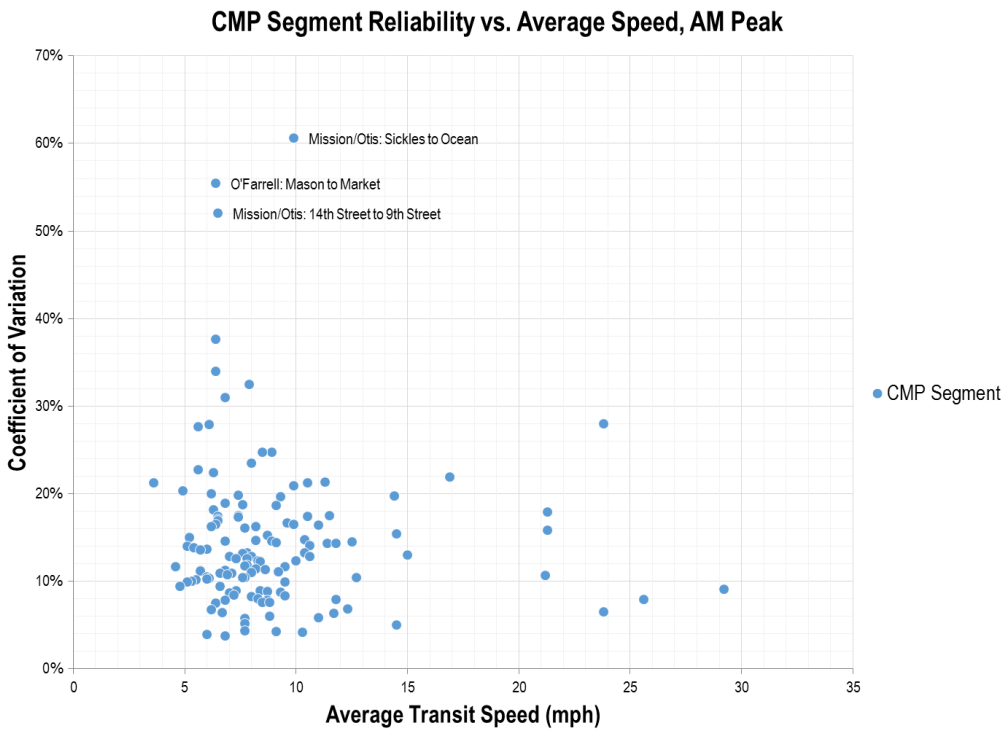
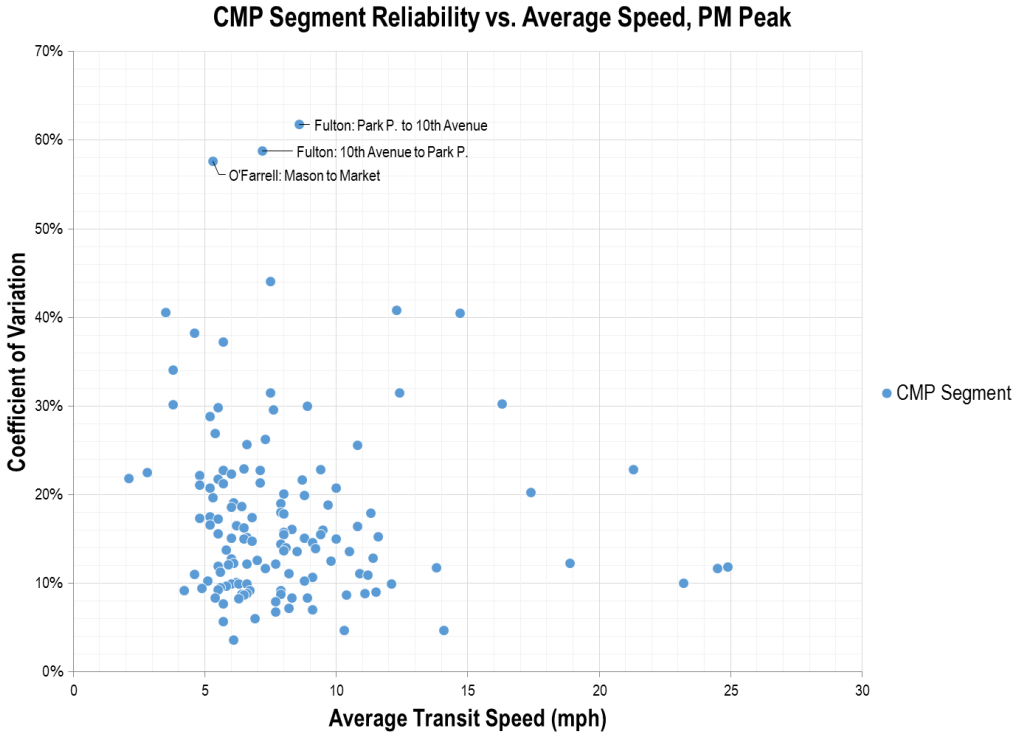


Figure A8-2 Reliability and Speed Matrix, PM Peak



As shown in Figures A8-1 and A8-2, the majority of CMP segments with speed less than 15 mph fall into 5 – 40% CV range, indicating moderate speeds and moderate reliability on average. It should be noted that buses were operated at extremely low speeds and least reliability on Mission St (in Outer Mission), O'Farrell St between Mason and Market, and Fulton St between 10th Ave and Park Presidio Blvd.

A.8.3.3 | Highest Auto to Transit Ratios

Auto-to-transit comparison was possible since the APC dataset is from the same monitoring period as the roadway LOS monitoring effort, when transit data was available. A ratio of 2 would indicate that, for a given CMp segment, on-board transit travel time is twice that of auto travel time. The CMP Segments with auto to transit speed ratios of 2.0 or higher are listed in Tables A8-6 and A8-7 below.

As described below, a small portion of the network where the speed ratio is between 0 and 1; indicating that transit is faster than or same as auto. All of these links are clustered in the downtown area.

- Market/Portola: Drumm to Van Ness (AM and PM)
- 1st St: Market to Harrison (PM)
- 2nd St: Brannan to Market (PM)
- Mission/Otis: 3rd to Embarcadero (PM)
- Mission/Otis: Embarcadero to 3rd (PM)
- Pine: Market to Kearny (PM)

Table A8-6 Segments with Auto to Transit Speed Ratio of 2.0 or higher, AM Peak

CMP ID	NAME	DIR	AUTO:TRANSIT SPEED RATIO	AVG. AUTO SPEED (MPH)	AVG. TRANSIT SPEED (MPH)
30	19th Ave/Park Presidio: Sloat to Junipero Serra	S	2.1	24.9	11.8
38	Bayshore: Industrial to Cesar Chavez	N	2.2	15.1	7
39	Bayshore: Jerrold to Industrial	S	2.5	19.3	7.7
76	Columbus: Greenwich to Montgomery	S	2.0	11.2	5.7
77	Doyle/ Richardson/ Lombard: County Line to SF Cemetery	E	2.1	30.8	14.4
104	Fulton: 10th Avenue to Arguello	E	2.0	15.6	8
111	Geary: Arguello to Gough	E	2.5	19.6	7.8
115	Geary: 25th Avenue to Great Hwy.	W	2.0	16.8	8.5
119	Geneva: Santos to Paris	W	2.2	18.4	8.3
137	J. Serra: County Line to Brotherhood	N	2.4	18.7	7.9
142	J. Serra: Brotherhood to County Line	S	3.8	54.6	14.5
154	Market/Portola: Castro to Guerrero	E	2.0	12.8	6.5
155	Market/Portola: Guerrero to Van Ness	E	2.2	9.9	4.6
159	Market/Portola: Guerrero to Castro	W	2.2	12.4	5.6
175	Mission/Otis: 9th to 14th	S	2.9	10.5	3.6
189	Ocean: Miramar to Howth	E	2.1	11.9	5.7
203	Potrero: 21st to Cesar Chavez	S	2.1	17.3	8.4
205	Skyline: Sloat to County Line	S	2.3	34.6	15
207	Sloat: Junipero Serra to Skyline	W	2.4	24.9	10.5
224	Van Ness/S. Van Ness: Washington to Lombard	N	2.0	10	5.1
227	Van Ness/S. Van Ness: Golden Gate to 13th	S	2.1	10.7	5.2
231	West Portal: Ulloa to Sloat	S	2.5	15.8	6.3
245	I-80: Fremont Exit to Treasure Island	E	2.8	58.7	21.2

Table A8-7 Segments with Auto to Transit Speed Ratio of 2.0 or higher, PM Peak

CMP ID	NAME	DIR	AUTO:TRANSIT SPEED RATIO	AVG. AUTO SPEED (MPH)	AVG. TRANSIT SPEED (MPH)
22	16th St: Mission to Market	W	2.0	10.1	5.1
29	19th Ave/Park Presidio: Lincoln to Sloat	S	2.0	20.5	10.3
39	Bayshore: Jerrold to Industrial	S	2.0	16.2	8
71	Cesar Chavez: Bryant to Guerrero	W	2.0	10.3	5.2

CMP ID	NAME	DIR	AUTO:TRANSIT SPEED RATIO	AVG. AUTO SPEED (MPH)	AVG. TRANSIT SPEED (MPH)
73	Columbus: Montgomery to Greenwich	N	2.2	11.9	5.5
92	Evans: 3rd to Cesar Chavez	W	2.0	24.6	12.4
103	Fulton: Park P. to 10th Avenue	E	2.2	19.1	8.6
111	Geary: Arguello to Gough	E	2.2	17.6	7.9
113	Geary: Gough to Arguello	W	2.1	18.5	8.8
117	Geneva: Cayuga to Paris	E	2.2	10.6	4.9
137	J. Serra: County Line to Brotherhood	N	2.6	17.4	6.6
141	J. Serra: 19th to Brotherhood	S	2.5	37.3	14.7
142	J. Serra: Brotherhood to County Line	S	3.8	53.6	14.1
150	Main: Mission to Market	N	2.3	11	4.8
155	Market/Portola: Guerrero to Van Ness	E	2.4	9.1	3.8
159	Market/Portola: Guerrero to Castro	W	2.8	15.4	5.5
170	Mission/Otis: 14th to 9th	N	2.4	9.2	3.8
175	Mission/Otis: 9th to 14th	S	5.0	10.5	2.1
182	North Point: Embarcadero to Columbus	W	2.0	15.8	8
183	North Point: Columbus to Van Ness	W	2.0	12.2	6.1
203	Potrero: 21st to Cesar Chavez	S	2.2	17.3	8
205	Skyline: Sloat to County Line	S	2.5	34.6	13.8
207	Sloat: Junipero Serra to Skyline	W	2.3	24.6	10.8
223	Van Ness/S. Van Ness: Golden Gate to Washington	N	2.1	13.6	6.4
224	Van Ness/S. Van Ness: Washington to Lombard	N	2.3	15.5	6.8
231	West Portal: Ulloa to Sloat	S	2.3	13	5.7

A.8.3.4 | Comparison of 2017 and 2015 PM Peak Period Results

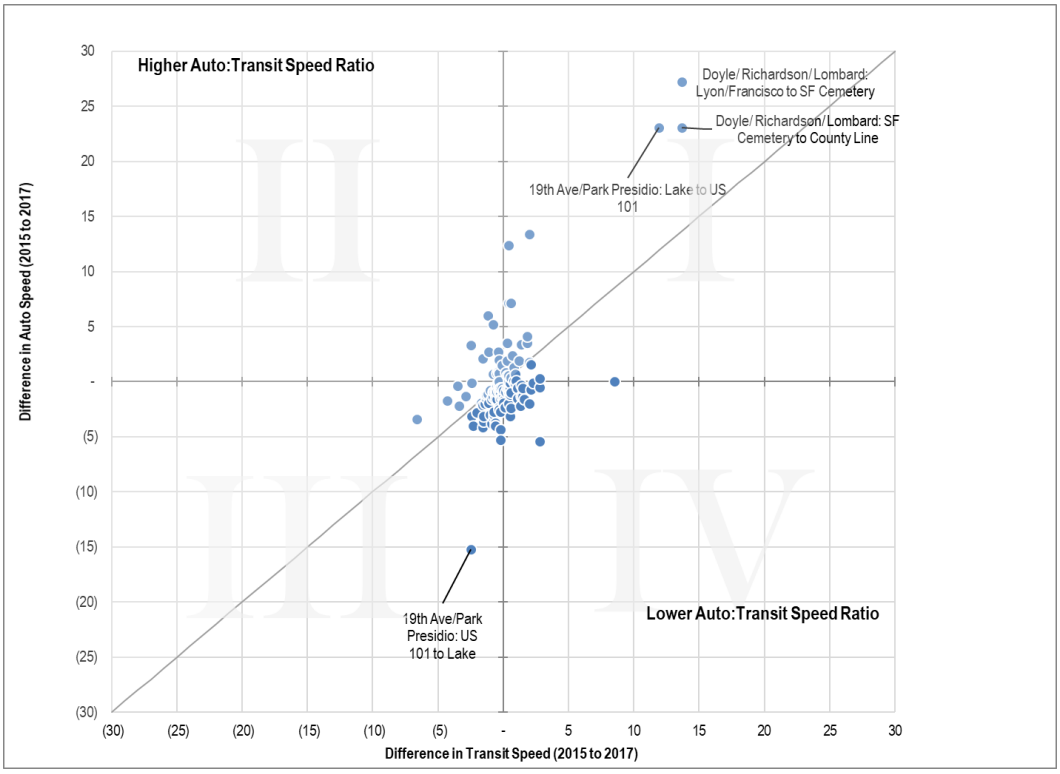
When comparing the CMP Segments common to both 2015 and 2017, there is a slightly higher average transit speed (7.3 mph in 2017 vs. 7.4 mph in 2015), and the maximum transit speed is higher in 2017 than in 2015.

Auto to transit speed ratios decreased on most segments and remained the same as 2015 on average, indicating the changes in congestion occurred at the same rate by different transport modes. It is worth noting that the average auto to transit speed ratios has increased from 1.7 to 2.1 since 2013, which indicates that transit is becoming measurably more competitive with driving.

As shown in Figure A8-3 below, auto to transit speed ratios changed from 2015 to 2017 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.

