

**SAN FRANCISCO
TRANSPORTATION
SUSTAINABILITY FEE
(TSF) NEXUS STUDY**

FINAL REPORT

Prepared For:

San Francisco Municipal Transportation
Agency

Prepared By:

Robert D. Spencer, Urban Economics

May 2015

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EXECUTIVE SUMMARY

In the City and County of San Francisco (the City) the only current citywide transportation impact fee is the Transit Impact Development Fee (TIDF). The fee is currently imposed on most nonresidential development in San Francisco and not on residential development. The TIDF funds costs associated with increased transit service provided by the San Francisco Municipal Transportation Agency (SFMTA) to accommodate development impacts, including capital facilities, fleet expansion, and capital maintenance.

The only other current City transportation impact fees are separate fees imposed in specific plan areas (e.g. Eastern Neighborhoods infrastructure impact fee). These fees apply to both residential and most non-residential development within plan areas. Nonresidential development projects currently pay these area plan fees in addition to the TIDF.

This report presents the technical analysis (“nexus study”) necessary for the City to update the TIDF and support adoption of the proposed Transportation Sustainability Fee (TSF) that would replace the TIDF. The TSF would replace and expand the TIDF’s applicability to include residential development projects. The use of TSF revenues would expand to include bicycle facilities and pedestrian and other streetscape infrastructure in addition to existing uses of the TIDF for public transit.

By adopting and implementing the TSF the City would achieve the following three objectives:

1. Replace the existing TIDF and expand its application to residential development and certain major institutions.
2. Expand the use of this citywide transportation impact fee to include bicycle facilities and pedestrian and other streetscape infrastructure to address transportation impacts from new development.
3. Establish a maximum justified transportation impact fee for all development whether or not subject to an area plan transportation fee in addition to the citywide TSF.

Growth Projections

Current projections indicate that over the next 30 years the number of housing units in the City will increase by 27 percent and employment by 35

percent.¹ Increased population and employment citywide from new development will generate increased auto and transit trips as well as increased bicycle and pedestrian activity.

The City’s transportation system is already highly congested under current conditions, as a result of both limited roadway capacity for vehicles and limited transit vehicle capacity for transit passengers. Congestion occurs particularly during morning and afternoon commute hours in the same eastern areas of the City that are also expected to experience the most development. Pedestrian activity will also increase in congested areas. Increased travel from new development will directly affect the performance of the City’s transportation system.

Table E.1 provides a summary of the growth projections used in the nexus study. “Non-TSF Development” primarily refers to major projects not subject to the TSF because of separate development or other contractual agreements or whose impacts are regulated by other agencies. “TSF Development” is an estimate of development that would be subject to the TSF.

Table E.1: Growth Projections (2010-2040)

	Non-TSF Development ¹	TSF Development	Total
Residential			
Housing Units			
Housing Units	47,000	54,400	101,400
Percent	46%	54%	100%
Nonresidential			
Employment (Jobs)			
Nonresidential (excluding PDR)	27,700	159,600	187,300
Production, Distribution, Repair (PDR)	(700)	10,300	9,600
Total	27,000	169,900	196,900
Percent	14%	86%	100%
<p>Note: Growth projections for 2010 and 2040 households (occupied housing units) and total employment (jobs) are within one percent of citywide totals estimated by the Association of Bay Area Governments (ABAG). See Tables A.1 and A.2 in Appendix A for details.</p> <p>¹ Includes major projects not subject to the TSF because of separate development or other contractual agreements or whose impacts are regulated by other agencies, plus an estimate of constructed, entitled, or approved projects from 2010 through 2014 that would be too far along in the development process to have a new fee applied to them.</p> <p>Sources: Table 2.4.</p>			

¹ See Table 2.1 in Chapter 2.

As a dense and built-out urban environment, the City does not have the option of physically expanding its roadways to accommodate more automobiles. Instead, the City's *Transit First* policy directs investments to transit, bike, and pedestrian modes of travel to improve transportation services within the City and shift travel away from the use of single-occupant autos. The policy thus benefits all travel modes: when commuters choose to travel by transit, bicycle, or walking they benefit from improvements to these facilities; when they choose to drive, they benefit from the reduction in automobile congestion that would exist without these improvements.

The TSF would address the impacts of development on the transportation system while supporting implementation of the *Transit First* policy. The TSF would accomplish these objectives by funding increased transit capacity to relieve transit congestion and by expanding bicycle and pedestrian facilities. The TSF would have three components: (1) transit capital maintenance, (2) transit capital facilities (including fleet expansion), and (3) complete streets (bicycle, pedestrian, and other streetscape infrastructure). These three components are described in the following sections.

SFMTA Transit Capital Maintenance Component

The transit capital maintenance component of the TSF is based on the same methodology used to calculate the maximum justified rates for the current TIDF. If adopted the TSF would replace the TIDF with revenues continuing to support SFMTA service expansion. The relationship between development and the transit capital maintenance component is summarized below:

- ◆ **Need for transit capital maintenance:** The impact of development on the need for additional transit capital maintenance is based on maintaining the existing transit level of service (transit LOS) as growth occurs. The existing transit LOS is the current ratio of the supply of transit services (measured by transit revenue service hours) to the level of transportation demand (measured by number of auto plus transit trips). As development generates new trips the SFMTA must increase the supply of transit services, and in particular capital maintenance expenditures, to maintain the existing transit LOS.
- ◆ **Use of TSF transit capital maintenance revenue:** The benefit to development from the use of fee revenues is based on improving transit vehicle maintenance to increase the availability of vehicles that provide transit service. SFMTA's transit vehicles include motor coaches (buses), trolley coaches (electric buses), light rail vehicles, historic streetcars, and cable cars. Improved vehicle maintenance directly increases revenue service hours by reducing the amount of time that a vehicle is out of service.

- ◆ **Proportional cost:** The TSF varies in direct proportion to the amount of trip generation of each development project.

Transit Capital Facilities Component

The transit capital facilities component of the TSF is based on a list of currently planned capital projects and programs needed to accommodate increased transit demand from new development. Examples include transit fleet expansion, improvements to increase SFMTA transit speed and reliability, and improvements to regional transit operators such as BART and Caltrain. The relationship between development and the transit capital facilities component of the TSF is summarized below:

- ◆ **Need for expanded transit capital facilities:** The impact of development on the need for expanded transit facilities is caused by increased transit and auto trips. The fair share cost of planned transit facilities is allocated to TSF development based on trip generation from TSF development as a percent of total trip generation served by the planned facility (including existing development and development not subject to the TSF).

For example, if a bus rapid transit project will improve service for both existing and new development then the cost allocated to the fee is the share of total trips in 2040 associated with TSF development. Alternately, if a fleet expansion project only serves growth then the cost allocated is the TSF development share of trips from growth only (TSF plus non-TSF development).

- ◆ **Use of TSF transit capital facilities component revenue:** The benefit to development from the use of fee revenues is based on funding new or expanded transit capital facilities to support increased transit services including improved vehicle availability.
- ◆ **Proportional cost:** The TSF varies in direct proportion to the amount of trip generation of each development project.

Complete Streets Component

The complete streets component of the TSF would fund the enhancement and expansion of bicycle facilities as well as pedestrian and other streetscape infrastructure to accommodate growth. This component of the TSF is equivalent to maintaining the existing amount of sidewalk space per pedestrian in San Francisco. The relationship between development and the complete streets component of the TSF is summarized below:

- ◆ **Need for pedestrian infrastructure:** The impact of development on the need for enhanced and expanded pedestrian and other streetscape infrastructure is based on achieving the pedestrian level of service (pedestrian LOS) recommended in the *San Francisco Citywide Nexus Analysis* completed in March 2014.² The pedestrian LOS is based on sidewalk space per capita. As growth occurs more investment is needed in pedestrian and other streetscape infrastructure to offset the congestion caused by more pedestrian trips.
- ◆ **Use of TSF complete streets revenue:** The benefit to development from the use of fee revenues is based on enhancing and expanding pedestrian and other streetscape infrastructure. Revenues may also be used for bicycle capital facilities.
- ◆ **Proportional cost:** The TSF varies in direct proportion to the amount of service population of each development project.

TSF Summary

Table E.2 provides a summary of the maximum justified TSF for each fee component describe above. The two transit components are summed because they apply to the same type of facility and to enable comparison with area plan transportation fees. Area plan fees have one fee component for transit and a separate one for complete streets (bicycle facilities and pedestrian and other streetscape infrastructure) based on legislation currently before the Board of Supervisors. The transit fee levels in Table E.2 are the maximum justified amounts that the City may charge new development for impacts on transit facilities and services, and likewise for complete streets. The City may choose to impose any amount up to the maximum justified amount for either or both of the two components.

² San Francisco Planning Department, *San Francisco Citywide Nexus Analysis*, March 2014.

Table E.2: Maximum Justified TSF per Building Square Foot (2015 dollars)

	Transit ¹	Complete Streets ²	Total
Residential	\$22.59	\$8.34	\$30.93
Nonresidential (excluding PDR)	\$80.68	\$6.74	\$87.42
Production, Distribution, Repair (PDR)	\$22.59	\$3.48	\$26.07
¹ Includes transit capital maintenance and transit capital facilities. ² Includes bicycle facilities plus pedestrian and other streetscape infrastructure. Source: Table 6.1.			

TSF Implementation

The TSF is part of a larger effort, the proposed Transit Sustainability Program (TSP). In addition to the TSF, the TSP includes (1) a transportation demand management (TDM) program for new development projects, and (2) revision to the City’s significance standard and threshold regarding evaluation of transportation impacts under the California Environmental Quality Act (CEQA) consistent with the new requirements of State Senate Bill 743.

The TSF nexus study and the expenditure of TSF revenues are designed to avoid any overlap with other TSP requirements or in any way double charge development projects for the same impact. Based on the current proposal, the TDM component of the TSP is focused on reducing vehicle miles travelled from new development whereas the TSF is focused on accommodating increased transit, bicycle, and pedestrian trips from new development. The TDM component would include a wide range of measures to encourage travel by transit, bicycle, and pedestrian modes and thus increase the need for the expanded facilities and services funded by the TSF.

Transportation fees within plan areas, e.g. Eastern Neighborhoods, may overlap with the TSF depending on the types of impacts addressed by the particular plan area fee and the types of facilities and services funded. Unless additional analysis is conducted to distinguish the TSF from a particular plan area fee, the TSF nexus study provides the maximum justified amount that may be imposed on development subject to both the TSF and a plan area fee for the same type of facility (transit or complete streets).

1. INTRODUCTION

This chapter provides a background and overview, presents the purpose of the report, and defines several key concepts and methods.³

Background

In the City and County of San Francisco (the City) the only current citywide transportation impact fee is the Transit Impact Development Fee (TIDF).⁴ The City first adopted the TIDF in 1981 and imposed it only on downtown office development only to fund increased transit services required to serve that development. In 2004 the City substantially revised and expanded the TIDF to apply to most nonresidential development citywide. The TIDF funds costs associated with increased transit service (including capital facilities, fleet expansion, and capital maintenance costs) incurred by the San Francisco Municipal Transportation Agency (SFMTA) to accommodate development impacts.

The only other transportation impact fees currently being imposed by the City are separate fees imposed in specific plan areas (e.g. Eastern Neighborhoods infrastructure impact fee) that apply generally to most development within plan areas, including residential and nonresidential development. For nonresidential development projects these fees are imposed in addition to the TIDF.

As further explained in Chapter 2, roughly one-quarter of the City's projected development over this 30-year planning horizon will be exempt from the existing TIDF or the proposed TSF. In most cases, this development is subject to an adopted development agreement that requires implementation of a substantial array of transportation mitigation measures and other requirements identified during the environmental review and planning entitlement process for each project. For example, the City has entered into development agreements establishing transportation mitigation and improvement requirements with the Candlestick Point – Hunters Point Shipyard Phase II and the Treasure Island – Yerba Buena Island development projects.

³ This report has been prepared at the direction of the San Francisco City Attorney's Office and the San Francisco Municipal Transportation Agency (SFMTA) in close coordination with the San Francisco County Transportation Authority (SFCTA) and the San Francisco Planning Department.

⁴ *San Francisco Planning Code*, Section 411.

At this time, based on current law, the remaining three-quarters of the City's projected development will be subject to either (1) the citywide TIDF on nonresidential development outside plan areas, (2) one of several transportation development impact fees within adopted plan areas⁵ plus the TIDF, or (3) no transportation impact fee in the case of residential development outside plan areas (because the TIDF is only imposed on nonresidential development).

Purpose of Report

This report presents the technical analysis ("nexus study") needed to support the City's adoption of a citywide development impact fee for the following transportation services and facilities:

- ◆ Transit capital maintenance
- ◆ Transit capital facilities
- ◆ Complete streets (bicycle facilities plus pedestrian and other streetscape infrastructure).

The nexus study draws substantially from prior efforts. The nexus for the transit capital maintenance component is based on the current TIDF nexus analysis last adopted in 2012.⁶ The nexus for the complete streets component is based on the *San Francisco Citywide Nexus Analysis* prepared by the San Francisco Planning Department in March 2014. The transit capital facilities component is a new nexus analysis that relies substantially on recent capital planning studies completed by SFMTA.

By adopting and implementing the Transportation Sustainability Fee (TSF) the City would be able to achieve the following three objectives:

1. Replace the existing TIDF with an impact fee that extends to residential development and certain major institutions.
2. Expand the use of this citywide transportation impact fee to cover bicycle facilities plus pedestrian and other streetscape infrastructure, in addition to impacts on transit service.
3. Establish a maximum justified transportation fee for all development whether or not subject to an area plan transportation fee in addition to the citywide TSF.

⁵ Adopted Area Plans are part of the San Francisco General Plan. Several of these Area Plans resulted in the creation of new development impact fees.

⁶ Cambridge Systematics (with Urban Economics), *San Francisco Transit Impact Development Fee Update*, February 2011 (adopted in 2012).

The TSF would be part of a larger effort, the Transportation Sustainability Program (TSP). In addition to the TSF, the TSP would include, if adopted, (1) a transportation demand management (TDM) program for new development projects, and (2) revision to the City's policies regarding evaluation of transportation impacts under the California Environmental Quality Act (CEQA).

This report describes the nexus analysis and documents the findings required by the Mitigation Fee Act (the Act)⁷ for the City's adoption of the TSF. The purpose of the TSF would be to fund transportation system improvements that accommodate citywide development impacts caused by increased demand for auto, transit, bike, and pedestrian travel generated by new development.

The key findings required by the Act and documented by this report include:

- ♦ **Impact of development:** Reasonable relationship between new development and the need for expanded citywide transportation services.
- ♦ **Use of fee revenue:** Reasonable relationship between new development and the benefits received from additional citywide transportation services provided by expanded transit capital maintenance, fleet and facilities, plus complete streets infrastructure to be funded with fee revenues.
- ♦ **Proportional cost:** Reasonable relationship between the impact of a development project and the total cost (maximum justified fee) attributed to the project.

Together these three key findings define the "nexus" between a development project, the fee paid, and the benefits received. The nexus study also documents the use of fee revenues as required by the Act by describing the types and estimated costs of expenditures to be funded by the fee.

