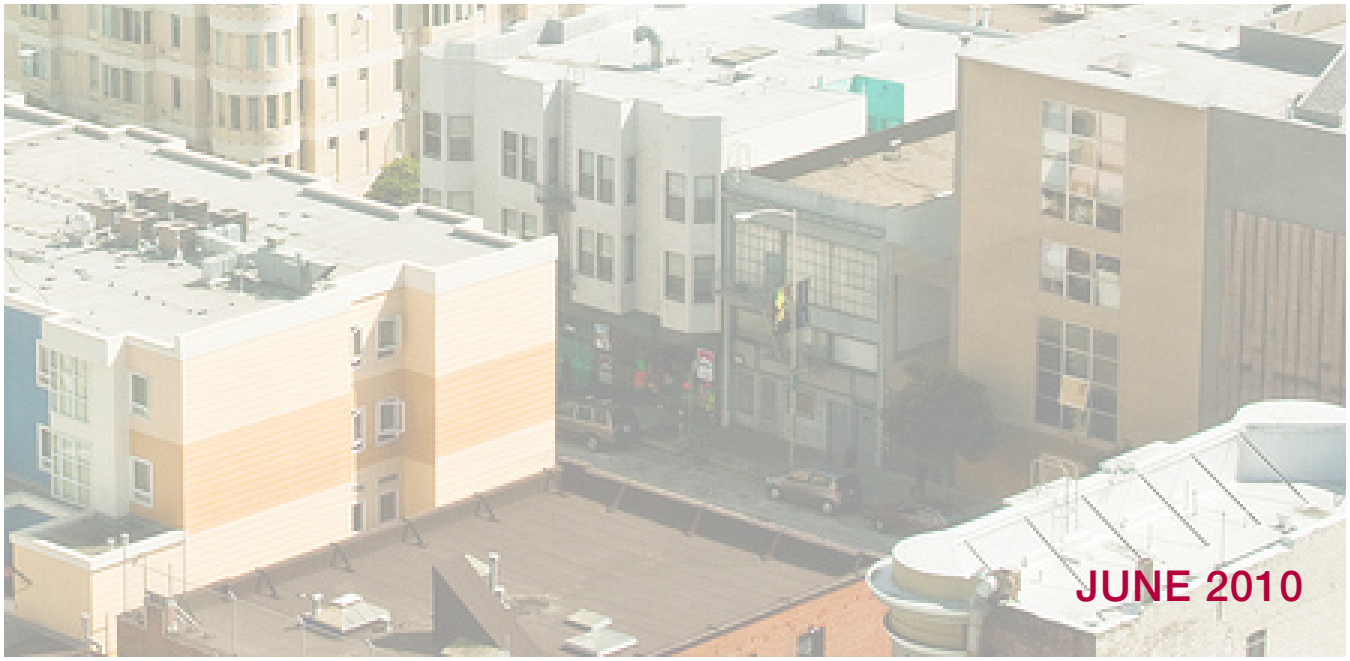
SFMTA | Municipal Transportation Agency

ENTRIPS

Eastern Neighborhoods Transportation Implementation Planning Study

EXISTING CONDITIONS



JUNE 2010

Table of Contents

Cover photos by Troy Holden and Nelson\Nygaard.

Table of Figures

Executive Summary and Study Themes

This document presents the Existing Conditions analysis for the Eastern Neighborhoods Transportation Planning and Implementation Study (EN TRIPS). EN TRIPS will develop transportation infrastructure improvements to serve the existing and projected needs of San Francisco's Eastern Neighborhoods, as envisioned by the Eastern Neighborhoods Area Plans, which were adopted by the San Francisco Board of Supervisors in 2009. The study area of EN TRIPS includes not only the Eastern Neighborhoods themselves (the Mission District, Eastern South of Market, Potrero Hill/Showplace Square, and the Central Waterfront), but also surrounding planning districts (Mission Bay, the Transbay District, and Western South of Market) that share key transportation corridors with the Eastern Neighborhoods.

As the first major deliverable of EN TRIPS, this Existing Conditions report establishes a baseline understanding of transportation conditions in the study area. It builds on the analysis conducted for the Eastern Neighborhoods Area Plans, developing a more in-depth understanding of current conditions, existing gaps in the transportation network, and potential opportunities to improve the system. Based on this information, this report identifies key issues and opportunities which will be further explored as the study progresses.

Following publication of this report, the Eastern Neighborhoods project team will develop a future conditions analysis that evaluates the impact of projected growth in the study area on the transportation system. In collaboration with community stakeholders, the project team will then recommend, design, and develop implementation plans for priority transportation improvements.

This section summarizes the report, presenting key data points and describing notable issues and opportunities by transportation mode. It ends with a summary of the major system-level themes that emerge from this analysis. These themes will guide future phases of EN TRIPS.

Figure ES-1 Eastern Neighborhoods Study Area

Transit *(for more information, see Chapter 3)*

Two objectives of the Eastern Neighborhood Area Plans are directly related to transit:

Objective 4.1: Improve public transit to better serve existing and new development

Objective 4.2: Increase transit ridership by making it more comfortable and easier to use.

Transit mode share in the Eastern Neighborhoods (19 percent) is equivalent to the citywide average. It is slightly higher (22 percent) in the South of Market District, which is adjacent to the City's primary transit corridor, Market Street, and generally enjoys a relatively high level of both pedestrian and transit access to the employment and retail centers of downtown. The mode split for transit in the Mission District, which has some of the City's highest population densities and which benefits from an unusually high level of transit service in major corridors, is the same as the citywide figure, 19 percent. Mode splits for transit in remaining neighborhoods are below the citywide average.

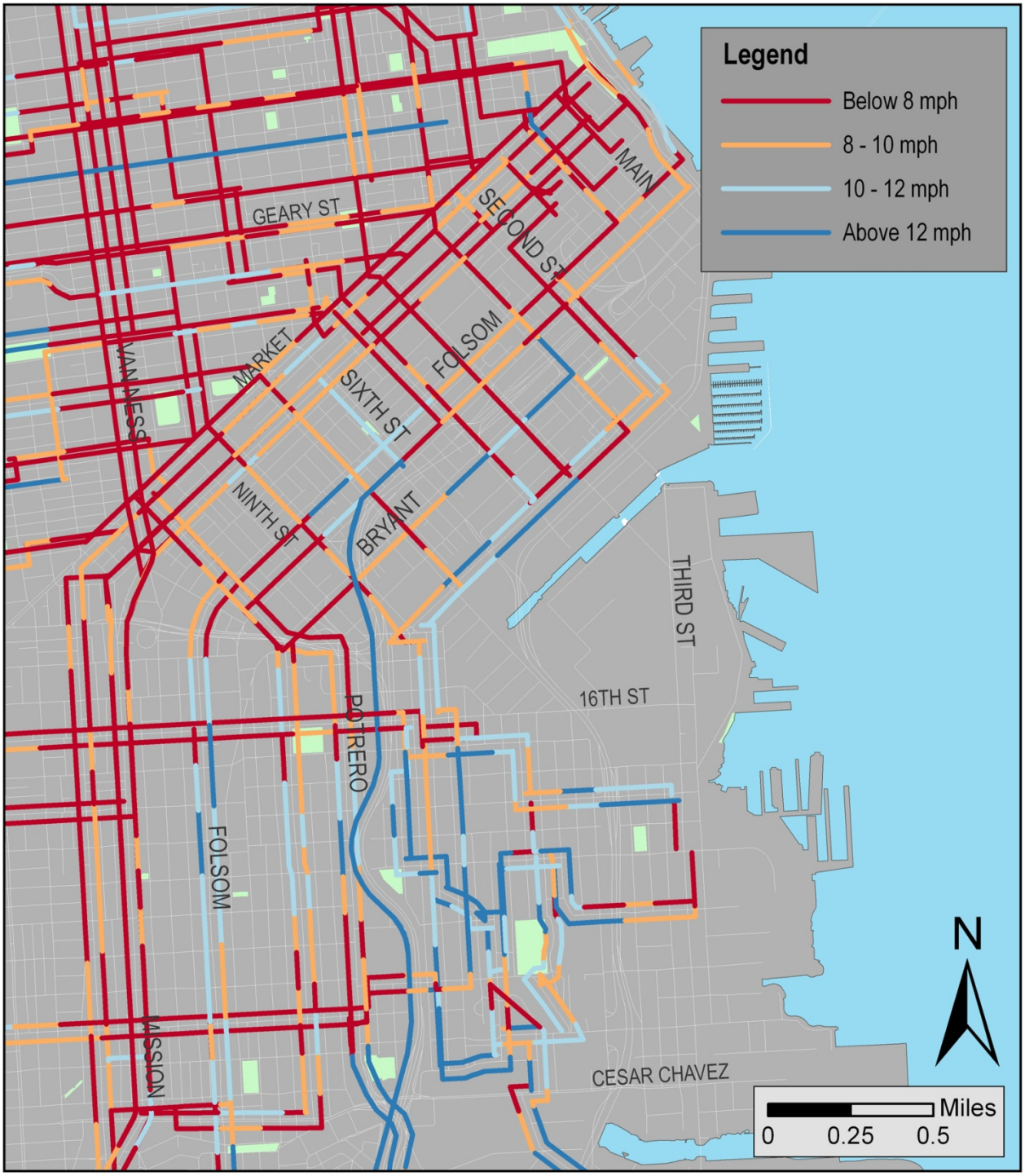
Muni service, which largely consists of bus routes operating in traffic, is relatively slow. In segments of several major streets, including much of Mission, 16th, and 24th Streets in the Mission District and Mission Street South of Market, buses average less than 8 miles per hour during the PM peak period. On streets including Mission Street, much of Potrero Avenue, and parts of 16th Street in the Mission, and on segments of Folsom Street and several of the north-south numbered streets in the South of Market, average peak-period bus speeds are less than half of average auto speeds.

The three busiest rail stations in the Eastern Neighborhoods, the 16th Street Mission and 24th Street Mission BART Stations and the Fourth and King Caltrain Station, are relatively well-served by connecting transit and pedestrian pathways, and mode shares for connections to and from them are dominated by non-auto modes. However, the primary mode for access to the 22nd Street Caltrain Station is driving.

A number of challenges are unique to individual neighborhoods, including: limitations on pedestrian access and legibility of transit routes imposed by the South of Market street grid; notable gaps in coverage in the Mission; and physical barriers in Potrero Hill, Mission Bay and the Central Waterfront.

A number of major improvements to the transit system in the Eastern Neighborhoods are planned, including SFMTA Transit Effectiveness Project (TEP) changes to bus lines, the Central Subway project, and the intertwined California High-Speed Rail, Transbay Transit Center and Downtown Rail Extension projects.

Figure ES-2 Muni Bus Speeds, Weekday PM Peak (Spring 2009)



Source: SFCTA, 2009 CMP, based on SFMTA data

Key Issues and Opportunities for Transit

The following issues and opportunities will be evaluated in detail in future phases of the Study:

- *Major transit routes operate relatively slowly.* The study area's key transit corridors, including but not necessarily limited to Folsom, 16th Street, Mission, Potrero and 24th Street, could benefit from transit-priority treatments including: bulb stops, signal prioritization, ticket-vending machines enabling all-door boarding, raised platforms enabling level boarding onto low-floor vehicles, and transit-only lanes wherever feasible (including "queue jumps" at busy intersections). Stop consolidation could also benefit many routes.
- *Transit on 16th Street faces substantial existing and future challenges. 16th* Street's relatively broad right-of-way and relatively light traffic volumes present an opportunity to improve the overall performance of the busy Route 22 Fillmore with relatively little effect on other users of the street. Furthermore, extension of the 22 into Mission Bay would establish important connections. An important issue that must be addressed as part of this extension is the crossing of the existing Caltrain right-of-way at Highway 280.
- *The South of Market's one-way street network can make transit confusing to use.* Conversion of Folsom to a two-way street would present the opportunity to consolidate transit service and improve the legibility of the overall transit network within the South of Market. Folsom might serve as a single, easily identifiable east-west transit spine across the neighborhood's midsection. On the other hand, conversion of Folsom and other South of Market streets to two-way operation might increase traffic congestion, affecting bus speeds, and maintenance of Folsom as a one-way street may present an opportunity to maximize the benefits of transit signal priority.
- *There are considerable gaps in east-west transit service through the study area.* No easy solution exists to the problems of distance between routes in the Mission District and east-west connectivity on Potrero Hill, given the geography of both areas and the relatively light demand in these areas. However, creative solutions may exist, such as community-based transit service or private "jitney" services. Implementation of the TEP-recommended Route 58 would improve transit service in the 24th Street corridor.
- *The potential exists for greatly enhanced transit demand at the Fourth and King rail station*. While construction of the Transbay Transit Center and Downtown Rail Extension would mean that the station would no longer serve as the terminus for Caltrain, it is likely that service to the station would be expanded, as electrification would reduce the cost to provide service and extension to downtown would increase the demand for service. Planning for the area should take into account the potential for greatly increased demand for transit service both at the station and along feeder routes connecting to the station. In particular, bus and Muni Metro stops outside of the station might be reconfigured and/or redesigned to improve connectivity at this important hub, and a coordinated wayfinding strategy should be part of any such process.

- *The 22nd Street Caltrain Station may have a greater, or different role to play.* While lightly used relative to Caltrain's terminus at Fourth and King Streets in Mission Bay, 22nd Street is an express stop serving "reverse commutes" from San Francisco to Silicon Valley, a growing market. Access to the station could be enhanced if new transit service were implemented between the station and growing areas just outside of its walk shed, including the Northeast Mission and northern Potrero Hill. Alternatively, if high-speed rail service were implemented along the Caltrain right-of-way, requiring reconstruction of the corridor, it might be worthwhile to study alternative locations for the station, most obviously near 16th Street, which would allow a direct connection to Muni Route 22 Fillmore and pedestrian access to and from the south side of Mission Bay, including the UCSF-Mission Bay campus and planned hospital.

Walking *(For more information, see Chapter 4)*

The Eastern Neighborhoods Area Plans have two objectives directly related to walking:

Objective 4.5: Consider the street network in the Eastern Neighborhoods as a City resource essential to multimodal movement and public open space.

Objective 4.6: Support walking as a key transportation mode by improving pedestrian circulation within the Eastern Neighborhoods and to other parts of the City.

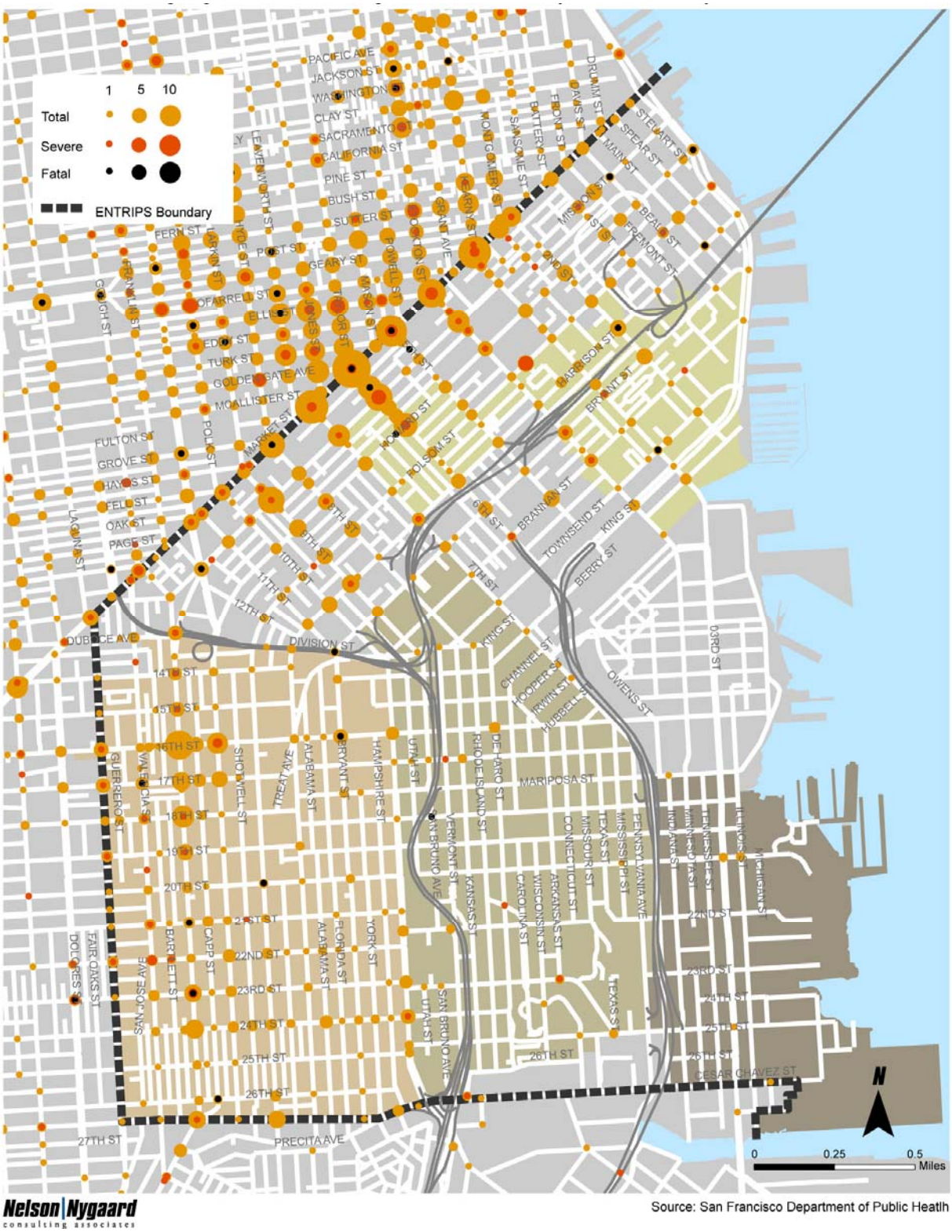
Walking is a prominent travel mode in the Eastern Neighborhoods. Approximately 26 percent of daily trips made in the study area are walking trips, about the same as in the City of San Francisco as a whole (25 percent). An additional 17 percent of trips are made by walking to transit. Despite relatively high walk mode shares, pedestrian conditions are not consistent throughout the study area and some significant barriers to pedestrian travel were identified. The variety of street types include busy commercial and transit corridors with high-volumes of pedestrians; quiet residential areas on steep topography; fine-grained grid patterns that offer strong connectivity and an abundance of amenities; as well as wide streets that have long crossing distances. This variety helps to define the unique character of the study area, but also challenges the pedestrian's ability to access daily needs.

Gaps and barriers in the pedestrian network are present to all neighborhoods within the study area. These include: long crossing distances created by intersections with closed crosswalks and streets with multiple turn lanes (as at several freeway ramp touchdowns in the South of Market); missing or narrow sidewalks (particularly in the Central Waterfront), as well as steep grades on many residential streets (particularly in Potero Hill). Of particular note are the physical and visual barriers created by the freeways and rail corridors that run throughout the study area.

Pedestrian injury collisions throughout the study area were concentrated on a few primary travel corridors. This finding is partially a reflection of high pedestrian volumes in these areas, but they also highlight "hot spots" and areas to focus traffic calming and engineering efforts. Some of these streets include: Third, Fifth, Sixth, Mission, Howard, Folsom, 16th, and 24th Streets.

Pedestrian-scale amenities could benefit from improvement in several parts of the study area. Certain streets in each neighborhood have had traffic calming measures (bulb outs, high visibility crosswalks, pedestrian refuge islands) and key amenities (lighting, landscaping, street trees, wayfinding) installed, but there are numerous candidates for additional improvements to enhance the pedestrian environment, while ensuring safe and convenient travel for all modes.

Figure ES-3 Eastern Neighborhoods Reported Pedestrian Injury Collisions (2004-08)



Source: San Francisco Department of Public Health

Key Issues and Opportunities for Pedestrian Travel

The following issues and opportunities will be evaluated in detail for further planning for changes to the pedestrian environment in the study area:

- The arterial streets in the South of Market present substantial challenges to pedestrians. These streets are built to accommodate high volumes of vehicle traffic, and their design may diminish comfort for pedestrians. Because SoMa arterials serve vehicles traveling to and from the Bay Bridge, the design of some arterials should continue to accommodate high volumes of vehicle traffic. However, pedestrian conditions may be able to be improved despite this limitation.
- For certain key streets in the South of Market, wholesale redesign of the right-of-way may be possible, changing the character of the street from an auto-oriented street to a more complete, multimodal street, with more space allocated to pedestrians.
- Among those streets in the South of Market lacking sidewalks, Townsend Street between Fourth and Seventh Streets is of particular concern. Its enhancement is vital to not only improving conditions for the high numbers of existing pedestrians, but also for increasing non-motorized access to regional transit services.
- A number of alleys in the South of Market present an opportunity to improve the quality of the pedestrian experience and offer a substantial opportunity to expand public/shared space.
- The difficulty of crossing 16th Street currently presents a barrier to pedestrian connections between Showplace Square and Potrero Hill. Pedestrian travel between these two neighborhoods could be improved through appropriate treatments of 16th Street, including enhanced crosswalks, curb bulb outs and countdown signals at signalized intersections.
- In a neighborhood poised for substantial growth, the pedestrian network in the Central Waterfront has significant weaknesses. New development in these areas may be an additional catalyst and opportunity to move forward with significant pedestrian improvements.
- EN TRIPS could work to support complementary pedestrian improvement projects that have been identified through other public planning processes, such as the Mission Streetscape Plan and the Potrero Hill Traffic Calming Project.

Bicycling *(For more information, see Chapter 4)*

The Eastern Neighborhood Area Plans have two objectives directly related to bicycling:

Objective 4.5: Consider the street network in the Eastern Neighborhoods as a City resource essential to multimodal movement and public open space.

Objective 4.7: Improve and expand infrastructure for bicycling as an important mode of transportation.

Bicycling mode share is higher in the study area than for the City as a whole. San Francisco's travel demand model estimates that bicycling represents four percent of all trips originating in the Eastern Neighborhoods, as compared to two percent citywide. Data from recent SFMTA bicycle counts also indicates that bicycle usage is on the rise, as counts within or adjacent to the study area have shown a 47 percent increase over the past four years.