Figure A8-3 Change in Auto & Transit Speeds 2015 to 2017, Weekday PM Peak Period



Attachment 8.1: Transit Speed Monitoring Results (2015 – 2017)

				2017 AM Peak					2017 PM Peak					2015 AM Peak	2015 PM Peak
Name	From	To	Dir	Avg. Transit Speed (mph)	Auto:Transit Speed Ratio	Sample Size	Coefficient of Variation	S.D Transit Speed (mph)	Avg. Transit Speed (mph)	Auto:Transit Speed Ratio	Sample Size	Coefficient of Variation	S.D Transit Speed (mph)	Avg. Transit Speed (mph)	Avg. Transit Speed (mph)
1st St	Market	Harrison	S												
2nd St	Brannan	Market	N	7.8	1.2	275	12%	0.9	6.5	1.0	224	23%	1.5	7.2	5.7
2nd St	Market	Brannan	S	8.2	1.3	216	11%	0.9	6.4	1.7	229	19%	1.2	7.5	4.6
3rd St	Jamestown	Evans	N												
3rd St	Evans	Terry Francois	N												
3rd St	Terry Francois	Market	N	7.7	1.4	1091	6%	0.4	6.6	1.3	700	9%	0.6	7.7	7.1
3rd St	Terry Francois	Evans	S												
3rd St	Evans	Jamestown	S												
4th St/Stockton	O'Farrell	Harrison	S												
4th St/Stockton	Harrison	Channel	S												
5th St	Brannan	Market	N	5.5	1.6	283	10%	0.6	2.8	1.3	250	23%	0.6	5.5	3.8
5th St	Market	Brannan	S	6.4	1.8	890	7%	0.5	4.6	1.5	853	11%	0.5	5.9	4.2
6th St	Brannan	Market	N												
6th St	Market	Brannan	S												
7th St	Brannan	Market	N	6.2	1.4	213	20%	1.2	5.5	1.5	199	22%	1.2	6.6	4.7
8th St	Market	Bryant	S	6.8	1.8	182	19%	1.3	6.1	1.4	165	19%	1.2	6.7	5.7
9th St	Brannan	Market	N												
10th St	Market	Brannan	S												
16th St	Market	Mission	E	5.3	1.8	407	10%	0.5	5.8	1.6	506	10%	0.6	5.9	6
16th St	Mission	Potrero	E	6.1	1.7	1000	10%	0.6	5.7	1.4	1067	8%	0.4	7.3	6.3
16th St	Potrero	Mission	W	7.7	1.5	1148	4%	0.3	5.5	1.7	1025	12%	0.7	8	6.1
16th St	Mission	Market	W	6	1.8	470	11%	0.6	5.1	2.0	461	10%	0.5	6.4	6
19th Ave/Park Presidio	Junipero Serra	Sloat	N	12.3	1.4	486	7%	0.8	11.5	1.5	421	9%	1.0	12.2	9.5
19th Ave/Park Presidio	Sloat	Lincoln	N	8.4	1.6	1662	9%	0.7	10.4	1.8	1472	9%	0.9	7.9	10
19th Ave/Park Presidio	Lincoln	Lake	N	11.8	1.7	405	8%	0.9	11.6	1.7	442	15%	1.8	12.5	13.1
19th Ave/Park Presidio	Lake	US 101	N	23.8	1.9	84	7%	1.5	23.2	1.8	86	10%	2.3	19.9	11.3
19th Ave/Park Presidio	US 101	Lake	S	21.3	1.5	85	16%	3.4	16.3	1.4	90	30%	4.9	17.9	18.8

19th Ave/Park Presidio	Lake	Lincoln	S	11.7	1.9	510	6%	0.7	8	1.7	521	18%	1.4	13.4	10
19th Ave/Park Presidio	Lincoln	Sloat	S	10.3	1.8	1628	4%	0.4	10.3	2.0	1575	5%	0.5	11	11.1
19th Ave/Park Presidio	Sloat	Junipero Serra	S	11.8	2.1	495	14%	1.7	9.1	1.8	476	11%	1.0	13.9	9.4
Alemany	Junipero Serra	Lyell	E												
Alemany	Lyell	Bayshore	E												
Alemany	Bayshore	Lyell	W												
Alemany	Lyell	County Line	W												
Bay	Van Ness	Embarcadero	E												
Bay	Embarcadero	Van Ness	W												
Bayshore	County Line	Industrial	N												
Bayshore	Industrial	Cesar Chavez	N	7	2.2	252	13%	0.9	8.1	1.9	256	14%	1.1	9	9.7
Bayshore	Jerrold	Industrial	S	7.7	2.5	362	16%	1.2	8	2.0	336	15%	1.2	8.9	7.5
Bayshore	Industrial	County Line	S												
Beale/Davis	Clay	Mission	S	6.3	1.5	306	22%	1.4	6	1.4	358	22%	1.3	6.8	7.1
Brannan	Division	6th	E												
Brannan	6th	3rd	E												
Brannan	3rd	6th	W												
Brannan	6th	Division	W												
Broadway	Gough	Larkin	E												
Broadway	Larkin	Powell	E												
Broadway	Powell	Montgomery	E	5.7	1.4	228	11%	0.6	5.6	1.7	261	9%	0.5	7.2	6.8
Broadway	Montgomery	Embarcadero	E											6	5.6
Broadway	Embarcadero	Montgomery	W												
Broadway	Montgomery	Powell	W						3.5	1.3	57	41%	1.4		3
Broadway	Powell	Larkin	W												
Broadway	Larkin	Gough	W												
Brotherhood	Junipero Serra	Alemany	E												
Brotherhood	Alemany	Junipero Serra	W												
Bryant	Division	4th Street	E	7.2	1.6	865	8%	0.6	5.9	1.4	889	12%	0.7	9.2	6.1
Bryant	4th Street	Embarcadero	E												
Bush	Masonic	Gough	E												
Bush	Gough	Market	E												
Castro/Divisadero	Market	14th Street	N	6.8	1.5	150	15%	1.0	6.8	1.8	128	17%	1.2	7.1	7.6
Castro/Divisadero	14th	Geary	N	6.4	1.6	333	16%	1.1	6.5	1.6	309	9%	0.6	6.6	6.7

Castro/Divisadero	Geary	Pine	N	5.1	1.5	94	14%	0.7	5.2	1.8	98	29%	1.5	6.1	6.6
Castro/Divisadero	Pine	Geary	S	7.4	1.6	86	20%	1.5	5.7	1.6	102	21%	1.2	6.8	5.5
Castro/Divisadero	Geary	14th	S	7	1.8	364	9%	0.6	5.3	1.8	346	20%	1.0	6.9	5.6
Castro/Divisadero	14th Street	Market	S	8.7	1.3	162	15%	1.3	7.3	1.3	150	26%	1.9	9.3	8.3
Cesar Chavez	Guerrero	Bryant	E	7.6	1.7	338	10%	0.8	6.5	1.5	323	16%	1.1	8	6.8
Cesar Chavez	Bryant	Kansas	E												
Cesar Chavez	Kansas	3rd Street	E												
Cesar Chavez	3rd Street	Kansas	W												
Cesar Chavez	Kansas	Bryant	W												
Cesar Chavez	Bryant	Guerrero	W	6.9	1.4	470	11%	0.7	5.2	2.0	456	17%	0.9	6	6.3
Clay	Kearny	Davis	E	7.3	1.5	1416	9%	0.7	7.7	1.1	1477	12%	0.9	7.5	6.6
Columbus	Montgomery	Greenwich	N	6.6	1.8	417	9%	0.6	5.5	2.2	336	9%	0.5	6.6	4.4
Columbus	Greenwich	North Point	N	7.7	1.5	439	10%	0.8	6.6	1.9	347	10%	0.7	8	7
Columbus	North Point	Greenwich	S	6.5	1.7	348	17%	1.1	6.7	1.3	314	9%	0.6	6.5	6.3
Columbus	Greenwich	Montgomery	S	5.7	2.0	292	14%	0.8	5.7	1.6	204	37%	2.1	4.8	4.2
Doyle/ Richardson/ Lombard	County Line	SF Cemetery	E	14.4	2.1	86	20%	2.8	21.3	1.8	85	23%	4.9	9.7	18.5
Doyle/ Richardson/ Lombard	SF Cemetery	Lyon/Francisco	E	14.4	1.2	86	20%	2.8	21.3	1.4	85	23%	4.9	9.7	18.5
Doyle/ Richardson/ Lombard	Lyon/Francisco	Van Ness	E	11	1.7	1363	6%	0.6	8.2	1.5	1409	7%	0.6	13.7	12.5
Doyle/ Richardson/ Lombard	Van Ness	Lyon/Francisco	W	9.1	1.5	1385	4%	0.4	8.9	1.5	1403	8%	0.7	9.5	8.1
Doyle/ Richardson/ Lombard	Lyon/Francisco	SF Cemetery	W	29.2	1.6	87	9%	2.6	24.5	1.6	91	12%	2.9	16.2	10.8
Doyle/ Richardson/ Lombard	SF Cemetery	County Line	W	29.2	1.7	87	9%	2.6	24.5	1.5	91	12%	2.9	16.2	10.8
Drumm	Market	Washington	N												
Drumm	Washington	Market	S												
Duboce/Division	Market	Mission	E												
Duboce/Division	Mission	Potrero	E												
Duboce/Division	Potrero	Mission	W												
Duboce/Division	Mission	Market	W												
Embarcadero	Townsend	North Point	N												
Embarcadero	North Point	Townsend	S												

Evans	Cesar Chavez	3rd Street	E	9.9	1.1	179	21%	2.1	11.4	1.2	143	13%	1.5	9.8	10.5
Evans	3rd Street	Cesar Chavez	W	12.5	1.3	154	14%	1.8	12.4	2.0	118	31%	3.9	13.5	12
Fell	Gough	Market	E												
Fell	Gough	Laguna	W												
Fell	Laguna	Stanyan	W												
Folsom	13th Street	8th Street	E	7.6	1.6	107	13%	1.0	5.5	1.7	114	17%	0.9	8.6	7.8
Folsom	8th Street	4th Street	E	8.2	1.6	221	15%	1.2	6	1.4	240	15%	0.9	7.1	4.6
Folsom	4th Street	1st Street	E												
Folsom	1st Street	Embarcadero	E												
Franklin	Market	Pine	N												
Franklin	Pine	Lombard	N												
Fremont	Harrison	Market	N												
Fulton	Park P.	10th Avenue	E						8.6	2.2	27	62%	5.3	9.2	8.8
Fulton	10th Avenue	Arguello	E	8	2.0	256	23%	1.9	7.5	1.9	325	31%	2.4	8.8	9.9
Fulton	Arguello	Masonic	E	7.8	1.7	384	13%	1.0	7.9	1.5	421	18%	1.4	7.8	8.6
Fulton	Masonic	Arguello	W	9.5	1.6	343	8%	0.8	8.3	1.6	448	16%	1.3	9.9	8.5
Fulton	Arguello	10th Avenue	W	16.9	1.2	141	22%	3.7	10	1.6	251	21%	2.1	13.8	11.3
Fulton	10th Avenue	Park P.	W						7.2	1.9	27	59%	4.2	12.1	6.7
Geary	Great Hwy.	25th Avenue	E	9.2	1.9	548	11%	1.0	12.3	1.3	15	41%	5.0	10.6	10.2
Geary	25th Avenue	Arguello	E	8.3	1.8	704	8%	0.7	8.7	1.7	31	22%	1.9	8.6	8.4
Geary	Arguello	Gough	E	7.8	2.5	439	13%	1.0	7.9	2.2	75	19%	1.5	9.2	8.3
Geary	Kearny	Gough	W	8.9	1.2	57	25%	2.2	7	1.1	92	13%	0.9	8.4	7.3
Geary	Gough	Arguello	W	9.6	1.8	64	17%	1.6	8.8	2.1	409	15%	1.3	9.3	8.5
Geary	Arguello	25th Avenue	W	8.7	1.5	40	9%	0.8	7.7	1.7	708	8%	0.6	8.9	7.8
Geary	25th Avenue	Great Hwy.	W	8.5	2.0	27	25%	2.1	9.1	1.9	566	7%	0.6	10.7	10.7
Geneva	Ocean	Cayuga	E	7.1	1.4	363	11%	0.8	6.5	1.5	484	15%	1.0	6.9	5.9
Geneva	Cayuga	Paris	E	6.8	1.8	231	8%	0.5	4.9	2.2	295	9%	0.5	6.9	5.3
Geneva	Paris	Santos	E	11.3	1.6	141	21%	2.4	11.2	1.7	169	11%	1.2	10	9.4
Geneva	Santos	Paris	W	8.3	2.2	293	12%	1.0	10.8	1.6	250	26%	2.8	10.2	11.1
Geneva	Paris	Cayuga	W	4.8	1.8	308	9%	0.5	5.6	1.7	251	11%	0.6	4.9	5.6
Geneva	Cayuga	Ocean	W	5.4	1.5	543	14%	0.7	6.2	1.5	384	16%	1.0	6.6	6.4
Golden Gate	Masonic	Franklin	E												
Golden Gate	Franklin	Market	E	6.2	1.6	212	16%	1.0						7.5	
Gough	Pine	Geary	S												
Gough	Geary	Golden Gate	S												

Gough	Golden Gate	Market	S												
Guerrero/San Jose	Monterey	29th Street	N												
Guerrero/San Jose	29th Street	Cesar Chavez	N												
Guerrero/San Jose	Cesar Chavez	29th Street	S												
Guerrero/San Jose	29th Street	Monterey	S												
Harrison	Embarcadero	1st Street	W												
Harrison	1st Street	4th Street	W	7.7	1.5	122	12%	0.9	5.4	1.4	129	27%	1.5	8.5	5.6
Harrison	4th Street	8th Street	W	8.8	1.9	770	6%	0.5	8.3	1.7	790	8%	0.7	8.6	8.4
Harrison	8th Street	Division	W	6.6	1.5	464	11%	0.7	6.3	1.7	474	8%	0.5	6	6.2
Hayes	Market	Gough	W	6.5	1.4	83	17%	1.1	4.8	1.6	100	17%	0.8	6.6	5.4
Howard	Embarcadero	SVanNess	W												
J. Serra	County Line	Brotherhood	N	7.9	2.4	205	33%	2.6	6.6	2.6	191	15%	1.0	9.8	13.2
J. Serra	Brotherhood	19th	N	9.1	1.1	168	19%	1.7	9.2	1.2	132	14%	1.3	7.2	7.9
J. Serra	19th	Sloat	N												
J. Serra	Sloat	19th	S												
J. Serra	19th	Brotherhood	S	23.8	1.8	82	28%	6.7	14.7	2.5	75	40%	6.0	18.9	17.2
J. Serra	Brotherhood	County Line	S	14.5	3.8	212	5%	0.7	14.1	3.8	221	5%	0.7		
Kearny	Market	Columbus	N	5.6	1.3	167	23%	1.3	6.6	1.3	30	26%	1.7	6.1	6.8
King	4th Street	2nd Street	E												
King	2nd Street	4th Street	W												
Lincoln/Kezar	19th Avenue	5th Ave.	E	10	1.8	1348	12%	1.2	9.4	1.9	594	23%	2.1	10.5	10.1
Lincoln/Kezar	5th Ave.	Stanyan	E												
Lincoln/Kezar	Stanyan	5th Ave.	W												
Lincoln/Kezar	5th Ave.	19th Avenue	W	14.5	1.3	566	15%	2.2	10	1.5	867	15%	1.5	13.9	11.7
Main	Mission	Market	N	4.9	1.8	409	20%	1.0	4.8	2.3	229	21%	1.0	8	6
Market/Portola	Sloat	Santa Clara	E												
Market/Portola	Santa Clara	Burnett	E	10.4	1.5	591	13%	1.4	11.1	1.7	584	9%	1.0	12.4	12.4
Market/Portola	Burnett	Castro	E												
Market/Portola	Castro	Guerrero	E	6.5	2.0	110	17%	1.1	5.4	1.9	107	8%	0.5	6.1	6.2
Market/Portola	Guerrero	Van Ness	E	4.6	2.2	174	12%	0.5	3.8	2.4	158	30%	1.1	5.9	5.3
Market/Portola	Van Ness	Drumm	E	6	1.3	3016	4%	0.2	5.7	1.1	2373	6%	0.3	6.7	6
Market/Portola	Drumm	Van Ness	W	6.8	1.0	3968	4%	0.3	6.1	0.9	4155	4%	0.2	7.9	7
Market/Portola	Van Ness	Guerrero	W	7.4	1.9	160	17%	1.3	5.8	1.9	159	14%	0.8	6.4	4.8