Citywide Approach To Nexus

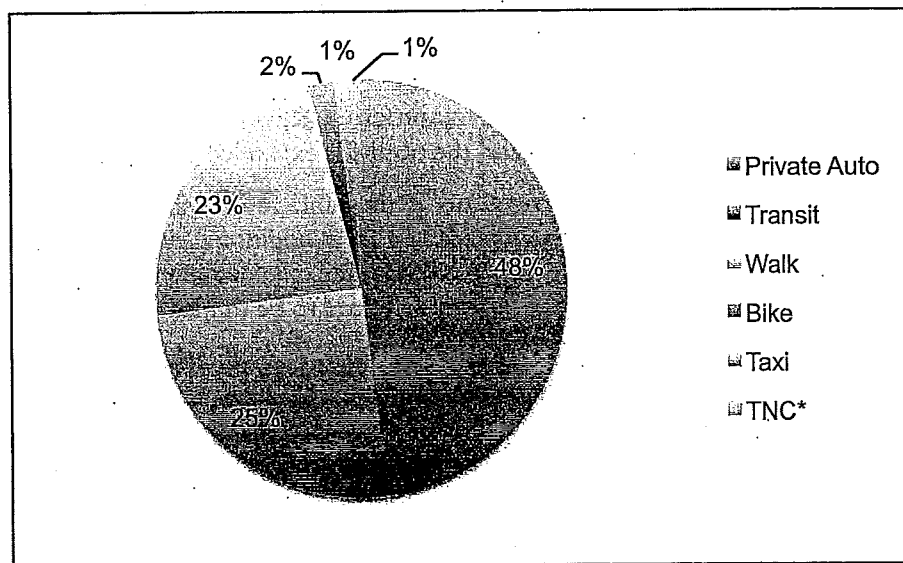
This section explains the citywide approach to the nexus for the TSF including the responsibilities of SFMTA and the San Francisco County Transportation Authority (SFCTA) for managing the citywide transportation system, and the role of the proposed TSF in addressing the impact of development on the system.

⁷ The Mitigation Fee Act is contained in Section 66000 and subsequent sections of the California Government Code.

Citywide Transportation System

San Francisco has a mature, built-out transportation network providing rights-of-way (streets, sidewalks, bike paths, and separate light rail corridors) for all modes of travel. On a typical weekday, this network accommodates about 3.2 million trips to, from, or within the City.⁸ The current share by mode is shown in Figure 1.1. Mode is the type of transportation used to complete a trip such as private auto, transit, walking, or bicycling.

Figure 1-1: San Francisco Travel Mode Share (2014)



¹ Transportation network companies such as Lyft, Uber, etc.

Source: Corey, Canapary & Galanis, memorandum to SFMTA regarding comparison between 2012, 2013, and 2014 SFMTA modeshare studies, Dec. 12, 2014.

The SFMTA is responsible for all modes of surface transportation within the City including public transit, bicycling, pedestrian planning, accessibility, parking and traffic management, and taxi regulation. The transportation system is the citywide network of public facilities⁹ that support transportation services for all modes of travel (auto, transit, bicycle, and pedestrian). The

⁸ The data cited refers to “trips”, not “trip ends”, as explained in the *Trip Generation* section of Chapter 2.

⁹ Private parking lots, shuttles, ride hailing companies, and garages and a few private streets are the only non-public components of the City’s transportation facilities.

SFMTA seeks to provide mobility for its customers through whatever mode they choose.

The Municipal Railway (Muni) is San Francisco's extensive local transit system and is the largest SFMTA operating division. San Francisco is the nation's second most densely populated major city, and Muni is one of the most heavily ridden transit systems on a per capita basis. The system has over 700,000 boardings on an average weekday. Muni focuses on serving downtown employment centers during the morning and afternoon peak periods and also provides cross-town and neighborhood service. With 73 bus routes and rail lines nearly all city residents are within two blocks of a Muni stop. With nearly 1,000 vehicles the Muni fleet is unique and includes historic streetcars, biodiesel and electric hybrid buses, electric trolley coaches, light rail vehicles, paratransit cabs and vans, and cable cars.

The SFCTA serves as the county congestion management agency for San Francisco, providing funding and coordinating planning efforts with State and regional transportation agencies. The congestion management agency role includes strengthening local land use policies with respect to transportation impacts and mitigations:

The City is a major regional destination for employment, shopping, tourism, and recreation. As a result, connections with other parts of the Bay Area are also critical components of the City's transportation system. Due to constraints from water bodies and topography, regional gateways for road vehicles are limited to the Golden Gate Bridge to the north, the Bay Bridge to the east, and two highways (Interstate 280 and Hwy. 101) extending south. Caltrans owns and operates the freeways and funds maintenance of the local highway network within San Francisco, including Hwy. 101 (Van Ness Avenue and Lombard Street), Hwy. 280, Hwy. 1, and Route 35 (Skyline Boulevard).

There is also a transit rail tunnel under the Bay operated by Bay Area Rapid Transit (BART) and terminals to accommodate ferry travel. The primary regional transit operators that serve the City include:

- Alameda-Contra Costa Transit District ("AC Transit" serving Alameda and Contra Costa counties)
- Bay Area Rapid Transit District ("BART" serving Alameda, Contra Costa, and San Mateo counties)
- Golden Gate Bridge, Highway and Transportation District ("Golden Gate Bus" and "Golden Gate Ferry" serving Marin and Sonoma counties)
- Peninsula Corridor Joint Powers Board ("Caltrain" serving San Mateo and Santa Clara counties)

- San Mateo County Transit District (“SamTrans”).
- San Francisco Bay Area Water Emergency Transportation Authority (“WETA” or “San Francisco Bay Ferry” serving Alameda, Marin, and San Mateo counties)

Addressing Development Impacts on the Citywide Transportation System

Current projections indicate that over the next 30 years, the number of housing units in the City will increase by 27 percent and employment will increase by 35 percent.¹⁰ Increased population and employment citywide from new development will generate increased auto and transit trips as well as increased bicycle and pedestrian travel.

The City’s transportation system is already highly congested, including significant transit crowding, under current conditions. Congestion occurs particularly during morning and afternoon commute hours in the same eastern areas of the City that are also expected to experience the most development. Pedestrian activity will also increase in congested areas. This increased travel activity will directly affect the performance of the City’s transportation system and constrain the City’s ability to achieve its transportation system goals.¹¹

As a dense and built-out urban environment, the City does not have the option of physically expanding its roadways to accommodate more automobiles. Instead, the City’s *Transit First* policy directs investments to transit, bike, and pedestrian modes of travel to improve transportation services within the City and shift travel away from the use of single-occupant autos.¹² These investments include increased transit capacity to relieve crowding on key lines as well as complete streets and bicycle facilities to support increased walk and bike trips. Increased bicycling has the effect of reducing both auto congestion and transit overcrowding. The policy thus benefits all travel modes. Those choosing to travel by transit, bicycle, or walking benefit from improvements to the facilities associated with these modes. Those choosing to drive benefit from the congestion reduction caused by the increased use of these modes associated with these improvements.

¹⁰ See Table 2.1 in Chapter 2.

¹¹ San Francisco County Transportation Authority, *San Francisco Transportation Plan 2040*, December 2013, pp. 13-17.

¹² City and County of San Francisco, *1996 Charter* (as amended through November 2013), Section 8A.115.

The City employs various land use regulatory tools to reduce development impacts on its transportation system. These tools include (1) design standards adopted by ordinance requiring on site and adjacent transportation improvements, (2) the environmental review process resulting in mitigations for transportation impacts, (3) agreements with developers to implement transportation improvements or form transportation management associations as a condition of project approval, and (4) development impact fee programs that identify and fund plan area or citywide transportation improvements. As mentioned under the *Purpose of Report* section, the TSF would update the City's citywide transportation development impact fee program by including residential development, expanding the use of funds to include bicycle and pedestrian modes, and providing a maximum justified amount for all development projects whether or not subject to a separate area plan fee.

Citywide Impacts and Use of Fee Revenues

The TSF is intended to address the citywide impact on the City's transportation system of development subject to the fee. Every development project has citywide impacts because most trips extend across significant portions of the City's transportation network.¹³ Furthermore, all new development projects benefit from the expenditure of TSF revenues citywide for the same reason that the SFMTA and SFCTA must plan for transportation improvements from a citywide perspective: the interconnectedness of the transportation network. Finally, most transit trips link to pedestrian trips so the need for complete streets improvements is linked to transit activity.

For example, just as most trips extend across the network, a major transportation improvement such as an upgraded transit line or separated bicycle lane benefits a wide variety of travelers due to transfers within the Muni system and the myriad origins and destinations. Furthermore, these improvements must address potential impacts to the system that extend across the network, for example the effect of a transit line upgrade on service to lines connecting to different parts of the City.

Report Organization

The nexus study is organized as follows:

¹³ San Francisco County Transportation Authority, *San Francisco Transportation Plan 2040*, December 2013, pp. 11-19.

- ◆ Chapter 2 explains how transportation impacts from new development are measured.
- ◆ Chapter 3 provides the nexus analysis for the transit capital maintenance component of the TSF.
- ◆ Chapter 4 provides the nexus analysis for the transit capital facilities component of the TSF.
- ◆ Chapter 5 provides the nexus analysis for the complete streets component of the TSF.
- ◆ Chapter 6 summarizes the maximum justified TSF and explains its relationship to area plan fees and the Transportation Sustainability Program (TSP).
- ◆ Appendices provide additional tables to support the quantitative information provided in individual chapters.

2. GROWTH IN DEMAND FOR TRANSPORTATION SERVICES

This chapter describes existing conditions, development projections, and other assumptions used to estimate demand on the City's transportation system.

2010 Development Estimates and 2040 Projections

The TSF nexus study is based on citywide development estimates for 2010 and a consistent set of development projections for 2040. These 30-year projections are based on the most recent estimates available when the nexus study was produced. Projections were prepared by the Association of Bay Area Governments (ABAG) for the nine-county San Francisco Bay region in association with the Metropolitan Transportation Commission (MTC). These ABAG/MTC development projections, known as the "Jobs Housing Connections" scenario, were approved in 2013 and are used for the most recent regional land use and transportation plan (*Plan Bay Area*).

The ABAG/MTC development projections anticipate that the City will continue to attract growth and investment as a primary employment center for the region. The number of housing units is projected to grow by 27 percent while employment is projected to grow by 35 percent. Employment growth will be supported by both increased commuting from outside the City and the addition of over 100,000 housing units in the City. Both employment and housing growth will depend on increased commuting into and out of the City supported by increased transit services.

The San Francisco Planning Department prepared estimates of existing and projected development for use in the TSF nexus study based on the ABAG/MTC projections for San Francisco. The Planning Department routinely prepares land use forecasts to aid in policy deliberation and decision-making on the City's land use future, as well as to form the basis for testing transportation impacts of new policies, projects, and plans.

The Planning Department maintains a land use allocation tool to provide land use inputs to SF-CHAMP. SF-CHAMP is the travel model operated by the San Francisco County Transportation Authority (SFCTA) to generate detailed forecasts of travel demand for transportation planning and policy purposes, including developing countywide and neighborhood transportation plans and providing input to micro-simulation modeling for corridor and project-level evaluations. The primary purpose of the land use tool is to allocate ABAG's citywide forecasts to housing and employment categories for each of the travel demand model's structure of 981 traffic analysis zones

(TAZs).¹⁴ The Planning Department's land use allocation tool constrains the sum of its projections by TAZ within plus or minus one percent of the ABAG/MTC citywide totals for population, households, and employment.

The Planning Department land use allocation tool converts the ABAG/MTC employment by industry sector to the land use categories used by the Planning Department and SF-CHAMP. The Planning Department's economic activity categories are:

- ◆ Residential
- ◆ Management, Information, and Professional Services
- ◆ Retail/Entertainment
- ◆ Production, Distribution, Repair
- ◆ Cultural/Institution/Education
- ◆ Medical and Health Services
- ◆ Visitor Services.

Table 2.1 summarizes the 2010 to 2040 growth estimates for San Francisco used as a basis for the nexus study. See Tables A.1 and A.2 in Appendix A for a comparison of these projections to *Plan Bay Area* estimates.

TSF and Non-TSF Development

Only a portion of the growth summarized in Table 2.1 would be subject to the TSF. Components of non-TSF development included in the growth projections are described below:

- ◆ Major private development projects that have already received primary entitlements from the City and/or entered into development or other contractual agreements with the City.¹⁵ These entitlements and agreements contractually define developers' commitments to transportation infrastructure improvements to mitigate transportation impacts. These projects would not be subject to the TSF but nonetheless fund substantial improvements to the City's transportation system to mitigate project impacts.

¹⁴ TAZs are small geographic areas (e.g., city blocks) used by SF-CHAMP to aggregate trips within the geographic area for analysis by the model.

¹⁵ State and local laws provide the City with authority to enter into development agreements (or disposition and development agreements, in the case of a Redevelopment Plan) with private parties, to establish the terms for exactions including impact fees in connection with the development of the particular project. Unless authorized by the terms of the development agreement, the City may not ordinarily impose additional fees on future development with areas covered by these agreements.

Table 2.1: San Francisco Growth 2010-2040

	2010	2040	2010 – 2040 Growth	
			Amount	Percent
Housing				
Housing Units	376,200	477,400	101,200	27%
Households	345,900	447,000	101,100	29%
Vacancy Rate	8.1%	6.4%		
Employment (Jobs)				
Management, Information and Professional Services	295,100	414,800	119,700	41%
Retail/Entertainment	97,700	123,200	25,500	26%
Production, Distribution, Repair	59,900	69,500	9,600	16%
Cultural/Institution/Education	59,800	80,400	20,600	34%
Medical and Health Services	36,500	52,200	15,700	43%
Visitor Services	21,000	26,800	5,800	28%
Total Employment	570,000	766,900	196,900	35%
Jobs per Household	1.65	1.72		
Sources: Tables A.1 and A.2.				

- ◆ Local, state and federal public development projects that are regulated by the respective public agency and not subject to the TSF.
- ◆ Pipeline development that includes both nonresidential and residential projects constructed from 2010 through 2014 because the TSF would not be adopted until 2015 and could not apply to prior development. Pipeline development also includes residential projects that have already received their first construction document and therefore would not be subject to a new fee program adopted in 2015. At the time of adoption of the TSF these projects would be too far along in the development process with permit conditions that would not provide for imposition of the TSF. Entitled or approved non-residential projects as of 2015 are excluded from pipeline development (and included in TSF development) because these projects would be subject to the TSF as an update to and replacement of the TIDF.

Major private and public development projects included in non-TSF development and not subject to the TSF are listed in **Table 2.2** (the first two of the three categories described above).

All other development would be subject to the TSF, including certain major projects plus development within areas of the City that have an adopted area plan. Major projects and area plans included as part of TSF development are shown in **Table 2.3**. The relationship between existing area plan transportation fees and the TSF is discussed in Chapter 6.

Table 2.2: Major Private and Public Development Projects Included in Non-TSF Development

Project	Why TSF Is Not Applicable
California Pacific Medical Center (CPMC)	Development agreement provides for transportation improvements and financial contributions to address impacts and prevents application of TSF to project.
Candlestick Point – Hunters Point Shipyard Phases I and II	Redevelopment plan provides for transportation improvements to address impacts and prevents application of TSF to project.
Parkmerced and Treasure Island – Yerba Buena Island (residential only)	Disposition and development agreement requires payment of TIDF but project not subject to new impact fees. Nonresidential development would pay TSF as update to the current TIDF. Residential development would not pay the TSF because the current TIDF does not apply to residential development.
Presidio	Development regulated by a federal agency (Presidio Trust).
San Francisco State University	Developer is a state agency exempt from the current TIDF and has a separate mitigation agreement for transportation impacts.
Transbay Redevelopment Project Area (Zone 1)	Exempt from the current TIDF based on S.F. Planning Code.
University of California – San Francisco Master Plan	Developer is a state agency exempt from the current TIDF.
Source: San Francisco Planning Department.	