The study area offers some of the best bicycling conditions and facilities in the City. Aside from Potrero Hill, the flat topography in the area is highly conducive to bicycle travel, and the myriad of routes provide strong access and connectivity. In particular, Route 45 along Valencia Street and Route 30 on Howard and Folsom Streets offer critical access between downtown and residential neighborhoods and commercial corridors to the south. Connectivity on east-west routes is more challenging, but facilities are provided on Seventh, Eighth, 14th, 16th, and 22nd Streets.

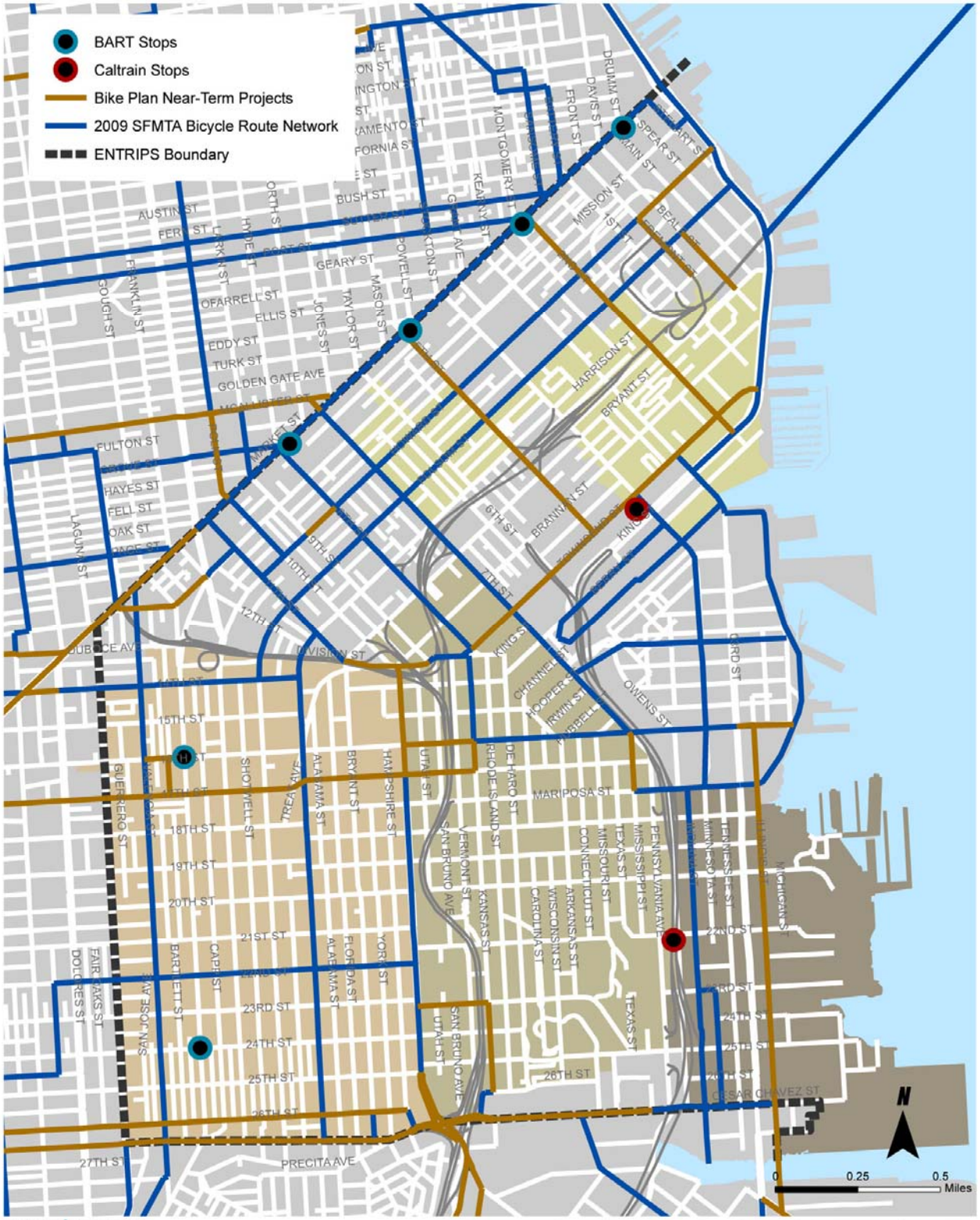
However, critical gaps in the network do still exist. Many of these gaps are addressed with proposed projects in the San Francisco Bicycle Plan, but much of the project implementation has been delayed by the four year legal injunction. Pending implementation, many designated bicycle routes continue to lack designated bicycle lanes.

The Eastern Neighborhoods are home to a number of the City's high bicycle injury collision intersections and corridors. Over the last five years, five intersections within or adjacent to the study area ranked among the City's highest for bicycle injury collisions, while four of the City's top seven highest bicycle injury collision corridors were located in the study area.

The SoMa area presents challenges to bicyclists. The grid is dominated by one-way streets, fast moving traffic during non-peak periods, and freeways. The one-way orientation can require bicyclists to circle around very large blocks in order to reach a destination. As a shortcut, some bicyclists will ignore one-way streets and ride on the sidewalk, against traffic, or both.

Finally, bicycle parking is in high demand throughout the study area, especially along popular commercial corridors in the Mission, near downtown employment centers, and close to major regional transit stations. As a result, bicycles will often be locked on sidewalk furniture or meter/sign posts, obstructing pedestrian travel. Parking challenges can discourage bicycle travel.

Figure ES-4 San Francisco Bicycle Network



Nelson\Nygaard consulting associates

Source: San Francisco City & County GIS, San Francisco General Plan

Key Issues and Opportunities for Bicycling

The following issues and opportunities will be evaluated in detail for further planning for changes to the bicycle network in the study area:

- The adopted Bicycle Plan addresses the identified short-term existing needs. The near-term bicycle projects in the Bicycle Plan are designed to accommodate much of the immediate growth, as well as address many of the existing safety concerns. As the injunction is lifted and implementation continues to progress over the next year, bicycling infrastructure in the Eastern Neighborhoods will grow substantially.
- Additional investment will be required to meet longer-term needs. Given the objectives of the four Area Plans, current and future residential development, and observed bicycling ridership trends it is likely that bicycling will continue to rise in the Eastern Neighborhoods. The EN TRIPS future conditions analysis will take into account this likely upward trend.
- The Mission Creek Bikeway presents a major opportunity for a new bike route through San Francisco, connecting major Eastern Neighborhoods destinations and providing needed recreational space. However, development of this project faces significant challenges, including the need for a joint city and Caltrans decision about the future of the Division Street right of way.
- There is insufficient bicycle parking available. The Bicycle Plan will address some of the need through sidewalk racks, but additional capacity may be needed. On-street bicycle corrals offer a potential solution. Additional monitoring of bicycle parking in new developments might also be needed to ensure adequate bicycle parking facilities.
- The high volume, one-way streets in SoMa present perhaps the most intriguing opportunities for innovative bicycle treatments. Separated bicycle lanes, or cycle tracks, offer bicyclists a more comfortable riding environment. Additional innovative treatments, such as bike boxes or colored bicycle lanes, have been shown to reduce conflicts, enhance visibility, and improve safety.

Motor Vehicle Circulation *(for more information, see Chapter 5)*

The Eastern Neighborhood Area Plans have two objectives directly related to vehicle circulation:

Objective 4.5: Consider the street network in the Eastern Neighborhoods as a City resource essential to multimodal movement and public open space.

Objective 4.9: Facilitate movement of automobiles by managing congestion and other negative impacts of vehicle traffic.

Private vehicle travel currently represents just over half of all trips made in the study area (52 percent, compared to 54 percent in the City as a whole) and will continue to be an important part of the area's transportation system, even as other parts of the multimodal transportation system develop. The study area is home to a diverse street typology, including a large portion of the City's freeway system, more than a dozen major arterials, Transit Preferential Streets, Neighborhood Pedestrian Streets. Each of these street types presents a unique set of circulation challenges and opportunities for improvement.

Using the San Francisco travel demand model (SF-CHAMP 4.1), and data obtained from intersection analyses at more than 50 intersections (study intersections were focused in SoMa and on 16th Street), a number of key data points emerged that will inform the development of alternatives for circulation changes in these areas.

North-south streets in the South of Market area, such as Fremont, First, Third, Fourth, Sixth, Seventh, and Eighth Streets, have the highest street volumes in the area. Much of this traffic can be attributed to pass-through traffic since the highest volume segments are between the I-80/US-101 and I-280 freeways and the North of Market area.

During the AM peak period, the typical vehicle travel speeds are below 16 miles per hour. Travel speeds drop below 12 miles per hour on Ninth Street and on Sixth Street. During the PM peak period, travel speeds throughout the study area slow considerably, especially in SoMa as high demand for travel to the Bay Bridge results in the delay. In other parts of the study area, vehicle travel slows considerably on Division, Mission, Guerrero, and 16th Streets during the PM peak period.

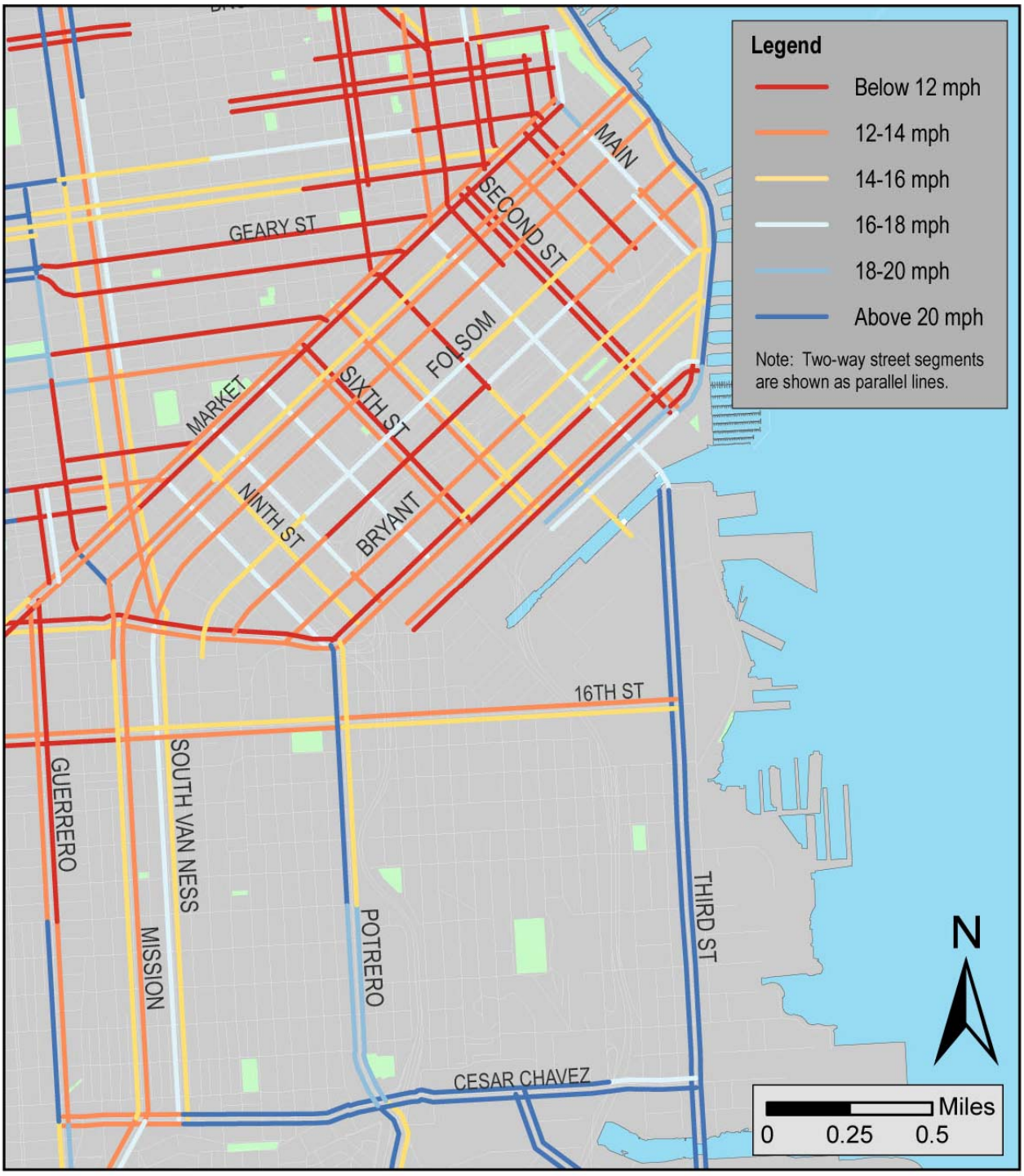
The Bay Bridge currently operates at or near vehicular capacity in the peak direction most weekdays during the AM/PM peak periods, resulting in queuing on local approaches. Queues are most pronounced on southbound First Street, Third Street, Fourth Street, eastbound Folsom Street, westbound Harrison Street, and eastbound Bryant Street.

Three study intersections in the AM peak hour and six intersections in the PM peak hour are highly congested. Intersections operating with delay in the AM and PM peak hour are located along streets that are generally heavily used as regional routes, such as Third, Fourth, Fifth, Bryant, Harrison, and Folsom Streets.

Over 70 percent of vehicle trips in SoMa during both the AM and PM peak periods are estimated to be "pass-through" trips (origin and destination both outside of the study area), including freeway trips that do not exit into the neighborhood. Of the total pass-through vehicle trips

through SoMa, approximately 40 percent are estimated to travel on a freeway ramp, meaning that they travel to the freeway from adjacent neighborhoods, or they exit the freeway and travel through SoMa en route to another destination (such as downtown). By contrast, trips solely within the SoMa make up less than one percent of vehicle trips, while approximately 27 percent of peak period trips in SoMa either begin or end there.

Figure ES-5 PM Peak Period Average Travel Speeds on Major Arterials



Source: SFCTA Spring 2009 System Performance Monitoring

Key Issues and Opportunities for Vehicle Circulation

The following issues and opportunities will be evaluated in detail for further planning for changes to vehicle circulation in the study area:

- SoMa arterial streets are designed to accommodate high volumes of vehicle traffic, and every arterial street in the South of Market is designated as part of the primary vehicle network. There may be an opportunity to change the character of at least some of these arterials in ways that reduce the effects of vehicle travel circulation on quality of life for residents and visitors, and on other travel modes.
- Traffic from Interstate 80 is the key factor overloading the SoMa road network. Most congested intersections in the SoMa neighborhood during the PM peak hour are worsened by queues extending back from the Interstate 80. During other periods of the day, high volumes of traffic from Interstate 80 result in congestion in the northbound corridors that have limited throughput capacity across Market Street.
- The City has options for managing congestion in the Eastern Neighborhoods without creating new vehicle capacity. Potential solutions include parking management, as well as opportunities to pursue congestion pricing strategies in coordination with regional partners. Additional investment in Transportation Demand Management (TDM) strategies may also help to reduce vehicle congestion.
- Most of the streets in the Mission District, Potrero Hill, Showplace Square, and Central Waterfront areas are not designated as primary vehicle corridors, and on many of these streets there may be opportunities to focus on multi-modal transportation improvements. In those areas, street design plans can focus on prioritizing travel for other modes and creating quality public spaces. Automobile travel speeds through these areas could be reduced through traffic calming measures where needed, and parking could be priced to ensure availability so that drivers circling for parking do not generate additional traffic.

Parking *(for more information, see Chapter 5)*

The Eastern Neighborhood Area Plans have one objective directly related to parking:

> **Objective 4.3:** Establish parking policies that improve the quality of neighborhoods and reduce congestion and private vehicle trips by encouraging travel by non-auto modes.

The parking analysis for the Eastern Neighborhoods occurs in the context of the SFMTA's SF*park* project, a major citywide program that seeks to better manage the City's parking supply through implementation of a number of policy reforms and pricing initiatives. Three SF*park* pilot areas overlap with the Eastern Neighborhoods study area: the Mission District, Downtown, and South Embarcadero pilot areas.

The Eastern Neighborhoods area plans set maximum allowable parking for several zoning categories in the study area. Despite lower parking requirements and unbundled parking mandates, it is expected that most of the new residential development in the study area will continue to have at least some accessory parking spaces. These trends contrast with the existing housing stock in the study area, much of which was built before accessory parking became commonplace.

Aside from the Central Waterfront and Mission Bay – where on-street parking is generally unrestricted, there are no Residential Parking Permit (RPP) zones, and off-street facilities are limited – the study area is home to a wide variety of parking facilities and regulations.

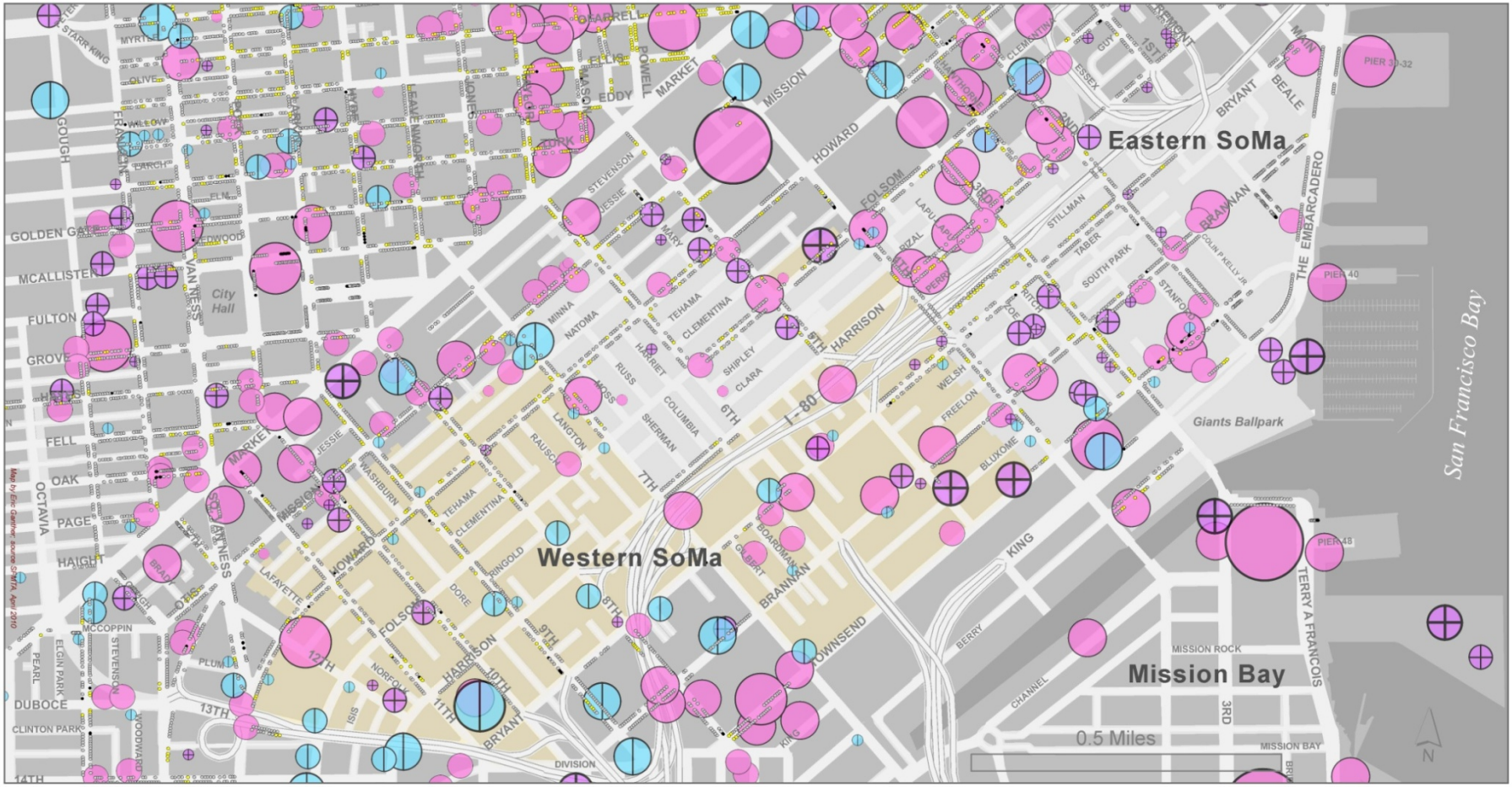
There are 7 RPP districts in the Eastern Neighborhoods, each with its own parking restrictions and level of demand. For example, in the "Y" Zone in SoMa's South Beach, the number of issued RPP permits is roughly twice the number of on-street parking spaces, the highest "saturation" of any zone. In the Mission, the saturation rate for its 3 RPP zones range from 96-105 percent, while the "X" RPP zone in Potrero Hill has a 49 percent saturation rate.

The South of Market has a significant amount of metered, unmetered, and off-street parking, including two city-owned parking facilities and several privately-owned parking lots and garages available to the general public. Paid publicly available parking is concentrated in the downtown financial district area.

Parking is metered on the Mission, Valencia, and 24th Street corridors, but occupancies exceed 100 percent during peak periods and turnover is low. Vehicles often double-park on Mission Street and on the cross-streets, obstructing buses on an important transit corridor.

On-street parking occupancies in the Showplace Square area are high, and with significant new growth predicted in this neighborhood. On-street parking in the Potrero Hill area is usually parallel to the street, and mostly unregulated. Several blocks with commercial stores have metered parking spaces.