Market/Portola	Guerrero	Castro	W	5.6	2.2	122	28%	1.5	5.5	2.8	113	16%	0.9	5.4	4.8
Market/Portola	Castro	Burnett	W												
Market/Portola	Burnett	Santa Clara	W	9.9	1.7	326	16%	1.6	11.3	1.5	365	18%	2.0	11.2	11.3
Market/Portola	Santa Clara	Sloat	W												
Masonic	Page	Geary	N	8.6	1.7	416	11%	1.0	8	1.6	338	14%	1.1	7.4	6.6
Masonic	Geary	Bush/Euclid	N												
Masonic	Presidio	Geary	S												
Masonic	Geary	Page	S	7.7	1.8	375	5%	0.4	7.1	1.8	447	21%	1.5	7.7	7.4
Mission/Otis	Sickles	Ocean	N	9.9	1.4	375	61%	6.0	12.1	1.2	83	10%	1.2	9.9	9.8
Mission/Otis	Ocean	Cesar Chavez	N	8.9	1.3	190	15%	1.3	9.7	1.4	245	19%	1.8	7.5	8.2
Mission/Otis	Cesar Chavez	14th Street	N	9.1	1.3	96	14%	1.3	7.9	1.2	100	9%	0.7	7.8	6.8
Mission/Otis	14th Street	9th Street	N	6.5	1.6	6	52%	3.4	3.8	2.4	16	34%	1.3	5.4	5.4
Mission/Otis	9th Street	3rd Street	N	10.6	1.3	68	14%	1.5	7.9	1.3	55	14%	1.1	8.4	7
Mission/Otis	3rd Street	Embarcadero	N	6.1	1.2	144	28%	1.7	7.6	0.9	169	30%	2.2	6.8	6
Mission/Otis	Embarcadero	3rd Street	S	6.4	1.4	99	38%	2.4	8.9	0.8	63	30%	2.7	6.2	6.9
Mission/Otis	3rd Street	9th Street	S	11.4	1.1	108	14%	1.6	9.8	1.2	73	13%	1.2	9.3	7
Mission/Otis	9th Street	14th Street	S	3.6	2.9	121	21%	0.8	2.1	5.0	122	22%	0.5	6.8	5.6
Mission/Otis	14th Street	Cesar Chavez	S	9.3	1.5	151	20%	1.8	7.3	1.4	147	12%	0.9	8.9	6.7
Mission/Otis	Cesar Chavez	Ocean	S	10.5	1.2	153	17%	1.8	9.1	1.2	138	15%	1.3	8.7	7
Mission/Otis	Ocean	Sickles	S	12.7	1.3	64	10%	1.3	8.8	1.6	393	20%	1.8	9.6	8.5
Montgomery	Broadway	Bush	S												
North Point	Van Ness	Columbus	E	9.5	1.4	689	10%	0.9	8.2	1.2	675	11%	0.9	10.2	8
North Point	Columbus	Embarcadero	E	11	1.2	111	16%	1.8	7.5	1.2	144	44%	3.3	9.4	7.9
North Point	Embarcadero	Columbus	W	7.6	1.6	153	19%	1.4	8	2.0	141	16%	1.3	6.4	6.6
North Point	Columbus	Van Ness	W	8	1.5	829	8%	0.7	6.1	2.0	677	12%	0.7	7.7	5.7
Oak	Stanyan	Divisadero	E												
Oak	Divisadero	Fillmore	E												
Oak	Fillmore	Laguna	E												
Oak	Laguna	Franklin	E												
Ocean	19th Avenue	Miramar	E												
Ocean	Miramar	Howth	E	5.7	2.1	317	11%	0.6	6	1.8	286	10%	0.6	5.5	5.5
Ocean	Howth	Miramar	W	6	1.7	260	14%	0.8	4.8	1.7	123	22%	1.1	5.7	4.3
Ocean	Miramar	19th Avenue	W												
Octavia	Market	Fell	N												
Octavia	Fell	Market	S												

O'Farrell	Gough	Mason	E	6.8	1.5	76	31%	2.1	4.6	1.9	86	38%	1.8	8.6	8
O'Farrell	Mason	Market	E	6.4	1.4	12	55%	3.5	5.3	1.3	9	58%	3.1	7	5.3
Pine	Market	Kearny	W						6	0.9	552	19%	1.1		8.9
Pine	Kearny	Leavenworth	W												
Pine	Leavenworth	Franklin	W												
Pine	Franklin	Presidio	W												
Potrero	Cesar Chavez	21st Street	N	7.4	1.9	374	18%	1.3	7.1	1.8	387	23%	1.6	7.1	7.9
Potrero	21st Street	Division	N	9.5	1.2	330	12%	1.1	9.4	1.4	360	15%	1.5	9.3	9
Potrero	Division	21st Street	S	9.3	1.7	440	9%	0.8	8.8	1.8	421	10%	0.9	10	8.2
Potrero	21st Street	Cesar Chavez	S	8.4	2.1	454	12%	1.0	8	2.2	451	20%	1.6	6.8	6
Skyline	County Line	Sloat	N	21.3	1.7	207	18%	3.8	24.9	1.4	219	12%	3.0	19.8	16.4
Skyline	Sloat	County Line	S	15	2.3	268	13%	1.9	13.8	2.5	256	12%	1.6		
Sloat	Skyline	Junipero Serra	E	11.5	1.8	381	17%	2.0	10.5	1.9	342	14%	1.4	11.1	11.2
Sloat	Junipero Serra	Skyline	W	10.5	2.4	439	21%	2.2	10.8	2.3	424	16%	1.8	14	13.2
Stanyan	Fulton	Turk	N												
Stanyan	Turk	Fulton	S												
Sutter	Divisadero	Gough	E	8.8	1.3	551	8%	0.7	7.7	1.4	529	7%	0.5	9	7.9
Sutter	Market	Mason	W	7.3	1.2	627	13%	0.9	6.3	1.3	698	10%	0.6	6.6	5.7
Sutter	Mason	Gough	W	6.7	1.7	865	6%	0.4	6.9	1.6	1108	6%	0.4	6.8	6.4
Sutter	Gough	Divisadero	W	8.7	1.3	715	8%	0.7	7.9	1.4	854	9%	0.7	8.7	7.6
Townsend	7th Street	2nd Street	E	8	1.4	379	13%	1.0	5.5	1.6	282	30%	1.6	8.4	5.1
Townsend	2nd Street	7th Street	W	8.2	1.3	434	16%	1.3	5.2	1.8	455	21%	1.1	9.2	5.7
Turk	Stanyan	Divisadero	E	8.5	1.5	515	8%	0.6	9.5	1.5	197	16%	1.5	7.4	10.1
Turk	Market	Hyde	W	6.4	1.6	102	34%	2.2	6	1.5	260	13%	0.8	7	6.7
Turk	Hyde	Gough	W												
Turk	Gough	Divisadero	W												
Turk	Divisadero	Stanyan	W	10.4	1.6	262	15%	1.5	8.5	1.9	414	14%	1.2	9.9	9
Van Ness/S. Van Ness	Cesar Chavez	13th	N												
Van Ness/S. Van Ness	13th	Golden Gate	N	6.8	1.3	229	11%	0.8	6.2	1.4	232	10%	0.6	6.4	5.7
Van Ness/S. Van Ness	Golden Gate	Washington	N	6.2	1.6	340	7%	0.4	6.4	2.1	317	9%	0.6	5.4	5.2
Van Ness/S. Van Ness	Washington	Lombard	N	5.1	2.0	271	10%	0.5	6.8	2.3	278	15%	1.0	5.2	7.4
Van Ness/S. Van Ness	Lombard	Washington	S	8	1.4	248	11%	0.9	6.6	1.7	232	12%	0.8	6.6	6.2
Van Ness/S. Van Ness	Washington	Golden Gate	S	6	1.9	362	10%	0.6	5.2	1.5	348	18%	0.9	5.7	5.2

Van Ness/S. Van Ness	Golden Gate	13th	S	5.2	2.1	557	15%	0.8	4.2	1.6	563	9%	0.4	6.2	4.7
Van Ness/S. Van Ness	13th	Cesar Chavez	S												
Washington	Drumm	Kearny	W												
West Portal	Sloat	Ulloa	N	10.6	1.1	297	13%	1.4	10.9	1.1	286	11%	1.2	11.4	11.4
West Portal	Ulloa	Sloat	S	6.3	2.5	298	18%	1.1	5.7	2.3	282	23%	1.3	7	5.8
I-280	Junipero Serra	Weldon	N												
I-280	Weldon	6th/Brannan	N												
US 101/Central Freeway	C & C Limit	Cortland	N												
US 101/Central Freeway	Cortland	I-80	N												
US 101/Central Freeway	I-80	Market	N												
I-80	Treasure Island	Fremont Exit	W	25.6	1.8	88	8%	2.0	17.4	1.2	63	20%	3.5		
I-80	Fremont Exit	US-101	W												
I-280	6th/Brannan	Weldon	S												
I-280	Weldon	Junipero Serra	S												
US 101/Central Freeway	Market	I-80	S												
US 101/Central Freeway	I-80	Cortland	S												
US 101/Central Freeway	Cortland	Monster Park Exit	S												
I-80	US-101	Fremont Exit	E												
I-80	Fremont Exit	Treasure Island	E	21.2	2.8	85	11%	2.3	18.9	1.9	59	12%	2.3		

APPENDIX 9

Multimodal Counts Data





APPENDIX 9

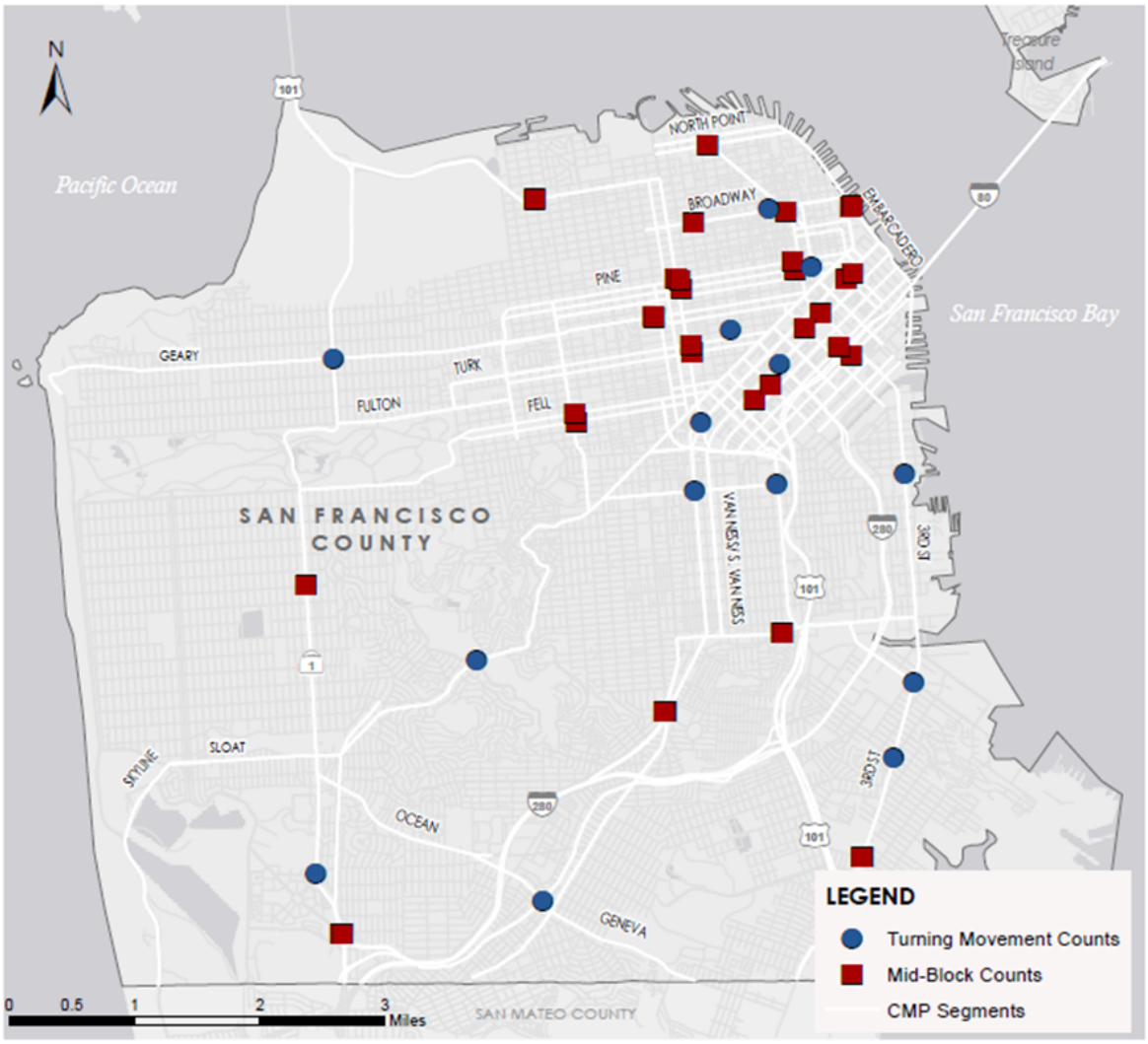
MULTIMODAL COUNTS DATA

KEY TOPICS

- Turning Movement Counts
- Mid-block Counts

In 2017, the Transportation Authority conducted mid-block and intersection volume counts. These counts are in addition to the legislatively required CMP performance measures and are therefore not subject to deficiency analyses. Two types of field volume counts were conducted: turning movement counts and mid-block counts (Figure A9-1). The data collected with these counts are used by agencies for planning and operations activities.