Table 2.3: Major Projects and Plans Included in TSF Development

Project	Why TSF Is Applicable
Mission Bay	Redevelopment plans included a 10-year moratorium on application of new impact fees and exactions in the project area that expired in 2011 (so the TSF would apply).
Parkmerced and Treasure Island – Yerba Buena Island (residential only)	Disposition and development agreement requires payment of TIDF but project not subject to new impact fees. Nonresidential development would pay TSF as update to the current TIDF. Residential development would not pay the TSF because the current TIDF does not apply to residential development.
Other major development projects currently under review (e.g. Mission Rock, Warriors, Pier 70)	No development agreements have been approved for these projects at the time of the nexus study. Future updates to the TSF would address the impact of any approved agreements that exempt these projects.
Development within area plans, including: <ul style="list-style-type: none"> • Balboa Park • Eastern Neighborhoods • Market & Octavia • Rincon Hill • Transit Center Development Plan (TCDP) • Van Ness & Market Downtown Residential Special Use District • Visitacion Valley¹ 	Area plan transit and complete streets fees generally do not address citywide impacts of development that would be addressed by the TSF. See Chapter 6 for more detail regarding relation of area plan fees to the TSF. Note: Transbay Redevelopment Project Area (Zone 1) parcels within the TCDP would not be subject to the TSF (see Table 2.2).
¹ The Schlage Lock development project in Visitacion Valley recently entered into a development agreement with the City that commits the project to pay the TSF if adopted. Source: San Francisco Planning Department.	

Development projections for 2010 to 2040 allocated to TSF and non-TSF development are shown in Table 2.4.

Table 2.4: TSF and Non-TSF Development (2010-2040)
Housing Units and Employment

Economic Activity Category	Total	Non-TSF Development			TSF Development
		Major Projects ¹	Pipeline Development ²	Subtotal	
<i>Formula</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d = b + c</i>	<i>e = a - d</i>
Residential					
Housing Units					
Housing Units	101,400	29,900	17,100	47,000	54,400
<i>Percent</i>	<i>100%</i>	<i>29%</i>	<i>17%</i>	<i>46%</i>	<i>54%</i>
Nonresidential					
Employment (Jobs)					
Management, Information & Professional Services	119,700	14,200	-	14,200	105,500
Retail/Entertainment	25,500	2,100	1,000	3,100	22,400
Cultural/Institution/Education	20,600	2,600	1,400	4,000	16,600
Medical & Health Services	15,700	6,600	(100)	6,500	9,200
Visitor Services	5,800	300	(400)	(100)	5,900
Nonresidential (ex. PDR)	187,300	25,800	1,900	27,700	159,600
Production, Distribution, Repair (PDR)	9,600	400	(1,100)	(700)	10,300
Total Nonresidential	196,900	26,200	800	27,000	169,900
<i>Percent</i>	<i>100%</i>	<i>13%</i>	<i><1%</i>	<i>14%</i>	<i>86%</i>
<p>¹ Major projects represent development that would not be subject to the TSF because of separate development or other contractual agreements to mitigate transportation impacts or whose impacts are regulated by other agencies. See Table 2.2.</p> <p>² Pipeline development is in addition to major projects and represents an estimate of all projects constructed from 2010 through 2014, plus residential projects that have already received their first construction document and therefore would not be subject to a new fee program adopted in 2015. Entitled or approved nonresidential projects are included in TSF development because they would pay the TSF as an update to and replacement of the TIDF after 2014.</p> <p>Sources: San Francisco Planning Department, Land Use Allocation Model Output, December 2013; Table 2.1.</p>					

Measuring Transportation System Impact

The TSF uses two measures of the impact of development on the transportation system: trip generation and service population. The assumptions and methods for converting the growth projections discussed above to each of these two measures of impact are explained in the following sections.

Trip Generation

The transit capital maintenance and transit capital facilities components of the TSF use trip generation to measure development impact on the need for transit service. Trips occur between origins and destinations such as from home to work, or from work to shopping, or from shopping back to home. Trip generation is related to travel demand, or the desire for mobility by residents and workers to access homes, jobs, shopping, recreation, and other activities.¹⁶

The impact of development on the need for expanded transit services and facilities is caused by increases in both transit and auto trips. Increased transit trips resulting from new development require increased transit services and facilities to reduce impacts on currently overcrowded transit lines, or prevent lines from becoming overcrowded. Increased auto trips from development require increased transit services and facilities to offset increased roadway congestion that increases travel times for transit service. In sum, increased transit and auto trip generation directly increases crowding on transit vehicles.

Trip generation estimates for the purposes of this nexus study do not include pedestrian and bicycle trips. Any increase in these trips from development benefits the transit system by reducing demand for transit services and thereby reducing crowding.

To calculate total trip generation, housing and employment projections are converted to building space, and a trip generation rate applied per 1,000 square feet of building space. Trip generation rates refer to “trip ends” with each trip having two trip ends and the impact assigned equally to the land use at each end of the trip. Assumptions used to convert housing and employment projections to building space, and to convert building space to trip generation, are based on citywide averages developed by the Planning Department and commonly applied in studies of development impacts in San Francisco.

Table 2.5 converts the projections in Table 2.4 to building space for TSF and non-TSF development, the basis on which the TSF will be applied to development projects. As shown in Table 2.5 TSF development includes about 54 percent of total residential growth and 87 percent of total nonresidential growth in building space.

¹⁶ For the purposes of the nexus study trip generation represents the movement by one person on a typical weekday from one activity to another, and are measured as person trips, not vehicle trips (an auto or transit vehicle may carry more than one person).

Table 2.5: TSF and Non-TSF Development (2010-2040)
Building Square Feet

Economic Activity Category	Sq. Ft. per Unit or per Employee	Non-TSF Development		TSF Development		Total	
		Housing Units or Employment	Building Space (1,000 sq. ft.)	Housing Units or Employment	Building Space (1,000 sq. ft.)	Housing Units or Employment	Building Space (1,000 sq. ft.)
<i>Formula</i>	<i>a</i>	<i>b</i>	<i>c = a * b</i>	<i>d</i>	<i>e = a * d</i>	<i>f = b + d</i>	<i>g = c + e</i>
Residential	1,156	47,000	54,300	54,400	62,900	101,400	117,200
<i>Percent</i>			46%		54%		100%
Nonresidential							
Management, Information & Professional Services	260	14,200	3,700	105,500	27,400	119,700	31,100
Retail/Entertainment	368	3,100	1,100	22,400	8,200	25,500	9,300
Cultural/Institution/Education	350	4,000	1,400	16,600	5,800	20,600	7,200
Medical & Health Services	350	6,500	2,300	9,200	3,200	15,700	5,500
Visitor Services	787	(100)	(100)	5,900	4,600	5,800	4,500
Nonresidential (ex. PDR)	308	27,700	8,400	159,600	49,200	187,300	57,600
Production, Distribution, Repair (PDR)	597	(700)	(400)	10,300	6,100	9,600	5,700
Total Non-residential		27,000	8,000	169,900	55,300	196,900	63,300
<i>Percent</i>			13%		87%		100%
Total			62,300		118,200		180,500
<i>Percent</i>			35%		65%		100%

Sources: Tables 2.4 and A.4.

For the nexus study, the employment density factor and trip generation rate for the management, information, and professional services economic activity category is updated to represent a weighted average of assumptions used for citywide development, and assumptions recently developed for the Central SoMa area plan environmental review. The latter represents higher employment densities associated with the type of technology-based companies likely to locate in that area.

Table 2.6 converts the building space estimates in Table 2.5 to estimates of total trip generation for TSF and non-TSF development. To be consistent with existing area plan impact fee nexus studies and the recently completed

San Francisco Citywide Nexus Analysis,¹⁷ five of the six nonresidential economic activity categories are merged into a single category “Nonresidential (excluding PDR)”. The Production, Distribution, and Repair (PDR) category is maintained as a separate category. A weighted average trip generation rate for the five merged categories is calculated based on the trip generation rate for each category and the 2010-2040 growth amount by category.

Table 2.6: TSF and Non-TSF Trip Generation (2010-2040)

Economic Activity Category	Motorized Trip Generation Rate (trips per 1,000 sq. ft.)	Non-TSF Development		TSF Development		Total	
		Building Space (1,000 sq. ft.)	Trip Generation	Building Space (1,000 sq. ft.)	Trip Generation	Building Space (1,000 sq. ft.)	Trip Generation
Residential	7	54,300	380,000	62,900	440,000	117,200	820,000
Nonresidential (ex. PDR)	25	8,400	210,000	49,200	1,230,000	57,600	1,440,000
Production, Distribution, Repair (PDR)	7	(400)	(3,000)	6,100	43,000	5,700	40,000
Total Trip Generation			587,000		1,713,000		2,300,000

Sources: Tables 2.5, A.4, and A.6.

More detail on housing unit size, employment density factors, and trip generation rates is shown in Appendix A, **Tables A.3 and A.4**. See **Tables A.5 and A.6** in that appendix for more detail on the estimates of total trip generation used in the nexus study.

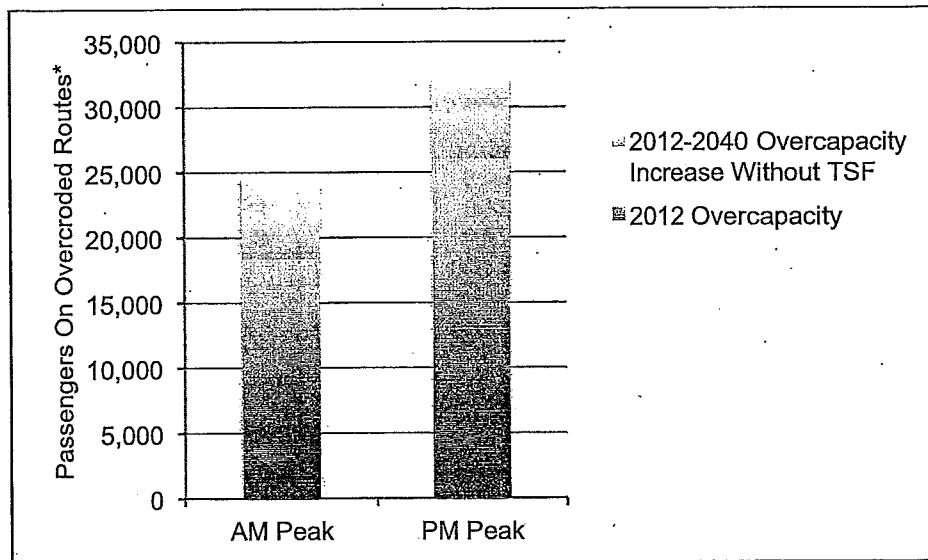
Trip generation from new development will cause the need for higher levels of transit service and increased transit facility capacity. Without the transit services and facilities to be fully or partially funded by the TSF, transit service in San Francisco is projected to become increasingly overcrowded. Increased overcrowding will diminish performance of the City’s transportation system and constrain the City’s ability to achieve its transportation system goals.¹⁸ SFMTA staff conducted an analysis of overcrowding using SF-CHAMP model output for existing and 2040 conditions. The 2040 projections include transit capital projects to be completed without funding from the TSF such as the Central Subway. As shown in **Figure 2.1**, the number of passengers on

¹⁷ San Francisco Planning Department, *San Francisco Citywide Nexus Analysis*, March 2014.

¹⁸ San Francisco County Transportation Authority, *San Francisco Transportation Plan 2040*, December 2013, pp. 13-17.

overcrowded routes will increase from 2010 to 2040 by approximately 6,500 passengers during the morning and afternoon peak periods. When transit reaches capacity, motorists that would have taken transit are unable to shift and opt to drive, exacerbating congestion.

Figure 2-1: Transit Passengers On Overcapacity Routes Without TSF



Note: "Overcapacity" is greater than 85 percent occupancy with passengers measured at maximum load point on each route.

Source: San Francisco Municipal Transportation Agency, personal communication summarizing analysis of SF-CHAMP model output, MLP Loads & % Contribution.xls, August 29, 2015.

Service Population

The complete streets component of the TSF uses service population to measure the impact of new development on the need for complete streets (improved pedestrian and other streetscape infrastructure). Service population includes both residents and those who work in the City ("employees" measured by the number of jobs). Thus a resident who works in the City is counted both as a resident and an employee to fully reflect the level of demand for complete streets infrastructure. One employee (whether or not a resident) is counted at 50 percent compared to one resident to reflect the lower level of demand for complete streets infrastructure associated with the workday compared to the morning, evening, and weekend demand of a resident. Tourists and visitors are reflected in the growth in employment in the City's business establishments that serve tourists and visitors. This service population approach to measuring the

impact of development on the need for complete streets infrastructure is typical for impact fee nexus studies and is consistent with the *San Francisco Citywide Nexus Analysis*.¹⁹

Assumptions used in the nexus study that convert population and employment to building space are shown in Table A.4.

¹⁹ San Francisco Planning Department, *San Francisco Citywide Nexus Analysis*, March 2014.

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3. TRANSIT CAPITAL MAINTENANCE

The SFMTA transit capital maintenance component of the TSF is based on the same methodology used to calculate the maximum justified rates for the current TIDF. If adopted, the TSF would replace the TIDF. The relationship between development and the transit capital maintenance component of the TSF is summarized below and explained more fully in the sections that follow:

- ◆ **Need for transit capital maintenance:** The impact of development on the need for additional transit capital maintenance is based on maintaining the existing transit level of service (transit LOS) as growth occurs. The existing transit LOS is the current ratio of the supply of transit services (measured by transit revenue service hours) to the level of transportation demand (measured by number of auto plus transit trips).²⁰ As development generates new trips the SFMTA must increase the supply of transit services, and in particular capital maintenance expenditures, to maintain the existing transit LOS.
- ◆ **Use of TSF transit capital maintenance revenue:** The benefit to development from the use of fee revenues is based on improving SFMTA transit vehicle maintenance to increase the availability of vehicles that provide transit service. SFMTA's transit vehicles include motor coaches (buses), trolley coaches (electric buses), light rail vehicles, historic streetcars, and cable cars. Improved vehicle maintenance directly increases revenue service hours by reducing the amount of time that a vehicle is out of service.
- ◆ **Proportional cost:** The TSF varies in direct proportion to the amount of trip generation of each development project.

Need For Transit Capital Maintenance

The TSF accommodates the impact of development by funding additional SFMTA transit capital maintenance to maintain the existing SFMTA transit LOS. Transit LOS is based on the existing number of revenue service hours per trip. The latest available financial data from the National Transit Database used to calculate the transit capital maintenance component is for

²⁰ As discussed in Chapter 2 (*Measuring Transportation System Impact* section), "trips" include both transit and auto trips because an increase in the former generates additional demand for transit, and an increase in the latter generates additional transit delays due to increased auto congestion causing a need for additional transit service.