Figure ES-6 Publicly Available Parking in the South of Market



	Paid	Customer	Permit	Motorcycle	General	Commercial	Unmetered	Total
Eastern SoMa Totals >>	4,817	225	673	57	954	174	2,350	**9,193**
Western SoMa Totals >>	2,468	1,370	847	58	693	95	2,525	**8,163**

Source: SFMTA SF*park* program

Key Issues and Opportunities for Parking

The following issues and opportunities will be evaluated in detail for further planning for changes to vehicle circulation in the study area:

- Almost 10,000 new units of housing are predicted in the Eastern Neighborhoods as a result of the Eastern Neighborhoods plans. Despite elimination of minimum parking requirements and the requirement for unbundled parking in parts of the plan area, most new housing will include some accessory parking, and vehicle ownership and trip generation rates may therefore be higher among new households than the existing population.
- High on-street parking occupancy can increase the likelihood of double parking, which creates obstacles for transit and vehicle circulation. SFMTA's SF*park* program will collect data on parking occupancies, double parking, and transit delays on key Eastern Neighborhoods streets.
- Through the SF*park* program, SFMTA will soon begin pilot tests of new meter technology and active parking management in three pilot areas in the Eastern Neighborhoods. If the pilot tests help to achieve transportation system goals as intended, the programs could be continued and expanded to other areas.
- Large areas of the South of Market and Showplace Square have high curb parking demand but lack parking meters. Particularly as the population of these areas grows, SFMTA could investigate expanding metered parking areas.
- Several residential districts in the study area have very high rates of parking occupancy. In at least one zone, peak occupancy regularly exceeds the legal supply of spaces. The SFMTA may investigate policy reforms to address parking availability in residential areas.
- Consistent with the Better Streets Plan, there may be opportunities in the Eastern Neighborhoods for the conversion of some curb parking to other uses such as landscaping; flexible uses such as temporary cafe seating; or to accommodate more pedestrian walking space, bicycle lanes and transit only lanes. The use of some existing curb parking capacity for other uses may become more feasible in the Eastern Neighborhoods once active parking management creates an appropriate balance between supply and demand.

Goods Movement *(for more information, see Chapter 5)*

The Eastern Neighborhoods Area Plans have one objective directly related to goods movement:

> **Objective 4.4:** Support the circulation needs of existing and new PDR uses in the Eastern Neighborhoods.

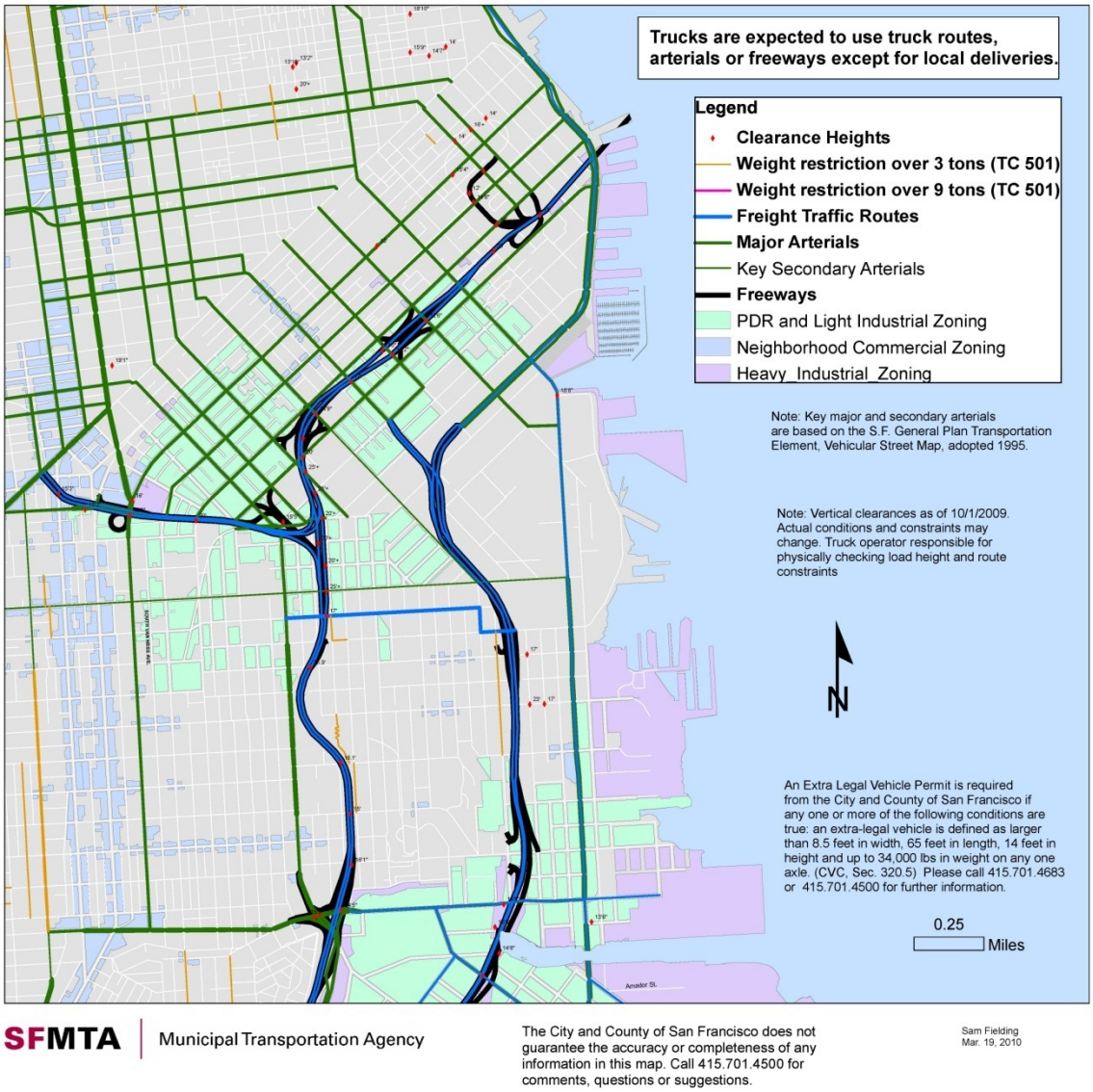
The movement of goods and services is an essential function of the transportation network citywide. However, it is an issue of even greater importance in the Eastern Neighborhoods, where not only retail businesses, but also heavy industry and production, distribution and repair (PDR) businesses are prevalent. A number of key issues were identified to help shape future recommendations for goods movement in the study area.

Light industry frequently shares space with residential and other commercial uses. The compatibility between these differing types of uses was a major focus of the Eastern Neighborhoods land use planning process. The land use categories created through the community planning process ensure that residents, visitors, and industrial businesses will continue to share space on Eastern Neighborhoods streets for the foreseeable future.

The streets of the Eastern Neighborhoods are subject to a number of regulations related to truck routes and truck weights. These regulations are designed to address the negative effects of truck travel on residents, while still accommodating the delivery needs of businesses. For example, vehicles weighing in excess of three tons (6,000 pounds) are prohibited on a few streets on Potrero Hill and in the western Mission. Truck movements are also physically restricted by clearances at grade-separated intersections, generally consisting of overpasses that are parts of Highways 101 and 280. In addition, The SFMTA and Port of San Francisco have designated all streets near the waterfront from Pier 50 in Mission Bay to Pier 96 just south of Islais Creek Channel as an "Overweight Corridor" where vehicles with a total weight of up to 46.5 tons (93,000 pounds) are permitted. This “corridor” is designed to facilitate the cargo distribution needs of Port properties.

There is a perceived shortage of loading and unloading space for delivery vehicles. These loading challenges are especially noticeable in dense neighborhood commercial corridors, such as Mission Street where there is both high demand for curbside parking and little off-street loading space.

Figure ES-7 SFMTA Advisory Truck Routes Map and Industrial/Commercial Zoning



Source: SFMTA

Key Issues and Opportunities for Goods Movement

The following issues and opportunities will be evaluated in detail for further planning for changes to goods movement in the study area:

- In areas with high parking occupancy, delivery vehicles struggle to find legal loading spaces. Additional loading spaces or time restrictions on deliveries may present opportunities to address this issue.
- In mixed-use districts, delivery trucks share space with passenger vehicles, pedestrians, and bicyclists. Street design in these areas will require careful attention to goods movement needs, while supplying the traffic calming and amenities necessary to provide safety and comfort for other users. Both street dimensions and curb design are important considerations.
- The City may wish to adjust designated truck routes in response to neighborhood and truck circulation needs. In addition, further enforcement of designated truck routes could occur. The City may also have the opportunity to increase awareness of designated truck routes using highly visible signage.
- South of Market streets are important corridors for goods movement, and any circulation changes in that neighborhood must consider the needs of trucks. A carefully considered strategy for freight management delivery in SoMa might dovetail with other efforts to prioritize different streets for different users, or to redesign streets to enhance mobility for all users. Such a strategy would reflect the long-term visions of the Western SoMa Community Plan and East SoMa Area Plan.

Shuttles, Taxis, and Car Sharing *(for more information, see Chapter 6)*

The Eastern Neighborhood Area Plans have one objective directly related to these alternative modes:

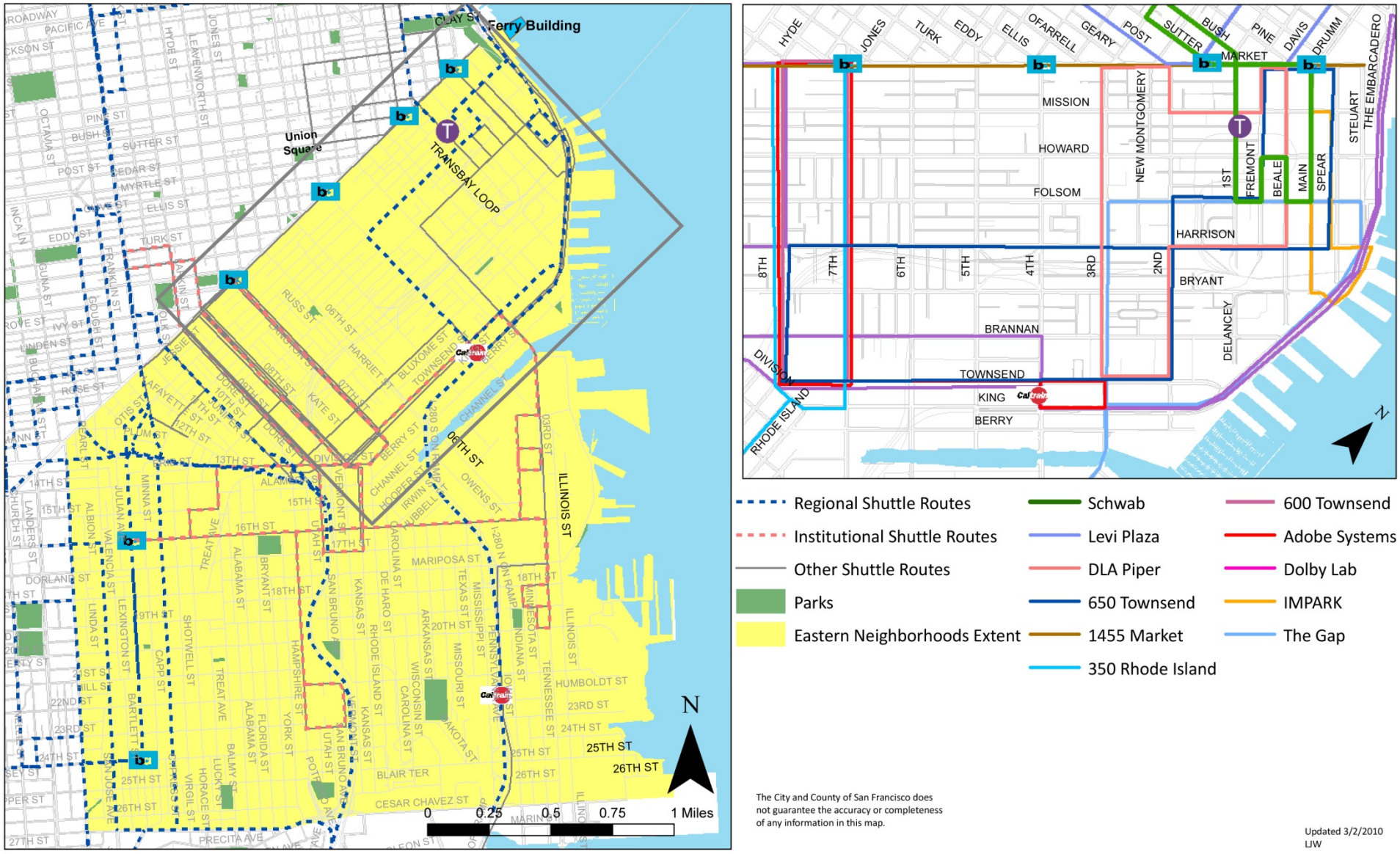
> **Objective 4.8:** Encourage alternatives to car ownership and the reduction of private vehicle trips.

There are a growing number of privately operated shuttle services in the study area, but primarily in the SoMa and Mission Bay neighborhoods. These services include “last mile” employer shuttle services, which offer the final connection to or from a passenger’s transit stop and place of employment. Other types of shuttle services are regional corporate shuttles and intra city institutional shuttles. The increase in private shuttle services can be attributed to a growth in employment centers and new residences in the SoMa and Mission Bay neighborhoods, as well as a reflection of the fact the local transit services and the bicycle and pedestrian network do not fully meet the needs of those living and working in this area. Second, the increasing prevalence of shuttle services has the potential to conflict with existing Muni service, especially in residential areas where curbside loading space is constrained.

Most taxi stands are concentrated on the Market Street, Third Street, and Fourth Street corridors in SoMa. A review of taxi stand locations revealed that there are few stands around the study area’s regional transit stops even though these stations have high walking mode shares.

Currently, there are two car share providers operating in San Francisco: City CarShare and Zipcar. In the Eastern Neighborhoods, both companies have several dozen dispersed pickup locations with higher concentrations of vehicles in certain neighborhoods. The vast majority of car share pods are located in the Mission and SoMa study areas along primary transit and commercial corridors. Conversely, there are a limited number of car share pods in the Potrero Hill/Showplace Square and Central Waterfront study areas. This finding is likely reflective of limited demand for such services given the area’s population density, land uses, and proximity to transit, but also higher car ownership rates and the relative ease with which can find a parking spot in these neighborhoods.

Figure ES-8 Eastern Neighborhoods Shuttle Systems



Key Issues and Opportunities for Shuttles, Taxis, and Car Sharing

The following issues and opportunities will be evaluated in detail for further planning for changes to these alternative modes in the study area:

- Shuttles can be in conflict with Muni buses at bus stops. In many areas, especially residential streets where curbside space is at a premium, shuttles will often use existing Muni bus stops to pick up or unload passengers. Such shuttle movements can delay Muni service, as well as create safety concerns with passengers potentially being dropped off or picked up outside of the bus zone. Increased enforcement of encroachment into Muni bus stop zones by private vehicles may be needed.
- Shuttles serving Downtown and South of Market destinations provide overlapping routes. Some of these shuttles may benefit from shuttle consolidation due to the overlapping nature of their routes and because many services operate below their full capacity, even during peak periods. However, consolidation may not be efficient or cost-effective for many existing operators.
- Most shuttle systems are private and do not offer transportation to the general public. It is possible that a consolidation effort that opened the service to all trips, not only private employer trips, could leverage additional growth for retail and other uses as opposed to office employees.
- Regional shuttles would benefit from the stop sharing and registration for purposes of coordinated service planning.
- New taxi stands may be warranted in high demand areas, especially around regional transit stations where stands do not currently exist.
- Decisions about the expansion and placement of car sharing vehicles are made by private entities, City Carshare and Zipcar. However, the City may be able to assist in providing car sharing parking spaces if high-need areas are identified.

Major Study Themes

Chapters 2-6 of this report catalog existing transportation needs in the Eastern Neighborhoods by neighborhood plan area and by mode of transportation. From this assembled information, a group of core themes emerge as issues and opportunities for the study area as a whole. These findings reinforce and build upon the major transportation needs identified through the Eastern Neighborhoods Area Plans. It should be noted that these themes address existing issues without regard to the impact of changing land uses, which will be explored in subsequent tasks. However, in most cases, changing land uses are most likely to exacerbate existing conditions.

1. **Built and operated to accommodate high volumes of regional traffic, the major arteries in the South of Market area present challenges for pedestrian and transit rider comfort.** *There are opportunities to create more livable streets in SoMa while maintaining the grid's role in regional transportation.*

   The types of transportation investments needed to make the South of Market more liveable are easy to recognize: narrower streets and wider sidewalks; more frequently spaced street crossings; transit-only lanes to speed buses; landscaping and pedestrian scale lighting would all make a difference. However, there is a tension between these needs and the SoMa street grid's role in the regional transportation system, distributing traffic from the Bay Bridge to downtown and to the rest of San Francisco. While congestion management strategies such as congestion pricing or smart parking management may one day help to reduce Bay Bridge traffic volumes, the SoMa grid will continue to receive high traffic volumes for the foreseeable future. In selecting pedestrian priority investments in the South of Market, potential impacts on regional auto circulation and local transit service must be carefully considered. Examples of projects that may address this issue include:

   - Several major planning efforts for the South of Market have considered or recommended conversion of Folsom Street from a one-way street to a "civic boulevard" that prioritizes the needs of pedestrians and/or transit. Zoned for neighborhood commercial uses in the Eastern Neighborhoods area plans, designated for transit priority improvements in the TEP, and sufficiently far from the Bay Bridge approaches, Folsom Street presents an opportunity to carve out significant pedestrian space.
   - As fast-moving, auto-oriented one-way corridors in the western South of Market, that currently carry somewhat lower vehicle volumes than adjacent streets, Seventh and Eighth streets may also present an opportunity for improvements.
   - SoMa's alleys currently serve as refuge from the larger arterials. This function could be enhanced with the addition of public realm improvements in the alleys themselves, or with mid-block crossings where the alleys intersect with arterials.

2. **Even in designated transit-priority corridors, Muni's most important routes operate relatively slowly.** *Transit priority investments and operational adjustments will be crucial to maintaining and enhancing the performance of the overall transportation system.*

   Local bus services fill an essential role in the Eastern Neighborhoods, bridging the gap between shorter trips that can be well-served by improvements to pedestrian and bicycle infrastructure and the longer trips that will be served by improvements to regional transit infrastructure. Transit-priority treatments can be relatively inexpensive and incremental in nature; yet the cumulative impact of many small changes over the course of a route can be substantial. The Transit Effectiveness Project set a goal of 15 to 20 percent improvement in travel times for Muni's busiest routes using measures such as transit lanes (continuous or "queue jumps" at intersections), traffic signal priority, "bulb-out" sidewalk extension stops, and a policy of "proof-of-payment" all-door boarding at major stops facilitated by ticket vending machines. Major stops might also offer an enhanced level of passenger amenity and improved multimodal access, including bicycle lockers. Stop consolidation could also benefit many routes.

   In constrained rights-of-way, transit priority can negatively impact other vehicles. Buses may stop in travel lanes, may be provided with priority at signals, or may be given their own lanes. These measures can impact not just autos, but delivery vehicles, and balancing the competing needs of transit riders and other users can be challenging. City policy, however, is clear: San Francisco is a "transit-first city" in which transit and non-motorized modes are to be prioritized in decisions related to allocation of rights-of-way. Examples of transit-priority corridor improvements may include:

   - 16th Street is one of the City's highest-priority transit corridors. The 22-Fillmore is one of Muni's busiest routes, part of the TEP Rapid Network of trunk lines, and provides important connections within the Eastern Neighborhoods between the 16th Street Mission BART station, Showplace Square and, pending a proposed realignment, Mission Bay. It is also a relatively wide street, and one on which little has been done to date to speed transit operations.

   - Mission Street is the City's second-busiest transit corridor, after Market Street. Three major bus routes – the 14-Mission, 14L-Mission Limited, and 49-Van Ness/Mission – utilize the street. Mission is a busy street for all users, with high volumes of pedestrian traffic and a continuous strip of retail that requires access for autos and delivery vehicles. It is a street on which vehicles often double-park, requiring electric trolleybuses to navigate past them without going "off-wire." It has also already been the site of limited transit-priority treatments, including a series of bulb stops.

3. **The regional-scale rail service investments planned for the Eastern Neighborhoods create both opportunities and challenges.** *To realize maximum benefit and mitigate negative impacts, there will be a need for complementary smaller-scale investments near stations and along rail corridors.*

While the Eastern Neighborhoods stand to benefit greatly from the increased access to be provided by Muni's Central Subway, the Downtown Rail Extension and California High-Speed Rail, these projects also create challenges for the neighborhoods where they will be built. Local transit and people walking or biking must be able to come and go in large numbers from the station. The project will create new barriers between communities. Examples of this type of challenge include:

- With the downtown rail extension, the 4th & King Station will be transformed from a commuter rail terminus providing local connections to the Financial District to a major regional and local transit hub. This transformation will place increased demands on the surrounding area, including an increased demand for high-quality pedestrian access. For example, there are currently no sidewalks along Townsend Street to the west of the station, leading toward Showplace Square.
- Transit and pedestrian access to the new Transbay Transit Center from the Eastern Neighborhoods will likewise be an important issue.
- Along with Interstate 280, the existing Caltrain right-of-way forms a barrier between the Mission Bay and Showplace Square neighborhoods. Upgrading of the Caltrain corridor to accommodate high-speed rail service would require grade-separation of all intersections. Redesign of the right-of-way could provide an opportunity to improve connectivity between Mission Bay and neighborhoods to the west.

4. **In sub-neighborhoods throughout the Eastern Neighborhoods plan area, the public realm could benefit from additional investment.** *Streetscape improvements can help improve the quality of life for residents, workers, and visitors.*

   Streetscape improvement opportunities are particularly apparent in the transitioning industrial areas, where pedestrian facilities may simply be lacking at present. Notable opportunities include:

   - The eventual build-out of the Central Waterfront's pedestrian grid in coordination with private development, and the completion of the Blue-Greenway could help open the City's eastern Waterfront to public enjoyment.
   - Even in established residential neighborhoods such as Potrero Hill and the southern parts of the Mission, recent community planning efforts have catalogued needed pedestrian and traffic-calming improvements. Continued efforts by diverse City agencies will be required to ensure that these projects are implemented.

5. **Physical and visual obstacles such as elevated freeways, railroad tracks, wide arterials, and natural barriers divide neighborhoods.** *In some cases, transportation projects can help to mitigate these barriers.*

   Steep hillsides (in particular, both the eastern and western slopes of Potrero Hill), freeways (Interstates 80 and 280 and U.S. 101, including the Central Freeway), and the

Caltrain tracks and yard north of 16th Street both define and divide the Eastern Neighborhoods. Freeways, in particular, can serve as barriers not just along the mainline roadway but at the touchdown points where on- and off-ramps intersect with the surface street grid, and where pedestrian crossings are often prohibited or problematic. The Bay Bridge Approach, as previously noted, is porous – yet the viaduct is a wide structure that casts long shadows and degrades the pedestrian environment. Between Beale and 2nd Streets, it forms a wall between the Rincon Hill and South Beach neighborhoods. The surface grid itself can also sometimes serve as a barrier where streets are especially wide, blocks are especially long and pedestrian paths are limited, as is the case throughout SoMa. Opportunities to address neighborhood barriers may include:

- Grade-separated crossings of the Caltrain right-of-way will be required, both for pedestrians and for transit.
- Signalized crossings of 16th Street could help to draw Potrero Hill and Showplace Square closer together.
- Intersection improvements may help to mitigate the effect of freeway ramps in the South of Market.