Figure A9-1 Location of Turning Movement and Mid-Block Counts



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

This map is for planning purposes only.

A.9.1. 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. Results of multimodal peak period intersection counts are shown in Table A9-1.

Table A9-1 Average Weekday Multimodal Volumes at Intersection Count Locations

	AM			PM		
LOCATION	VEHICLE TRAFFIC	BICYCLES	PEDESTRIANS	VEHICLE TRAFFIC	BICYCLES	PEDESTRIANS
3rd St and 16th St	3,792	118	274	4,357	57	412
3rd St and Evans Ave	3,857	66	150	3,609	56	185
3rd St and Palou Ave	3,665	49	688	3,621	50	1,043
6th St and Howard St	5,003	87	854	5,964	657	1,107
19th Ave and Holloway Ave	9,318	20	1,610	9,929	35	2,091
Geneva Ave and Alemany Blvd	5,505	17	259	5,376	21	251
Leavenworth St and Eddy St	1,873	73	1,278	2,114	35	2,080
Mission St and 16th St	2,491	77	3,658	3,583	135	6,214
Montgomery St and Bush St	3,276	101	5,539	2,983	181	6,559
Park Presidio Blvd and Geary Blvd	11,751	5	687	12,270	18	693
Portola Dr and O'Shaughnessy/Woodside	7,887	26	428	8,264	15	296
Potrero Ave and 16th St	4,212	47	821	5,510	104	1,018
South Van Ness Ave and 13th St	7,513	24	296	7,285	88	392
Stockton St and Broadway	3,100	59	2,348	4,095	49	5,465
Total	73,243	769	18,890	78,960	1,501	27,806

A.9.2. Mid-block Counts

Mid-block counts were recorded at 28 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. Mid-block counts at one location - Van Ness between Pine and California – could not be collected due to the ongoing construction. Results of multiday mainline traffic counts are shown in Table A9-2.

Table A9-2 Average Weekday Traffic Volumes at Mainline Count Locations

	NORTHBOUND			SOUTHBOUND		
LOCATION	DAILY	AM	PM	DAILY	AM	PM
19th Ave between Moraga and Noriega	35,102	3,891	4,637	36,013	4,149	4,746

	NORTHBOUND			SOUTHBOUND		
LOCATION	DAILY	AM	PM	DAILY	AM	PM
Fremont St between Mission and Natoma	20,011	2,520	2,116			
Junipero Serra Blvd between Font and Brotherhood Ramps	44,693	5,147	5,383	46,212	5,664	5,870
Mission St between 24th and 25th	3,560	357	403	5,155	398	736
San Jose Ave between Randall and Saint Mary's	20,002	3,202	2,915	20,001	2,683	3,566
The Embarcadero between Broadway and Washington	21,112	2,740	2,697	16,691	2,111	2,123
1st St between Mission and Minna				21,313	2,792	1,493
3rd St between Fitzgerald and Gilman	12,501	1,834	1,474	10,751	1,052	1,682
3rd St between Minna and Howard	28,696	3,370	3,188			
4th St between Minna and Howard				16,028	1,487	2,256
7th St between Howard and Folsom	20,520	2,543	2,513			
8th St between Tehama and Celementina				18,774	2,270	2,446
Columbus Ave between Broadway and Pacific	9,290	750	1,555	8,132	1,442	704
Total	215,488	26,353	26,881	199,069	24,049	25,623
	EASTBOUND			WESTBOUND		
Bay St between Leavenworth and Columbus	11,872	2,381	1,322	13,054	1,121	2,691
Broadway Tunnel between Larken and Powell	15,725	2,236	2,000	13,183	1,167	2,181
Bryant St between 3rd and 4th	22,227	3,328	1,924			
Bush St between Grant and Kearny	15,757	2,343	1,770			
Bush St between Van Ness and Polk	19,064	3,048	2,185			
Cesar Chavez St between York and Hampshire	25,209	3,538	3,276	26,136	3,191	3,659
Fell St between Divisadero and Scott				32,042	3,212	4,556
Geary Blvd between Laguna and Gough	15,867	2,371	1,863	13,993	1,226	2,485
Golden Gate Ave between Van Ness and Polk	13,172	1,972	1,637			
Harrison St between 3rd and 4th				26,424	2,754	3,276
Lombard St between Broderick and Divisadero	21,849	3,890	2,253	19,532	1,926	3,074
Oak St between Divisadero and Scott	30,982	3,920	3,453			
Pine St between Grant and Kearny				16,514	1,552	2,333
Pine St between Van Ness and Polk				21,030	1,816	3,111
Turk St between Van Ness and Polk				11,348	1,174	1,788
Total	191,724	29,028	21,683	193,257	19,139	29,153

APPENDIX 10

Travel Demand Management





APPENDIX 10

TRAVEL DEMAND MANAGEMENT

KEY TOPICS

- TDM General Plan Objectives
- TDM Requirements
- TDM Policies
- TDM Programs
- TDM Studies and Plans

A.10.1. TDM General Plan Objectives

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.

A.10.2. TDM Requirements

A.10.2.1 | 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. The recently adopted 2017 Clean Air Plan focuses on laying groundwork for a long-term effort to reduce Bay Area GHG emissions 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050. It also updates the 2010 Clean Air Plan, to fulfill state ozone planning requirements and includes all feasible measures to reduce emissions of ozone precursors—reactive organic gases (ROG) and nitrogen oxides (NOx)—and reduce transport of ozone and its precursors to neighboring air basins. In addition, the Plan builds upon and enhances the Air District's efforts to reduce emissions of fine particulate matter and toxic air contaminants.

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.

A.10.2.2 | TDM Requirements on New Development

A.10.2.2.1 | 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.

A.10.2.2.2 | Institutional Master Plans

TDM measures are also present in Institutional Master Plans (IMP), 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 IMP 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.

A.10.2.2.3 | 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 square feet 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.

A.10.2.2.4 | 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.

A.10.2.2.5 | 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.

A.10.3. TDM Policies

A.10.3.1 | 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. To date, 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.

A.10.3.2 | 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. In February 2017, SFMTA approved the continuation of the Commuter Shuttle Program, based in part on a mid-year evaluation and commuter shuttles hub study. The hub study, conducted jointly by SFMTA and the Transportation Authority, found that a "hub" model, which would concentrate commuter shuttle stops at a small number of designated locations in the city, would dramatically reduce shuttle ridership, increase driving by current shuttle riders, and increase the risk for crashes in the city. The mid-year evaluation found that the existing program had led to a lower potential for conflicts with Muni, fewer shuttles on small, residential streets, a cleaner vehicle fleet, a reduced potential for service disruptions, including those arising from labor disputes, and increased enforcement for violations of parking laws. The updated program allows the SFMTA to establish shuttle vehicle accessibility guidelines and to issue higher penalties for repeated violations of the shuttle permit terms and conditions.

A.10.3.3 | SFMTA Carsharing Policy

Carsharing programs are encouraged in San Francisco as a means to reduce car ownership and decrease VMT[1]. The precise number of carsharing members in San Francisco is unknown but is increasing, as new car sharing vendors like Maven and GIG Car Share (in the East Bay) enter the market.

To further encourage carsharing, SFMTA developed a carsharing policy in 2013. The policy outlines the On-Street Car Sharing Pilot Program whereby private carsharing companies can apply to use on-street parking spaces for carshare vehicles. As of August 2015, 202 on-street parking spaces were reserved for carshare vehicles. A 2017 evaluation of the pilot program found that car share cars enrolled in the program were in use 6 hours a day, relative to 1 hour a day for a private vehicle, and were used on-average by 19 unique users per month.

A.10.3.4 | 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 SFpark program.

SFpark was a demonstration project funded through the Department of Transportation's Urban Partnership Program. For the SFpark 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

SFpark 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

[1] 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.

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. After the end of the pilot demonstration, the SFMTA continued demand-responsive meter rate adjustments, with the most recent on February 1, 2017.

A.10.4. TDM Programs

A.10.4.1 | 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.

A.10.4.2 | 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.

A.10.4.3 | 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.

A.10.4.4 | Bikesharing

Ford GoBike, formerly Bay Area Bike Share, 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) Originally operated by Alta Bikeshare, MTC transferred operations to Motivate in May 15, and in 2017 Motivate expanded the program to 5 Bay Area Cities with 540 stations and 7,000 bicycles, including a substantial expansion within San Francisco.

A.10.5. TDM Studies and Plans

A.10.5.1 | BART Smart Travel Rewards Pilot

BART Smart Travel Rewards Pilot (BART Perks): the Transportation Authority and BART jointly ran a six-month test program to explore new ways to reduce crowding on the BART system. The goal was to see if small incentives could effectively encourage people to ride outside of the morning rush. Enrollment grew rapidly after the program launch and reached nearly 18,000 participants by the end of the program. Initial evaluation results suggest that the program was effective at incentivizing some riders (about 10% of participant peak hour travelers) to shift their commute times. The Transportation Authority and BART are completing a full evaluation to determine whether and how to pursue similar programs in the future.

A.10.5.2 | Travel Demand Management Ordinance

The SFMTA, City Planning Department, and SFCTA partnered to craft the Travel Demand Management (TDM) Ordinance as part of the Transportation Sustainability Program (TSP). The TDM Ordinance introduced TDM requirements on new construction or changes of land use in San Francisco, and provides a toolkit to aid developers in designing an appropriate TDM program. 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 inter-agency team is committed to analyzing the effectiveness of TDM measures, through research, to improve the toolkit by prioritizing the most effective measures. The San Francisco Board of Supervisors approved the ordinance on February 7, 2017.

A.10.5.3 | Parking Supply and Utilization Study

Adopted in 2016, the Parking Supply and Utilization Study evaluated the feasibility of several parking-related strategies for reducing congestion by shifting trips from auto to non-auto modes or shifting trips to less congested time periods. The evaluated parking strategies performed modestly in mitigating area-wide congestion and were less effective than the preferred cordon pricing scenario examined in the 2010 Mobility Access and Pricing Study. Rather than pursue any of the strategies analyzed, the study recommended that agencies advance existing parking-related initiatives, including the Residential Parking Permit Evaluation and Reform Project and implementation of the city's proposed TDM Ordinance (see "Shift", above).

A.10.5.4 | Child Transportation Survey Report

Completed in 2016, the Child Transportation Survey Report provided more in-depth and comprehensive information on school transportation issues in San Francisco and identified potential solutions to help mitigate school commute difficulties. Of participants surveyed, most school commutes are by car, with bicycling and walking comprising less than 10%. The high share of auto usage results in congestion impacts focused around school sites at specific times of day, although the overall contribution to citywide congestion is marginal. The report concludes with recommendations that include scoping a pilot program to offer shuttle services in a select geographic area, identification of a preferred mobile application to support carpooling to school, investment in programs that encourage bicycling and walking to school, and improving and expanding transit options to improve competitiveness with driving and reduce barriers to transit.

A.10.5.5 | Lombard Street: Managing Access to the Crooked Street Study

Lombard Street: Managing Access to the Crooked Street: completed in March 2017, this study focused on the neighborhood at and around the "crooked street" block of Lombard Street. The block is one of the city's most prominent landmarks and attracts millions of visitors each year. The study identified and evaluated a options to manage visitor access and circulation on and around the Crooked Street while maintaining the character and livability of the residential neighborhood and avoiding spillover effects into adjacent streets and neighborhoods. The study recommended (1) improved enforcement of existing regulations by the San Francisco Municipal Transportation Agency (SFMTA) and San Francisco Police Department, (2) engagement of the tourism industry as partners in visitor management, (3) engineering and signage enhancements by SFMTA, and (4) the development and implementation of a reservations and pricing system for vehicles by the Transportation Authority, including the creation or designation of a dedicated entity to manage the system and other interventions to address the impacts of visitors to the Crooked Street.

A.10.5.6 | Bayview Moves Pilot Project

This pilot program, supported by Prop K funds, began in January 2016 and concluded in June 2017. The pilot program partnered with three Community Business Organizations (CBOs) to provide ride matching, ride sharing and general mobility management to the Bayview Community. While the program has three main partners, several more CBOs use the service and pay for their respective trips. Ridership steadily increased throughout the course of the pilot as additional CBOs learned of the program and adjusted their budgets to suit the program's structure. At the conclusion of the pilot, the Transportation Authority supported CBO efforts to develop an ongoing program that will sustain successful elements of the pilot.

A.10.5.7 | 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 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.

A.10.5.8 | San Francisco Transportation Plan

The 2013 San Francisco Transportation Plan 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

Every four years, the Transportation Authority updates the city's long-range transportation plan. The SFTP outlines how transportation funding in the city will be prioritized through 2040, with consideration for citywide goals as well as expected and potential revenues. The Transportation Authority adopted the most recent SFTP update in October 2017. In partnership with the SFMTA and the Planning Department, the Transportation Authority began major update to the SFTP in 2016 as part of Connect SF. Connect SF began a visioning exercise, along with the Subway Vision, the first in a series of modal studies (including TDM) in 2016. The project team will conduct additional modal studies and an update to the SFTP through 2018.

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 2017 Clean Air Plan

Regional TCM	Local Implementation
A-1. Local and Area-wide Bus Service Improvements.	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. The Van Ness Bus Rapid Transit Project is currently under construction. The Geary Bus Rapid Transit Project has a Locally Preferred Alternative (LPA) that has secured state environmental clearance; federal clearance is expected in early 2018. The Geneva-Harney Bus Rapid Transit project released a feasibility study in 2015. SFMTA is also in the process of replacing its fleet with a goal towards zero emissions.

San Francisco Trip Reduction Efforts:
Relationship to Regional Transportation Control Measures

TCM	Local Implementation
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 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. The Transportation Authority and SFMTA recently completed a Subway Vision that creates a framework for subway expansion throughout the city and identifies likely corridors. The Transportation Authority partnered with the Metropolitan Transportation Commission and numerous other agencies to complete a Core Capacity Transit Study that recommended a suite of projects to address transit crowding and unreliability in corridors into downtown San Francisco. The study identified the need for a new Transbay crossing and developed promising potential alignments for both BART and conventional rail.
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.