2013 so the transit LOS calculation is based on 2013 estimates as well. As shown in Table 3.1, SFMTA delivers 1.31 revenue service hours for every 1,000 auto and transit trips.

Table 3.1: SFMTA Transit Capital Maintenance Service Standard

	Formula	Amount
Annual Revenue Service Hours	a	3,458,000
Days per Year	b	365
Average Daily Revenue Service Hours	$c = a / b$	9,474
2013 Average Daily Trips (ADT) ¹	d	7,235,000
Revenue Service Hours per 1,000 ADT	$e = c * d / 1,000$	1.31
¹ Auto and transit trip ends only within San Francisco. Excludes bicycle and pedestrian trip ends. Sources: U.S. Department of Transportation, Federal Transit Administration, National Transit Database, RY 2013 Data Tables (http://www.ntdprogram.gov/ntdprogram/pubs/dt/2013/excel/DataTables.htm); Table A.5.		

The net cost per revenue service hour is shown in Table 3.2. Non-vehicle maintenance costs and general administrative costs are deducted because these costs are not directly related to providing expanded transit service. Fare box revenue is also deducted because transit system users from development projects would pay fares to offset costs. Other SFMTA funding is not deducted because it is not restricted to uses that increase service. Unlike the TIDF nexus analysis, capital expenditures and funding are not included in the transit capital maintenance component of the TSF. The transit capital impacts of development are addressed separately in the transit capital facilities component of the TSF (see next chapter).

Use of Fee Revenues

Based on the nexus approach, SFMTA may use fee revenues from the TSF transit capital maintenance component for any operating cost that directly support increased transit service. SFMTA anticipates using fee revenues solely for direct preventative capital maintenance costs that increase transit service. Fee revenues may not fund capital facilities costs to avoid overlap with the transit capital facilities component of the TSF, nor costs in the two categories excluded from the level of service calculation in Table 3.2 (non-vehicle maintenance costs and general administration).

Table 3.2: Net Annual Cost per Revenue Service Hour

	<i>Formula</i>	Amount	
Total Operating Costs	<i>a</i>		\$ 668,000,000
Excluded Operating Costs			
Non-Vehicle Maintenance	<i>b</i>	\$ (66,000,000)	
General Administration	<i>c</i>	(111,000,000)	
Farebox Revenue	<i>d</i>	(220,100,000)	
Subtotal	$e = b + c + d$		(397,100,000)
Net Annual Costs	$f = a + e$		\$ 270,900,000
Average Daily Revenue Service Hours	<i>g</i>		9,474
Net Annual Cost per Daily Revenue Service Hour	$h = f / g$		\$28,594
Sources: U.S. Department of Transportation, Federal Transit Administration, National Transit Database, RY 2013 Data Tables (http://www.ntdprogram.gov/ntdprogram/pubs/dt/2013/excel/DataTables.htm); Table 3.1.			

Maximum Justified Fee

The maximum justified fee for the transit capital maintenance component is based on the net annual cost per revenue service hour converted to a cost per trip. The cost per trip takes into account that the fee is paid once when a development project receives a building permit, but transit service must be provided for years following to serve that development project. The net annual cost per trip is multiplied by a net present value factor representing the funding needed over a 45-year period to provide the additional transit service. These calculations are shown in **Table 3.3**, with supporting calculations shown in **Tables B.1** and **B.2** in Appendix B.

Table 3.3: Transit Capital Maintenance Cost Per Trip

	<i>Formula</i>	Amount
Net Annual Cost per Revenue Service Hour	<i>a</i>	\$28,594
Revenue Service Hours per 1,000 Average Daily Trips	<i>b</i>	1.3100
Net Annual Cost per Average Daily Trip ¹	$c = a * b / 1,000$	\$ 37.46
Net Present Value Factor	<i>d</i>	58.78
Total Cost per Trip	$e = c * d$	\$ 2,202
¹ Auto and transit trips only. Excludes bicycle and pedestrian trips. ² Net present value factor represents the multiplier for \$1.00 in annual costs to be fully funded over a 45-year period, given interest earnings and inflation. Sources: Tables 3.1, 3.2, and B.2.		

The maximum justified transit capital maintenance component of the TSF is based on the cost per trip shown in Table 3.3 multiplied by the trip generation rates for each economic activity category. The maximum justified fee is shown in Table 3.4. The variance in the fee by economic activity category based on trip generation, and the scaling of the fee based on the size of the development project, supports a reasonable relationship between the amount of the fee and the share of transit capital maintenance attributable to each development project.

Table 3.4: SFMTA Transit Capital Maintenance Component Maximum Justified Fee (2015 dollars)

Economic Activity Category	Cost per Trip	Trip Generation Rate (per 1,000 sq. ft.)	Maximum Justified Transit Capital Maintenance Fee (per sq. ft.)
<i>Formula</i>	<i>a</i>	<i>b</i>	$c = a * b / 1,000$
Residential	\$2,202	7	\$15.41
Nonresidential (excluding PDR)	\$2,202	25	\$55.05
Production, Distribution, Repair (PDR)	\$2,202	7	\$15.41
Sources: Tables 3.3 and A.4.			

4. TRANSIT CAPITAL FACILITIES

The transit capital facilities component of the TSF is based on a list of currently planned capital projects and programs needed to accommodate increased transit demand from development.²¹ The relationship between development and the transit capital facilities component of the TSF is summarized below and explained more fully in the sections that follow:

- ♦ **Need for expanded transit capital facilities:** The impact of development on the need for expanded transit facilities is caused by increased transit and auto trips as discussed in Chapter 2 in the *Trip Generation* section. The fair share cost of planned transit facilities allocated to TSF development to accommodate this demand is based on trip generation from TSF development as a percent of total trip generation served by the planned facility (including existing development and non-TSF development, depending on the specific facility).²²
- ♦ **Use of TSF transit capital facilities component revenue:** The benefit to development from the use of fee revenues is based on funding new or expanded transit capital facilities to support increased transit services including improved vehicle availability.
- ♦ **Proportional cost:** The TSF varies in direct proportion to the amount of trip generation of each development project.

Need For Transit Capital Facilities

The impact of increased trip generation from development on the need for expanded transit capital facilities is accommodated by a list of major proposed projects and programs drawn from the SFMTA's most recent long-range plans. Only projects and programs that are not fully funded with programmed funding are included in the TSF list of transit capital facilities. The total cost of each project or program is allocated to TSF development based on one of the following two fair share cost allocation methods:

Method 1: If the project or program includes replacement and expansion of an existing transit facility then the total cost is allocated to trips

²¹ Bicycle facilities are included in the transit capital facilities component nexus because bicycle infrastructure improvements shift demand away from transit thereby relieving transit overcrowding. However, TSF spending on bicycle infrastructure will occur solely from the complete streets component of the TSF. See text later in this chapter for more explanation.

²² See Chapter 2 for definitions of TSF and non-TSF development.

generated by existing and new (2010-2040) development because all development is associated with the need for the project or program. Existing development is based on 2010 land use and new development includes both non-TSF and TSF development.

Method 2: If the project or program only provides expanded transit capacity needed to serve demand from new development then the total cost is allocated only to trips generated by new development, both non-TSF and TSF development, because only new development is associated with the need for the project or program.

As shown in Table 4.1, method 1 results in an allocation of 18 percent of the total cost to TSF development. Method 2 results in an allocation of 75 percent of total cost to TSF development.

Table 4.1: Trip Generation Shares

Development	Trip Generation	Method 1	Method 2
		2040 Total	2010-2040
2010 Development	7,222,000	75.8%	NA
2010-2040 Development			
Non-TSF Development	587,000	6.2%	25.5%
TSF Development	1,713,000	18.0%	74.5%
Subtotal 2010-2040	2,300,000	24.2%	100.0%
2040 Development	9,522,000	100.0%	NA
Sources: Tables 2.6 and A.6.			

The planned projects and programs used to calculate the transit capital facilities component of the TSF are shown in Table 4.2, with notes and sources provided in Table 4.3. All costs reflect 2015 dollars. The planned projects and programs are shown in three major facility categories:

- ◆ Transit service expansion and reliability improvements
- ◆ Improvements supporting regional transit operators
- ◆ Bicycle infrastructure improvements (see explanation for inclusion of bicycle improvements following the tables).

Table 4.2: Transit Capital Facilities Fair Share Cost Allocation (\$ 1,000)

Expenditure Category / Project or Program	Formula	Total Cost	Allocation Method ¹	Non-TSF Cost Share			Potential TSF Cost Share
				Existing Development (2010)	Non-TSF Development (2010-2040)	Non-TSF Cost Share Subtotal	
		a		b = a * x	c = a * y	d = b + c	d = a * z
				where x, y, z = fair share cost allocation (Table 4.1)			
SFMTA Transit Service Expansion and Reliability Improvements							
Transit Fleet Expansion		\$630,500	2	NA	\$160,800	\$160,800	\$469,700
Transit Facilities		449,500	1	\$340,700	27,900	368,600	80,900
Muni Forward Rapid Network		53,700	2	NA	13,700	13,700	40,000
Geary Bus Rapid Transit		323,500	1	245,200	20,100	265,300	58,200
M-Ocean View / 19th Ave.		520,000	1	394,200	32,200	426,400	93,600
Subtotal		\$1,977,200		\$980,100	\$254,700	\$1,234,800	\$742,400
Improvements Supporting Regional Transit Operators							
BART Fleet Expansion		145,200	2	NA	\$37,000	\$37,000	\$108,200
BART Train Control		100,000	2	NA	25,500	25,500	74,500
Caltrain Electrification		1,332,100	1	1,009,700	82,600	1,092,300	239,800
Transbay Transit Center (Phase 2)		2,376,900	1	1,801,700	147,400	1,949,100	427,800
Subtotal		\$3,954,200		\$2,811,400	\$292,500	\$3,103,900	\$850,300
Bicycle Infrastructure Improvements							
Bicycle Programs (expansion)		548,500	2	NA	\$139,900	\$139,900	\$408,600
Total		\$6,479,900		\$3,791,500	\$687,100	\$4,478,600	\$2,001,300

¹ Method 1 allocates costs based on total trip generation in 2040 (existing and new development). Method 2 allocates costs based only on trip generation from new development (2010-2040).

Sources: Tables C.2, C.3, C.4, C.5, C.6, 4.1, and 4.3.

Table 4.3: Transit Capital Facilities (Notes & Sources)

Project or Program	Fair Share Cost Allocation & Funding Notes	Sources
SFMTA Transit Service Expansion and Reliability Improvements		
Transit Fleet Expansion	All costs associated with additional capacity needed to serve 2010-2040 growth as identified in recent (2014) fleet and facility planning studies ¹ Excludes cost of replacement vehicle capacity, Central Subway vehicles (funded), and Geary BRT vehicles (see Geary BRT project).	See Tables C.1 and C.2
Transit Facilities	Allocate costs to all 2040 development because the needs include rehabilitation and replacement of existing facilities. A more detailed analysis by facility would likely result in a higher allocation share to 2010-2040 development.	See Table C.3
Muni Forward Rapid Network	All costs associated with additional capacity needed to serve 2010-2040 growth. Total Rapid Network investment estimated at \$231 mil. of which about 77 percent (\$178 mil.) is funded and associated with near-term projects that address existing deficiencies and provide additional capacity. TSF funding limited to funding 23 percent of Rapid Network total cost (\$53 mil. and currently unfunded) as a conservative estimate of costs associated with additional capacity needed to serve growth.	See Table C.4
Geary Bus Rapid Transit	Allocate to all 2040 development because project would replace and increase capacity of existing service. Includes vehicles.	See Table C.5
M-Ocean View / 19 th Ave.	Allocate to all 2040 development because project would replace and increase capacity of existing service. Total cost represents most likely cost for "Longer Subway/Bridge" option.	San Francisco County Transportation Authority, <i>19th Avenue Transit Study</i> , March 2014, Table 4.8. p. 66.

Table 4.3: Transit Capital Facilities (Notes & Sources) (continued)

Project or Program	Fair Share Cost Allocation & Funding Notes	Sources
Improvements Supporting Regional Transit Operators		
BART Fleet Expansion	All costs associated with additional capacity needed to serve 2010-2040 growth. Total cost of 44 additional cars to accommodate additional peak hour trips, based on SF-CHAMP model run indicating 4,554 passengers that would exceed current capacity, and 105 passengers per car at 100 percent capacity. Assume \$3.3 million cost per car based on latest public report though BART staff now anticipating cost of \$5.5 million per car.	San Francisco Bay Area Rapid Transit District (BART), <i>Building A Better BART: Investing In The Future Of The Bay Area's Rapid Transit System</i> (draft), July 2014, p. 13; San Francisco Municipal Transportation Agency (personal communication regarding SF-CHAMP model output; transitCrowding_Peak_BART_Transbay_v2.xlsx, Nov. 21, 2014).
BART Train Control	All costs associated with additional capacity needed to serve 2010-2040 growth. The \$100 mil. cost is 50 percent of the \$200 mil. capacity expansion component of the Train Control Modernization Program (TCMP). The capacity expansion component is driven by growth in transbay trips serving downtown San Francisco so half of the cost is allocated to San Francisco growth (the other half is associated with development at the other end of each trip). The total replacement and upgrade project cost of the TCMP is \$915 million.	BART, "Funding Priorities and Financial Outlook", BART board workshop presentation, Jan. 29-30, 2015, and "Capital Funding Priorities", presentation to San Francisco Capital Planning Committee, Feb. 9, 2015.
Caltrain Electrification	Allocate to all 2040 development because project would replace and increase capacity of existing service. Based on \$1,456 mil. in year-of-expenditure dollars, discounted 9.3% to 2015 based on scheduled project completion by FY 2019-20. Excludes Advanced Signal System / Positive Train Control (funded).	San Francisco County Transportation Authority, <i>2014 Prop. K Strategic Plan</i> , Appendix D, Sep. 12, 2014;
Transbay Transit Center (Phase 2) – Downtown Extension	Allocate to all 2040 development because project would replace and increase capacity of existing service. Based on \$2,598 mil. in year-of-expenditure dollars, discounted 9.3% to 2015 based on project completion by FY 2019-20 subject to funding availability.	San Francisco County Transportation Authority, <i>2014 Prop. K Strategic Plan</i> , Appendix D, Sep. 12, 2014;
Bicycle Infrastructure Improvements		
Bicycle Programs (expansion)	All costs associated with expanding service to shift trips and increase transit capacity to serve 2010-2040 growth.	See Table C.6
¹ The fair share cost allocation to TSF development is slightly conservative because fleet expansion costs are based on a 2015-2040 growth whereas the cost allocation is based on 2010-2040 growth.		

Bicycle improvements are included because bicycle infrastructure improvements shift demand away from autos and transit thereby relieving auto congestion, improving transit travel times, and reducing transit overcrowding.²³ However, TSF spending on bicycle infrastructure will occur solely from the complete streets component of the TSF (see Chapter 5). This approach is consistent with the bicycle, pedestrian, and streetscape infrastructure components of the area plan fees based on current legislation pending before the Board of Supervisors.

Table 4.2 calculates the potential TSF cost share (shown in the last column of the table) by deducting the shares allocated to existing development and non-TSF development.