6. **The Eastern Neighborhoods remain the industrial heart of San Francisco.** *Even as neighborhoods change, the heavy and light industry businesses that provide nearly 30,000 jobs in Eastern Neighborhoods plan areas will continue to require delivery trucks of all kinds.*

   Accommodation of freight deliveries over highways and local streets is an economic imperative for the City. In districts that are transitioning from traditional industrial areas to mixed-use neighborhoods, including much of South of Market, the northeastern Mission, Showplace Square and the Central Waterfront, resolution of tensions between established users and new residents can require a delicate balancing act of competing concerns. Attention may be required to:

   - Establish truck routes and loading/unloading time of delivery policies that work well for business while minimizing negative impacts.
   - Design streets in emerging mixed-use industrial areas that provide a safe and attractive public realm without restricting the ingress and egress of trucks.

As EN TRIPS proceeds to future conditions analysis, an understanding of these study area-wide challenges will guide project development.

Chapter 1. Introduction

1.1 Summary

This document presents the Existing Conditions analysis for the Eastern Neighborhoods Transportation Planning and Implementation Study (EN TRIPS). EN TRIPS will develop transportation infrastructure improvements to serve the existing and projected needs of San Francisco's Eastern Neighborhoods, as envisioned by the Eastern Neighborhoods Area Plans, which were adopted by the San Francisco Board of Supervisors in 2009. The study area of EN TRIPS includes not only the Eastern Neighborhoods themselves (the Mission District, Eastern South of Market, Potrero Hill/Showplace Square, and the Central Waterfront), but also surrounding planning districts (Mission Bay, the Transbay District, and Western South of Market) that share key transportation corridors with Eastern Neighborhoods.

As the first work product of EN TRIPS, this Existing Conditions report establishes a baseline understanding of transportation conditions in the study area. It builds on the analysis conducted for the Eastern Neighborhoods Land Use Plans, developing a more in-depth understanding of current conditions, existing gaps in the transportation network, and potential opportunities to improve the system. Based on this information, this report designates important transportation corridors of interest for the remainder of the study.

Following publication of this report, the Eastern Neighborhoods project team will develop a future conditions analysis that evaluates the impact of projected growth in the study area on the transportation system. In collaboration with community stakeholders, the project team will then recommend, design, and develop implementation plans for priority transportation improvements.

1.2 Background: Introduction to the Eastern Neighborhoods Community Planning Process

San Francisco's Eastern Neighborhoods are made up of the diverse communities of the Mission, Eastern South of Market, Central Waterfront, and Showplace Square/Potrero Hill. A community planning process was initiated for these areas in 2001 with the goal of developing new zoning controls for the industrial portions of these neighborhoods. As home to much of the city's industrial land supply, the transformation of these neighborhoods over the last 15 years has resulted in growing land use conflicts. Housing, offices, and the shops and services catering to them were competing for land with industrial businesses. The Eastern Neighborhoods Plans were conceived as a means to address inevitable change in the four most affected neighborhoods.

The planning process sought to determine how much industrial land to preserve and how much could be transitioned to a mix of uses, including housing. Discussions focused on both where and how the transition to liveable mixed-use neighborhoods would occur. The planning process was then expanded to address other issues critical to creating "complete neighborhoods," in both transitioning and stable areas. The Planning Department worked with neighborhood stakeholders

to create Area Plans for each neighborhood.[1] These Area Plans contain holistic visions for each neighborhood in the areas of affordable housing, transportation, parks and open space, urban design, and community facilities. Adopted in early 2009, the Eastern Neighborhoods Community Plans call for up to 10,000 units of transit-oriented housing (market-rate and affordable) and 13,000 new jobs over the next 20 years. They also call for the public amenities needed to support this growing population, including parks, community facilities, and transportation.

The Eastern Neighborhoods Area Plans identify at a high level the types of infrastructure improvements necessary to enhance livability, enable development intensity, and serve these changing neighborhoods. The transportation investments envisioned in the Plans are designed to support integrated, mixed use, transit-rich neighborhoods. The Plans recommend linking new housing and jobs to local and regional transit, redesigning industrial streets to enhance livability for pedestrians and bicyclists, and providing new traffic signals, street improvements, and loading areas to ensure industrial businesses continue to thrive. There are ten specific objectives for transportation included in the Eastern Neighborhoods Area Plans. They are:

- Objective 4.1: Improve public transit to better serve existing and new development in the Eastern Neighborhoods.
- Objective 4.2: Increase transit ridership by making it more comfortable and easier to use.
- Objective 4.3: Establish parking policies that improve the quality of neighborhoods and reduce congestion and private vehicle trips by encouraging travel by non-auto modes.
- Objective 4.4: Support the circulation needs of existing and new Production Distribution and Repair uses in the Eastern Neighborhoods.
- Objective 4.5: Consider the street network in the Eastern Neighborhoods as a city resource essential to multi-modal movement and public open space.
- Objective 4.6: Support walking as a key transportation mode by improving pedestrian circulation within east soma and to other parts of the city.
- Objective 4.7: Improve and expand infrastructure for bicycling as an important mode of transportation.
- Objective 4.8: Encourage alternatives to car ownership and the reduction of private vehicle trips.
- Objective 4.9: Facilitate movement of automobiles by managing congestion and other negative impacts of vehicle traffic.
- Objective 4.10: Develop a comprehensive funding plan for transportation improvements.

[1] The adopted Eastern Neighborhoods Area Plans can be found on the SF Planning Department web site: http://www.sf-planning.org/index.aspx?page=1673

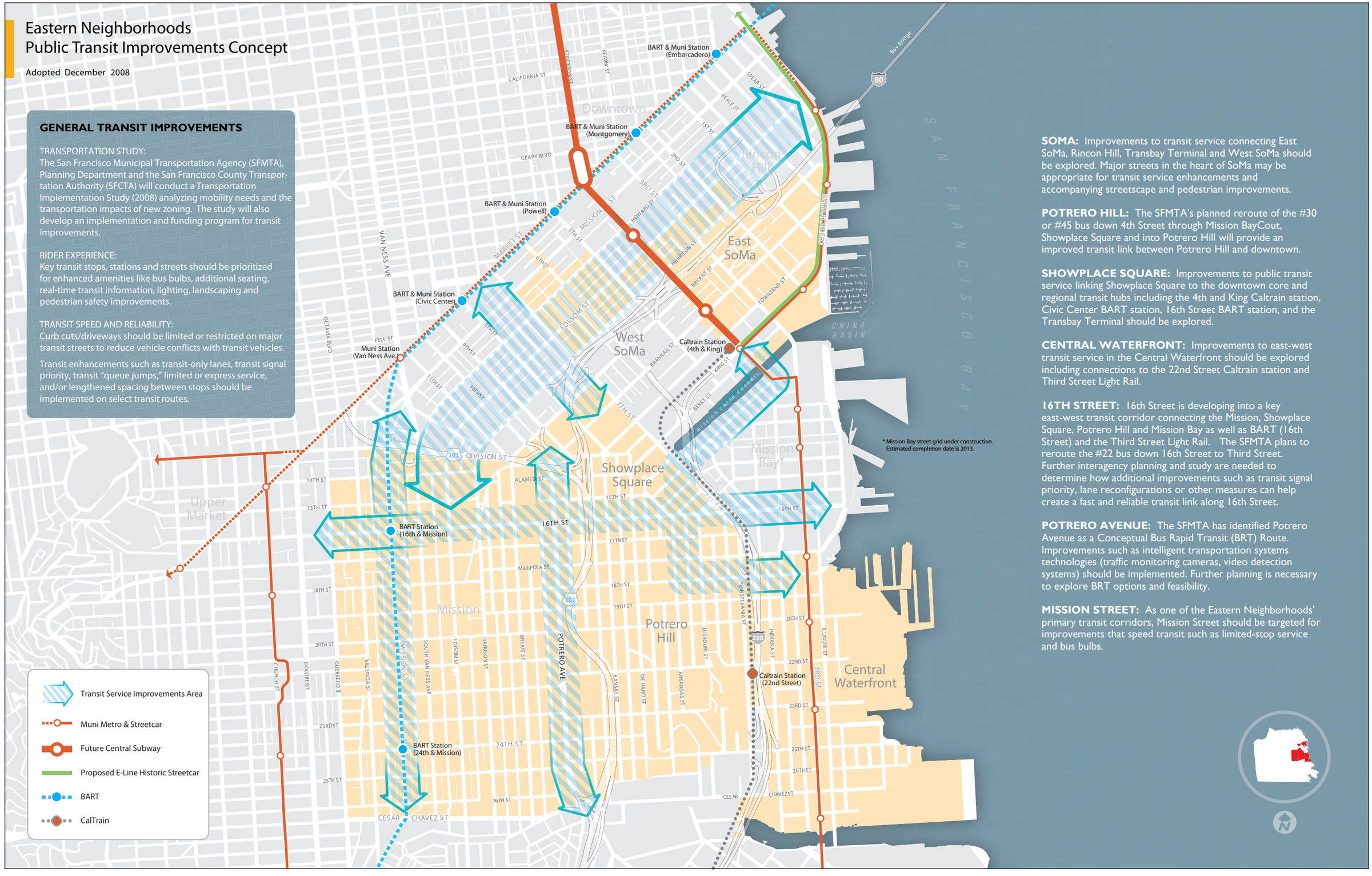
Figure 1-1 illustrates the Eastern Neighborhoods plan areas. Figure 1-2 and 1-3 illustrate the corridors identified by the Area Plans for transit improvements. Figure 1-3 illustrates the areas that the plan designates for pedestrian, bicycle, and traffic-calming investments.

The transportation concepts illustrated in figures 1-2 and 1-3 were proposed as part of the Eastern Neighborhoods land use plans, and reflect the needs identified through the community planning process. While the concepts will inform the initial phases of project development and prioritization, EN TRIPS will conduct a more detailed evaluation of current and future transportation needs and project feasibility than was carried out for the land use planning process. As result of this analysis EN TRIPS may develop these concepts further, refine them, or replace them.

Figure 1-1 Eastern Neighborhoods Study Area

Source: San Francisco Planning Department

Figure 1-2 Eastern Neighborhoods Area Plans Transit Concepts



SOMA: Improvements to transit service connecting East SoMa, Rincon Hill, Transbay Terminal and West SoMa should be explored. Major streets in the heart of SoMa may be appropriate for transit service enhancements and accompanying streetscape and pedestrian improvements.

POTRERO HILL: The SFMTA's planned reroute of the #30 or #45 bus down 4th Street through Mission BayCout, Showplace Square and into Potrero Hill will provide an improved transit link between Potrero Hill and downtown.

SHOWPLACE SQUARE: Improvements to public transit service linking Showplace Square to the downtown core and regional transit hubs including the 4th and King Caltrain station, Civic Center BART station, 16th Street BART station, and the Transbay Terminal should be explored.

CENTRAL WATERFRONT: Improvements to east-west transit service in the Central Waterfront should be explored including connections to the 22nd Street Caltrain station and Third Street Light Rail.

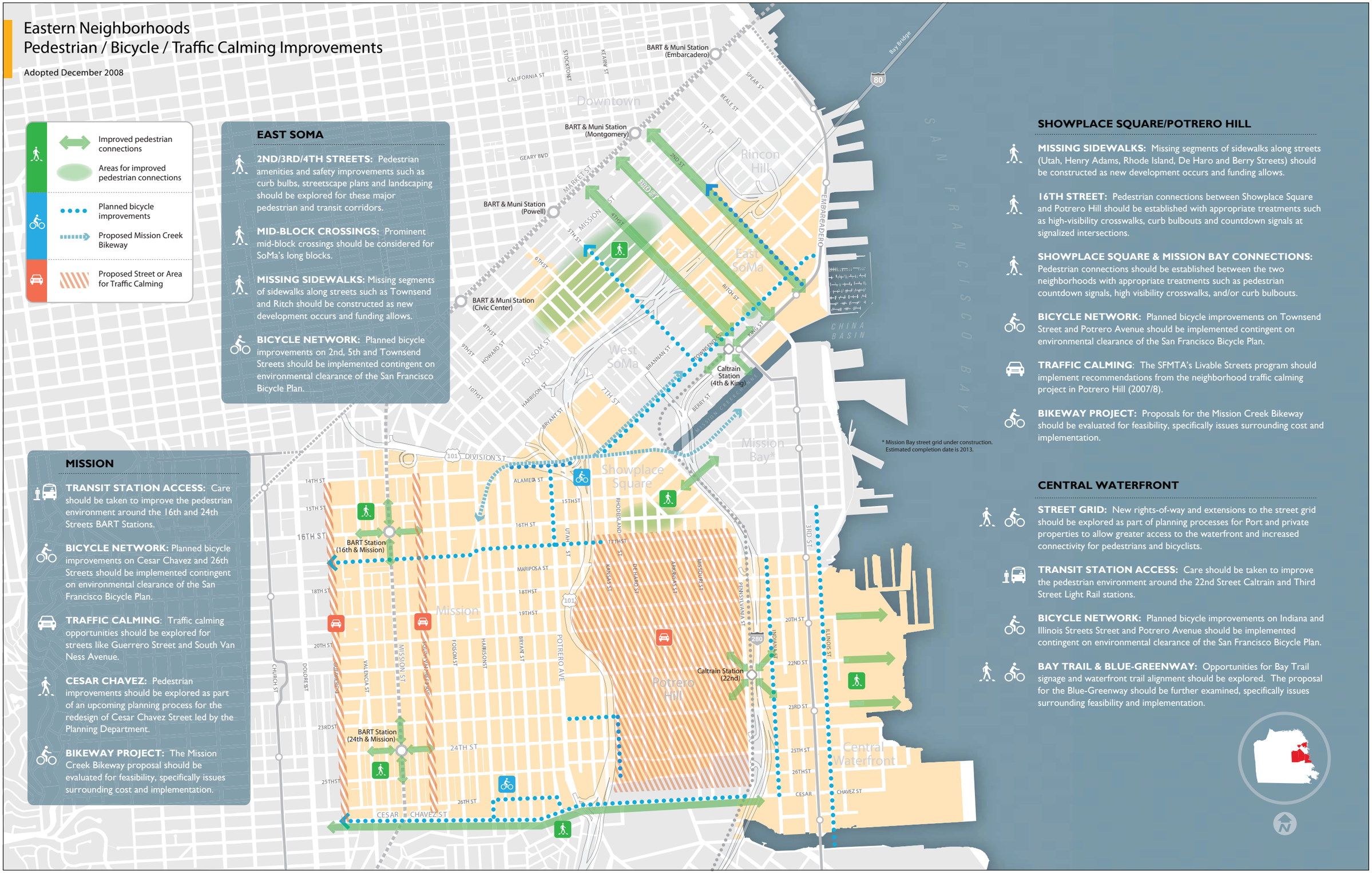
16TH STREET: 16th Street is developing into a key east-west transit corridor connecting the Mission, Showplace Square, Potrero Hill and Mission Bay as well as BART (16th Street) and the Third Street Light Rail. The SFMTA plans to reroute the #22 bus down 16th Street to Third Street. Further interagency planning and study are needed to determine how additional improvements such as transit signal priority, lane reconfigurations or other measures can help create a fast and reliable transit link along 16th Street.

POTRERO AVENUE: The SFMTA has identified Potrero Avenue as a Conceptual Bus Rapid Transit (BRT) Route. Improvements such as intelligent transportation systems technologies (traffic monitoring cameras, video detection systems) should be implemented. Further planning is necessary to explore BRT options and feasibility.

MISSION STREET: As one of the Eastern Neighborhoods' primary transit corridors, Mission Street should be targeted for improvements that speed transit such as limited-stop service and bus bulbs.

Source: San Francisco Planning Department

Figure 1-3 Eastern Neighborhoods Area Plans Bicycle and Pedestrian Concepts



Source: San Francisco Planning Department

1.3 Introduction to EN TRIPS

In order to implement the transportation vision established in the Eastern Neighborhoods Area Plans, the City is undertaking a supplementary transportation planning effort. This project, known as the Eastern Neighborhoods Transportation Implementation Planning Study (EN TRIPS), will address future transportation impacts of expected growth by identifying, designing, and seeking funding for transportation infrastructure projects timed to support growth in the Eastern Neighborhoods in the next 20 years. EN TRIPS is a coordinated multi-agency partnership led by the San Francisco Municipal Transportation Agency (SFMTA) with the San Francisco Planning Department (Planning Department) and the San Francisco County Transportation Authority (SFCTA).

Specifically, EN TRIPS will accomplish the following:

1. Perform technical analysis to determine existing and future circulation needs based on land use growth/change.
2. Select critical transportation projects.
3. Determine conceptual designs for projects.
4. Environmentally clear select projects.
5. Develop funding and implementation strategy.

It is important to note that EN TRIPS will not design and fund infrastructure projects to address all of the existing and future transportation infrastructure needs in the study area. The City is currently undertaking numerous ongoing planning processes that address a variety of transportation needs across this large and diverse part of the city. Instead, EN TRIPS will seek to identify and advance the highest priority transportation needs for the study area that are unlikely to be met through other projects.

Among the transportation corridors that EN TRIPS will evaluate in detail will be those specified as priority corridors through the Eastern Neighborhoods Area Plans adoption process. In adopting the Plans, the San Francisco Board of Supervisors identified a short list of Eastern Neighborhoods Early Start Capital Projects deemed critical to support the existing and future transportation and open space infrastructure needs of the Eastern Neighborhoods. Three of these Eastern Neighborhoods Early Start Capital Projects are related to transportation. The following key project corridors project will be analyzed in detail by EN TRIPS:

- *Folsom Street Redesign/South of Market Circulation Improvements*: The Eastern Neighborhoods Area Plans call for redesigning Folsom Street as a “civic boulevard” to serve as a major neighborhood commercial street in the South of Market. In analyzing the Folsom Street corridor, the project will evaluate proposals for SoMa grid circulation changes, sidewalk widening, midblock signals, adding additional traffic signals, additional pedestrian signals, roadway restriping, and/or transit trolley line infrastructure. The project may also evaluate the need for redesign of parts of the surrounding street grid, including such streets as Howard Street, Seventh Street, Eighth Street, and possibly others.

- *16th Street Corridor Transit Improvements*: As a significant east-west corridor through the Eastern Neighborhoods, 16th Street is a critical street for transit as well as all transportation modes. EN TRIPS will evaluate ways to improve transit access on 16th Street. The project may provide design assistance with the 16th Street Caltrain crossing to allow for the 22-Fillmore trolley extension project to Mission Bay. Possible related proposals may include providing enhanced transit connections and circulation between Mission Bay and adjacent areas, such as Potrero Hill and Showplace Square with potential new east-west street alignments. Transit preferential street improvements (such as transit only lanes, bus bulbs, signal priority treatment) and streetscape treatments to 16th Street will also be considered.
- *Townsend Street Pedestrian Improvements*: Townsend Street (between Fourth and Seventh Streets) provides important access to the Fourth and King Caltrain Station. Currently, Townsend Street is an unaccepted street with inadequate pedestrian infrastructure. The future Caltrain extension to downtown provides an opportunity to not only rebuild Townsend to accepted standards, but to also implement a redesign of Townsend to make this a more pedestrian-oriented street.

In addition to detailed evaluation of these corridors, EN TRIPS will also evaluate the need for transportation investments in other key project corridors that are highest priority for advancing the transportation vision in the Eastern Neighborhoods Area Plans. Transportation needs not identified as the highest priority and advanced to the design stage by the EN TRIPS project team will instead be advanced by other City transportation planning efforts as resources allow. For this category of project, EN TRIPS will identify needed improvements and recommend the appropriate avenue for further development. Finally, EN TRIPS may examine and make recommendations for key transportation policy issues in the Eastern Neighborhoods, including parking, transportation demand management, and private shuttle service coordination.

1.4 Introduction to the EN TRIPS Existing Conditions Report

As the first work product for EN TRIPS, this Existing Conditions Report establishes a baseline understanding of transportation conditions in the study area. It builds on the analysis conducted for the Eastern Neighborhoods Land Use Plans, developing a more detailed picture of current conditions.

Chapter 2 reviews the context for transportation planning in the Eastern Neighborhoods. It describes the important City policies that guide transportation planning for the area, catalogs ongoing studies and transportation projects that affect the project area, reviews population and employment conditions, illustrates recent development trends, and highlights existing travel behaviors.

Chapters 3, 4, 5, and 6 review the performance of existing facilities for each mode of transportation in the Eastern Neighborhoods, as well as ongoing and proposed projects for each mode. They also note network gaps and opportunities for improvement in each mode. *Chapter 3*

reviews transit, focusing on Muni service. *Chapter 4* reviews motor vehicle conditions and impacts. It provides an overview of the City's primary vehicle network, presents a detailed analysis of intersection level of service in the South of Market and on 16th Street, and then reviews the policy environment for vehicle parking and goods movement. *Chapter 5* reviews conditions for non-motorized transportation in the Eastern Neighborhoods, including pedestrian and bicycle travel. Finally, Chapter 6 summarizes the specialized transportation services, shuttle service, taxis, and car sharing, that supplement and fill gaps in the above primary networks.

Chapter 7 presents a framework that will be used to evaluate the transportation system in the Eastern Neighborhoods, and it describes next steps for EN TRIPS.

Because future growth will be evaluated in an upcoming deliverable, the analysis is focused on near-term needs and may or may not be modified in light of the future conditions analysis. Following this report, the Eastern Neighborhoods project team will develop a future conditions analysis that evaluates the impact of projected growth in the study area on the transportation system. The project team will then work with community stakeholders to develop recommended transportation improvements.

Chapter 2. Context

This section describes the policies, existing transportation infrastructure, and ongoing planning processes that make up the context for EN TRIPS.