San Francisco Trip Reduction Efforts:
Relationship to Regional Transportation Control Measures

TCM	Local Implementation
B-2. Transit Efficiency & Use	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. Muni is upgrading signage, lighting, and other architectural aspects of its downtown stations. 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. San Francisco State University has implemented a discount transit pass for trips on BART and Muni.
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 Program.	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 Programs	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. Ridesharing 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. SFMTA 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 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 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. Bicycle Access and Facilities Improvements.	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 new protected bicycle lanes on Masonic Street, 7th Street, 8th Street, 13th Street, Folsom Street, Howard Street, upper Market Street, and others.
D-2. Pedestrian Access and Facilities Improvements.	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 pedestrian corridors.

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 has been designated as the Treasure Island Mobility Management Agency (TIMMA). TIMMA 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. A recently completed Parking Supply and Utilization Study evaluated the feasibility of parking-related strategies for reducing congestion. The evaluated strategies performed modestly in mitigating area-wide congestion and were less effective than the preferred cordon pricing scenario examined the Transportation Authority's 2010 Mobility Access and Pricing Study.

San Francisco Trip Reduction Efforts:
Relationship to Regional Transportation Control Measures

TCM	Local Implementation
E-2. Parking Policies to Reduce VMT	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. As described above (E-1), The Transportation Authority completed a Parking Supply and Utilization Study that considered further parking policy reform to manage auto trip demand. Rather than pursue any of the strategies analyzed, the study recommended that agencies advance existing parking-related initiatives, including the Residential Parking Permit Evaluation and Reform Project and implementation of the city's proposed TDM Ordinance.
E-3. Transportation Pricing Reform.	The Transportation 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 Supply and Utilization 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.

APPENDIX 12

Land Use Impacts Analysis Program





APPENDIX 12

LAND USE IMPACTS ANALYSIS PROGRAM

KEY TOPICS

- City Land Use Development Process
- CMA-Regional Land Use Coordination
- Neighborhood Transportation Plans and Projects
- Transportation Impact Analysis Studies

A.12.1. City Land Use Development Process

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.

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 A.12.4), the City has recently aligned its CEQA review and development approval process with RTP goals such as a Vehicle Miles Traveled (VMT) 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.

A.12.1.1 | 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, the Transbay Center District Plan, and the Central SoMa 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 addressed 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 gases. Recent innovations in transportation are rapidly changing how people navigate our city streets. These emerging mobility services and technologies include ride-hailing services (such as Uber & Lyft), microtransit (Chariot), app-based ridesharing, bike/e-bike/car-sharing, courier network services, autonomous vehicle technologies, and more.

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 Section A.12.4.

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.

A.12.2. CMA-Regional Land Use Coordination

A.12.2.1 | CMP Land Use Impacts Analysis

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.

A.12.2.2 | MTC/CMA Transportation/Land Use Work Plans

Pursuant to MTC's agreements with county CMAs over coordination of transportation and land use, 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.

A.12.2.3 | 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. ABAG and MTC approved an update to 2013's Plan Bay Area (Plan Bay Area 2040) in July 2017.

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. A map of the PDA's can be found in Chapter 6. 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. 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). Five Priority Conservation Areas (PCAs) have been adopted by San Francisco since 2015: Palou Phelps Natural Area, Bayview Hill Natural Area, Green Connections-McLaren Park Pivot, Crosstown Trail-Connecting Twin Peaks Bio-Region/Glen Canyon, and the San Francisco Bay Area Water Trail.

As a part of Plan Bay Area, the region committed to identify funding incentives for PDAs and PCAs, most significantly through the One Bay Area Grant (OBAG) Program which provides a five-year framework for the federal Surface Transportation Program and the Congestion Mitigation and Air Quality Improvement Program funds programmed by MTC. OBAG Cycle 1 covered Fiscal Years 2012/13 through 2016/17. OBAG Cycle 2 covers Fiscal Years 2017/18 through 2021/22, and built upon OBAG Cycle 1 with an added focus on affordable housing and anti-displacement policies in light of the region's current housing crisis. Approximately 45% of OBAG Cycle 2 funds are passed to county Congestion Management Agencies (CMAs), including the Transportation Authority for San Francisco, to program to projects that help advance the transportation and land use vision expressed in Plan Bay Area 2040. For the OBAG Cycle 2 county grant program:

- Funds were distributed to the region's nine CMAs using a funding formula that was based 50 percent on population, 20 percent on future housing growth assigned through the Regional Housing Needs Allocation, and 30 percent on housing production between 1999 and 2014. The

formula placed additional emphasis on affordable housing, defined as including very low-, low-, and moderate-income households.

- Scoring methodologies were required to provide a reward for jurisdictions with the most effective affordable housing and anti-displacement policies.
- 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).
- To be eligible to receive funds, all jurisdictions were required to have a certified Housing Element, have adopted a Complete Streets policy, and have complied with the State's Surplus Land Act.
- Each CMA was required to create a Transportation Investment and Growth Strategy that describes how it expects to support its PDAs through transportation investment and is required to regularly update it. The Transportation Authority Board adopted the latest version of San Francisco's Transportation Investment and Growth Strategy in May 2017.

In order to facilitate growth and transportation investments in the San Francisco's PDAs, 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 A12-1 for the list of projects).

Table A12-1: 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)	$898,763
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	$255,774
M-Ocean View Re-Alignment Study	19th Avenue Corridor	$492,000
Ocean Avenue Pedestrian and Streetscape Improvements	Balboa Park	$195,463
Balboa Reservoir TDM	Balboa Park	$76,000
Market/Noe Technical Analysis	Market & Octavia	$100,000

A.12.2.4 | 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.

A.12.2.4.1 | Core Capacity Transit Study

The Core Capacity Transit study (CCTS) 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 considered 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.

The CCTS recommends a package of short- and medium-term projects for both the Transbay and SF Metro Corridors. Immediate action is needed to advance the recommended packages toward implementation, including programming them into regional and state funding plans for prioritization. In particular, it is critical that unfunded prerequisite projects are prioritized for funding. Suggested funding plans include Plan Bay Area 2040, any future bridge toll increases, and California Senate Bill 1.

The CCTS developed a range of long-term ideas and concepts for the study corridors. The SF Metro Corridor long-term ideas and concepts will help inform ConnectSF as it considers the challenges and potential solutions facing San Francisco in the coming decades. The planning process to further refine the Transbay Corridor long-term options should continue in order to implement a project by 2040.

A.12.3. List of Neighborhood Transportation Plans and Projects

A list of plans developed with the support of the Community Based Transportation Planning program and the Neighborhood Transportation Improvement Program is provided below.

The Community Based Transportation Planning program supported development of the following plans:

- Western Addition Community Based Neighborhood Transportation Plan (also funded with NTIP funds) (2017)
- 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 Neighborhood Transportation Improvement Program supported the following planning projects (* indicates projects that are underway):

- District 1: Improving Connections from Golden Gate Park to the Presidio
- District 2: Lombard Study: Managing Access to the "Crooked Street"
- District 3: Kearny Street Multimodal Implementation*
- District 5: Western Addition Community Based Neighborhood Transportation Plan (also funded with MTC CBTP funds)

- District 6: Pedestrian Safety in SOMA Youth and Family Zone: Folsom-Howard Streetscape and Vision Zero Ramp Intersection Study*
- District 7: Balboa Area Transportation Demand Study
- District 9: Alemany Interchange Improvement Study
- District 10: Cesar Chavez / Bayshore / Potrero Intersection Improvement Project
- District 10: Potrero Hill Pedestrian Safety and Transit Access
- District 11: Geneva-San Jose Intersection Study*

A.12.4. Transportation Impact Analysis Studies

A.12.4.1 | 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.

A.12.4.2 | Transportation Sustainability Fee

In the City and County of San Francisco the only citywide transportation impact fee until recently was the Transit Impact Development Fee (TIDF). First enacted in 1981, the Downtown 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. The fee was imposed on most nonresidential development in San Francisco and not on residential development. The 2004 TIDF ordinance (see Appendix 14) 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 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. The fee schedule was updated in February 2013, based on a nexus study completed in 2011, and is shown in Table A12-2.

Table A12-2: 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

Based on another nexus study completed in 2015, the Transportation Sustainability Fee (TSF) was adopted and went into effect in December 2015. The TSF replaces TIDF and would raise new revenue to expand the transportation system as San Francisco grows. New commercial developments, market-rate residential developments with more than 20 units, and certain large institutions will be required to pay the TSF. Affordable housing developments, subsidized middle-income housing, market-rate housing with less than 20 units or less and most nonprofit developments are exempt from the fee. Table A12-3 shows the latest fee schedule (San Francisco Planning Code: Section 411A).

Table A12-3: TSF Ordinance Fee Schedule

LAND USE CATEGORY	TIDF PER SQ. FT. OF DEVELOPMENT
Residential, 21-99 units	$7.74
Residential, all units above 99 units	$8.74
Non-Residential, except Hospitals and Health Services, 800-99,999 gsf	$18.04
Non-Residential, except Hospitals and Health Services, all gsf above 99,999 gsf	$19.04
Hospitals	$18.74
Health Services, all gsf above 12,000 gsf	$11.00
Production, Distribution and Repair	$7.61

Currently, the TIDF generates about $24 million a year on average. The TSF is projected to add about $14 million a year, raising nearly $1.2 billion for transportation improvements over 30 years, or roughly $430 million in net new revenue. 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 TSF is part of a larger effort, the Transit Sustainability Program (TSP), that seeks to improve and expand upon San Francisco's transportation system to help accommodate new growth. It belongs to the "Invest" component of TSP that aims to invest in transportation network by having developers pay their fair share to help offset the growth created by their project.

A.12.4.3 | CEQA Transportation Impact Analysis and Impact Fee Mitigation Reform

The Transit Sustainability Program (TSP), mentioned in the previous section, also has an "Align: CEQA Reform" component that aims to change how the City analyzes impacts of new development on the transportation system under the California Environmental Quality Act (CEQA) so that it better aligns with the City's longstanding environmental policies, like reducing greenhouse gas emissions.

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. In March 2016, San Francisco became the first county to adopt the proposed SB 743 guidelines rather than wait for state adoption. The San Francisco Planning Commission adopted a resolution to move forward with state-proposed guidelines that modernize the way City officials measure the transportation impacts of new development. This will remove automobile delay as a significant impact on the environment and replace it with a vehicle miles traveled threshold for all CEQA environmental determinations, including active projects, going forward.

APPENDIX 13

San Francisco Transportation Impacts Analysis Guidance





TRANSPORTATION IMPACT ANALYSIS GUIDELINES
FOR ENVIRONMENTAL REVIEW

October 2002

The Planning Department
City and County of San Francisco

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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

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

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 14

Downtown Transit Impact Development Fee Ordinance





Amendment of the whole
in committee. 07/12/04

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

Amendment of the whole
in committee. 07/12/04

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

City Hall
1 Dr. Carlton B. Goodlett Place
San Francisco, CA 94102-4689

City and County of San Francisco

Tails

Ordinance

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.

Gloria L. Young
Clerk of the Board

AUG 05 2004

Date Approved

Mayor Gavin Newsom

APPENDIX 15

Capital Improvement Program





APPENDIX 15

CAPITAL IMPROVEMENT PROGRAM

KEY TOPICS

- Relationship to Regional Transportation Plan and Countywide Transportation Plan
- List of Funding Sources
- Capital Improvement Program Amendments

A.15.1. Relationship to 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 Capital Improvement Program (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. 2013's Plan Bay Area was the region's first RTP/Sustainable Communities Strategy (SCS) that explicitly integrated transportation projects and policies with land-use strategies to meet the SB 375 requirements to accommodate future population growth and reduce greenhouse gas emissions. MTC and the Association of Bay Area of Governments adopted an update to Plan Bay Area, named Plan Bay Area 2040, in July 2017.

The Transportation Authority develops the SFTP (countywide transportation plan) for San Francisco, consistent with MTC guidelines, to guide transportation investment and to serve as a basis for RTP/SCS 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. A focused update approved in October 2017 reaffirmed these goals, updated project costs, and reassessed projects previously identified for funding. 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).

A.15.2. List of Funding Sources

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 section 7.2 of the main report, 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.

A.15.2.1 | 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 2015 CMP, the MTC approved a second cycle of OBAG programming (OBAG 2) for Fiscal Years 2017/18 through 21/22. One of the centerpieces of OBAG 2 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. A map of PDAs is included in Chapter 6 of the main report. Since the 2015 CMP, the Transportation Authority has provided monitoring and support for sponsor agencies as the original OBAG projects advance through the design and construction phases under the federal aid guidelines. In July and September of 2017, the Transportation Authority Board approved a total of $45,370,000 in county share OBAG 2 programming. In December 2017, we anticipate the Transportation Authority Board will approve the remaining $2.8 million in San Francisco's OBAG 2 program for a Safe Routes to School Non-Infrastructure project. See Appendix 16 for the updated project list.

A.15.2.2 | 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 $127 million to three projects: Central Subway (first priority, $75.5 million), payback to MTC of an advance for Presidio Parkway (second priority, $34 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. However, the passage of Senate Bill 1 in 2017 stabilized the program, and San Francisco's 2018 STIP target was $14.767 million. We could not program RTIP funds directly to the Central Subway project because all the contracts have been awarded, so we are honoring the commitment by programming RTIP funds to other eligible projects of SFMTA's choice. Appendix 16 shows the draft 2018 RTIP priorities approved by the Transportation Authority Board. The 2018 RTIP is expected to be approved by MTC in December 2017, followed by the CTC's STIP adoption in March 2018.

A.15.2.3 | 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 17 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 5-Year Prioritization Program (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 18 provides a list of programmatic categories in the Expenditure Plan and

refers to the current 2014 5YPP project lists. Appendix 19 summarizes the funding levels in the 2014 Strategic Plan baseline as adopted in September 2014.

A.15.2.4 | 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 three categories of investment and prescribed percentage shares over 30 years: Street Repair & Reconstruction (50%), Pedestrian Safety (25%), and Transit Reliability & Mobility Improvements (25%). The Expenditure Plan requires that the Transportation Authority adopt a Strategic Plan to guide the timing of expenditures and set policies for day-to-day management of the program and to update it every five years. In 2012, the Transportation Authority Board approved the first Prop AA Strategic Plan with $25.1 million to projects through Fiscal Year 2016/17, as amended. This year, the Board approved the 2017 Strategic Plan with $22.8 million programmed to projects through Fiscal Year 2021/22. See Appendix 20 for Prop AA Strategic Plan Programming.

A.15.2.5 | 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 16 for the list of San Francisco TFCA projects selected since the last CMP.