The potential TSF cost share shown in Table 4.2 must be adjusted to calculate the maximum justified funding that could be provided by the TSF. Maximum justified TSF funding is based on applying any currently programmed funding available after funding of the non-TSF cost share. Programmed funding is funding that has been programmed through prior legislative action and includes funding from:

- ◆ Proposition K funding from the San Francisco County Transportation Authority
- ◆ Transportation 2030 general obligation bond recently approved in San Francisco
- ◆ Metropolitan Transportation Commission transit core capacity challenge grant program for SFMTA projects that targets federal, state, and regional funds to high-priority transit capital projects
- ◆ Caltrain funding for the Caltrain electrification project
- ◆ Transbay Transit Center funding from various sources

²³ The San Francisco County Transportation Authority (SFCTA) modeled the impact of building out the Class 1 bicycle facilities to 100 miles and estimated that daily bike trips would increase by about 20,000, or about 20 percent including shifts from auto and transit modes (personal communication, Sep. 26, 2014); Dill, Jennifer and Theresa Carr (2003), "Bicycle Commuting and Facilities in Major U.S. Cities: If You Build Them, Commuters Will Use Them – Another Look", TRB 2003 Annual Meeting CD-ROM; Nelson, Arthur and David Allen (1997), "If You Build Them, Commuters Will Use Them; Cross-Sectional Analysis of Commuters and Bicycle Facilities", Transportation Research Record 1578; San Francisco Department of Parking and Traffic, "Polk Street Lane Removal/Bike Lane Trial Evaluation", Report to San Francisco Board of Supervisors, May 16, 2001.

- ◆ Developer funding through development or other contractual agreements.

Programmed funding is first allocated to the non-TSF cost share. Any funding remaining after allocation to the non-TSF cost share is then deducted from the TSF cost share. **Table 4.4** shows the maximum justified TSF funding for the transit capital facilities component based on this approach. All funding reflects 2015 dollars. Detail regarding programmed funding is shown in Appendix **Table C.7**.

The SFMTA has access to other revenue sources to address any funding gaps for the projects and programs listed in **Table 4.4**, after deducting programmed funding and TSF revenue. These alternative sources ensure that the projects and programs listed in **Table 4.4** are financially feasible. These alternative funding sources are listed in **Table 4.5**.

Use of Fee Revenues

The SFMTA or SFCTA may use revenue from the TSF transit capital facilities component for any capital project that expands transit service in or to/from San Francisco, or directly supports the expansion of that service such as vehicle maintenance facilities. Eligible costs that may be funded include capital expenses such as project management, design, engineering, environmental review, land acquisition, equipment, and construction.

As explained previously, the transit capital facilities component of the TSF will not be used to support bicycle infrastructure improvements. Instead, spending on bicycle infrastructure will occur from the complete streets component of the TSF.

The TSF may fund projects or programs that replace and expand existing transit facilities as long as method 1 is used to allocate expansion-related costs to the TSF (across existing and new development) (see *Need for Transit Capital Facilities* section, above). The TSF may also fund projects or programs that solely support transit service expansion. In this case method 2 would be used to allocate costs to the TSF development (new development only).

Table 4.4: Transit Capital Facilities Maximum Justified TSF Funding Share (\$ 1,000)

Expenditure Category / Project or Program	Total Programmed Funding	Non-TSF Cost Share	Net Programmed Funding Available For TSF Cost Share	Potential TSF Cost Share	Maximum Justified TSF Funding
<i>Formula</i>	<i>a</i>	<i>b</i>	<i>c = a - b¹</i>	<i>d</i>	<i>e = d - c</i>
<i>SFMTA Transit Service Expansion and Reliability Improvements</i>					
Transit Fleet Expansion	\$406,000	\$160,800	\$245,200	\$469,700	\$224,500
Transit Facilities	150,800	368,600	-	80,900	80,900
Muni Forward Rapid Network	2,000	13,700	-	40,000	40,000
Geary Bus Rapid Transit	46,100	265,300	-	58,200	58,200
M-Ocean View / 19th Ave.	71,800	426,400	-	93,600	93,600
Subtotal	\$676,700	\$1,234,800	\$245,200	\$742,400	\$497,200
<i>Improvements Supporting Regional Transit Operators</i>					
BART Fleet Expansion	\$-	\$37,000	\$-	\$108,200	\$108,200
BART Train Control	2,800	25,500	-	74,500	74,500
Caltrain Electrification	108,900	1,092,300	-	239,800	239,800
Transbay Transit Center (Phase 2)	463,900	1,949,100	-	427,800	427,800
Subtotal	\$575,600	\$3,103,900	\$-	\$850,300	\$850,300
<i>Bicycle Infrastructure Improvements</i>					
Bicycle Programs Expansion	\$13,000	\$139,900	\$-	\$408,600	\$408,600
Total	\$1,265,300	\$4,478,600	\$245,200	\$2,001,300	\$1,756,100
¹ Unless negative, then \$0. Sources: Tables 4.2 and C.7.					

Table 4.5: Transit Capital Facilities Funding Sources

<p>Federal Grant Programs</p> <ul style="list-style-type: none"> • Federal Transit Administration <ul style="list-style-type: none"> - Section 5307 – Urbanized Area Formula Program - Section 5309(b)1 – New Starts, Small Starts and Very Small Starts Programs • Federal Highway Administration <ul style="list-style-type: none"> - Highway Safety Improvement Program - Surface Transportation Program - Congestion Mitigation and Air Quality Improvement Program - TIGER Discretionary Grants
<p>State Funding Programs</p> <ul style="list-style-type: none"> • Active Transportation Program • Cap and Trade • Prop1B – Transportation Bond Program • Prop1A – High-Speed Rail Bond Program • Regional Transportation Improvement Program • State Transit Assistance for capital projects • State Highway Operation and Protection Program
<p>Regional and Local Funding Programs</p> <ul style="list-style-type: none"> • Climate Initiatives Program • Cost Sharing With Other Counties on Joint Projects • Lifeline Transportation Program • OneBayArea Grant Program • Prop AA (San Francisco vehicle registration fee) • Regional Measure 2 (bridge tolls) • Transit Performance Initiative Program • Transportation Fund for Clean Air (Bay Area Air Quality Management District) • SFMTA revenue bonds • General Obligation Bonds • General Fund Allocation for Capital Projects

Maximum Justified Fee

The fee schedule for the TSF transit capital facilities component is based on the maximum justified cost per trip and is shown in **Table 4.6**. The cost per trip is based on the maximum justified funding and the total number of trips generated by TSF development.

Table 4.6: Transit Capital Facilities Cost per Trip

	Amount
Maximum Justified TSF Funding	\$1,756,100,000
Total Trip Generation	1,713,000
Cost per Trip	\$1,025
Source: Tables 4.4 and 2.6	

The maximum justified fee for each economic activity category is based on the cost per trip shown in Table 4.6 multiplied by the trip generation rates for each category. The maximum justified fee schedule is shown in Table 4.7. The variance in the fee by economic activity category based on trip generation, and the scaling of the fee based on the size of the development project, supports a reasonable relationship between the amount of the fee and the share of transit capital facilities attributable to each development project.

Table 4.7: Transit Capital Facilities Component Maximum Justified Fee (2015 dollars)

Economic Activity Category	Cost per Trip	Trip Generation Rate (per 1,000 sq. ft.)	Maximum Justified Transit Capital Facilities Fee (per sq. ft.)
<i>Formula</i>	<i>a</i>	<i>b</i>	$c = a * b / 1,000$
Residential	\$1,025	7	\$7.18
Nonresidential (excluding PDR)	\$1,025	25	\$25.63
Production, Distribution, Repair (PDR)	\$1,025	7	\$7.18
Sources: Seifel Consulting, Inc., <i>San Francisco Eastern Neighborhoods Nexus Study</i> , prepared for the City of San Francisco Planning Department, May 2008; Tables 2, 3, and Appendix D Table D.2; Tables 4.6 and A.4.			

5. COMPLETE STREETS

The complete streets component of the TSF would fund the enhancement and expansion of pedestrian and other streetscape infrastructure to accommodate growth. This component of the TSF is intended to maintain the existing level of service currently provided for pedestrians in San Francisco. The relationship between development and the complete streets component of the TSF is summarized below and explained more fully in the sections that follow:

- ◆ **Need for pedestrian infrastructure:** The impact of development on the need for enhanced and expanded pedestrian infrastructure is based on achieving the pedestrian level of service (pedestrian LOS) recommended in the *San Francisco Citywide Nexus Analysis*.²⁴ The pedestrian LOS is based on sidewalk space per capita.
- ◆ **Use of TSF complete streets revenue:** The benefit to development from the use of fee revenues is based on enhancing and expanding pedestrian and other streetscape infrastructure. Revenues may also be used for bicycle capital facilities for reasons explained in the section *Use of Fee Revenues*.
- ◆ **Proportional cost:** The TSF varies in direct proportion to the amount of service population of each development project.

Need For Pedestrian Infrastructure

The need for pedestrian infrastructure is directly related to the number of pedestrians in the City. As discussed in detail in Chapter 2 in the *Service Population* section, pedestrians include both residents and employees with employees also reflecting demand from visitors who use the City's business establishments. The combined service population of residents and employees for pedestrian infrastructure as calculated by the *Citywide Nexus Analysis* is based on residents plus employees weighted at 50 percent.²⁵ Employees are weighted lower than residents because of the lower demand for pedestrian infrastructure relative to residents (less time at work as an employee compared to time at home or doing other activities as a resident).

²⁴ San Francisco Planning Department, *San Francisco Citywide Nexus Analysis*, March 2014, pp. 25-30.

²⁵ San Francisco Planning Department, *San Francisco Infrastructure Level of Service Analysis*, March 2014, p. 44.

The *Citywide Nexus Analysis* calculated the pedestrian LOS based on the amount of existing sidewalk space and the future service population. Thus the study assumes a pedestrian LOS of 88 square feet per capita in the future compared to 103 square feet per capita currently. To compensate for this conservative assumption, the pedestrian LOS assumes a cost per square foot that incorporates improvements to existing sidewalks with the addition of elements such as curb ramps, bulb-outs, and pedestrian signals.²⁶

The unit cost of pedestrian infrastructure calculated by the *Citywide Nexus Analysis* and updated to 2015 dollars is \$47.18 per square foot. This cost reflects a conservative set of assumptions for pedestrian infrastructure and reflects a range of improvement levels across the City.²⁷ This unit cost specifically excludes elements of pedestrian infrastructure that may be required under Section 138.1 of the San Francisco Planning Code related to urban design standards. Under this section of the code the City may require certain development projects to improve pedestrian infrastructure directly adjacent to the project. By excluding these cost elements there is no overlap between the TSF complete streets component and compliance with Section 138.1 of the Planning Code.²⁸

Based on the inputs described above, the cost per capita by economic activity category representing the cost of pedestrian infrastructure to serve new development is shown in **Table 5.1**.

²⁶ Ibid, Table 18, p. 45.

²⁷ San Francisco Planning Department, *San Francisco Citywide Nexus Analysis*, March 2014, Table 17, p. 29.

²⁸ AECOM, memorandum to San Francisco Planning Department regarding San Francisco Infrastructure Nexus Analysis – Streetscape Cost, March 20, 2014, pp. 10-11.

Table 5.1: Pedestrian Infrastructure Level of Service

Economic Activity Category	Level of Service (sq. ft. per capita)	Cost per Sq. Ft. ¹	Service Population Weight ²	Cost per Capita
<i>Formula</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d = a * b * c</i>
Residential	88	\$47.18	100%	\$4,152
Nonresidential (ex. PDR)	88	\$47.18	50%	\$2,076
Production, Distribution, Repair (PDR)	88	\$47.18	50%	\$2,076
<p>¹ Cost based on \$43.00 (\$ 2013) from <i>Citywide Nexus Analysis</i>, increased by 4.5% for 2014 and 5.0% for 2015 to reflect annual infrastructure construction cost inflation estimates prepared by the City and applied to all city development impact fees.</p> <p>² Employment service population weighted at 50 percent of residential service population to reflect relative demand for pedestrian infrastructure.</p> <p>Source: San Francisco Planning Department, <i>San Francisco Citywide Nexus Analysis</i>, March 2014, Table 17, p. 29.</p>				

Use of Fee Revenues

The primary purpose of the TSF complete streets components is to fund capital improvements to the City's pedestrian and other streetscape infrastructure. As discussed in the Better Streets Plan (BSP),²⁹ the City aims to improve the pedestrian environment for all of San Francisco's residents and employees. Acceptable uses of revenue from the TSF complete streets component include (but are not limited to) sidewalk paving, lighting installation, pedestrian signalization of crosswalks or intersections, street tree planting, bulb-out construction, street furnishing, landscaping, traffic calming, and other streetscape improvements cited in the BSP. Current planned expenditures of TSF revenue drawn from the *SFMTA 20-Year Capital Plan* are shown in Table 5.2. The table also shows programmed funding for these programs with Proposition K being the only current source.

²⁹ San Francisco Public Works Code, Section 2.4.13.

Table 5.2: TSF Pedestrian Infrastructure Programs

Pedestrian Infrastructure Program	Amount
Pedestrian Strategy Corridor Program	\$363,000,000
Striping and Signage Program	8,800,000
Total	\$371,800,000
Programmed Funding: Proposition K ¹	(55,600,000)
Funding Need	\$316,200,000
<p>¹ Prop. K funding based on (1) determining Prop. K expenditure line items that would be eligible for funding TSF expenditure plan projects (100% of Prop. K expenditure lines 38 and 40), (2) discounting remaining programmed funds from FY 2016 through FY 2034 to 2014\$ for those line items, (3) determining the share available for SFMTA projects (vs. other departments and agencies), and (4) allocating the discounted share to the TSF project.</p> <p>Sources: San Francisco Municipal Transportation Agency, <i>SFMTA 20-Year Capital Plan</i>, Oct. 15, 2013, pp. B-20; San Francisco County Transportation Authority, <i>2014 Prop. K Strategic Plan</i>, Sep. 12, 2014; SFCTA staff (for discount factors).</p>	

For all area plan fees except the Transit Center District fee, legislation pending before the Board of Supervisors would distinguish between a fee component for transit and a fee component for bicycle, pedestrian and other streetscape infrastructure. To provide consistency with the proposed area plan fee programs, revenue from the TSF complete streets component may also be used for bicycle facilities. The use of the TSF for bicycle facilities is already justified under the transit capital facilities component (see prior chapter). Thus, as long as the maximum justified fees for each component are not exceeded, bicycle facilities may be funded by either component.

Maximum Justified Fee

The maximum justified fee for the complete streets component is based on the cost and building square feet per capita by economic activity category. The maximum justified fee is shown in **Table 5.3**. The variance in the fee by economic activity category based on building space per capita, and the scaling of the fee based on the size of the development project, supports a reasonable relationship between the amount of the fee and the share of complete streets infrastructure attributable to each development project.

Table 5.3: Complete Streets Component Maximum Justified Fee (2015 dollars)

Economic Activity Category	Cost per Capita	Sq. Ft. per Capita	Maximum Justified Fee (per sq. ft.)
<i>Formula</i>	<i>a</i>	<i>b</i>	<i>c = a / b</i>
Residential	\$4,152	498	\$8.34
Nonresidential (excluding PDR)	\$2,076	308	\$6.74
Production, Distribution, Repair (PDR)	\$2,076	597	\$3.48
Sources: Tables 5.1 and A.4.			