2.1 Policy and Planning Context

The goals and policies outlined in the Eastern Neighborhoods Area Plans provide guidance to the EN TRIPS project. In addition, other City plans and policies provide extensive input to EN TRIPS. The Transportation Element of the San Francisco General Plan establishes the overall framework for the transportation system in San Francisco. The plan addresses regional transportation, congestion management, vehicle circulation, transit, pedestrians, bicycles, parking, and goods movement. The modal networks identified in the General Plan are illustrated in the modal sections of Chapter 3 of this report.

The primary policy governing allocation of transportation rights-of-way and resources in the City and County of San Francisco is the Transit-First Policy, Section 8A.115 of the City Charter. Introduced in 1973 and revised by voters in 1999, the Transit-First Policy also addresses non-motorized modes, and includes 10 principles intended to guide decision-making processes related to prioritization of transportation resources. These are:

1. To ensure quality of life and economic health in San Francisco, the primary objective of the transportation system must be the safe and efficient movement of people and goods.
2. Public transit, including taxis and vanpools, is an economically and environmentally sound alternative to transportation by individual automobiles. Within San Francisco, travel by public transit, by bicycle and on foot must be an attractive alternative to travel by private automobile.
3. Decisions regarding the use of limited public street and sidewalk space shall encourage the use of public rights of way by pedestrians, bicyclists, and public transit, and shall strive to reduce traffic and improve public health and safety.
4. Transit priority improvements, such as designated transit lanes and streets and improved signalization, shall be made to expedite the movement of public transit vehicles (including taxis and vanpools) and to improve pedestrian safety.
5. Pedestrian areas shall be enhanced wherever possible to improve the safety and comfort of pedestrians and to encourage travel by foot.
6. Bicycling shall be promoted by encouraging safe streets for riding, convenient access to transit, bicycle lanes, and secure bicycle parking.
7. Parking policies for areas well served by public transit shall be designed to encourage travel by public transit and alternative transportation.
8. New transportation investment should be allocated to meet the demand for public transit generated by new public and private commercial and residential developments.

9. The ability of the City and County to reduce traffic congestion depends on the adequacy of regional public transportation. The City and County shall promote the use of regional mass transit and the continued development of an integrated, reliable, regional public transportation system.

10. The City and County shall encourage innovative solutions to meet public transportation needs wherever possible and where the provision of such service will not adversely affect the service provided by the Municipal Railway.

The Transit-First Policy is designed to encourage a multimodal or "complete streets" approach to design of the City's public rights-of-way, including "transit-priority" treatments meant to improve transit speed, reliability, and amenity for passengers.

The Countywide Transportation Plan, created by the San Francisco County Transportation Authority and published in July 2004, is the City's blueprint for funding transportation system development and investment over the next thirty years. The Countywide Transportation Plan further develops and implements General Plan principles by identifying necessary transportation system improvements based on technical review of system performance, extensive public input on key issues and needs, and analysis of financial opportunities and constraints.

City agencies have also developed a small group of major program documents that serve as both action-plans and implementation programs for broad areas of current transportation system development in the City. These are:

- **The Better Streets Plan**. The Better Streets Plan, initiated by the San Francisco Planning Department, establishes principles for the design of streets in San Francisco. EN TRIPS will adhere to these principles in both the design and analysis phases of the project.

- **The Transit Effectiveness Project (TEP).** TEP is a comprehensive audit of Muni service based on extensive data collection and community comment. Its final recommendations included numerous proposals to change routes and frequencies of service, as well as a package of proposed capital investments. TEP recommendations, through not yet fully implemented, will form the baseline for EN TRIPS transit system analysis and development.

- **San Francisco Bicycle Plan.** The bicycle plan is the SFMTA's principal document for guiding bicycle facilities. The near term projects specified in the bike plan will be considered the baseline bicycle network for EN TRIPS.

- **SF*park*.** SF*park* is the SFMTA's parking management program. The purpose of the program is to develop and implement a set of strategies to ensure that the City's on- and off-street parking system will be safe, convenient, response, accountable, and cost-effective.

- **SFgo.** SFgo is the SFMTA's program for real-time traffic management. It allows for dynamic management of signal timing, traffic incident response, real-time traffic information for drivers, and other strategies.

Ongoing Plans and Projects

Within the framework of these overarching policies and programs, numerous planning efforts are working to improve transportation in the Eastern Neighborhoods. Planning efforts range from traffic-calming projects on individual alleyways to redevelopment plans for whole neighborhoods. These efforts are being lead by a diverse group of agencies, including SFMTA, SFCTA, the Department of Public Works, the San Francisco Redevelopment Agency, and others. Each of these plans and projects is described in more detail in the appropriate modal or geographic section of this report. Ongoing planning efforts are also cataloged in full in Appendix A.

2.2 Study Areas

This section briefly describes the neighborhoods that make up the EN TRIPS study area, including notable transportation facilities and services, and ongoing plans and pipeline projects. Detailed discussion of transportation facilities by mode follows in Chapters 3-6.

The EN TRIPS study area, identified in Figure 2-1, is roughly bounded by Market Street, Guerrero Street, Cesar Chavez, and the San Francisco Bay. It includes the Eastern Neighborhood Plan areas themselves (the Eastern South of Market [SoMa], Mission Bay, Showplace Square, Mission, Potrero Hill, and Central Waterfront neighborhoods) and a group of districts that were not included in the Eastern Neighborhoods Plans, but share important transportation corridors with the Eastern Neighborhoods. These are the Market Street corridor, the Transbay District, Rincon Hill, the Western South of Market, and Mission Bay. The EN TRIPS project will focus on addressing the transportation needs of the Mission, Potrero Hill/Showplace Square, Central Waterfront, and the South of Market (with the South of Market broadly defined to include both Eastern and Western SoMa), but it will take into account existing and future projected conditions in the neighboring districts. The neighborhoods are described below.

Figure 2-1 Eastern Neighborhoods Study Area

Eastern Neighborhoods Plan Areas

South of Market

The South of Market (SoMa) has historically been an industrial area, due in part to its proximity to the San Francisco ports. Currently, the neighborhood has a mix of uses, including commerce, entertainment and living space. Most non-residential buildings are used as small office, production, distribution, and repair (PDR) spaces. These line the arterial roadways in the neighborhood. There are also low- and mid-rise housing units that are generally found in small alleys. SoMa is also the point at which vehicle traffic enters San Francisco from Interstate 80. Pedestrians, bicycles, and transit vehicles share streets with trucks and freeway traffic. Wide one-way streets like Howard, Folsom, Harrison, and Bryant carry fast moving vehicles, while pedestrians walk long blocks and narrow residential side streets and alleys. The streets throughout SoMa are primarily vehicle-oriented and present a variety of pedestrian and bicycling safety and circulation challenges.

The portion of the South of Market that was included in the Eastern Neighborhoods Land Use planning process is known as East SoMa. It includes the area that is bordered roughly by the Embarcadero and spans westward toward Seventh Street. Most of the existing transit service in East SoMa is designed to provide access to the downtown area and Market Street via north-south lines. Service is also provided to connect East SoMa with Mission Bay and the Third Street corridor. On the far eastern side of the neighborhood, the Giants baseball stadium and the Caltrain Station at Fourth and King Streets draw high volumes of transit riders, pedestrians, and bicyclists.

Another section of the neighborhood, known as Western SoMa is defined as the area between Fourth and 12th Streets and Howard and Townsend Streets. Western SoMa has a mix of uses, including commerce, entertainment, and living space. Most non-residential buildings are used as small office, production, distribution, and repair (PDR) spaces; these line the arterial roadways in the neighborhood. There are also low- and mid-rise housing units that are generally found in small alleys and along some arterials. With the participation of the San Francisco Planning Department, the Western SoMa Citizens Planning Task Force has developed a land use plan for this area that is separate from the Eastern Neighborhoods plan. Because they share important transportation corridors and have many of the same challenges and opportunities, East and West SoMa will be evaluated jointly by EN TRIPS.

Mission

The Mission District is roughly bordered by Guerrero Street to the west, Cesar Chavez Street to the south, Potrero Ave to the east and US-101 to the north. The Mission is mixed-use in nature, combining residential units with commercial, industrial, and retail uses. While small retail shops are found throughout the neighborhood, a group of production, distribution, and repair business and facilities are located mostly in the north-east portion of the neighborhood. These include auto repair shops, wholesale distributors, lumber yards, and supply stores, among other uses.

The district's dense built environment and mix of housing and retail make walking, bicycling, and public transit attractive and supports the district as a high-volume transportation node. Abundant

transit options (local and regional), vibrant, pedestrian-scale commercial corridors (Mission Street, Valencia Street, and 24th Street), and a popular network of relatively flat bicycle lanes and routes make the Mission accessible by all modes. Those making regional trips by private vehicle have easy access to US-101 via on and off ramps that touch the Mission in various locations. As with many other residential neighborhoods in San Francisco, the balance between parking supply and demand remains a significant challenge in this district. The Mission's several Muni lines and two BART stations make it an important local and regional transit hub.

Central Waterfront

The Central Waterfront is bounded roughly by Interstate 280 on the west, Islais Creek to the south, and Mariposa Street to the north. Its dominant land uses are PDR businesses in low-rise structures, and maritime activities are centered on the San Francisco Dry Dock and Pier 80. A small number of housing units are finely integrated with the PDR businesses. The low residential density supports little neighborhood commercial activity; however, a small shopping corridor exists on 22nd Street. Bolstered by the recent completion of the Muni Third Street Light Rail as well as nearby Mission Bay development, the neighborhood is gradually accommodating an increased amount of mixed-use development.

Due to the Central Waterfront's history as an industrial and maritime district, it has limited pedestrian facilities, an incomplete street grid, limited waterfront access, and high volumes of truck traffic. However, the completion of the Third Street Light Rail and related street upgrades like pedestrian countdown signals and new curb ramps along Third Street have helped to upgrade the environment for pedestrians and bicyclists.

Showplace Square and Potrero Hill

Showplace Square and Potrero Hill are adjoined neighborhoods grouped into one plan area for the Eastern Neighborhoods Area plan process. This study area is bordered roughly by Potrero Avenue on the west, Interstate 280 on the east, Seventh Street /Bryant Street, on the north, and 26th Street on the south. Despite their close proximity to one another, Showplace Square and Potrero Hill present quite different transportation issues.

Showplace Square has traditionally been a PDR hub for interior design and furniture manufacturing. Following the adoption of the Eastern Neighborhoods Plans, this area is poised for significant growth. Potrero Hill is an established residential area with commercial corridors on 18th and 20th Streets.

Neighboring Districts

The following districts are adjacent to and share corridors with the Eastern Neighborhoods. In seeking to address the transportation needs of the Eastern Neighborhoods, EN TRIPS will take into account existing and expected future conditions in these districts.

Rincon Hill

Rincon Hill is a historically industrial district just to the north of the Bay Bridge approach that has recently begun to undergo high-rise residential redevelopment. Generally bounded by Folsom

Street, the Embarcadero, the Bay Bridge approach, and the Fremont/Folsom Street off-ramp from Interstate 80, it is a relatively small area – approximately 55 acres. Under the Rincon Hill Plan approved by the City in 2005, however, it could eventually be home to as many as 10,000 residents giving it a population density greater than that of the Tenderloin, Chinatown, or likely any U.S. neighborhood west of Chicago. Implementing these pedestrian improvements represents both the greatest opportunity and challenge for transportation planning in Rincon Hill.

Transbay Transit Center District

The Transbay Transit Center will replace the existing Transbay Terminal at First and Mission Streets, serving as the transfer point for regional bus service and the eventual terminus of Caltrain and California High Speed Rail. The plan for California High Speed Rail in San Francisco, and the downtown extension of the Caltrain corridor are discussed in Chapter 3 of this report. The Transbay Transit Center District is the area around the Transit Center site. It is defined as the area between Market and Folsom Streets and Hawthorne and Steuart Streets. A redevelopment plan for the district proposes more than 2.5 million square feet of new office and residential uses permitted above existing zoning. Increased value from proposed development will help fund the construction of the Transit Center itself, as well as other public improvements. This effort will focus on both private properties and properties owned or to be owned by the Transbay Joint Powers Authority around the Transit Center itself.

Mission Bay

Mission Bay is a 303-acre redevelopment site bordered by South of Market, the waterfront, the Central Waterfront district, and Interstate 280. Located primarily on former rail yards and underutilized industrial parcels, it can roughly be divided into five segments:

- North of Mission Creek (also known as China Basin Channel) is a dense neighborhood of residential and retail spaces that has already been largely built out.
- South of the creek is an area planned for less dense residential and retail uses.
- Farther south is a new University of California, San Francisco (UCSF) campus that is planned to include a new medical center.
- To the east and west of the UCSF campus are areas zoned for office and research and development space.

At build out, Mission Bay is planned to include 6,000 units of housing (1,700 of them below market rate), 4.4 million square feet of office and R&D space, 500,000 square feet of retail, a 500-room hotel, 41 acres of open space, and community facilities including a 500-student public school, a library, police and fire stations. The UCSF Mission Bay campus would feature an additional 2.65 million square feet of building space, and its hospital is currently planned to offer 289 beds in its first phase, scheduled to open in 2014. To date, about one-half of the housing and one-third of the office and R&D space has been built and four major biomedical research buildings, a community center, housing, and four parking garages have been constructed on the UCSF campus.

Ensuring efficient connecting transit service to Mission Bay is crucial for a successful transportation system in the Eastern Neighborhoods. Mission Bay transit issues are discussed in Chapter 3.

Market Street Corridor

Market Street, which marks the north-west boundary of the EN TRIPS study area, is the main street of San Francisco's downtown. Extending from Twin Peaks to the Embarcadero, Market Street has blighted sections, thriving mixed-use neighborhoods, and downtown areas busy with office workers, shoppers, and tourists. Downtown, Market Street is the backbone of San Francisco's transit system. Eleven Muni routes, including the historic F-Market Streetcars, run on Market. The subway underneath the street is the right of way for both BART and Muni Metro, which share four rail underground rail stations. As part of the Better Market Street project, SFMTA has been piloting several strategies to improve transit reliability and pedestrian experience on the street. Beginning in September 2009, the City began diverting private cars at Eighth and Market to test its effect on transit operations. It has since moved the detour to Tenth Street. Pedestrian, cyclists, public transit vehicles, taxis, emergency and delivery vehicles still have full access to Market Street. This program is the first of several planned pilot projects, which will be used to inform a project to redesign Market Street by 2013. Because the operation of Market is extremely important for the functioning of South of Market circulation and vice versa, EN TRIPS will be closely coordinated with the Better Market Street project.

2.3 Population and Employment

This section discusses employment, population, and development trends in the study area. The data in this section is drawn from the Association of Bay Area Governments (ABAG) Projections 2005, adjusted by the San Francisco Planning Department in 2007. These are the same data that were used to inform the SF-CHAMP model analysis of travel behavior in Chapter 2.4.

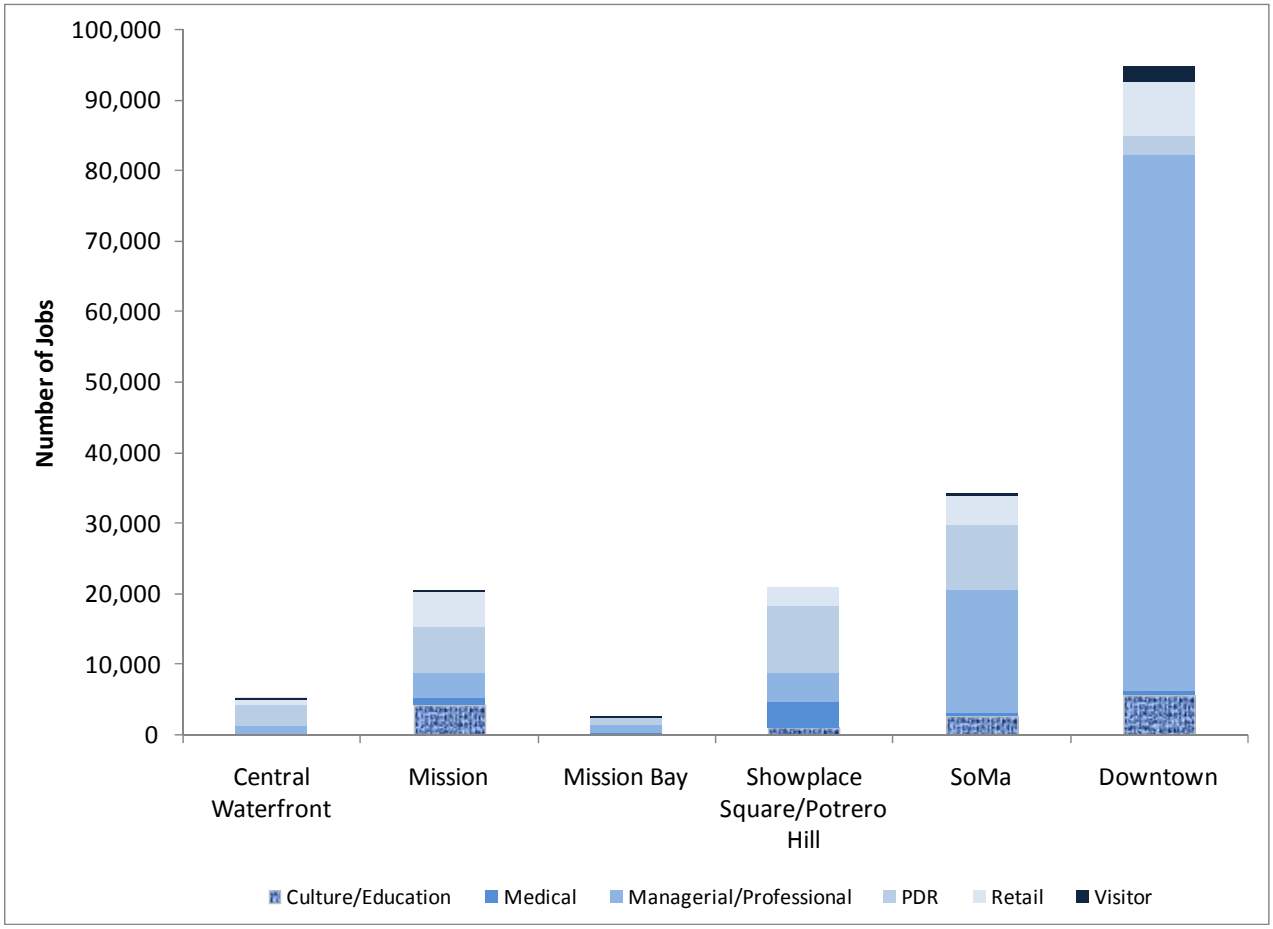
Employment

The Eastern Neighborhoods study area has just over 178,000 jobs. Employment data is categorized into six types: visitor services; retail services; production, distribution, and repair (PDR) services; managerial, informational, professional; business (MIPS) services; medical (MED) services; and cultural, institutional, and educational (CIE). For the study area as a whole, 58 percent of jobs are in the managerial and professional category. PDR services are second with 18 percent of jobs and retail services are third with 12 percent of jobs.

More than half of the jobs in the study area are located not in the Eastern Neighborhoods Plan areas, but in the sections of the downtown financial district that fall within the EN TRIPS study area boundary. As shown in Figure 2-2, which highlights jobs by neighborhood and employment category, roughly 80 percent of the jobs in this portion of downtown are managerial or professional jobs. SoMa has the second largest share of jobs with approximately 34,000, or 19 percent.

The Mission and Showplace Square/Potrero Hill have roughly equal numbers of jobs, at 11 percent of the total. Just under 10,000 PDR jobs are located in the Mission District (mostly in the north-east part of the neighborhood) and Showplace Square includes about 6,500 PDR jobs. Given its small size, the Central Waterfront has a small share of overall employment, but nearly 3,000 PDR jobs are located there. Preservation of PDR employment in the Eastern Neighborhoods was one of the major considerations in the Eastern Neighborhoods community planning process.

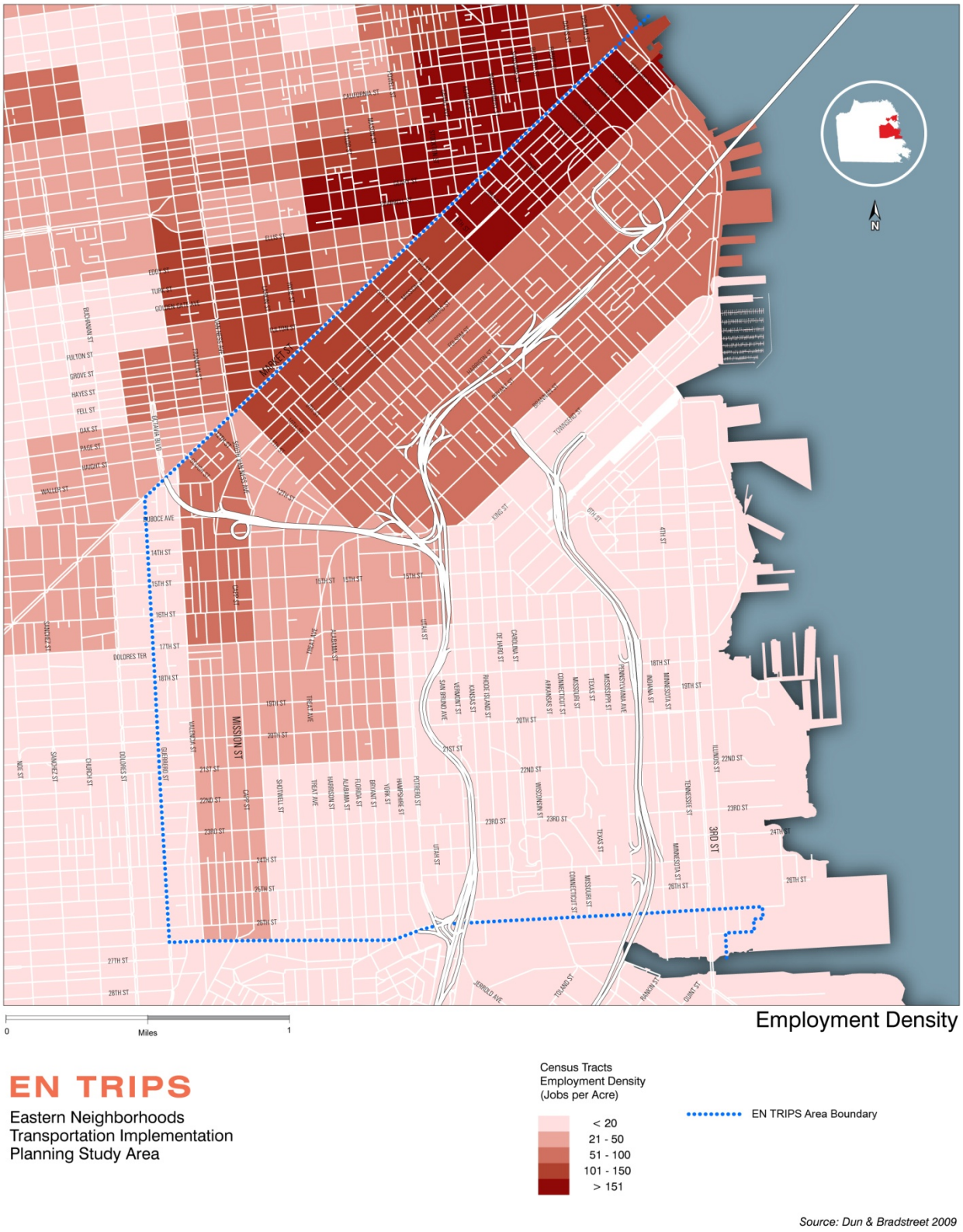
Figure 2-2 Employment in the Eastern Neighborhoods by Neighborhood and Job Category



Source: ABAG Projections 2005, adjusted by the San Francisco Planning Department in 2007

Figure 2-3 offers a view of employment density in the EN study area. Employment density is highest in the downtown area, with more than 151 jobs per acre around the Market, Second, and Mission Street corridors. Employment density is also high farther south into SoMa, but offers greater variability. For example, the Fifth and Brannan Street corridors have densities ranging from 21 to more than 151 jobs per acre. Employment density is much lower in the other neighborhoods. However, there are notable concentrations of jobs in the Showplace Square area, the north east Mission industrial area, as well as the Mission and Valencia Street commercial corridors.