A.15.2.6 | 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. Since the adoption of the Cycle 4 LTP program of projects in February 2015, the Transportation Authority has provided monitoring and support for sponsor agencies. See Appendix 16 for the Cycle 4 LTP project list.

A.15.2.7 | Senate Bill 1 Local Partnership Program Formulaic Shares

The Local Partnership Program (LPP), created by the Road Repair and Accountability Act of 2017 or Senate Bill 1, is a program created to reward local or regional transportation agencies that have sought

and received voter approval of taxes or fees solely dedicated to transportation. Of the $200 million appropriated annually, the California Transportation Commission allocates 50% of the program through a Formulaic Program based on both the share of revenues and population of counties with voter-approved sales taxes, tolls, or fees. As administrator of San Francisco's Transportation Sales Tax (Prop K), the Transportation Authority is responsible for programming San Francisco's share of the LPP Formulaic Program, estimated in $2 million per year. For the first two programming cycles (FY 2017/18 through FY 2019/20) the Transportation Authority anticipates programming San Francisco's share to street resurfacing projects throughout San Francisco.

A.15.3. Capital Improvement Program Amendments

A.15.3.1 | 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.

A.15.3.2 | 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.

A.15.3.3 | 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, SB 1 Local Partnership Program Formulaic Shares, 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.

A.15.3.4 | 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.

A.15.3.4.1 | 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:

- Schedule for Transportation Authority Board approval;
- Preliminary list of unresolved conformance or consistency issues identified in connection with the request; and
- Proposed course of action for resolution of these issues, including, at least, consultation and joint efforts with the applicant.

A.15.3.4.2 | 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?

A.15.3.4.3 | 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.

APPENDIX 16

Discretionary Grants





San Francisco Transportation Fund for Clean Air (TFCA) – FY 2016/17 and 2017/18 County Program Manager Projects

Project	Sponsor [1]	TFCA Funds Programmed	Total Project Cost
Gator Pass Implementation	SFSU	$350,000	$580,000
Alternative Fuel Taxicab Vehicle Incentive Program FY 2016/17	SFMTA	$250,000	$250,000
Emergency Ride Home FY 2016/17	SFE	$36,269	$36,269
Short-Term Bicycle Parking FY 2016/17	SFMTA	$335,988	$701,079
Paratransit Sedans	SFMTA	$270,000	$300,000
Alternative Fuel Taxicab Vehicle Incentive Program FY 2017/18	SFMTA	$79,964	$250,000
Emergency Ride Home FY 2017/18	SFE	$41,832	$41,832
Short-Term Bicycle Parking FY 2017/18	SFMTA	$79,964	$511,866
Bike Share Phase 4 Expansion	SFMTA	$255,000	$318,000
	TOTAL	**$1,699,017**	**$2,989,046**

[1] Project sponsor acronyms refer to the San Francisco Department of the Environment (SFE); the San Francisco Municipal Transportation Agency (SFMTA); and San Francisco State University (SFSU).

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			$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.

San Francisco One Bay Area Grant Cycle 2 (OBAG 2)

Project	Sponsor [1]	OBAG 2 Funds Programmed	Total Project Cost
Better Market Street	DPW	$ 15,980,000	$603,720,000
Embarcadero Station: New Northside Platform Elevator and Faregates	BART	$2,000,000	$15,000,000
Geary Bus Rapid Transit Phase 1	SFMTA	$ 6,939,000	$64,656,000
John Yehall Chin Elementary Safe Routes to School	DPW	$3,366,000	$4,200,000
Peninsula Corridor Electrification Project (PCEP)	PCJPB	$11,188,000	$1,980,250,000
San Francisco Safe Routes to School Non-Infrastructure 2019-2021[2]	SFMTA	$2,813,264 (pending)	$3,177,488
Total Programmed		$39,473,000	
Total Pending Approval		$2,813,264	

[1] Project sponsor acronyms include the Bay Area Rapid Transit District (BART), Department of Public Works (DPW), Peninsula Corridor Joint Powers Board (PCJPB).and the San Francisco Municipal Transportation Agency (SFMTA)

[2] $2.81 million is still pending Board approval for the San Francisco Safe Routes to School Non-Infrastructure 2019-2021 project, anticipated in December 2017.

San Francisco Draft 2018 Regional Transportation Improvement Program (RTIP) Priorities

Project	Sponsor [1]	RIP Funds Programmed	Total Project Cost
2020 Restoration of SFMTA Light Rail Lines [2]	SFMTA	$5,500,000	$27,500,000
2021 Restoration of SFMTA Light Rail Lines [2]	SFMTA	$8,252,000	$41,260,000
Planning, Programming, and Monitoring	MTC	$237,000	$237,000
Planning, Programming, and Monitoring	SFCTA	$778,000	$778,000
Total Programmed [3]		$14,767,000	

[1] Project sponsor acronyms include the Metropolitan Transportation Commission (MTC), San Francisco County Transportation Authority (SFCTA), and San Francisco Municipal Transportation Agency (SFMTA).

[2] The SFMTA will identify the specific scope of work (e.g. likely a series of state of good repair and enhancements) to be funded closer to the year of programming through its capital budgeting process. As a condition of approving the 2018 RTIP funds, the SFMTA will submit a detailed scope, schedule, budget, and funding plan to the SFCTA for approval prior to submitting an allocation request to the California Transportation Commission.

[3] The proposed programming is subject to approval by MTC in December 2017 and the California Transportation Commission (CTC) in March 2018.

APPENDIX 17

Prop K Transportation Sales Tax Expenditure Plan Summary





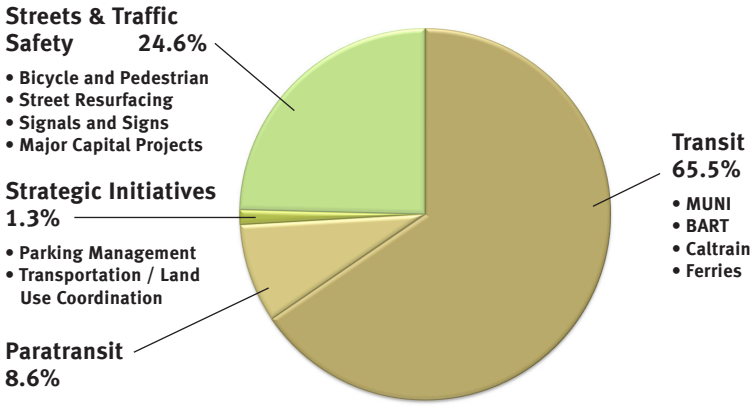
Proposition K Transportation Sales Tax Reauthorization and Expenditure Plan

San Francisco County Transportation Authority

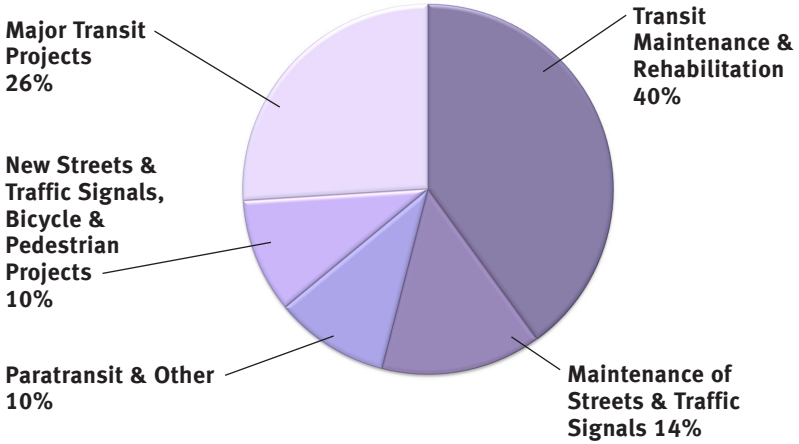
1455 Market Street, 22nd Floor
San Francisco, CA 94103

TEL 415.522.4800
FAX 415.522.4829
EMAIL info@sfcta.org
WEB www.sfcta.org

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.

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.

APPENDIX 18

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).

APPENDIX 19

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**

APPENDIX 20

2017 Prop AA Strategic Plan Programming





2017 Prop AA Strategic Plan
Programming and Allocations
Approved 9/26/2017

Project Name	Phase	Sponsor	Fiscal Year 2017/18	Fiscal Year 2018/19	Fiscal Year 2019/20	Fiscal Year 2020/21	Fiscal Year 2021/22	5-Year Total
Street Repair and Reconstruction								
Target Funds Available in Category			**$ 3,294,247**	**$ 2,189,097**	**$ 2,189,097**	**$ 2,189,097**	**$ 2,189,097**	**$ 12,050,635**
Geary Boulevard Pavement Renovation	Construction	SFPW	$ 2,397,129					$ 2,397,129
23rd St, Dolores St, York St and Hampshire St Pavement Renovation	Construction	SFPW		$ 2,397,129				$ 2,397,129
Mission Street Transit and Pavement Improvement	Construction	SFPW				$ 2,397,129		$ 2,397,129
Fillmore Street Pavement Renovation	Construction	SFPW					$ 2,397,129	$ 2,397,129
Subtotal Programmed to Category (% all time)	**47.4%**		**$ 2,397,129**	**$ 2,397,129**	**$ -**	**$ 2,397,129**	**$ 2,397,129**	**$ 9,588,516**
Cumulative Remaining Capacity			***$ 897,118***	***$ 689,086***	***$ 2,878,183***	***$ 2,670,151***	***$ 2,462,119***	***$ 2,462,119***
Pedestrian Safety								
Target Funds Available in Category			**$ 1,414,490**	**$ 939,958**	**$ 939,958**	**$ 939,958**	**$ 939,958**	**$ 5,174,324**
Haight Street Streetscape (Pedestrian Lighting)	Construction	SFPW	$ 2,052,000					$ 2,052,000
Potrero Gateway Loop (Pedestrian Safety Improvements)	Construction	SFPW	$ 300,000					$ 300,000
Vision Zero Coordinated Pedestrian Safety Improvements (Bulbs & Basements)	Construction	SFPW	$ 700,000					$ 700,000
Arguello Boulevard Traffic Signal Upgrade	Construction	SFMTA		$ 655,000				$ 655,000
Bulb-outs at WalkFirst Locations	Design	SFMTA		$ 500,000				$ 500,000
Western Addition Transportation Plan Implementation (Pedestrian Lighting)	Construction	SFMTA		$ 986,928				$ 986,928
Subtotal Programmed to Category (% all time)	**26.3%**		**$ 3,052,000**	**$ 2,141,928**	**$ -**	**$ -**	**$ -**	**$ 5,193,928**
Cumulative Remaining Capacity			***$ (1,637,510)***	***$ (2,839,480)***	***$ (1,899,521)***	***$ (959,563)***	***$ (19,604)***	***$ (19,604)***
Transit Reliability and Mobility Improvements								
Target Funds Available in Category			**$ 2,202,022**	**$ 1,463,291**	**$ 1,463,291**	**$ 1,463,291**	**$ 1,463,291**	**$ 8,055,185**
Muni Metro Station Enhancements - Phase 1	Construction	SFMTA	$ 2,465,316					$ 2,465,316
Muni Metro Station Enhancements - Phase 2	Construction	SFMTA			$ 3,503,099			$ 3,503,099
Geary Bus Rapid Transit - Phase 2	Construction	SFMTA		$ 2,064,919				$ 2,064,919
Subtotal Programmed to Category (% all time)	**26.2%**		**$ 2,465,316**	**$ 2,064,919**	**$ 3,503,099**	**$ -**	**$ -**	**$ 8,033,334**
Cumulative Remaining Capacity			***$ (263,294)***	***$ (864,922)***	***$ (2,904,730)***	***$ (1,441,440)***	***$ 21,851***	***$ 21,851***
Total Available Funds			**$ 6,910,759**	**$ 4,592,346**	**$ 4,592,346**	**$ 4,592,346**	**$ 4,592,346**	**$ 25,280,143**
Total Programmed			**$ 7,914,445**	**$ 6,603,976**	**$ 3,503,099**	**$ 2,397,129**	**$ 2,397,129**	**$ 22,815,778**
Cumulative Remaining Capacity			***$ (1,003,686)***	***$ (3,015,316)***	***$ (1,926,069)***	***$ 269,148***	***$ 2,464,365***	

Allocated	
Pending	

2017 Prop AA Strategic
Plan Cash Flow

Project Name	Phase	Sponsor	Fiscal Year 2017/18	Fiscal Year 2018/19	Fiscal Year 2019/20	Fiscal Year 2020/21	Fiscal Year 2021/22	5-Year Total
Street Repair and Reconstruction								
Target Funds Available in Category			**$ 3,294,247**	**$ 2,189,097**	**$ 2,189,097**	**$ 2,189,097**	**$ 2,189,097**	**$ 12,050,635**
Geary Boulevard Pavement Renovation	Construction	SFPW	$ 479,426	$ 958,852	$ 958,852			$ 2,397,129
23rd St, Dolores St, York St and Hampshire St Pavement Renovation	Construction	SFPW		$ 799,043	$ 1,598,086			$ 2,397,129
Mission Street Transit and Pavement Improvement	Construction	SFPW				$ 1,198,565	$ 1,198,565	$ 2,397,129
Fillmore Street Pavement Renovation	Construction	SFPW					$ 2,397,129	$ 2,397,129
Cash Flow Subtotal			**$ 479,426**	**$ 1,757,895**	**$ 2,556,938**	**$ 1,198,565**	**$ 3,595,694**	**$ 9,588,516**
Cumulative Remaining Capacity			***$ 2,814,821***	***$ 3,246,023***	***$ 2,878,183***	***$ 3,868,715***	***$ 2,462,119***	***$ 2,462,119***
Pedestrian Safety								
Target Funds Available in Category			**$ 1,414,490**	**$ 939,958**	**$ 939,958**	**$ 939,958**	**$ 939,958**	**$ 5,174,324**
Haight Street Streetscape (Pedestrian Lighting)	Construction	SFPW	$ 500,000	$ 1,050,000	$ 502,000			$ 2,052,000
Potrero Gateway Loop (Pedestrian Safety Improvements)	Construction	SFPW	$ 80,000	$ 145,000	$ 75,000			$ 300,000
Vision Zero Coordinated Pedestrian Safety Improvements (Bulbs & Basements)	Construction	SFPW	$ 175,000	$ 475,000	$ 50,000			$ 700,000
Arguello Boulevard Traffic Signal Upgrade	Construction	SFMTA		$ 327,500	$ 327,500			$ 655,000
Bulb-outs at WalkFirst Locations	Design	SFMTA		$ 250,000	$ 250,000			$ 500,000
Western Addition Transportation Plan Implementation (Pedestrian Lighting)	Construction	SFMTA		$ 141,864	$ 378,303	$ 466,761		$ 986,928
Cash Flow Subtotal			**$ 755,000**	**$ 2,389,364**	**$ 1,582,803**	**$ 466,761**	**$ -**	**$ 5,193,928**
Cumulative Remaining Capacity			***$ 659,490***	***$ (789,916)***	***$ (1,432,760)***	***$ (959,563)***	***$ (19,604)***	***$ (19,604)***
Transit Reliability and Mobility Improvements								
Target Funds Available in Category			**$ 2,202,022**	**$ 1,463,291**	**$ 1,463,291**	**$ 1,463,291**	**$ 1,463,291**	**$ 8,055,185**
Muni Metro Station Enhancements - Phase 1	Construction	SFMTA	$ 1,232,658	$ 1,232,658				$ 2,465,316
Muni Metro Station Enhancements - Phase 2	Construction	SFMTA			$ 600,000	$ 1,650,000	$ 1,253,099	$ 3,503,099
Geary Bus Rapid Transit - Phase 2	Construction	SFMTA		$ 2,064,919				$ 2,064,919
Cash Flow Subtotal			**$ 1,232,658**	**$ 3,297,577**	**$ 600,000**	**$ 1,650,000**	**$ 1,253,099**	**$ 8,033,334**
Cumulative Remaining Capacity			***$ 969,364***	***$ (864,922)***	***$ (1,631)***	***$ (188,341)***	***$ 21,851***	***$ 21,851***
Total Available Funds			**$ 6,910,759**	**$ 4,592,346**	**$ 4,592,346**	**$ 4,592,346**	**$ 4,592,346**	**$ 25,280,143**
Total Cashflow			**$ 2,467,084**	**$ 7,444,836**	**$ 4,739,741**	**$ 3,315,326**	**$ 4,848,793**	**$ 22,815,778**
Cumulative Remaining Capacity			***$ 4,443,675***	***$ 1,591,185***	***$ 1,443,791***	***$ 2,720,811***	***$ 2,464,365***	