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6. TRANSPORTATION SUSTAINABILITY FEE

The maximum justified transportation sustainability fee is the sum of the three component fees presented in Chapters 3, 4, and 5. The maximum justified TSF is shown in **Table 6.1** per square foot of building space. The two transit components are subtotaled to show the total maximum justified TSF for transit facilities and services. The total fee on a development project for transit facilities and services should not exceed this amount without a nexus study justifying the higher amount. Likewise, the total fee on a development project for pedestrian and other streetscape infrastructure should not exceed the complete streets component without a nexus study justifying the higher amount.

Table 6.1: Maximum Justified TSF (2015 dollars)

Economic Activity Category	Maximum Justified TSF per Square Foot				
	Transit Components			Complete Streets Component	Total TSF
	Transit Capital Maintenance	Transit Capital Facilities	Subtotal		
Residential	\$15.41	\$7.18	\$22.59	\$8.34	\$30.93
Nonresidential (excluding PDR)	\$55.05	\$25.63	\$80.68	\$6.74	\$87.42
Production, Distribution, Repair (PDR)	\$15.41	\$7.18	\$22.59	\$3.48	\$26.07

Sources: Tables 3.4, 4.7, and 5.3.

Relationship Between TSF and Area Plan Fees

As listed in Chapter 2, Table 2.3, the City has area plans that have their own separate transportation development impact fees. Pending approval of legislation currently before the Board of Supervisors³⁰, these fees would be separated between transit and complete streets components. The complete streets component would include bicycle, pedestrian, and other streetscape infrastructure. The TSF is proposed to have a similar structure (separate transit and complete streets components) to mirror the proposed area plan fee structure. This structure is also consistent with the *Citywide Nexus Analysis* referenced in Chapters 2 and 5 of this report.

³⁰ Pending legislation is regarding adoption of the *Citywide Nexus Analysis* referenced in Chapters 2 and 5 and would amend Article 4 of the Planning Code.

As explained in Chapter 1, the current TIDF is a citywide fee on nonresidential development only. Nonresidential development within a plan area currently pays the TIDF in addition to any area plan transit fee component. If adopted, the TSF would replace the TIDF and be applied to both residential and nonresidential development.

Area plan transportation fees were developed to fund improvements within their respective plan areas to address local impacts from new development. By contrast the TSF is designed to fund citywide projects and programs to address citywide development impacts. Regardless of the separation or overlap between area plan fees and the TSF, the TSF should be adopted at a level such that the combined area plan and TSF amounts are less than the maximum justified TSF amounts shown in Table 6.1. This approach would ensure that new development is not overpaying for transportation impacts and that new development fully benefits from the expenditure of fee revenues. Specifically, within each plan areas the TSF should be adopted at less than the maximum justified amount such that:

- ◆ The combined amount of the adopted area plan and TSF transit fee components remains less than the maximum justified TSF transit fee component (transit capital maintenance plus transit capital facilities).
- ◆ The combined amount of the adopted area plan and TSF complete streets components remains less than the maximum justified TSF complete streets component.

See Appendix D, **Tables D.1 and D.2** for a list of current transportation fees within plan areas and a comparison with the maximum justified TSF amount. The maximum justified TSF is greater than the current fee (including the TIDF) across all economic activity categories, area plans, and for both the transit and complete streets fee components. In most cases the maximum justified TSF is more than 50 percent greater than the current fee. Thus there is substantial flexibility for the City to determine the appropriate TSF amount to adopt and implement.

Relationship Between TSF and TSP

The TSF will be part of a larger effort, the proposed Transit Sustainability Program (TSP). In addition to the TSF, the TSP includes (1) a transportation demand management (TDM) program for new development projects, and (2) revision to the City's policies regarding evaluation of transportation impacts under the California Environmental Quality Act (CEQA) consistent with State Guidelines adopted pursuant to Senate Bill 743.

The TSF nexus study and the expenditure of TSF revenues are designed to avoid any overlap with other TSP requirements or in any way double charge development projects for the same impact. Based on the current proposal,

the TDM component of the TSP includes a wide range of measures including measures to encourage travel by transit, bicycle, and pedestrian modes. These measures do not overlap with the TSF because:

- ◆ TDM measures related to transit service are focused on transit pass subsidies for residents and employees of development projects to encourage transit use. The TSF is focused on offsetting the impact of increased transit use on transit capital maintenance and transit capital facilities costs. Furthermore, farebox revenue supported by transit pass subsidies only covers about one-third of total operating costs (\$220 mil. in annual revenue versus \$668 mil. of annual costs) and these revenues are excluded from calculation of the TSF transit capital maintenance component (see Table 3.2).
- ◆ TDM measures related to bicycle and pedestrian improvements are focused on on-site improvements such as bike parking and frontage improvements for pedestrians. The TSF is focused on citywide capital investments in bicycle facilities and pedestrian infrastructure.

TSF Updates

The TSF should be updated using the following two methods:

1. **Annual updates:** The calculations in this nexus study are based on 2015 dollars. The adopted TSF should be updated annually for cost inflation in a similar manner as the City currently does for all other development impact fees to ensure that fee revenue remains constant with inflation to fund development impacts.
2. **Five-year updates:** The Mitigation Fee Act and the Planning Code require every five years that any local agency implementing a development impact fee make findings similar to those made at the time of the initial fee adoption.³¹ For these five year updates the City should:
 - a. Update the transit capital maintenance fee component based on the latest available data from the National Transit Database and corresponding land use data for the City.
 - b. Update the transit capital facilities fee component based on the latest available list of major transit capital projects that benefit new development, along with updates to project costs and programmed funding.

³¹ California Government Code Section 66001(d).

- c. Update the complete streets component based on a review of the pedestrian level of service and current cost estimates for pedestrian and other streetscape infrastructure.

These periodic reviews and adjustments to the TSF will ensure that the program continues to adequately address the impacts of development on the City's transportation system.

APPENDICES

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A. LAND USE PROJECTIONS & TRIP GENERATION ESTIMATES

The Transit Sustainability Fee is based on a consistent set of development estimates for 2010 and land use projections for 2040. These estimates and projections are converted to trip generation estimates and used to evaluate the impact of development on the transportation system. This appendix describes these estimates and projections including key assumptions and methodologies used to develop them.

Consistency With Regional Projections

In preparing the land use allocations for 2010 and 2040, the Planning Department controlled citywide totals to the most recent estimates available from the Association of Bay Area Governments (ABAG) for the nine-county San Francisco Bay region developed in association with the Metropolitan Transportation Commission (MTC). Citywide totals were controlled to be within plus or minus two percent of the 2010 and 2040 ABAG totals for population, housing, and employment. Comparisons of the Planning Department's citywide totals with the ABAG totals are shown in **Tables A.1 and A.2.**

Table A-1: San Francisco Development 2010

	Nexus Study	ABAG	Difference, Nexus Study vs. ABAG	
			Amount	Percent
Housing				
Housing Units	376,000	376,900	(900)	(0.2%)
Households	345,900	345,800	100	0.0%
Vacancy Rate	8.0%	8.3%	NA	NA
Employment (Jobs)				
Management, Information and Professional Services	295,100	NA	NA	NA
Retail/Entertainment	97,700	NA	NA	NA
Production, Distribution, Repair	59,900	NA	NA	NA
Cultural/Institution/Education	59,800	NA	NA	NA
Medical and Health Services	36,500	NA	NA	NA
Visitor Services	21,000	NA	NA	NA
Total Employment	570,000	568,700	1,300	0.2%
Jobs per Household	1.65	1.64		
<p>Note: "NA" indicates that San Francisco Planning uses different employment categories than ABAG so comparisons are not applicable.</p> <p>Sources: San Francisco Planning Department, Land Use Allocation Model Output, December 2013; Association of Bay Area Governments and the Metropolitan Transportation Commission, <i>Plan Bay Area, Final Forecast of Jobs, Population and Housing</i>, Table 14, p. 42, July 2013.</p>				

Table A-2: San Francisco Development 2040

	S.F. Planning Dept. 2040	ABAG 2040	Difference, Nexus Study vs. ABAG	
			Amount	Percent
Housing				
Housing Units	477,400	469,400	8,000	1.7%
Households	447,000	447,400	(400)	(0.1%)
Vacancy Rate	6.4%	4.7%	NA	NA
Employment (Jobs)				
Management, Information and Professional Services	414,800	NA	NA	NA
Retail/Entertainment	123,200	NA	NA	NA
Production, Distribution, Repair	69,500	NA	NA	NA
Cultural/Institution/Education	80,400	NA	NA	NA
Medical and Health Services	52,200	NA	NA	NA
Visitor Services	26,800	NA	NA	NA
Total Employment	766,900	759,500	7,400	1.0%
Jobs per Household	1.72	1.70		
<p>Note: "NA" indicates that San Francisco Planning uses different employment categories than ABAG so comparisons are not applicable.</p> <p>Sources: San Francisco Planning Department, Land Use Allocation Model Output, December 2013; Association of Bay Area Governments and the Metropolitan Transportation Commission, Plan Bay Area, Final Forecast of Jobs, Population and Housing, Table 14, p. 42, July 2013.</p>				

Housing Unit Size, Employment Density, and Trip Generation Rates

Housing unit size (average square feet per housing unit) and employment density factors (square feet per employee) are used to convert projections of housing units and employment to projections of building space. Average housing unit size is based on the Eastern Neighborhoods Nexus Study completed in 2008.³² Employment density factors are consistent with those used in the Planning Department's land use allocation tool with one exception (see next paragraph). Trip generation rates are based on the most recent update of the TIDF completed in 2011.³³

³² Seifel Consulting, Inc., *San Francisco Eastern Neighborhoods Nexus Study*, prepared for the City of San Francisco Planning Department, May 2008

³³ Cambridge Systematics with Urban Economics, *Transit Impact Development Fee Update*, prepared for the San Francisco Municipal Transportation Agency, February 2011.

The employment density factor and trip generation rate for the Management, Information, and Professional Services (MIPS) economic activity category were adjusted to incorporate recent information from the Central SoMa environmental review as explained in Chapter 2. See Table A.3 for the MIPS adjustment.

See Table A.4 for the factors and rates used for all economic activity categories. See Tables A.5 and A.6 for trip generation estimates used for the nexus analysis for the TSF transit capital maintenance and TSF transit capital facilities components, respectively.

Table A-3: Management, Information & Professional Services Employment Density and Trip Generation Rate

	<i>Formula</i>	Central SoMa	All Other City-wide	Total
Management, Information & Professional Services Employment	<i>a</i>	45,000	74,700	119,700
Sq. Ft. per Employee ¹	<i>b</i>	200	276	247
Occupied Building Space (1,000 sq. ft.)	$c = a * b / 1,000$	9,000	20,600	29,600
Vacancy Rate	<i>d</i>	5.0%	5.0%	5.0%
Total Building Space (1,000 sq. ft.)	$e = c / (1 - d)$	9,500	21,700	31,200
Trip rate (per 1,000 sq. ft.)²	<i>f</i>	18	13	15
Trips	$g = e * f$	171,000	282,100	453,100
Trip Rate (per employee)	$h = g / a$	3.80	3.78	3.79
<p>¹ "Central SoMa" and "All Other Citywide" employment density (sq. ft. per employee) provided by San Francisco Planning Department. "Total" density is the weighted average.</p> <p>² "All Other Citywide" trip rate is from S.F. Planning Department. "Central SoMa" trip rate is calculated based on the inverse of the ratio of All Other Citywide to Central SoMa employment density. "Total" trip rate is the weighted average of the Central SoMa and All Other Citywide trip rates.</p> <p>Sources: San Francisco Planning Department, Land Use Allocation Model Output, December 2013; Cambridge Systematics with Urban Economics, <i>Transit Impact Development Fee Update</i>, prepared for the San Francisco Municipal Transportation Agency, February 2011.</p>				

Table A-4: Service Population, Building Space, and Trip Generation Rates

	Service Population & Building Space			Trip Generation per Housing Unit or 1,000 Square Feet ¹
	Square Feet per Resident or Employee	Residents per Unit or Vacancy Rate (for employment)	Gross Square Feet per Housing Unit or Employee	
Housing				
Housing Units	498	2.32	1,156	7
Employment				
Management, Information & Professional Services	247	5.0%	260	15
Retail/Entertainment	350	5.0%	368	65
Cultural/Institution/Education	350	0.0%	350	23
Medical and Health Services	350	0.0%	350	22
Visitor Services	787	0.0%	787	13
Nonresidential (ex. PDR) ²			308	25
Production, Distribution, Repair (PDR)	567	5.0%	597	7
¹ Average daily motorized (transit and auto) trips. ² Weighted average based on 2010-2040 growth. Sources: San Francisco Planning Department, <i>San Francisco Citywide Nexus Analysis</i> , March 2014 (for housing density and size); San Francisco Planning Department, Land Use Allocation Model Output, December 2013 (for employment densities and vacancy rates); Cambridge Systematics with Urban Economics, <i>Transit Impact Development Fee Update</i> , prepared for the San Francisco Municipal Transportation Agency, February 2011 (for trip generation rates); Table A.3.				

Table A-5: Trip Generation 2013

Economic Activity Category	2010 Development (housing units or employment)	Sq. Ft. per Unit or Employee	2010 Development (1,000 sq. ft.)	2010-2013 Development (1,000 sq. ft.)	2013 Development (1,000 sq. ft.)	Trip Generation Rate (average daily trips per 1,000 sq. ft.)	2013 Trip Generation (average daily trips)
<i>Formula</i>	<i>a</i>	<i>b</i>	<i>c = a * b</i>	<i>d</i>	<i>e = c + d</i>	<i>f</i>	<i>g = e * f</i>
Residential	376,000	1,156	434,700	2,700	437,400	7	3,062,000
Nonresidential (ex. PDR)	510,100	308	157,100	(200)	156,900	25	3,923,000
Production, Distribution, Repair (PDR)	59,900	597	35,800	(100)	35,700	7	250,000
Total Trip Generation							7,235,000
Sources: San Francisco Planning Department, Land Use Allocation Model Output, December 2013; Tables A.1 and A.4.							

Table A-6: Trip Generation 2010 and 2040

Economic Activity Category	Trip Generation Rate (trips per 1,000 sq. ft.)	2010 Development		2010-2040 Development		2040 Development	
		Building Space (1,000 sq. ft.)	Trip Generation	Building Space (1,000 sq. ft.)	Trip Generation	Building Space (1,000 sq. ft.)	Trip Generation
Residential	7	434,700	3,043,000	117,200	820,000	551,900	3,863,000
Nonresidential (ex. PDR) ¹	25	157,100	3,928,000	57,600	1,440,000	214,700	5,368,000
Production, Distribution, Repair (PDR)	7	35,800	251,000	5,700	40,000	41,500	291,000
Total Trip Generation			7,222,000		2,300,000		9,522,000
¹ Trip generation rate based on weighted average of building square feet for 2010-2040 development by economic activity category and rounded to whole number.							
Sources: Tables 2.5, A.4, and A.5.							

B. TRANSIT CAPITAL MAINTENANCE

The following two tables provide support for the calculations presented in Chapter 3 for the transit capital maintenance component of the TSF. **Table B.1** provides the source for the inflation and interest rates that are inputs to the model for the net present value factor shown in Table 3.3. **Table B.2** provides a truncated version of the model used to calculate the net present value factor.