Figure 2-3 Employment Density in the Eastern Neighborhoods

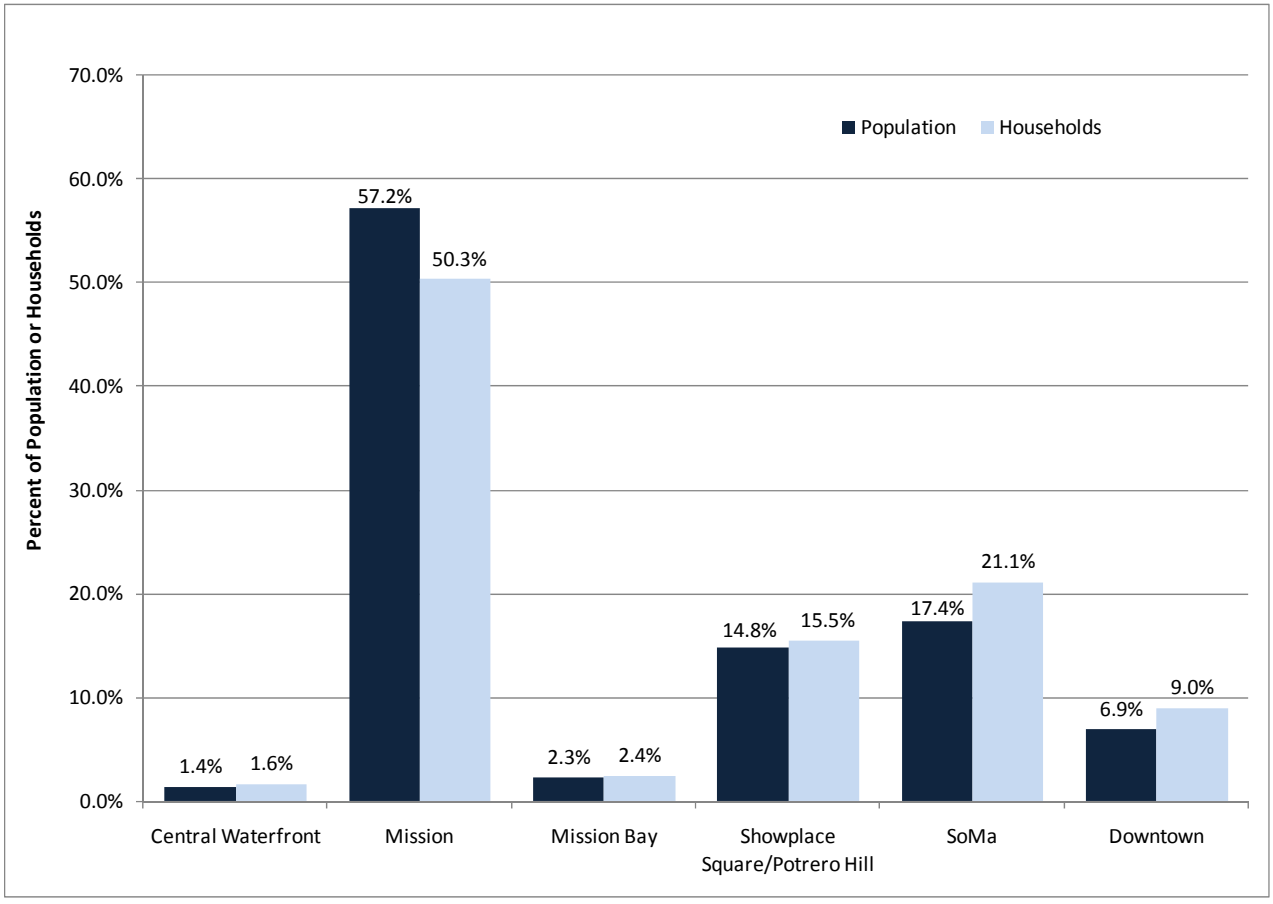


Population, Household Size, and Household Income

The Eastern Neighborhoods study area has an estimated 96,438 people, or 13 percent of San Francisco's total population, living in an estimated 39,137 households.[1] In the Eastern Neighborhoods, various racial minorities combine to total more than half the population: Hispanic/Latino residents are the largest minority at 33 percent of the population, while Asians account for 15 percent and African-Americans 7 percent of the population.

The average household size in the study area is 2.5 people per household, slightly larger than the 2.3 average for San Francisco as a whole. The household size in the Mission, at 2.8 people per household is the highest in the Eastern Neighborhoods and among the highest in the City. The majority of people and households in the Eastern Neighborhoods live in the Mission. As shown in Figure 2-4, SoMa, which includes both eastern and western SoMa, represents 17 percent of the study area's population. Showplace Square/Potrero Hill is third with 15 percent. Both SoMa and Showplace Square/Potrero Hill have smaller household sizes than the Eastern Neighborhoods as a whole.

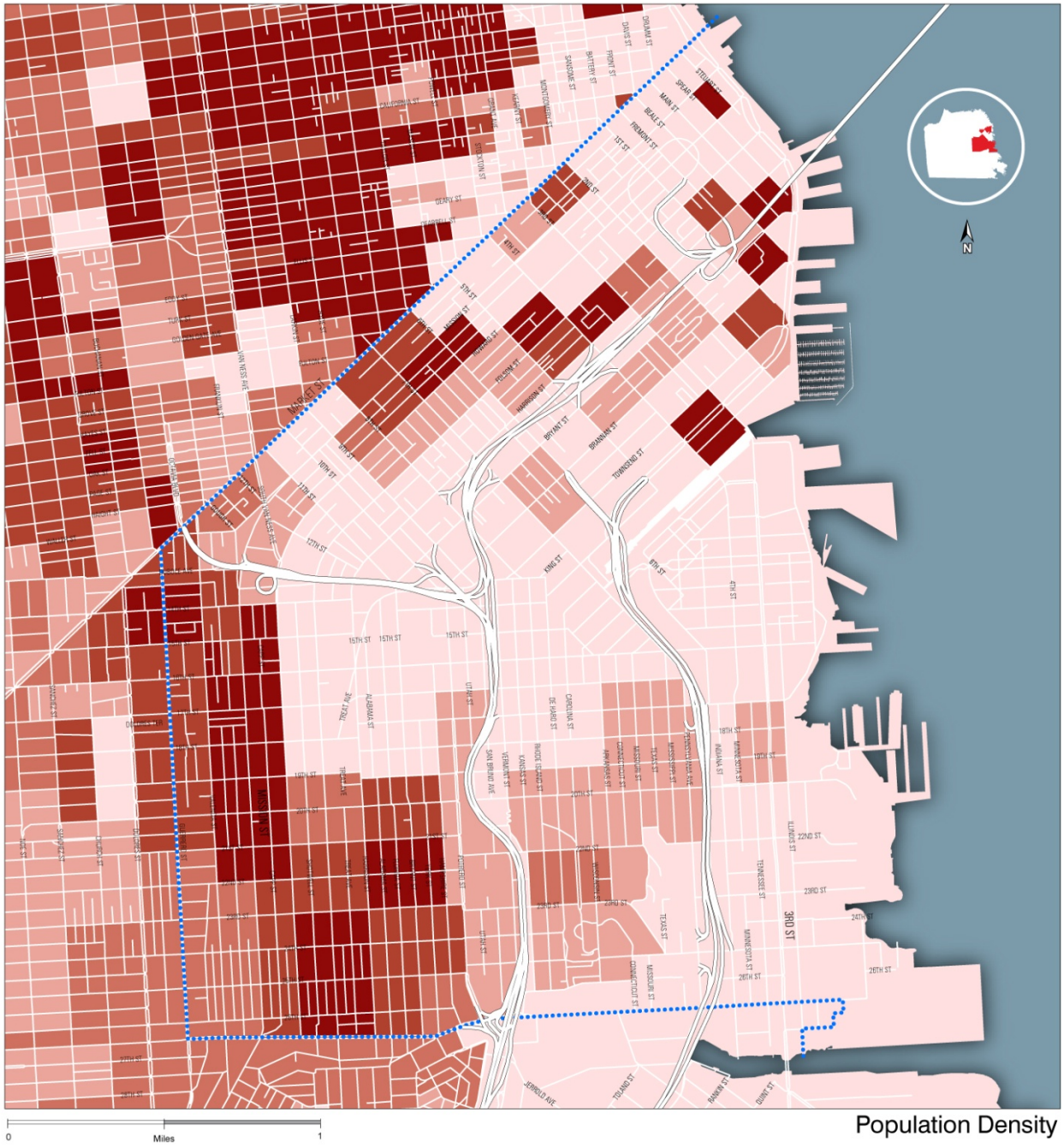
Figure 2-4 Relative Share of Population and Households in the Eastern Neighborhoods[2]



[1] ABAG Projections 2005, adjusted by the San Francisco Planning Department in 2007 to reflect development pipeline.
[2] Ibid

Figure 2-5 illustrates population density (persons per square mile) in the study area. It shows that the study area's population is concentrated in the southern and western parts of the Mission District. Population density is also higher in certain areas of the SoMa, most notably along the Folsom and Howard Street corridors near Fourth, Fifth, and Sixth Streets. Population density in the Showplace Square/Potrero Hill and Central Waterfront areas is much lower, with only a few pockets of higher densities around 22nd and 23rd Streets in Potrero Hill. For the most part, however, these two neighborhoods have less than 20 people per acre.

Figure 2-5 Population Density in the Eastern Neighborhoods



The estimated mean household income in the study area is just over $102,000.[3] Mean household income by neighborhood varies from $83,000 in the Mission, to roughly $130,000 in the Showplace Square/Potrero Hill and downtown areas, to a high of $163,000 in the Central Waterfront.

Development in the Eastern Neighborhoods

Figure 2-6 summarizes residential development in the Eastern Neighborhoods between January 2000 and April 2010, as recorded in San Francisco Planning Department case tracking data. Just fewer than 16,000 units of housing have been built in the study area during this time period.

Figure 2-7 illustrates the geographic distribution of development in the Eastern Neighborhoods. The majority of the study area's housing development since 2000 has occurred in the South of Market, where nearly 6,000 units of housing have been constructed. There has been a wide variety in size of housing development, with numerous smaller developments (four units or less) and a number of larger developments as well. Most of this construction has occurred on Sixth, Seventh, Folsom, Howard, and Brannan Streets.

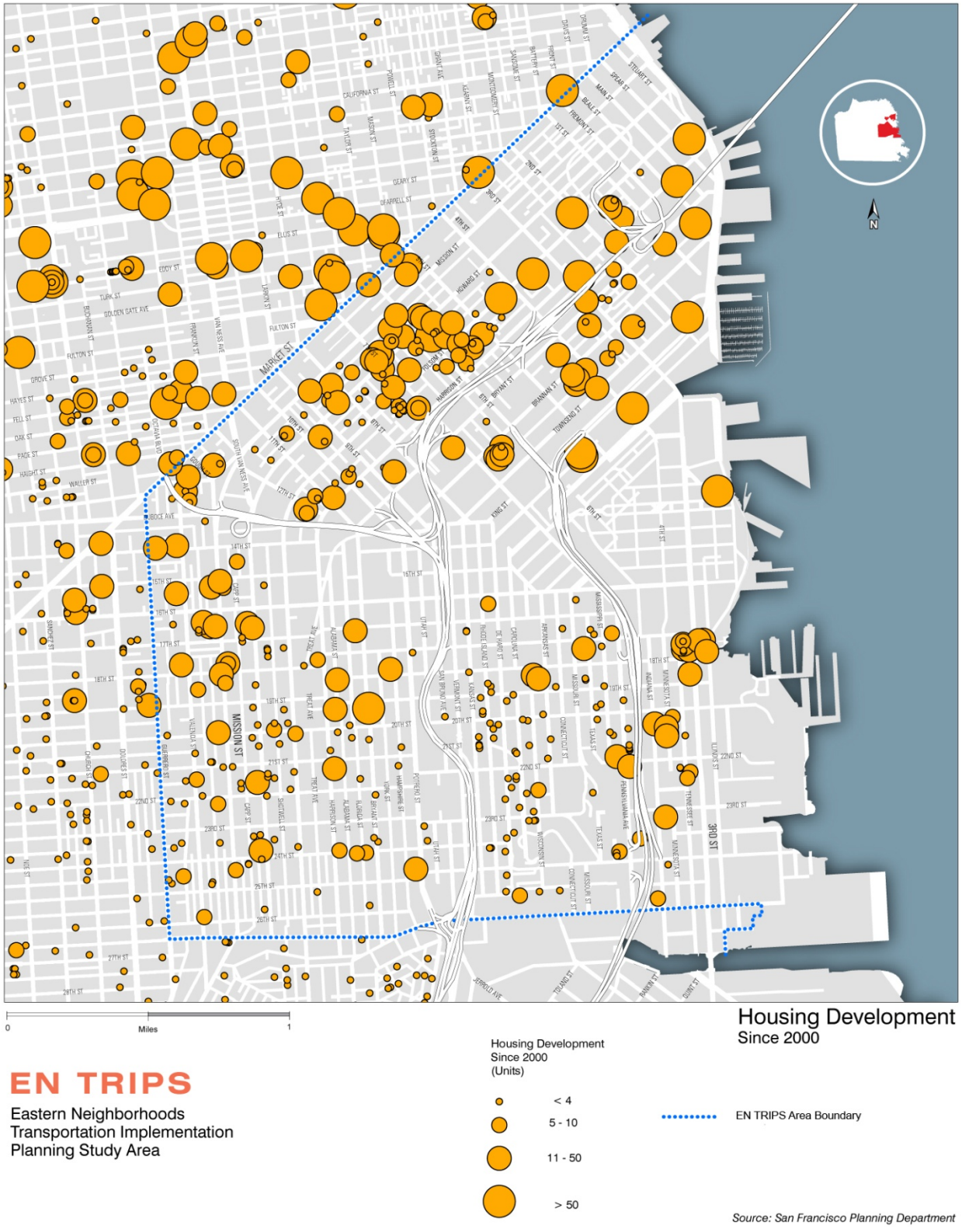
In the Mission, nearly 1,200 units of housing have been built in the last 10 years. Numerous smaller residential developments (less than 10 units) have been built throughout the southern portion of neighborhood. Farther to the north, near 16th Street, larger developments (11 units plus) have been built. The majority of the nearly 900 units of new housing built in Potrero Hill have been smaller housing projects focused in the area surrounding 20th and Rhode Island Streets. The Central Waterfront has seen small number of large new housing developments, most notably on the Third Street and 18th Street corridors, for a total of just over 300 new units of housing. The Mission Bay plan area has 1,600 new units of housing built since 2000.

Figure 2-6 Eastern Neighborhoods Housing Built Since 2000

Neighborhood	Net Units since 2000
Central Waterfront	313
Mission District	1,168
Mission Bay	1,618
Showplace Square/Potrero Hill	879
SoMa	5,978
Total	15,934

[3] Data source: ABAG 2005. 1989 dollars, adjusted for inflation to reflect 2010 dollars.

Figure 2-7 Housing Development Since 2000



The development "pipeline", as recorded by the San Francisco Planning Department, consists of development projects that would add residential units or commercial space, applications for which have been formally submitted to the Planning Department or the Department of Building Inspection (DBI). Pipeline projects are at various stages of development: from applications having been filed to entitlements secured; from building permits approved and issued to projects under construction. The pipeline includes only those projects with a land use or building permit application. It does not include projects undergoing preliminary Planning Department project review or projections based on area plan analysis. The current pipeline only includes projects filed during the last five years, projects approved in the last four years, and projects that started construction during the past three years.

Figure 2-8 summarizes development pipeline in the Eastern Neighborhoods as of April 2010. There are currently more than 13,000 units of housing and more than six million square feet of commercial development proposed.

Figure 2-9 illustrates the location, type, and size of development projects in the pipeline. Of these, more than 9,000 units are planned for SoMa and most of the remainder is planned for Showplace Square. There are currently more than 4 million square feet of commercial development proposed for SoMa and 1.5 million square feet of commercial development proposed for Mission Bay.

It is important to note that the turbulence in the real estate markets and subsequent economic downturn has affected many of these projects, resulting in financing challenges, project delay, and potential project cancellation. It is not possible to know for certain how many of the proposed projects will ultimately be built, and on what time frame.

Figure 2-8 Eastern Neighborhoods Development Pipeline

Neighborhood	Pipeline Commercial Net Sq Ft	Pipeline Housing Net Units
Central Waterfront	81,979	929
Mission	45,909	638
Mission Bay	1,545,057	0
Showplace Square/Potrero Hill	432,266	2,444
SoMa	4,103,831	9,487
Total	6,209,042	13,498

Vehicle Ownership

Figure 2-10 illustrates vehicle ownership in the Eastern Neighborhoods by categorizing census tracts according to the percentage of dwellings without access to a motor vehicle. While these data are available only from the 2000 census and therefore do not reflect recent demographic change, they do illustrate a fact that remains true: a significant number of households in the western parts of the Mission and South of Market do not have access to vehicles. Potrero Hill and the Central Waterfront have considerably higher vehicle ownership rates.