2012 Prop AA Strategic Plan
Programming and Allocations (Adopted 9.26.17)

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
			$ 8,717,775	$ 4,420,172	$ 4,420,172	$ 4,420,172	$ 4,420,172	**$ 26,398,463**
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**
9th Street Pavement Renovation	CON	SFPW	$ 2,101,136					$ 2,101,136
28th Ave Pavement Renovation	CON	SFPW	$ 1,169,843					$ 1,169,843
Chinatown Broadway St	DES	SFPW		$ 650,000				$ 650,000
Mansell Corridor Improvement Project	DES	SFMTA		$ 202,228				$ 202,228
	CON	SFMTA			$ 2,325,624			$ 2,325,624
McAllister St Pavement Renovation	CON	SFPW		$ 1,995,132				$ 1,995,132
Dolores St Pavement Renovation	CON	SFPW			$ 2,145,024			$ 2,145,024
Brannan St Pavement Renovation	CON	SFPW					$ 2,540,359	$ 2,540,359
Subtotal Programmed to Category	**47.5%**		**$ 3,270,979**	**$ 2,847,360**	**$ 4,470,648**	**$ -**	**$ 2,540,359**	**$ 13,129,346**
(Over)/Under			**$ 1,087,909**	**$ (637,274)**	**$ (2,260,562)**	**$ 2,210,086**	**$ (330,273)**	**$ 69,886**
Cumulative Remaining			***$ 1,087,909***	***$ 450,634***	***$ (1,809,927)***	***$ 400,159***	***$ 69,886***	***$ 69,886***
Pedestrian Safety								
Funds Available in Category			**$ 2,179,444**	**$ 1,365,043**	**$ 1,105,043**	**$ 2,104,780**	**$ 1,105,043**	**$ 7,859,353**
Arguello Gap Closure	CON	Presidio		$ 350,000				$ 350,000
Mid-Block Crossing on Natoma/8th	DES	SFMTA		$ 54,608				$ 54,608
	CON	SFMTA			$ 310,000			$ 310,000
Ellis/Eddy Traffic Calming Improvement	DES	SFMTA		$ 337,450	$ -			$ 337,450
Franklin and Divisadero Signal Upgrades	DES	SFMTA		$ 260,270				$ 260,270
	CON	SFMTA			$ 636,480			$ 636,480
Pedestrian Countdown Signals	CON	SFMTA	$ 1,380,307					$ 1,380,307
McAllister St Campus Streetscape	DES	UC Hastings		$ 83,000				$ 83,000
	CON	UC Hastings			$ 1,619,035			$ 1,619,035
Webster St Pedestrian Signals	DES	SFMTA			$ 260,000			$ 260,000
	CON	SFMTA					$ 141,794	$ 141,794
Gough St Pedestrian Signals	DES	SFMTA				$ 300,000		$ 300,000
Broadway Chinatown Streetscape Improvements	CON	SFPW				$ 1,029,839		$ 1,029,839
Mansell Streetscape Improvements	CON	SFMTA				$ 161,127		$ 161,127
Bulb-outs at WalkFirst Locations	DES	SFMTA				$ 491,757		$ 491,757
Subtotal Programmed to Category	**26.8%**		**$ 1,380,307**	**$ 1,085,328**	**$ 2,825,515**	**$ 1,982,723**	**$ 141,794**	**$ 7,415,667**
(Over)/Under			**$ 799,137**	**$ 279,715**	**$ (1,720,472)**	**$ 122,057**	**$ 963,249**	**$ 443,686**
Cumulative Remaining			***$ 799,137***	***$ 1,078,852***	***$ (641,620)***	***$ (519,563)***	***$ 443,686***	***$ 443,686***
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**
Civic Center BART/Muni Bike Station	CON	BART		$ 248,000				$ 248,000
City College Pedestrian Connector	DES	SFMTA		$ 42,000				$ 42,000
	CON	SFMTA			$ 891,000			$ 891,000
Hunters View Transit Connection	DES	MOH		$ 195,000				$ 195,000
	CON	MOH		$ 1,649,994				$ 1,649,994
24th St Mission SW BART Plaza and Pedestrian Improvements	CON	BART	$ 713,831					$ 713,831
Elevator Safety and Reliability Upgrades	CON	SFMTA				$ 287,000		$ 287,000
Muni Bus Layover Area at BART Daly City Station	CON	BART				$ 507,980		$ 507,980
Subtotal Programmed to Category	**16.4%**		**$ 713,831**	**$ 2,134,994**	**$ 891,000**	**$ 794,980**	**$ -**	**$ 4,534,805**
(Over)/Under			**$ 1,465,612**	**$ (1,029,951)**	**$ 214,043**	**$ 310,063**	**$ 1,105,043**	**$ 2,064,810**
Cumulative Remaining			***$ 1,465,612***	***$ 435,661***	***$ 649,704***	***$ 959,767***	***$ 2,064,810***	***$ 2,064,810***
Total Programmed			**$ 5,365,116**	**$ 6,067,682**	**$ 8,187,162**	**$ 2,777,703**	**$ 2,682,153**	**$ 25,079,818**
Carried Forward to 2017 Strategic Plan								**$ 2,578,383**
(Over)/Under			**$ 3,352,659**	**$ (1,387,510)**	**$ (3,766,990)**	**$ 2,642,206**	**$ 1,738,019**	**$ -**
Cumulative			***$ 3,352,659***	***$ 1,965,148***	***$ (1,801,842)***	***$ 840,363***	***$ 2,578,383***	
Total Available Funds			**$ 8,717,775**	**$ 4,680,172**	**$ 4,420,172**	**$ 5,419,909**	**$ 4,420,172**	**$ 27,658,200**

Allocated
Pending

APPENDIX 21

Technical Approach and Model Consistency Report





APPENDIX 21

TRAVEL DEMAND MODEL AND UNIFORM DATABASE

KEY TOPICS

- Technical Approach
- Model Consistency Report

A.21.1. Technical Approach

A.21.1.1 | 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. 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 planning and revenue forecasting for the Treasure Island Mobility Management Agency, and environmental analyses. Current model applications include 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 A21-1 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 5.2 is the current version of the model. The following paragraphs discuss the evolution of SF-CHAMP from version 3.0 to 5.2.

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. SF-CHAMP 5.2 includes more accurate representation of parking prices and better sensitivity to them, and a partial recalibration using CHTS data reweighted to match 2015 control totals.

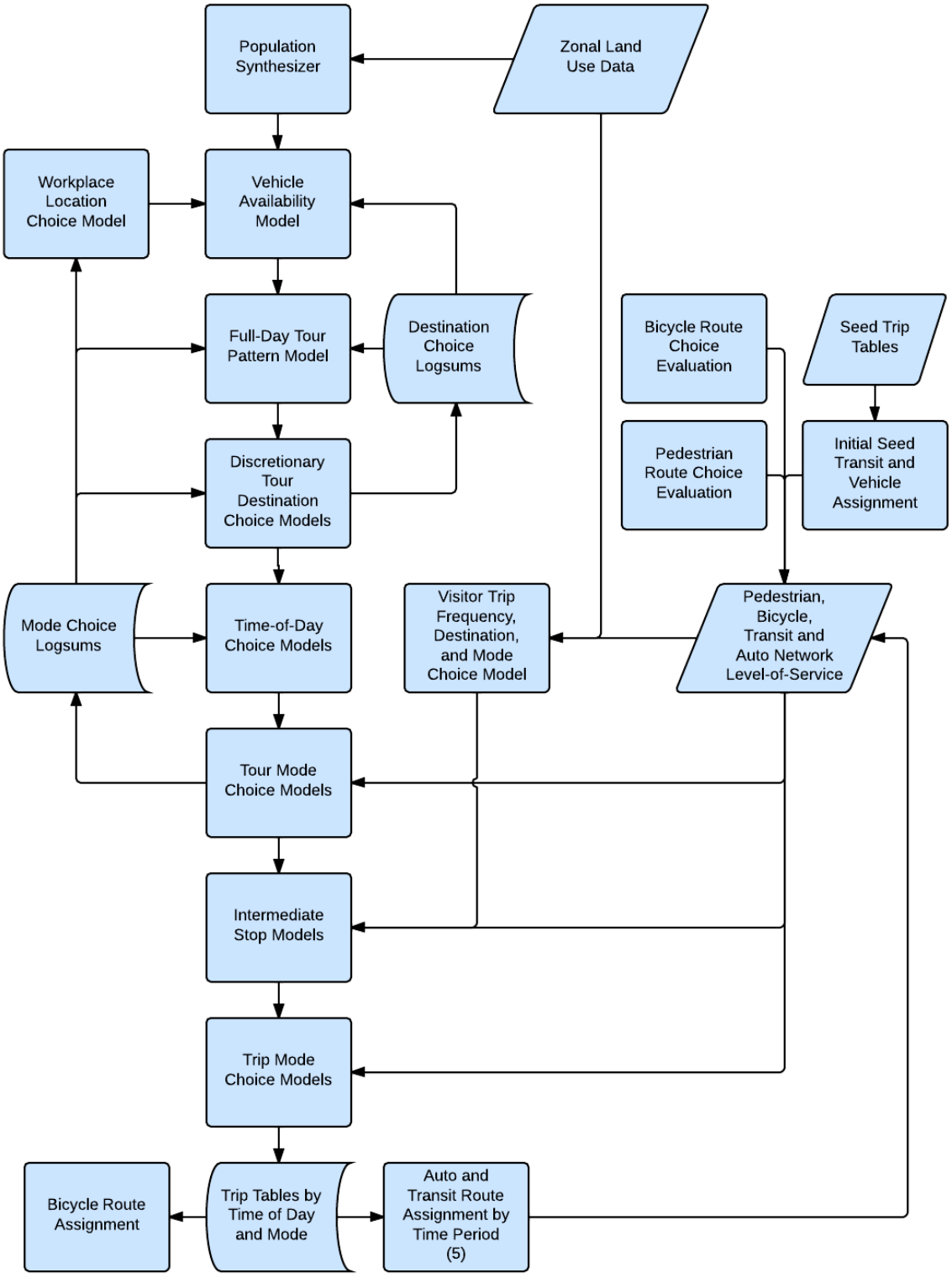


Figure A21-1: CHAMP 5.2 Model Components

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 A21-2 illustrates the difference between trips (as estimated in the traditional four-step process) and tours.

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

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.

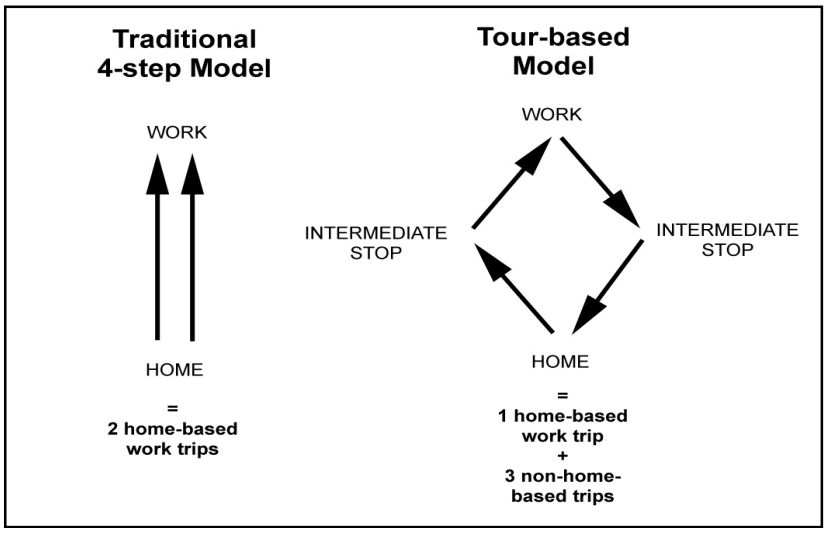


Figure A21-2: Trip Definitions: 4-step model vs. tour-based model

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.

A.21.1.2 | GIS Database and ArcGIS 10.5

The Transportation Authority uses a GIS database coupled with ESRI's ArcGIS 10.5 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.

A.21.2. Model Consistency Report

A.21.2.1 | 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.

A.21.2.2 | 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 A21-3 and A21-4 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.