Table B-1: Inflation and Interest Rates

Cost Inflation ¹			Interest Earned ²		
Calendar Year	Index	Annual Rate	Fiscal Year Ending	Index	Annual Rate
2014	252.0	2.86%	2014	105.7	0.73%
2013	245.0	2.21%	2013	105.0	0.95%
2012	239.7	2.70%	2012	104.0	1.32%
2011	233.4	2.59%	2011	102.6	1.24%
2010	227.5	1.38%	2010	101.4	1.38%
2009	224.4		2009	100.0	
Five-Year Compounded Annual Average		2.35%	Five-Year Compounded Annual Average		1.12%

¹ San Francisco Bay Area Consumer Price Index (index 1982-84 = 100).
² Average annual interest earning on City and County of San Francisco pooled fund balances (index 2008 = 100).
Sources: Association of Bay Area Governments (<http://www.abag.ca.gov/planning/research/cpi.html>); S.F. Treasurer's Office (<http://sftreasurer.org/reports-plans>).

Table B-2: Net Present Value Factor

	Year	1	2	3	...	43	44	45
Beginning Fund Balance ¹	a	58.78	58.44	58.07	...	7.97	5.40	2.75
Interest Earnings ²	$b = a * 1.12\%$	0.66	0.65	0.65	...	0.09	0.06	0.03
Expenditures ³	$c = c \text{ (prior yr)} * 2.35\%$	(1.00)	(1.02)	(1.05)	...	(2.65)	(2.72)	(2.78)
Ending Fund Balance	$d = a + b - c$	58.44	58.07	57.67	...	5.40	2.75	0.00
Net Present Value Factor ¹		58.78						

Note: This table models the amount necessary to collect in Year 1 such that \$1.00 in expenditures can be sustained for 45 years given inflation and interest earnings.

¹ Beginning fund balance in Year 1 is solved for to calculate the net present value factor. The Year 1 value is set such that the Year 45 ending fund balance equals \$0.00. In all other years the beginning fund balance equals the ending fund balance from the prior year.

² Assumes interest earned on beginning fund balance and all expenditures made at end of year.

³ Expenditures at beginning of Year 1 equal \$1.00 and are inflated assuming all costs represent end of year (inflated) values.

Source: Table B.1 (for interest and inflation rates).

C. TRANSIT CAPITAL FACILITIES

This appendix provides the supporting documentation for the transit capital projects and programs included in the transit capital facilities component of the TSF presented in Chapter 4. All cost and funding data reflect 2015 dollars.

- ◆ **Tables C.1 and C.2** provide supporting data from the transit fleet plan expansion project. Calculated costs reflect net fleet expansion costs to serve new development (2015-2040).
- ◆ **Table C.3** provides supporting data for the transit fleet maintenance facilities projects. The facility plan (see table sources) represents a significant re-positioning, upgrade, and expansion of SFMTA's facilities to serve both existing and new development.
- ◆ **Table C.4** provides supporting data for the transit reliability improvements. The projects in the upper part of the table are to be implemented in the near term (e.g. by 2017) and are fully funded largely through the City's 2014 general obligation bond. These projects address existing deficiencies and provide for some system capacity expansion to serve new development. The projects in the lower part of the table are unfunded and solely associated with increasing capacity to serve new development. These projects are allocated to TSF transit capital facilities (Table 4.2):
- ◆ **Table C.5** provides supporting data for the Geary Bus Rapid Transit project. This project replaces and upgrades an existing transit line so it serves existing development and provides for capacity expansion to serve growth.
- ◆ **Table C.6** provides supporting data for the bicycle facilities program. These projects represent a significant expansion of the bicycle program. These projects only serve development by shifting trips out of autos (thereby relieving vehicle congestion and improving transit service) and shifting trips out of transit (thereby relieving transit overcrowding).
- ◆ **Tables C.7 and C.8** provide supporting data for the programmed funding available for transit capital facilities shown in Tables 4.2 and 4.4. Estimates reflect funding for 2015-2040 in 2015 dollars.

Table C-1: Transit Fleet Plan

	Existing (2015)	Fleet Expansion/ Contraction	Planned (2040)
Motor Coach (40')	337	(55)	282
Motor Coach (60') ¹	159	157	316
Trolley Coach (40')	240	(50)	190
Trolley Coach (60')	93	17	110
Light Rail Vehicle	147	113	260
Total	976	182	1,158

Note: "TFMP" source was relied upon for all data except where updated by "Vision" source (only update was 2040 estimate of 316 60' motor coach vehicles instead of 324 vehicles).

Note: 30' motor coach and 40' contingency coach vehicles are excluded because their fleet size is not projected to change.

Sources: San Francisco Municipal Transportation Agency, 2014 SFMTA Transit Fleet Management Plan (TFMP), March 2014, Appendix B; Parson Brinkerhoff, Addendum to SFMTA's Real Estate and Facilities Vision for the 21st Century / Vision Refinement for Coach Facilities (Vision), Jun. 24, 2014, Table 1, p. 2.

Table C-2: Transit Fleet Plan Expansion Costs

	Fleet Expansion	Cost per Vehicle	Total Cost
Motor Coach (40')	(55)	\$880,000	\$(48,400,000)
Motor Coach (60')	157	\$1,350,000	\$212,000,000
Trolley Coach (40')	(50)	\$1,580,000	\$(79,000,000)
Trolley Coach (60')	17	\$1,970,000	\$33,500,000
Light Rail Vehicle	113	\$6,000,000	\$678,000,000
Net Fleet Expansion	182		\$796,100,000
Adjustments			
Geary Bus Rapid Transit Vehicles ¹	(16)	\$1,350,000	\$(21,600,000)
Central Subway Light Rail Vehicles ²	(24)	\$6,000,000	\$(144,000,000)
Net Fleet Expansion Cost After Adjustments	142		\$630,500,000
<p>Note: 30' motor coach and 40' contingency coach vehicles are excluded because their fleet size is not projected to change.</p> <p>¹ Geary BRT vehicles included in Geary BRT project in TSF capital facilities list (Table 4.2).</p> <p>² Central Subway is not solely designed to accommodate growth and vehicles are fully funded.</p> <p>Sources: San Francisco Municipal Transportation Agency (personal communication regarding costs per vehicle, Vehicle Demand Summary for Expenditure Plan.xlsx, Nov. 21, 2014); Table C.1.</p>			

Table C-3: Transit Fleet Maintenance Facilities

Facility Name	Amount
Motor and Trolley Coach Facilities	
Burke	Detail By Facility Not Available
Central Body Repair & Paint (Muni Metro East-MME)	
Facility Expansion or New Facility (to be identified)	
Flynn	
Islais Creek	
Kirkland	
Marin	
Potrero	
Presidio	
Woods	
Subtotal	
Other Fleet Facilities¹	
Cameron Beach	11,048,000
Green	4,348,000
Green Annex	1,094,000
Total	\$449,490,000
<p>¹ Other fleet facilities include facilities for light rail vehicles, historic rail fleet, and cable cars. Excludes Scott facility because it is only used for non-revenue generating vehicles.</p> <p>Sources: Parsons Brinckerhoff, <i>Real Estate and Facilities Vision for the 21st Century</i>, prepared for the San Francisco Municipal Transportation Agency, Feb. 5, 2013, Table 3, p. 51; Parsons Brinckerhoff, <i>Vision Refinement for Coach Facilities</i> (draft), prepared for the San Francisco Municipal Transportation Agency, Jun. 24, 2014, Table 5, p. 14.</p>	

Table C-4: Muni Forward Rapid Network Improvements

Project Name	Amount
Sample Near Term Projects To Address Existing Deficiencies & Provide Additional Capacity (funded)¹	
5 Fulton: Outer Route Fast Track Transit Enhancements	\$2,800,000
71 Haight-Noriega: Haight Street Fast Track Transit & Streetscape Enhancements	1,500,000
9 San Bruno: Potrero Ave Fast Track Transit & Streetscape Enhancements	7,133,000
Columbus Street Fast Track Transit Enhancements	700,000
Irving Street Fast Track Transit Enhancements	2,000,000
Mission and Silver Fast Track Transit Enhancements	400,000
5 Fulton: McAllister Street Fast Track Transit Enhancements	800,000
10 Townsend: Sansome Contraflow Signals	1,000,000
28 19th Avenue: 19th Ave Transit and Pedestrian Enhancements	16,500,000
30 Stockton: Eastern Segment Transit Enhancements	3,400,000
5 Fulton: Mid-Route Transit Enhancements	22,700,000
71 Haight-Noriega: Haight Street Transit and Streetscape Enhancements	6,600,000
8X Bayshore Express: Geneva Ave Transit Enhancements	8,250,000
9 San Bruno: 11th St and Bayshore Blvd Transit and Pedestrian Enhancements	4,400,000
N Judah: Transit Enhancements	14,600,000
8X Bayshore Express: Mid-Route Transit Enhancements	3,750,000
14 Mission: Downtown Mission Transit and Streetscape Enhancements	19,600,000
14 Mission: Inner Mission Transit and Streetscape Enhancements	1,500,000
14 Mission: Outer Mission Transit and Streetscape Enhancements	3,850,000
22 Fillmore: 16th Street Transit and Streetscape Enhancements - Phase 1	34,745,000
J Church: Transit Enhancements	10,800,000
L Taraval: Transit and Streetscape Enhancements	10,500,000
Total	\$177,528,000
Share	77%
Sample Longer Term Projects To Provide Additional Capacity (unfunded)	
1 California Travel Time Reduction Project	\$8,920,000
22 Fillmore Segment 2 (on Fillmore) Travel Time Reduction Project	6,620,000
28 19th Avenue Segment 2 (in Marina) Travel Time Reduction Project	1,900,000
30 Stockton Segment 1 (west of Van Ness) Travel Time Reduction Project	23,120,000
5 Fulton TEP Travel Time Reduction Project: Segment 2 from Arguello to 25th Ave.	1,260,000
K v TEP Travel Time Reduction Project	4,720,000
M Ocean View Segment 1 (West Portal to 19th Av) Travel Time Reduction Project ¹	500,000
M Ocean View Segment 1 (West Portal to 19th Av) Travel Time Reduction Project ¹	3,000,000
M Ocean View Segment 2 (East of 19th Av) Travel Time Reduction Project ²	3,620,000
Subtotal	\$53,660,000
Share	23%
Total	\$231,188,000
¹ These projects are fully funded with the largest source being the 2014 general obligation transportation bond.	
² The TSF transit capita facilities list also includes an M-Ocean View/19th Ave. project (see Table 4.2). There is no overlap between the Rapid Network projects listed here and that project because the later excludes the segments shown here.	
Source: San Francisco Municipal Transportation Agency; "Muni Forward Rapid Network Capital Projects - Implementation Summary" (1-page summary), May 12, 2014.	

Table C-5: Geary Bus Rapid Transit

Project Element	Amount
Dedicated colorized bus lanes	\$84,696,000
Station/stop bus operation improvements	53,818,000
Station/stop passenger amenities	60,283,000
Bus vehicle changes	22,655,000
Traffic signals	40,124,000
Other street improvements	34,779,000
Pedestrian improvements	22,296,000
Other changes at key areas	4,854,000
Total	\$323,505,000
Source: San Francisco Municipal Transportation Agency, <i>Attachment 3: Geary Cost Estimate By Element and Phase</i> (SFMTA Board Presentation), Nov. 13, 2014.	

Table C-6: Bicycle Facilities Program Expansion

Program Element	Amount
Bicycle Network Expansion	\$64,825,000
Bicycle Network Long Term Improvements	370,400,000
Bicycle Plan Network Short Term Projects	23,000,000
Location-Specific Bicycle Hotspot Improvements	13,500,000
Bicycle Sharing	54,000,000
Secure Bicycle Parking	10,800,000
Short Term Bicycle Parking	12,000,000
Total	\$548,525,000
Source: San Francisco Municipal Transportation Agency, <i>SFMTA 20-Year Capital Plan</i> , Oct. 15, 2013, pp. B-3 to B-5.	

Table C-7: Transit Capital Projects & Programs – Programmed Funding (\$ 1,000)

Expenditure Plan Category / Project or Program	Prop. K ¹		GO Bond	MTC Core Capacity	Caltrain Project Funding	TTC Project Funding	Developer Funding	Total Programmed Funding
	Expenditure Line	Amount						
Transit Service Expansion and Reliability Improvements								
Transit Fleet Expansion	15	\$-	\$-	\$400,000	\$-	\$-	\$6,000	\$406,000
Transit Facilities Vision	20M	13,800	70,000	67,000				150,800
Muni Forward Rapid Network	1	2,000						2,000
Geary Bus Rapid Transit	1	46,100					71,800	46,100
M-Ocean View / 19th Ave.	1	-					\$77,800	71,800
Subtotal		\$61,900	\$70,000	\$467,000	\$-	\$-	\$77,800	\$676,700
Improvements Supporting Regional Transit Operators								
BART Car Expansion	17B	-	\$-	\$-	\$-	\$-	\$-	\$-
BART Train Control	22B	2,800						2,800
Caltrain Electrification	6	3,900			\$105,000			108,900
Transbay Transit Center (Phase 2)	5	83,300				380,600		463,900
Subtotal		\$90,000	\$-	\$-	\$105,000	\$380,600		\$575,600
Bicycle Infrastructure Improvements								
Bicycle Programs Expansion	39	\$13,000	\$-	\$-	\$-	\$-	\$77,800	\$13,000
Total		\$164,900	\$70,000	\$467,000	\$105,000	\$380,600	\$77,800	\$1,265,300

¹ Prop. K funding based on (1) determining Prop. K expenditure line items that would be eligible for funding TSF expenditure plan projects, (2) discounting remaining programmed funds from FY 2016 through FY 2034 to 2015 dollars for those line items, (3) determining the share available for SFMTA projects (vs. other departments and agencies), and (4) allocating the discounted share to the TSF project.

Sources: **Prop. K:** San Francisco County Transportation Authority, 2014 Prop. K Strategic Plan, Appendices D (for Transbay Transit Center funding) and Appendix F (for all other projects), Sep. 12, 2014; SFCTA staff, personal communication (for discount factors). **GO Bond:** San Francisco Municipal Transportation Agency, Transportation 2030: 2014 Transportation and Road Improvement General Obligation Bond Report, Jun. 18, 2014 (appendix). **MTC Core Capacity:** Metropolitan Transportation Commission, Resolution No. 4123, Dec. 18, 2013. **Caltrain and TTC Project Funding:** See Prop. K source, based on allocated plus programmed funding discounted 9.3 percent to 2015 dollars net of Prop. K contribution (shown in separate column). **Developer Funding:** San Francisco Planning Department.