Figure 2-9 Proposed Residential, Commercial, and Mixed-Use Development for Eastern Neighborhoods

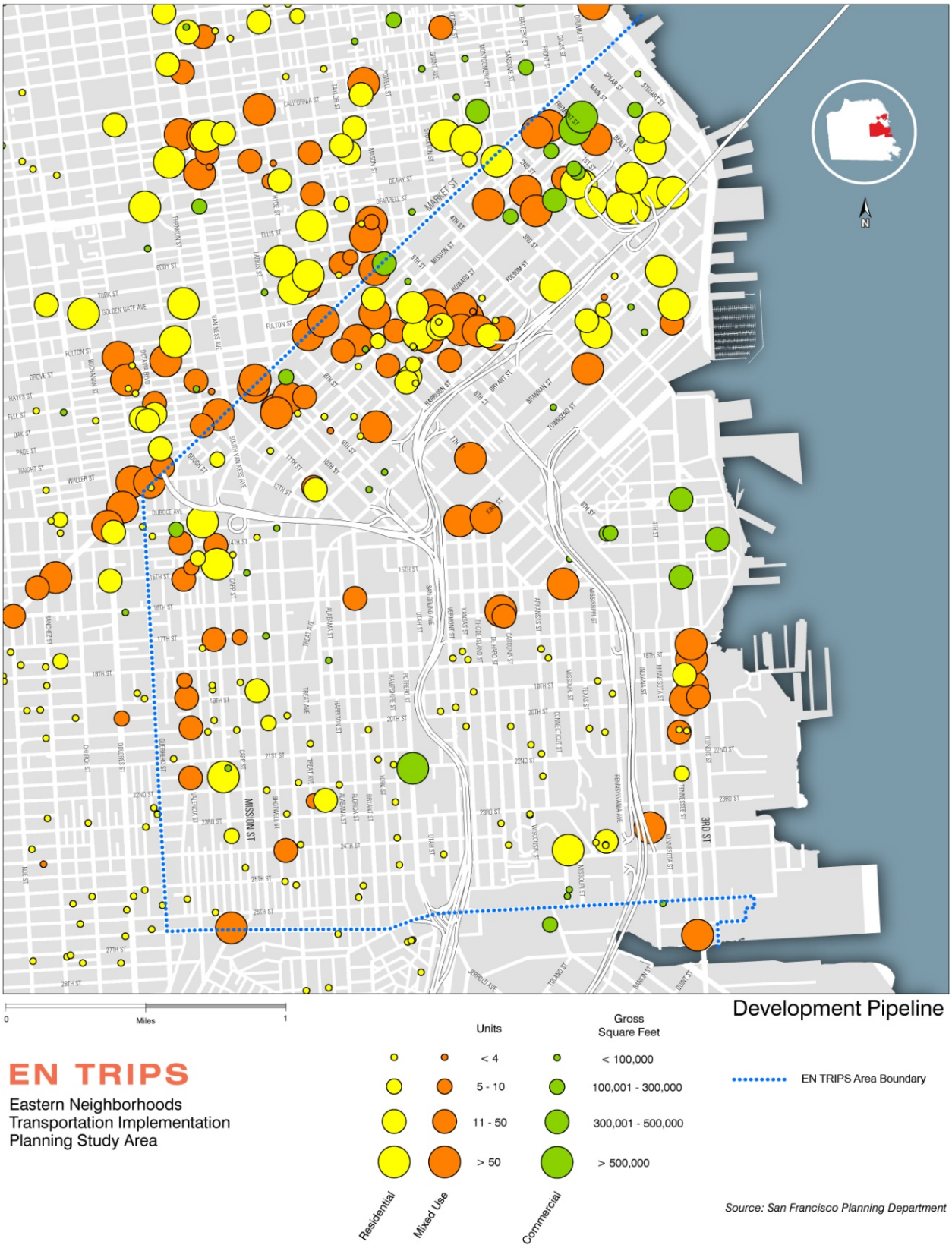
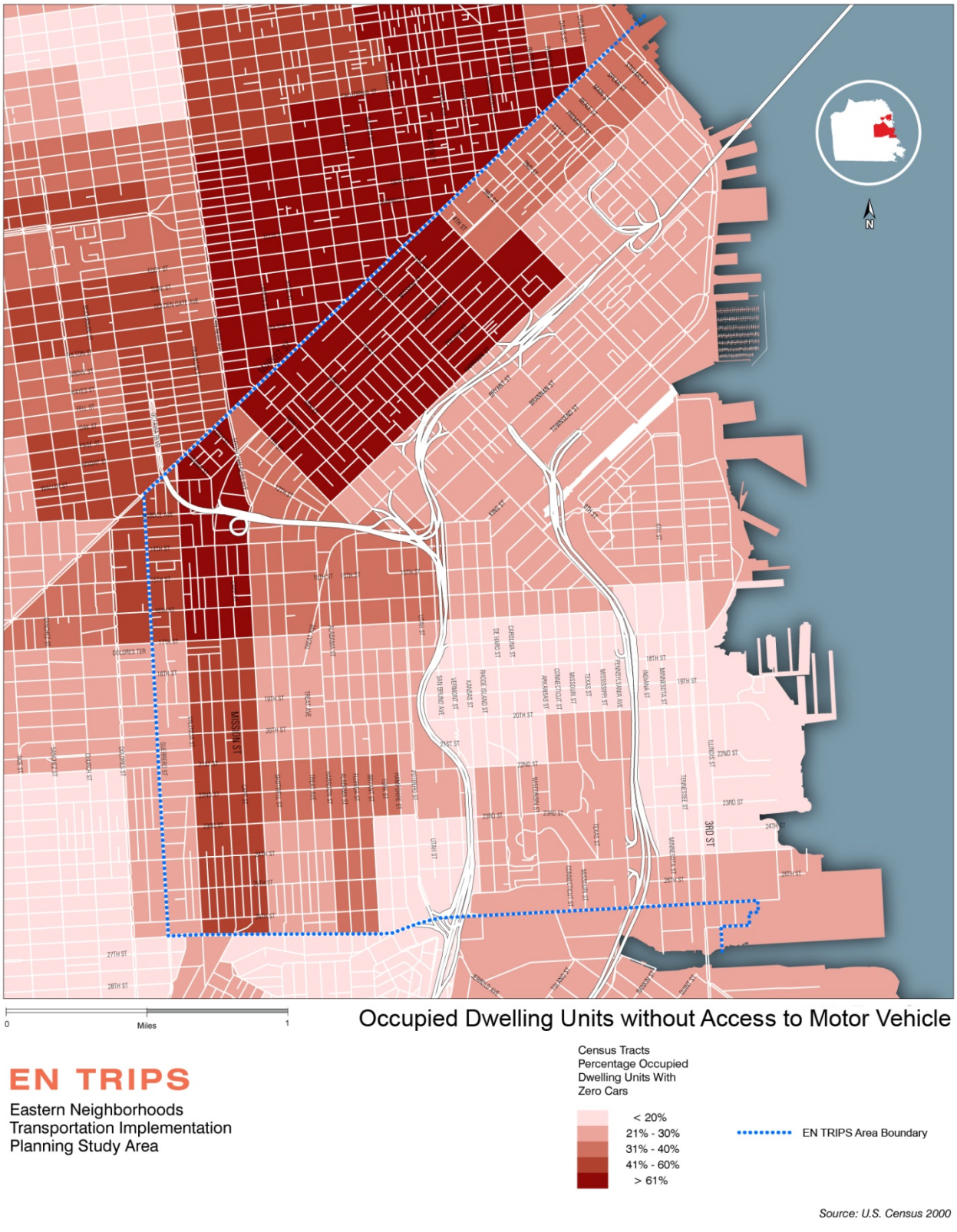


Figure 2-10 Eastern Neighborhoods Dwelling Units without Access to a Motor Vehicle



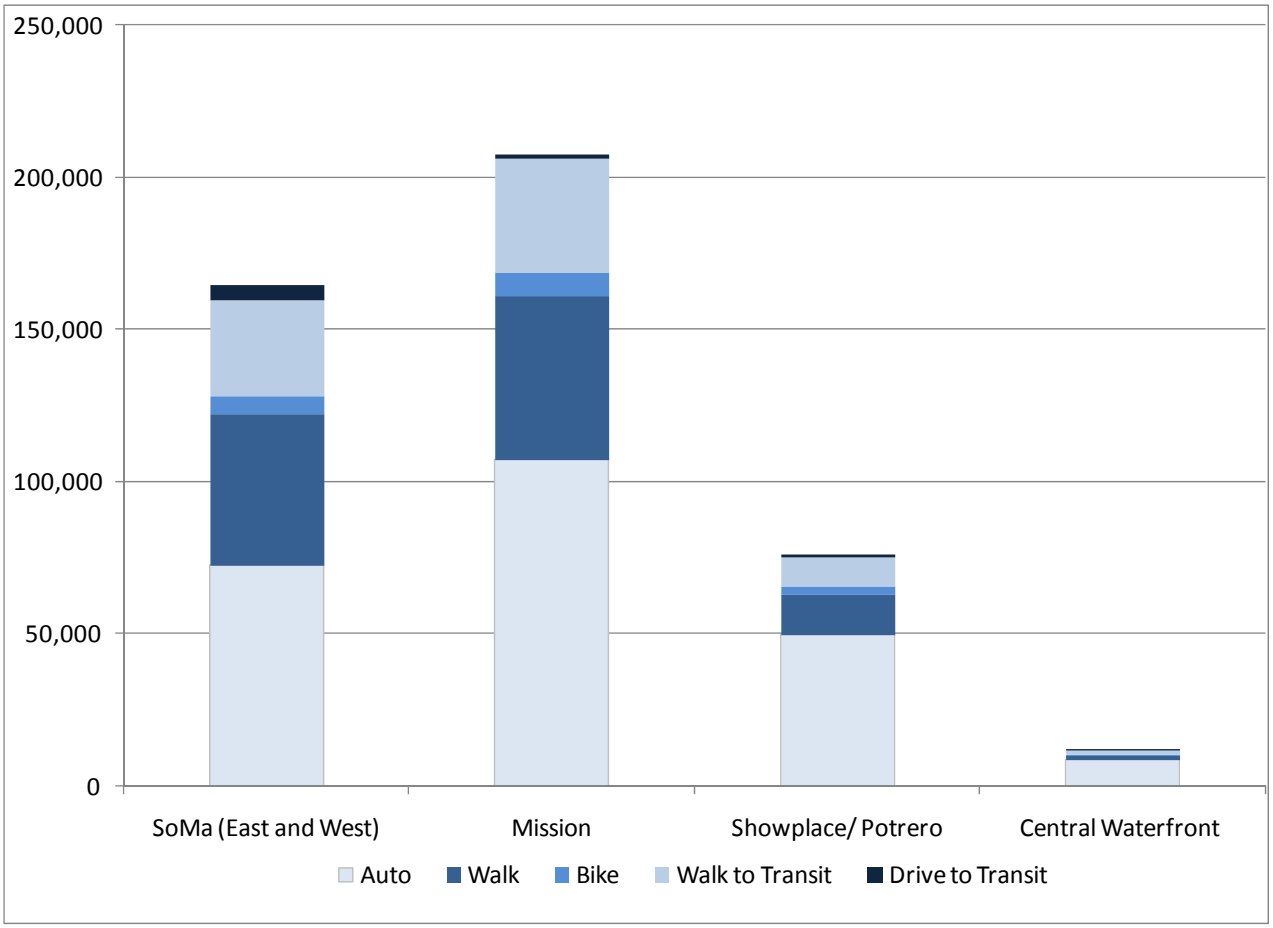
2.4 Travel Behavior

Overview

This section discusses travel patterns in the Eastern Neighborhoods Study area. The information is drawn San Francisco's travel demand model (SF-CHAMP 4.1 / ABAG P2007). The San Francisco County Transportation Authority (SFCTA) maintains the San Francisco Chained Activity Modeling Process (SF-CHAMP), an activity-based travel demand model. The geographic extent of the model includes other Bay Area cities. The boundaries for the neighborhood areas described in figures 2-11 through 2-14 have been drawn along the Transportation Analysis Zone (TAZ) boundaries used by the SF-CHAMP model, and differ somewhat from actual plan area boundaries. For example, for this analysis, Mission Bay has been included in the Central Waterfront area. Zone boundaries for this analysis are illustrated in Figures 2-15 and 2-16.

As illustrated in Figure 2-11, the travel demand model estimates that each day an estimated 461,000 person-trips originate in the Eastern Neighborhoods plan areas. The largest share of these, more than 200,000 trips, originate in the Mission District. More than 160,000 daily trips originate in the South of Market, home to the bulk of the jobs in the study area. The Potrero Hill/Showplace Square area has roughly 70,000 daily origins. The Central Waterfront, which currently has a very small residential population, represents a very small share of the study area's overall travel.

Figure 2-11 Mode Choice Daily Person-Trips Originating in the Eastern Neighborhoods

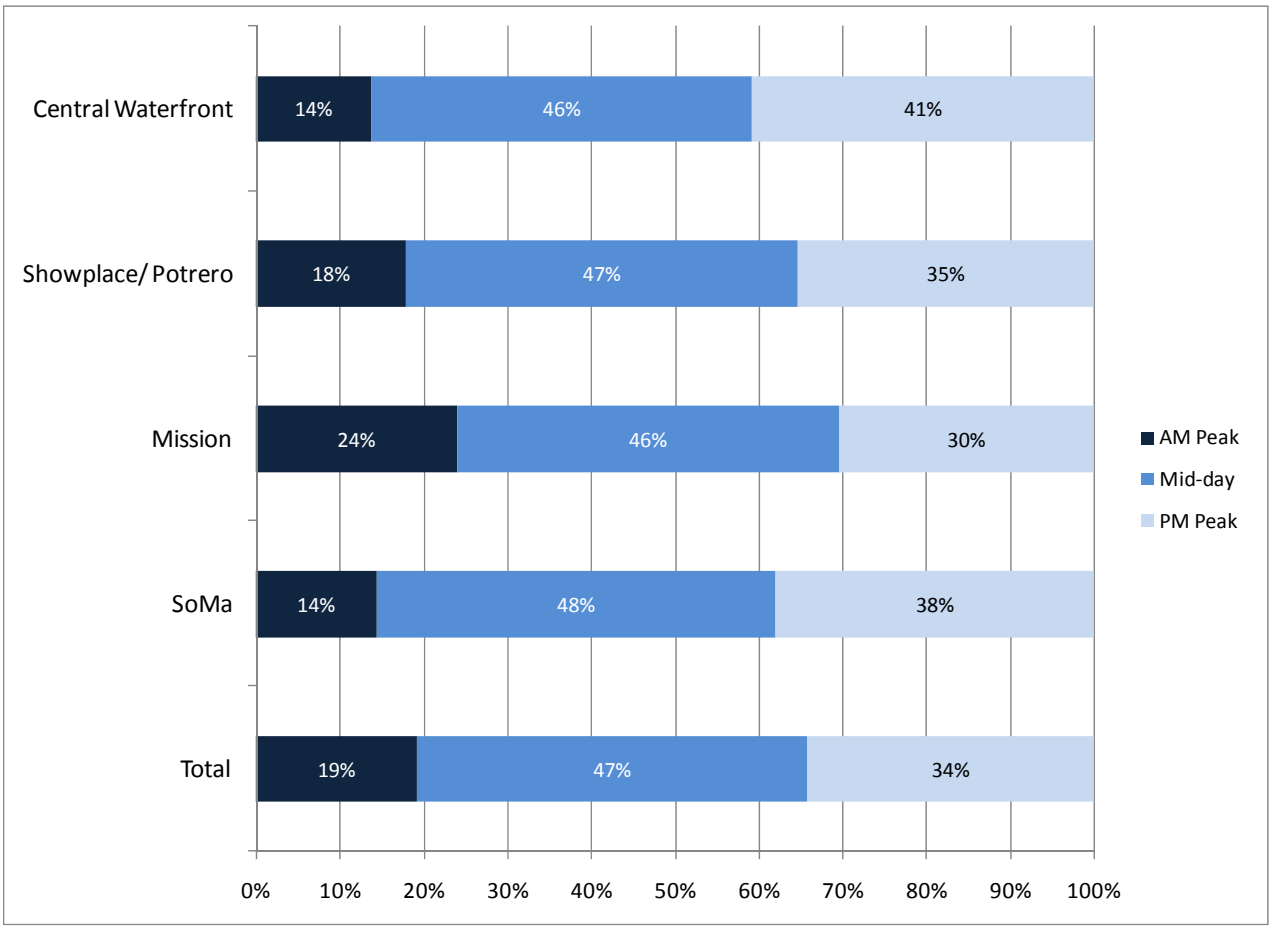


Source: SF-CHAMP 4.1 / ABAG P2007

Figure 2-12 illustrates that during the AM peak period there is a net inflow of trips into the Eastern Neighborhoods as commuters enter the area's job centers. This pattern reverses in the PM peak period as workers return to their homes, so the daily origins and destinations are equal over the course of the day. About 47 percent of the area's trips occur outside of the AM and PM peak periods, when roads and transit are less crowded.

The South of Market is responsible for much of the imbalance between AM and PM trips. Just 14 percent of SoMa's trip origins occur during the AM peak period. Thirty-four percent of SoMa's trip origins occur during the PM peak period as workers leave the neighborhood and return to their homes. In the Mission, with its much larger residential population, roughly a quarter of trip origins occur during the AM peak period, and 30 percent occur during the PM peak period.

Figure 2-12 Person-Trip Origins in the Eastern Neighborhoods by Time of Day for All Modes



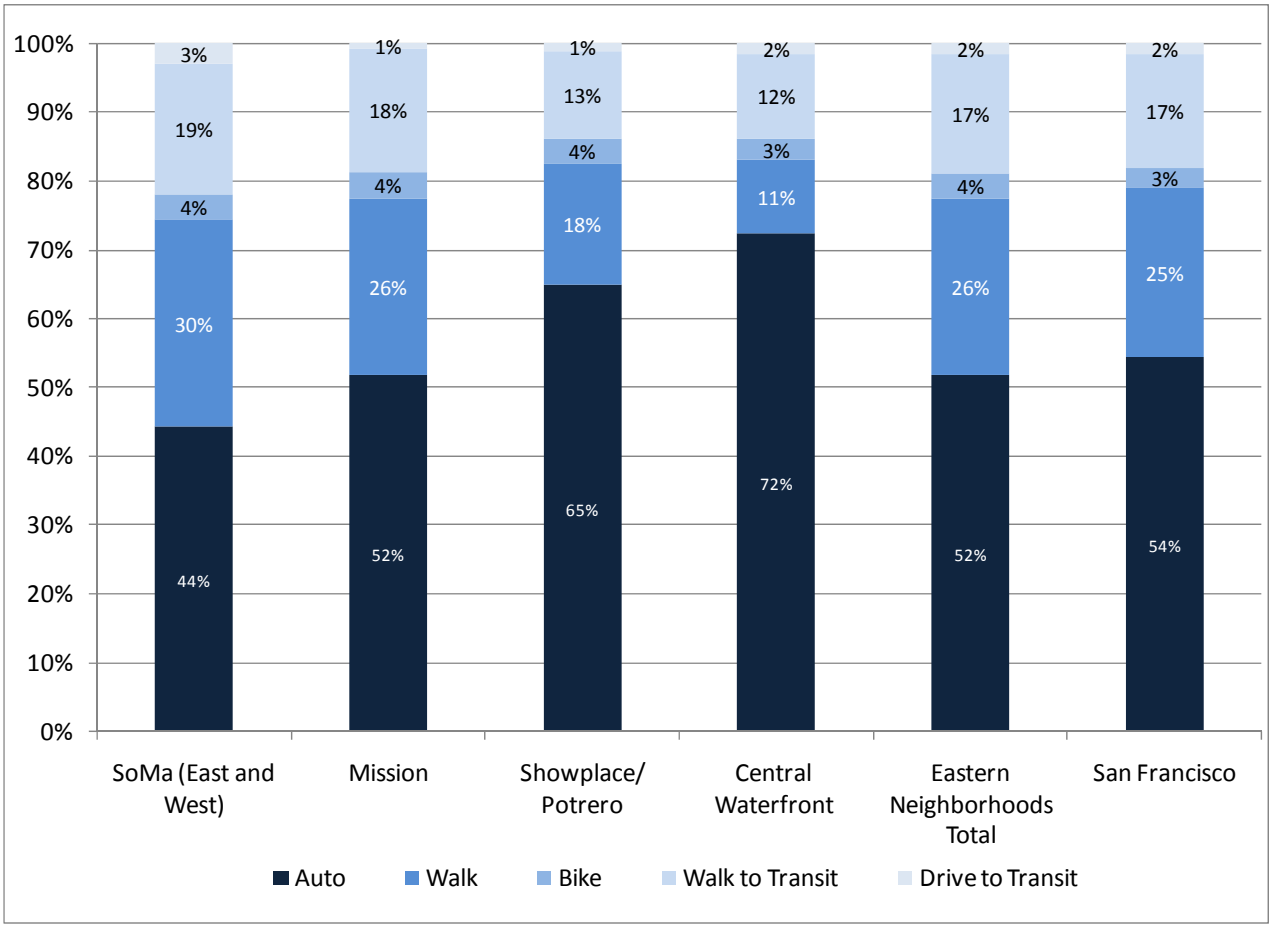
Source: SF-CHAMP 4.1 / ABAG P2007

Mode Choice

As illustrated in Figure 2-13, just over half of person-trips occurring to, from, and within the Eastern Neighborhoods are made by motor vehicles (including both drivers and passengers). A quarter of all trips are walk trips and an estimated 4 percent are bicycle trips. Transit accounts for about one in five trips, with most transit passengers walking to their bus or rail stop. This pattern of mode choice is very similar to the pattern in San Francisco as a whole.

Mode of travel varies substantially by neighborhood. The South of Market has the lowest share of motor vehicle trips (44 percent) and the highest share of walk (30 percent) and transit (19 percent) trips – This share does not include the very large number of vehicle trips that pass through the South of Market street grid without stopping, on the way to and from I-80. Vehicle volumes in the South of Market are discussed in detail in Chapter 5. Mode share in the Mission District is nearly identical to the Eastern Neighborhoods as a whole. In Showplace Square/Potrero Hill, with lower densities, fewer transit options, and challenging topography, two-thirds of trips are made by car. Of the small number of trips in the Central Waterfront, almost three quarters are vehicle trips.

Figure 2-13 Mode Choice in the Eastern Neighborhoods (Daily Trips)

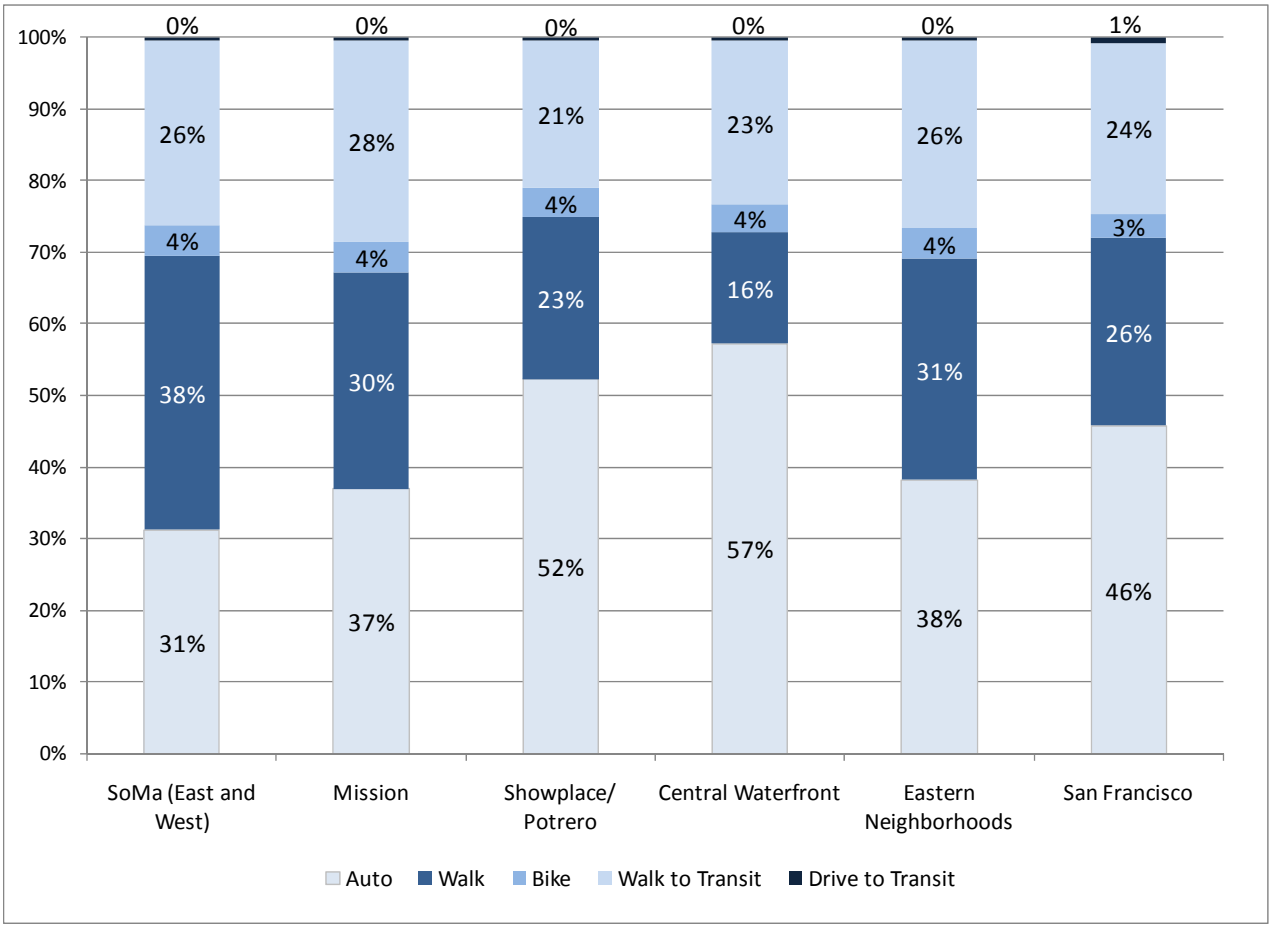


Source: SF-CHAMP 4.1 / ABAG P2007

Patterns of mode choice are slightly different during the peak period. Trips *originating* in the Eastern Neighborhoods during the AM peak are more likely to be made by transit (31 percent) or walking (26 percent) than they are during the day as whole, and vehicle trips make up just 38 percent of AM peak trips originating in the Eastern Neighborhoods. However, vehicles retain a high share of trips with *destinations* in the Eastern Neighborhoods during the AM peak period (46 percent), reflecting the inflow of regional commuters into the neighborhood. During the PM peak period, this pattern reverses, with a high proportion of auto trips originating the Eastern

Neighborhoods and more trips with destinations in the Eastern Neighborhoods occurring by walking and transit.