Table A21-1 Comparison of SF-CHAMP to ABAG County-Level Estimates for Population, Households, Jobs, and Employed Residents, Years 2010 and 2040, Plan Bay Area (v 0.3)

2010

	SF-CHAMP 5.2.0				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 5.2.0				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 A21-3: Difference in Households from Plan Bay Area for 2040

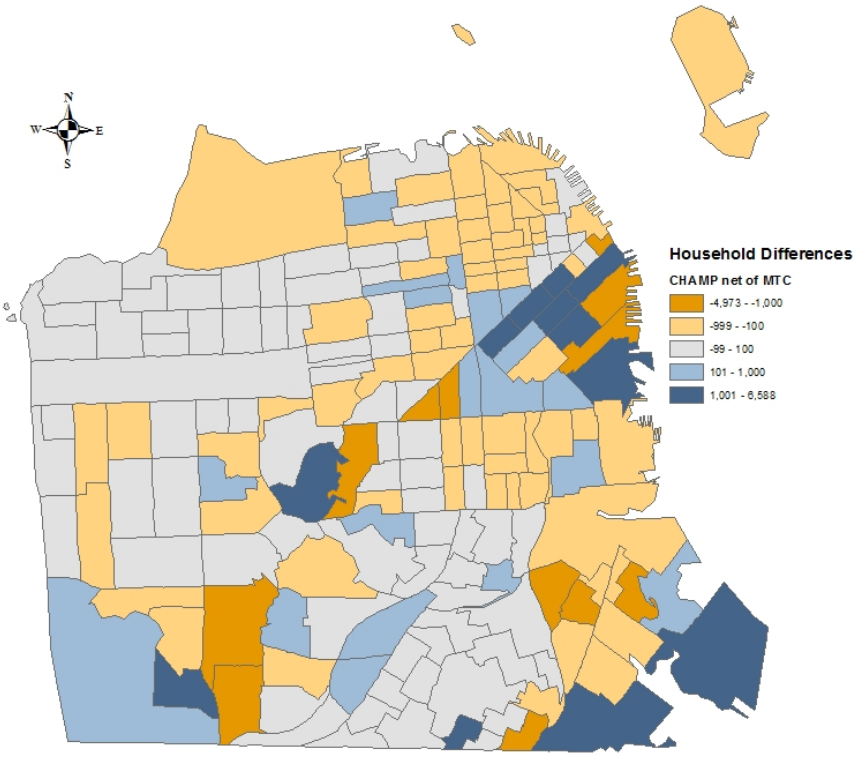
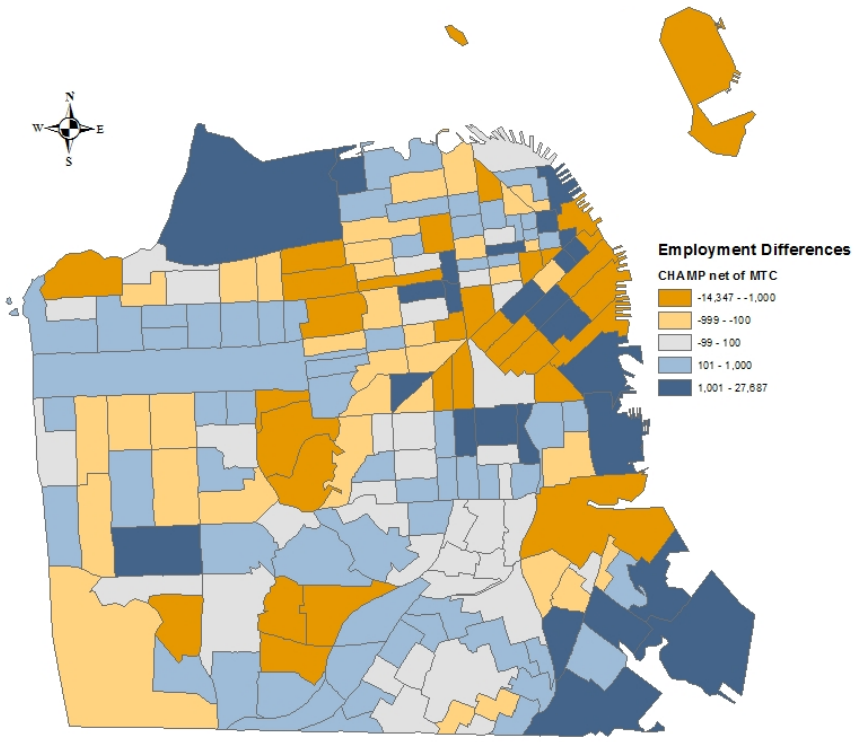


Figure A21-4: Difference in Jobs from Plan Bay Area for 2040



A.21.2.3 | 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.

Table A21-2 Comparison of SF-CHAMP to MTC Pricing Assumptions

	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, 2017	Toll schedule starting July 1, 2017
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, 2017	Toll schedule starting July 1, 2017
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

A.21.2.4 | 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.

A.21.2.5 | 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 A21-3 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 3%.

Table A21-3 Comparison of SF-CHAMP to ABAG 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	166,299	184,488	89,254	29,067	469,108	3%	-4%	-3%	8%	-1%
San Mateo	17,115	102,472	112,418	89,941	321,946	-10%	-5%	-10%	37%	1%
Santa Clara	55,941	253,065	290,240	246,009	845,255	-16%	-4%	-12%	35%	0%
Alameda	96,365	239,382	219,863	180,512	736,122	-2%	2%	-16%	30%	0%
Contra Costa	29,070	131,992	173,093	134,779	468,934	67%	-8%	-17%	35%	0%
Solano	8,102	46,873	64,629	51,758	171,362	-5%	-1%	-12%	22%	0%
Napa	2,657	17,806	23,487	14,824	58,774	-2%	2%	-5%	11%	1%
Sonoma	12,234	71,014	87,049	57,999	228,296	-6%	8%	-9%	8%	0%
Marin	7,860	37,418	46,229	23,768	115,275	99%	2%	-13%	11%	0%
Bay Area	395,643	1,084,510	1,106,262	828,657	3,415,072	2%	-2%	-13%	29%	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	35%	39%	19%	6%	100%	1%	-1%	-1%	0%	0%
San Mateo	5%	32%	35%	28%	100%	-1%	-2%	-4%	7%	0%
Santa Clara	7%	30%	34%	29%	100%	-1%	-1%	-5%	8%	0%
Alameda	13%	33%	30%	25%	100%	0%	1%	-6%	6%	0%
Contra Costa	6%	28%	37%	29%	100%	2%	-2%	-8%	7%	0%
Solano	5%	27%	38%	30%	100%	0%	0%	-5%	6%	0%
Napa	5%	30%	40%	25%	100%	0%	0%	-2%	2%	0%
Sonoma	5%	31%	38%	25%	100%	0%	2%	-4%	2%	0%
Marin	7%	32%	40%	21%	100%	3%	1%	-6%	2%	0%
Bay Area	12%	32%	32%	24%	100%	0%	-1%	-5%	5%	0%

A.21.2.6 | 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 A21-4 Comparison of SF-CHAMP to MTC Number of Trips by Tour Purpose, Year 2040, Plan Bay Area (v 0.3)

Year 2040			
Trips	MTC	SF-CHAMP	Percent Difference
Work/Commute	8,944,444	8,642,566	-3%
College/University	702,760	1,103,055	57%
Other School	3,177,982	2,589,361	-19%
Work-Based	1,981,510	1,606,280	-19%
Other	14,615,592	20,215,470	38%
Total	29,422,288	34,156,732	16%

Share	MTC	SF-CHAMP	Difference in Share
Work/Commute	30%	25%	-5%
College/University	2%	3%	1%
Other School	11%	8%	-3%
Work-Based	7%	5%	-2%
Other	50%	59%	10%

A.21.2.7 | 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 51% 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 A21-5 Comparison of SF-CHAMP to MTC 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	9.34	-6%
College/University	6.69	5.82	-13%
Other School	3.43	4.16	21%
Work-Based	3.29	4.95	51%
Other	4.69	4.93	5%
Total	6.07	6.02	-1%

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 A21-6 Comparison of SF-CHAMP to MTC 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	9.5%	1.5%	0.3%	1.0%	0.2%	0.0%	0.0%	0.0%	0.2%	12.7%
San Mateo	2.6%	5.7%	1.5%	0.5%	0.1%	0.0%	0.0%	0.0%	0.1%	10.4%
Santa Clara	0.2%	1.5%	23.5%	1.4%	0.1%	0.0%	0.0%	0.0%	0.0%	26.8%
Alameda	2.3%	0.9%	1.9%	14.2%	1.2%	0.1%	0.0%	0.0%	0.1%	20.7%
Contra Costa	1.5%	0.1%	0.1%	3.1%	7.8%	0.3%	0.1%	0.0%	0.1%	13.2%
Solano	0.2%	0.0%	0.0%	0.2%	0.7%	3.3%	0.3%	0.1%	0.1%	4.9%
Napa	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	1.2%	0.1%	0.0%	1.6%
Sonoma	0.1%	0.0%	0.0%	0.1%	0.1%	0.1%	0.2%	5.4%	0.5%	6.6%
Marin	0.9%	0.0%	0.0%	0.2%	0.1%	0.0%	0.0%	0.1%	1.7%	3.2%
Bay Area	17.2%	9.9%	27.4%	20.7%	10.4%	3.9%	2.0%	5.8%	2.8%	100.0%

Difference from MTC

	Destination County									
Origin County	San Francisco	San Mateo	Santa Clara	Alameda	Contra Costa	Solano	Napa	Sonoma	Marin	Bay Area
San Francisco	-0.5%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.2%
San Mateo	0.4%	0.4%	-0.2%	-0.3%	-0.1%	0.0%	0.0%	0.0%	0.0%	0.1%
Santa Clara	-0.2%	0.0%	0.8%	-0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%
Alameda	0.0%	-0.3%	-0.5%	1.4%	-0.3%	0.0%	0.0%	0.0%	-0.1%	0.2%
Contra Costa	0.2%	-0.2%	-0.2%	-0.2%	0.6%	-0.1%	0.0%	0.0%	-0.1%	0.0%
Solano	-0.1%	0.0%	0.0%	-0.2%	0.0%	0.2%	0.0%	0.0%	-0.1%	-0.2%
Napa	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%
Sonoma	-0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.1%	0.1%	0.1%
Marin	0.3%	-0.1%	0.0%	-0.1%	0.0%	0.0%	0.0%	-0.1%	0.1%	0.1%
Bay Area	0.0%	0.0%	0.0%	0.0%	0.1%	-0.1%	0.1%	-0.1%	-0.1%	0.0%

A.21.2.8 | 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 A21-7 Comparison of SF-CHAMP to MTC 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	79.7%	3.0%	1.8%	15.5%
College/University	68.9%	4.4%	3.3%	23.4%
Other School	79.6%	13.2%	2.2%	5.0%
Work-Based	62.1%	36.1%	0.7%	1.0%
Other	79.8%	14.1%	2.1%	3.9%
Total	78.6%	12.0%	2.0%	7.4%

Difference from MTC	Auto	Walk	Bicycle	Transit
Work/Commute	1.1%	-3.2%	0.0%	2.1%
College/University	11.8%	-10.9%	1.8%	-2.7%
Other School	11.5%	-8.1%	0.6%	-4.0%
Work-Based	-5.3%	5.4%	-0.1%	0.0%
Other	-5.8%	4.0%	1.1%	0.7%
Total	-1.1%	0.3%	0.7%	0.1%

A.21.2.9 | 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:

- Drive Alone, No Value Toll
- Shared-Ride Two, No Value Toll
- Shared-Ride Three-Plus, No Value Toll
- Drive Alone, Value Toll
- Shared-Ride Two, Value Toll
- Shared-Ride Three-Plus, Value Toll
- Drive Alone, Already Paid Value Toll
- Shared-Ride Two, Already Paid Value Toll
- Shared-Ride Three-Plus, Already Paid Value Toll
- Truck, No Value Toll
- Truck, Value Toll
- 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 A21-8 through A21-10 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 5.2.0 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 A21-8 Comparison of SF-CHAMP to MTC 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)	3,835,849	648,226	947,116	323,160	305,145	6,059,496
AM Peak (3 Hr)	17,950,294	3,116,484	7,438,742	2,551,650	1,707,049	32,764,219
Midday (6.5 Hr)	39,505,413	6,567,860	16,129,228	5,647,504	3,988,220	71,838,224
PM Peak (3 Hr)	20,706,062	3,725,686	9,778,859	3,443,223	2,088,494	39,742,324
Evening (8.5 Hr)	23,452,714	4,006,965	8,255,673	2,889,280	2,331,139	40,935,771
Daily	105,450,331	18,065,221	42,549,618	14,854,817	10,420,047	191,340,034

Percent Difference	Facility Type					
Time Period	Freeways	Expressways	Major Arterials	Collectors	Other	All Facilities
Early AM	-30%	17%	-21%	-3%	-12%	-23%
AM Peak	-32%	9%	-24%	-8%	-49%	-27%
Midday	49%	117%	47%	100%	-7%	51%

PM Peak	-26%	15%	-18%	5%	-51%	-22%
Evening	40%	124%	42%	86%	8%	46%
Daily	2%	57%	7%	38%	-28%	7%

Table A21-9 Comparison of SF-CHAMP to MTC 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)	63,659	11,731	49,403	19,543	12,911	157,247
AM Peak (3 Hr)	445,547	82,747	447,487	178,284	91,128	1,245,193
Midday (6.5 Hr)	835,200	161,852	957,461	375,525	214,171	2,544,209
PM Peak (3 Hr)	553,416	107,932	634,014	257,382	122,174	1,674,919
Evening (8.5 Hr)	422,507	83,871	451,060	178,229	109,531	1,245,198
Daily	2,320,329	448,133	2,539,425	1,008,963	549,916	6,866,766

Percent Difference	Facility Type					
Time Period	Freeways	Expressways	Major Arterials	Collectors	Other	All Facilities
Early AM	-29%	4%	42%	70%	-41%	-7%
AM Peak	-15%	25%	41%	56%	-54%	2%
Midday	79%	148%	176%	236%	-14%	105%
PM Peak	-1%	42%	61%	82%	-51%	18%
Evening	51%	127%	159%	224%	-13%	85%
Daily	21%	75%	101%	132%	-35%	45%

Table A21-10 Comparison of SF-CHAMP to MTC 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)	60.3	23.8	38.5
AM Peak (3 Hr)	40.3	18.5	26.3
Midday (6.5 Hr)	47.3	18.9	28.2
PM Peak (3 Hr)	37.4	17.0	23.7
Evening (8.5 hr)	55.5	21.3	32.9
Daily	45.4	18.9	27.9

Percent Difference	Facility Type		
Time Period	Freeways	All Other Facilities	All Facilities
Early AM	-2%	-23%	-18%
AM Peak	-20%	-32%	-29%
Midday	-16%	-31%	-26%
PM Peak	-25%	-36%	-34%
Evening	-7%	-26%	-21%
Daily	-15%	-31%	-27%