Table C-8: Transit Capital Projects & Program Funding Notes

Expenditure Category / Sample Project or Program	Funding Notes
Transit Reliability Improvements	
Transit Fleet Expansion	Prop. K: No funding for this line item after FY 2015. MTC Core Capacity: \$400 mil. from Cap and Trade based on proposed legislation (AB 574 (Lowenthal) proposed in 2013). TTC Project Funding: Excludes TCDP impact fee funding of \$2 mil. for two 40' coaches so that TSF maximum justified fee is inclusive of TCDP impact fee (see discussion of area plan fees in Chapter 6). Developer Funding: Parkmerced providing \$6 mil. for one light rail vehicle through development agreement.
Transit Facilities	Prop. K: Allocate 100% of line item. GO Bond: Allocate 100% of "Muni Facilities" category. MTC Core Capacity: \$67 mil. from Cap and Trade based on proposed legislation (AB 574 (Lowenthal) proposed in 2013).
Muni Forward Rapid Network	Prop. K: Allocate \$2 mil. from line item. GO Bond: No funds allocated because all funding for higher priority projects (see Table C.4).
Geary Bus Rapid Transit	Prop. K: Allocates 100% of line item except for Rapid Network allocation.
M-Ocean View / 19 th Ave.	Prop. K: Allocate 0% of line item. GO Bond: Does not allocate any available funding for Corridor Improvement Program (\$28M) that is limited to design and engineering studies. Developer Funding: Parkmerced providing \$70 mil. and San Francisco State University providing \$1.83 mil. through development agreements.
Improvements Supporting Regional Transit Operators	
BART Fleet Expansion	Prop. K: Allocate 0% of line item because line item is only for car replacement. No funding assumed from MTC Core Capacity because funding needed to offset cost increases (\$5.3 mil. per car versus MTC Core Capacity estimate of \$3.3 mil. per car).
BART Train Control	Prop. K: Allocate 100% of line item. No funding assumed from MTC Core Capacity because funding needed to offset cost increases (total project now estimated at \$915 mil. of which \$200 mil. is associated with increasing system capacity versus MTC Core Capacity estimate of \$700 mil.).
Caltrain Electrification	Prop. K: Allocate 100% of line item. Caltrain Project Funding: Includes all allocated and programmed funds discounted 9.3 percent to 2015 dollars. Excludes all planned funding.
Transbay Transit Center (Phase 2)	Prop. K: Allocate 100% of line item. TTC Project Funding: Includes all allocated and programmed funds discounted 9.3 percent to 2015 dollars. Excludes all planned funding.
Bicycle Infrastructure Improvements	
Bicycle Program Expansion	Prop. K: Allocate 75% of line item based on prior and near term allocations (remainder for other departments and transit agencies and for non-capital projects).
Sources: See Table C.7.	

D. AREA PLAN FEES

Table D.1 provides a schedule of current transportation fees. Each area plan fee is allocated to transit and complete streets components based on Citywide Nexus Study legislation (see Article 4 of the San Francisco Planning Code), currently pending adoption at the Board of Supervisors as of publication of this report. The current TIDF is added to the area plan transit component because the TIDF is imposed citywide on all development projects. The TIDF currently only applies to nonresidential projects and not to residential projects. Based on the proposed legislation, the complete streets component of the area plan fees funds bicycle facilities plus pedestrian and other streetscape infrastructure. There is no current citywide fee for pedestrian infrastructure and bicycle facilities.

Table D.2 compares the total current fee with the maximum justified transportation fee documented in this TSF nexus study (see Table 6.1 in Chapter 6). The table separately compares the transit and complete streets fee components. The existing TIDF is replaced by the TSF and the TSF is applied to all residential and nonresidential development. As shown in the table the maximum justified TSF is greater than the current fee across all economic activity categories, area plans, and for both fee components. In most cases the maximum justified TSF is more than 50 percent greater than the current fee.

Table D-1: Existing Transportation Fees (fee per sq. ft.)

Area Plan / Economic Activity Category	Incremental Fee (TCDF Only)	Total Area Plan Fee ¹	Transit				Complete Streets	
			Share	Area Transit Fee	City-wide TIDF ²	Total	Share	Total
Formula		a	b	c = a * b	d	e = c + d	f	g = a * f
Balboa Park								
Residential		9.71	12%	1.17	-	1.17	38%	3.69
Nonresidential (excluding PDR)		1.82	12%	0.22	14.14	14.36	38%	0.69
Production, Distribution, Repair (PDR)		-	0%	-	7.46	7.46	0%	-
Market & Octavia								
Residential		10.92	22%	2.40	-	2.40	44%	4.80
Nonresidential (excluding PDR)		4.13	20%	0.83	14.14	14.97	61%	2.52
Production, Distribution, Repair (PDR)		-	0%	-	7.46	7.46	0%	-
Rincon Hill								
Residential		10.44	0%	-	-	-	79%	8.25
Nonresidential (excluding PDR)		-	0%	-	14.14	14.14	0%	-
Production, Distribution, Repair (PDR)		-	0%	-	7.46	7.46	0%	-
Van Ness and Market Downtown Residential Special Use District								
Residential		18.20	22%	4.00	-	4.00	44%	8.01
Nonresidential (excluding PDR)		18.20	45%	8.19	14.14	22.33	30%	5.46
Production, Distribution, Repair (PDR)		-	0%	-	7.46	7.46	0%	-
Visitacion Valley								
Residential		5.56	0%	-	-	-	45%	2.50
Nonresidential (excluding PDR)		-	0%	-	14.14	14.14	45%	-
Production, Distribution, Repair (PDR)		-	0%	-	7.46	7.46	0%	-
Eastern Neighborhoods – General – Tier 1								
Residential		9.71	10%	0.97	-	0.97	31%	3.01
Nonresidential (excluding PDR)		7.28	53%	3.86	14.14	18.00	34%	2.48
Production, Distribution, Repair (PDR)		-	0%	-	7.46	7.46	0%	-
Eastern Neighborhoods – General – Tier 2								
Residential		14.56	10%	1.46	-	1.46	31%	4.51
Nonresidential (excluding PDR)		12.14	53%	6.43	14.14	20.57	34%	4.13
Production, Distribution, Repair (PDR)		-	0%	-	7.46	7.46	0%	-
Eastern Neighborhoods – General – Tier 3								
Residential		19.42	10%	1.94	-	1.94	31%	6.02
Nonresidential (excluding PDR)		16.99	53%	9.00	14.14	23.14	34%	5.78
Production, Distribution, Repair (PDR)		-	0%	-	7.46	7.46	0%	-

Table D.1: Existing Transportation Fees (fee per sq. ft.) (continued)

Area Plan / Economic Activity Category	Incremental Fee (TCDP Only)	Total Area Plan Fee ¹	Transit				Complete Streets	
			Share	Area Transit Fee	City-wide TIDF ²	Total	Share	Total
Formula		a	B	c = a * b	d	e = c + d	f	g = a * f
Eastern Neighborhoods - Affordable Housing Zones - Tier 1								
Residential		9.71	6%	0.58	-	0.58	4%	0.39
Nonresidential (excluding PDR)		7.28	85%	6.19	14.15	20.34	4%	0.29
Production, Distribution, Repair (PDR)		-	0%	-	7.46	7.46	0%	-
Eastern Neighborhoods - Affordable Housing Zones - Tier 2								
Residential		14.56	6%	0.87	-	0.87	4%	0.58
Nonresidential (excluding PDR)		12.14	85%	10.32	14.15	24.47	4%	0.49
Production, Distribution, Repair (PDR)		-	0%	-	7.46	7.46	0%	-
Eastern Neighborhoods - Affordable Housing Zones - Tier 3								
Residential		19.42	6%	1.17	-	1.17	4%	0.78
Nonresidential (excluding PDR)		16.99	85%	14.44	14.15	28.59	4%	0.68
Production, Distribution, Repair (PDR)		-	0%	-	7.46	7.46	0%	-
Transit Center District Plan - FAR Up To 9:1								
Residential	4.39	4.39	NA ³	4.39	-	4.39	NA ³	NA ³
Office, Retail, Institutional	4.39	4.39	NA ³	4.39	14.14	18.53	NA ³	NA ³
Hotel	4.39	4.39	NA ³	4.39	14.14	18.53	NA ³	NA ³
Industrial	4.39	4.39	NA ³	4.39	7.46	11.85	NA ³	NA ³
Transit Center District Plan - FAR 9:1 to 18:1								
Residential	6.58	7.68	NA ³	7.68	-	7.68	NA ³	NA ³
Office, Retail, Institutional	21.40	15.09	NA ³	15.09	14.14	29.23	NA ³	NA ³
Hotel	8.78	8.78	NA ³	8.78	14.14	22.92	NA ³	NA ³
Industrial	4.39	4.39	NA ³	4.39	7.46	11.85	NA ³	NA ³
Transit Center District Plan - FAR Above 18:1								
Residential	3.29	9.97	NA ³	9.97	-	9.97	NA ³	NA ³
Office, Retail, Institutional	10.97	25.71	NA ³	25.71	14.14	39.85	NA ³	NA ³
Hotel	3.29	11.51	NA ³	11.51	14.14	25.65	NA ³	NA ³
Industrial	4.39	4.39	NA ³	4.39	7.46	11.85	NA ³	NA ³
¹ For TCDP, average fee for projects with 9:1 to 18:1 FAR based on maximum possible amount (18:1 FAR), or 100% of base fee plus 50% of incremental fee. Average fee for projects with greater than 18:1 FAR based on 181 Fremont project, or 70% of three incremental fees summed. No incremental fee for production, distribution, repair (PDR) category.								
² Current Transportation Impact Development Fee (applied citywide). The weighted average rate is used for nonresidential (ex. PDR) and Office, Retail, Institutional (for the TCDP).								
³ TCDP does not allocated fee to transit versus complete streets components.								
Sources: San Francisco Planning Department, <i>San Francisco Citywide Development Impact Fee Register</i> (rates effective Jan. 1, 2015).								

Table D-2: Existing Vs. Maximum Justified Transportation Fees (fee per sq. ft.)

Area Plan / Economic Activity Category	Transit				Complete Streets			
	Cur- rent	Max. Justi- fied	Differ- ence (amt.)	Differ- ence (%)	Cur- rent	Max. Justi- fied	Differ- ence (amt.)	Differ- ence (%)
Balboa Park								
Residential	1.17	22.59	(21.42)	(95%)	3.69	8.34	(4.65)	(56%)
Nonresidential (excluding PDR)	14.37	80.68	(66.31)	(82%)	0.69	6.74	(6.05)	(90%)
Production, Distribution, Repair (PDR)	7.46	22.59	(15.13)	(67%)	-	3.48	(3.48)	(100%)
Market & Octavia								
Residential	2.40	22.59	(20.19)	(89%)	4.80	8.34	(3.54)	(42%)
Nonresidential (excluding PDR)	14.98	80.68	(65.70)	(81%)	2.52	6.74	(4.22)	(63%)
Production, Distribution, Repair (PDR)	7.46	22.59	(15.13)	(67%)	-	3.48	(3.48)	(100%)
Rincon Hill								
Residential	-	22.59	(22.59)	(100%)	8.25	8.34	(0.09)	(1%)
Nonresidential (excluding PDR)	14.15	80.68	(66.53)	(82%)	-	6.74	(6.74)	(100%)
Production, Distribution, Repair (PDR)	7.46	22.59	(15.13)	(67%)	-	3.48	(3.48)	(100%)
Van Ness and Market Downtown Residential Special Use District								
Residential	4.00	22.59	(18.59)	(82%)	8.01	8.34	(0.33)	(4%)
Nonresidential (excluding PDR)	22.34	80.68	(58.34)	(72%)	5.46	6.74	(1.28)	(19%)
Production, Distribution, Repair (PDR)	7.46	22.59	(15.13)	(67%)	-	3.48	(3.48)	(100%)
Visitacion Valley								
Residential	-	22.59	(22.59)	(100%)	2.50	8.34	(5.84)	(70%)
Nonresidential (excluding PDR)	14.15	80.68	(66.53)	(82%)	-	6.74	(6.74)	(100%)
Production, Distribution, Repair (PDR)	7.46	22.59	(15.13)	(67%)	-	3.48	(3.48)	(100%)
Eastern Neighborhoods - General - Tier 1								
Residential	0.97	22.59	(21.62)	(96%)	3.01	8.34	(5.33)	(64%)
Nonresidential (excluding PDR)	18.01	80.68	(62.67)	(78%)	2.48	6.74	(4.26)	(63%)
Production, Distribution, Repair (PDR)	7.46	22.59	(15.13)	(67%)	-	3.48	(3.48)	(100%)
Eastern Neighborhoods - General - Tier 2								
Residential	1.46	22.59	(21.13)	(94%)	4.51	8.34	(3.83)	(46%)
Nonresidential (excluding PDR)	20.58	80.68	(60.10)	(74%)	4.13	6.74	(2.61)	(39%)
Production, Distribution, Repair (PDR)	7.46	22.59	(15.13)	(67%)	-	3.48	(3.48)	(100%)
Eastern Neighborhoods - General - Tier 3								
Residential	1.94	22.59	(20.65)	(91%)	6.02	8.34	(2.32)	(28%)
Nonresidential (excluding PDR)	23.15	80.68	(57.53)	(71%)	5.78	6.74	(0.96)	(14%)
Production, Distribution, Repair (PDR)	7.46	22.59	(15.13)	(67%)	-	3.48	(3.48)	(100%)

Table D.2: Existing Vs. Maximum Justified Transportation Fees (fee per sq. ft.) (continued)

Area Plan / Economic Activity Category	Transit				Complete Streets				
	Current	Max. Justified	Difference (amt.)	Difference (%)	Current	Max. Justified	Difference (amt.)	Difference (%)	
Eastern Neighborhoods - Affordable Housing Zones - Tier 1									
Residential	0.58	22.59	(22.01)	(97%)	0.39	8.34	(7.95)	(95%)	
Nonresidential (excluding PDR)	20.34	80.68	(60.34)	(75%)	0.29	6.74	(6.45)	(96%)	
Production, Distribution, Repair (PDR)	7.46	22.59	(15.13)	(67%)	-	3.48	(3.48)	(100%)	
Eastern Neighborhoods - Affordable Housing Zones - Tier 2									
Residential	0.87	22.59	(21.72)	(96%)	0.58	8.34	(7.76)	(93%)	
Nonresidential (excluding PDR)	24.47	80.68	(56.21)	(70%)	0.49	6.74	(6.25)	(93%)	
Production, Distribution, Repair (PDR)	7.46	22.59	15.13	(67%)	-	3.48	(3.48)	(100%)	
Eastern Neighborhoods - Affordable Housing Zones - Tier 3									
Residential	1.17	22.59	(21.42)	(95%)	0.78	8.34	(7.56)	(91%)	
Nonresidential (excluding PDR)	28.59	80.68	(52.09)	(65%)	0.68	6.74	(6.06)	(90%)	
Production, Distribution, Repair (PDR)	7.46	22.59	(15.13)	(67%)	-	3.48	(3.48)	(100%)	
Transit Center District Plan - FAR Up To 9:1									
Residential	4.39	30.93	(26.54)	(86%)	TCDP does not allocate fee to transit and complete streets components so total TCDP fee compared with total TSF maximum justified under "Transit".				
Office	18.54	87.42	(68.88)	(79%)					
Hotel	18.54	87.42	(68.88)	(79%)					
Industrial	11.85	26.07	(14.22)	(55%)					
Transit Center District Plan - FAR 9:1 to 18:1									
Residential	7.68	30.93	(23.25)	(75%)					
Office	29.24	87.42	(58.18)	(67%)					
Hotel	22.93	87.42	(64.49)	(74%)					
Industrial	11.85	26.07	(14.22)	(55%)					
Transit Center District Plan - FAR Above 18:1									
Residential	9.97	30.93	(20.96)	(68%)					
Office	39.86	87.42	(47.56)	(54%)					
Hotel	25.66	87.42	(61.76)	(71%)					
Industrial	11.85	26.07	(14.22)	(55%)					
Sources: Tables 6.1 and D.1.									