Figure 2-14 Mode Choice in the Eastern Neighborhoods (AM Peak Period)



Source: SF-CHAMP 4.1 / ABAG P2007

Eastern Neighborhood Resident Commute Mode Choice

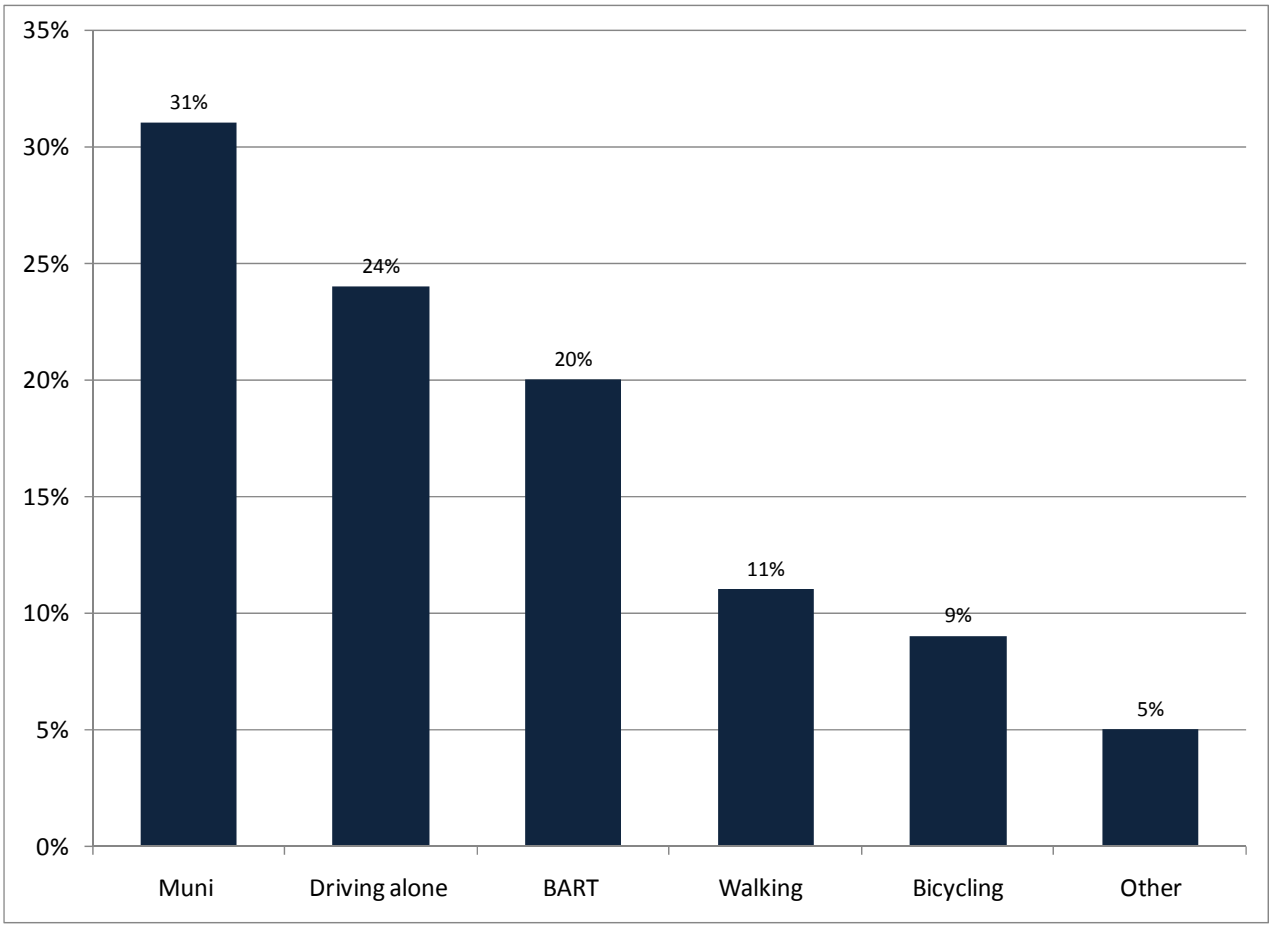
The above SF-CHAMP travel demand model data reflects the estimated travel patterns of both residents and non-residents. A survey of Eastern Neighborhoods residents reveals more detail about travel patterns of this important subgroup of users of the transportation system. Under the direction of the SFCTA, Godbe Research conducted a mail-back survey of Eastern Neighborhoods residents. The survey was conducted between September 8th and September 30th, 2009. 1,716 residents responded to the survey.

The survey found that 77 percent of survey respondents work outside their home. Of this group, 74 percent work full-time, while 25 percent work part-time. The majority (61 percent) go to their usual place of work five days per week and another 14 percent four days per week.

As illustrated in Figure 2-15, about half of all commute trips by survey respondents are made using transit (31 percent use Muni, 20 percent use BART). Transit mode share for resident

commuters responding to the survey is therefore much higher than the overall AM peak transit mode share for all trips originating in the plan area as projected by SF-CHAMP.

Figure 2-15 Eastern Neighborhood Resident Commute Mode



Source: Eastern Neighborhoods Travel Behavior Survey, 2009

The survey also found that most non-work trips were taken either within the Eastern Neighborhoods or elsewhere in San Francisco. For non-work trips by Eastern Neighborhoods residents that remained in the study area, walking was by far the most common mode (75 percent), followed by Muni (27 percent) and driving alone (19 percent). For non-work trips elsewhere in the City, Muni was most commonly used (59 percent), followed by driving alone (37 percent), BART (37 percent) and walking (33 percent). Non-work trips outside San Francisco were mostly split between driving alone (38 percent) and BART (37 percent).

Origins and Destinations

Figures 2-16 and 2-17 illustrate the overall pattern of trips between the Eastern Neighborhoods for all modes of transportation, and from each of the Eastern Neighborhoods to other parts of San Francisco and the region. The source of this data is the San Francisco travel demand model (SF-CHAMP 4.1). The zones analyzed here are made up of Transportation Analysis Zones (TAZs) as defined for SF-CHAMP 4.1, and do not correspond precisely to the neighborhood plan area boundaries. The zone boundaries are illustrated in Figures 2-16 and 2-17.

Figure 2-16 shows total daily trips. It illustrates that the strongest travel corridors in the study area are from the Eastern Neighborhoods and neighboring districts and other parts of the region – rather than between Eastern Neighborhoods. It also shows that Downtown is a very significant destination, with more than 50,000 daily trips between the South of Market and Downtown. There is a high demand for trips between the South of Market and North Beach/Chinatown. Figure 2-16 also shows that, with the bulk of the study area's population, the Mission accounts for a large share of inter-district trips. More than 10,000 daily trips occur between the Mission and Downtown.

With much smaller populations, both Showplace Square/Potero Hill and the Central Waterfront share their strongest travel corridors with the areas to the south (the Outer Mission/Bayshore/South Bay zone).

The Eastern Neighborhoods also have strong links to neighboring regions outside of San Francisco. Nearly 59,000 daily person-trips are made between the Eastern Neighborhoods and the South Bay (including 20,000 trips to and from SoMa, 24,000 to and from the Mission, and nearly than 12,000 from Showplace Square/Potrero). Links to the East Bay are even stronger, with nearly 66,000 daily person trips (of these, more than 32,000 are to and from SoMa, 18,000 to and from the Mission, and 11,000 to and from Showplace/Potrero).

Figure 2-17 illustrates trips made during the PM Peak period, with trips to and from each district illustrated separately to show the dominant direction of travel. It illustrates that during the PM Peak period more than 8,000 people depart Downtown for the Mission and for the South of Market as commuters return home from work. There is also a strong travel corridor in the opposite direction, from the South of Market toward Downtown.

Figure 2-17 also illustrates that more than 8,000 travelers also leave the South of Market during the PM peak period and go south toward Outer Mission/Bayshore/South Bay. More than 6,000 trips depart the SoMa and head towards the East Bay during the PM peak. From the Mission, the dominant travel direction during the PM peak period is toward the neighborhoods to its south and west.

More than 9,000 people travel from the Eastern Neighborhoods to the South Bay during the PM peak (including 3,700 from SoMa and 3,200 from the Mission), compared nearly 6,000 people making the reverse trip. There is more travel to and from the East Bay during the PM peak: 12,000 people travel from the Eastern Neighborhoods to the East Bay (including roughly 7,000 from SoMa and 2,700 from the Mission), compared to 5,000 people making the reverse trip from the East Bay to the Eastern Neighborhoods.

It is important to note that the analysis in this section presents trips that have either origins or destinations inside the Eastern Neighborhoods. It does not include the very large number of trips that pass through the Eastern Neighborhoods (particularly through the South of Market) in the way to or from other parts of the City. Pass-through vehicle trips are discussed in detail in Chapter 5.1 of this report.

Figure 2-15 Daily Trips with Origin or Destination in the Eastern Neighborhoods

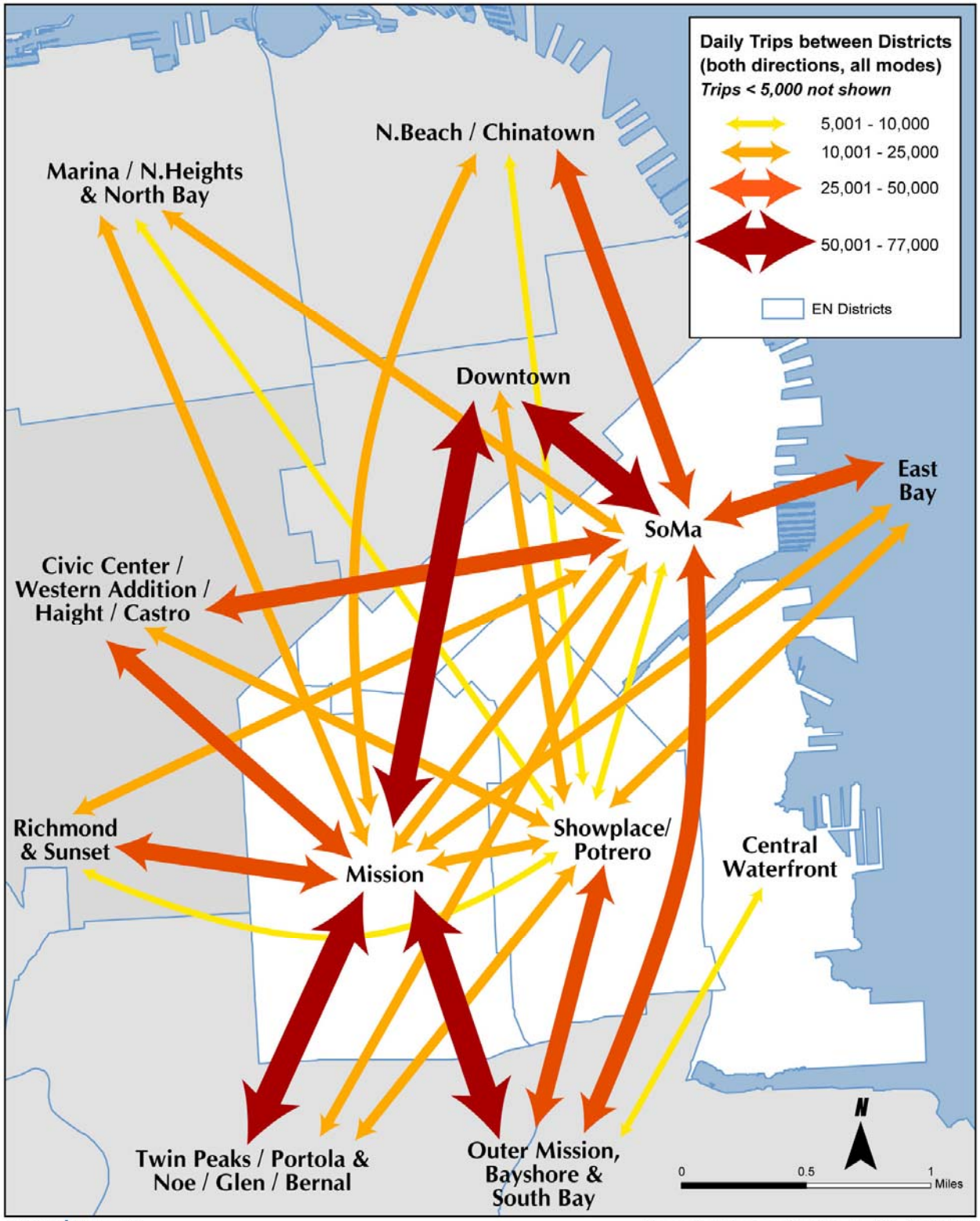
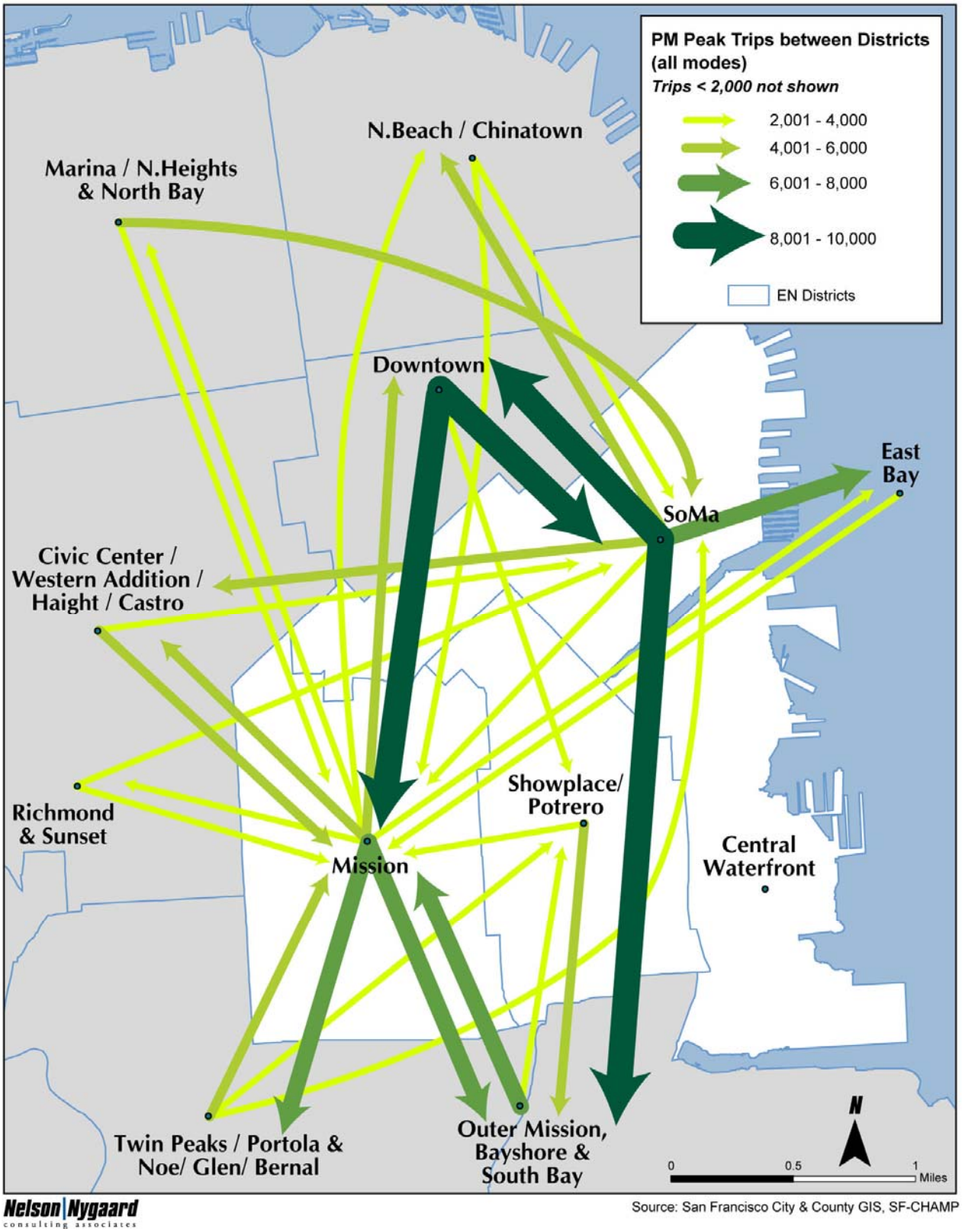


Figure 2-16 PM Peak Trips with Origin or Destination in the Eastern Neighborhoods



Travel Behavior/Demographics Issues and Opportunities

The following issues and opportunities related to travel behavior and demographics will be considered:

- The majority of the population in the Eastern Neighborhoods is located in the southern and western parts of the Mission District. The South of Market is home to the greatest share of the area's jobs, as well as a substantial number of residents. High densities and major transit infrastructure in these areas present opportunities, but significant transportation challenges remain. Relatively low densities and a less infrastructure in Showplace Square, Potrero Hill, and the Central Waterfront present mobility challenges. Challenges are explored further in Chapters 3 through 6.
- Proposed residential development in the Eastern Neighborhoods is concentrated in SoMa and Showplace Square, while proposed commercial development is concentrated in SoMa and Mission Bay. The challenges and opportunities presented by new development will be explored in detail in the EN TRIPS future conditions analysis.
- The SF-CHAMP model estimates that mode shares for trips made from the Eastern Neighborhoods area are roughly consistent with overall citywide averages. However, with the City's highest levels of transit infrastructure and relatively high densities in large parts of the area, higher walk, bike, and transit mode shares are possible. Consistent with the objectives of the Eastern Neighborhoods area plans, EN TRIPS will seek to capitalize on these opportunities to enhance the attractiveness of transit and non-motorized modes of travel.
- The Eastern Neighborhoods have strong travel links to regions outside of San Francisco, including both the South Bay and East Bay. An important opportunity will be enhancing connections to regional transit.
- A very large number of trips cover the short distance between SoMa and Downtown. While walk mode share for these trips is already high, an improved pedestrian environment in SoMa could improve the comfort of current walkers and encourage more walk trips.
- Currently, Showplace Square/Potrero Hill, the Central Waterfront, and Mission Bay represent a small share of overall Eastern Neighborhoods travel demand. A key challenge will be to integrate new development in these areas into the transportation system in a way that provides opportunities for walk, bike, and transit trips. The future conditions analysis conducted for this study will evaluate expected growth in detail.

Chapter 3. Transit

3.1 Transit

The Eastern Neighborhoods include some of the parts of the city best served by public transportation, as well as areas with notable transit gaps. Existing public transit service in the Eastern Neighborhoods is provided by the SFMTA as well as by two regional rail operators, the San Francisco Bay Area Rapid Transit District (BART) and Caltrain, and on a more limited basis by regional bus agencies including SamTrans, Golden Gate Transit, and AC Transit. Regional ferry service to downtown is also available.

Overall, transit accounts for about 19 percent of all trips in the Eastern Neighborhoods, a figure that reflects the citywide average. However, there is notable variation between neighborhoods, with mode shares for transit ranging from 14 percent in the Central Waterfront, Showplace Square and Potrero Hill to 19 percent in the Mission and 22 percent South of Market.

SFMTA Transit

The SFMTA's transit division operates the San Francisco Municipal Railway – known as "Muni" – within the City and County of San Francisco. SFMTA operates 81 fixed routes, including six surface/subway light rail lines (Muni Metro), three cable car lines, an historic streetcar line, and hybrid electric-diesel, diesel, and electric trolleybus routes. SFMTA transit service operates 24 hours a day, seven days a week. Daily ridership on Muni totals more than 700,000 boardings, of which more than three-quarters are on bus routes. Within the Eastern Neighborhoods study area, 31 percent of all residential commuters report using Muni to access their places of work.[1]

As illustrated in Figure 3-1, the San Francisco General Plan designates the streets that make up the city's primary transit network. Designated transit streets include The Embarcadero, Folsom Street (in the South of Market), Third Street, 16th Street, Mission Street, and Potrero Avenue. As is typical of urban transit operations, more than three-quarters of Muni ridership is concentrated in a few relatively high-demand corridors. However, SFMTA is atypical among large transit operators in that service in most of these corridors is provided not by trains, but by buses.

In the Eastern Neighborhoods, transit service along Mission Street is met entirely by buses (Routes 14 Mission, 14 Mission Limited, and 49 Van Ness-Mission), although BART rail service is available below parts of the street. Service in the 16th Street corridor is provided by Routes 22 Fillmore and 33 Stanyan, and along Potrero Avenue by Routes 9 San Bruno, 9L San Bruno Limited and 33 Stanyan. Since 2007, service on Third Street has been provided by the T Third Street Metro line. Both the T and, on weekdays, the N Judah Metro line operate on the Embarcadero in the South of Market, between the Fourth and King Caltrain Station and the Market Street tunnel used by both Muni Metro and BART trains, and past AT&T Park.

[1] Eastern Neighborhoods Travel Behavior Survey, 2009

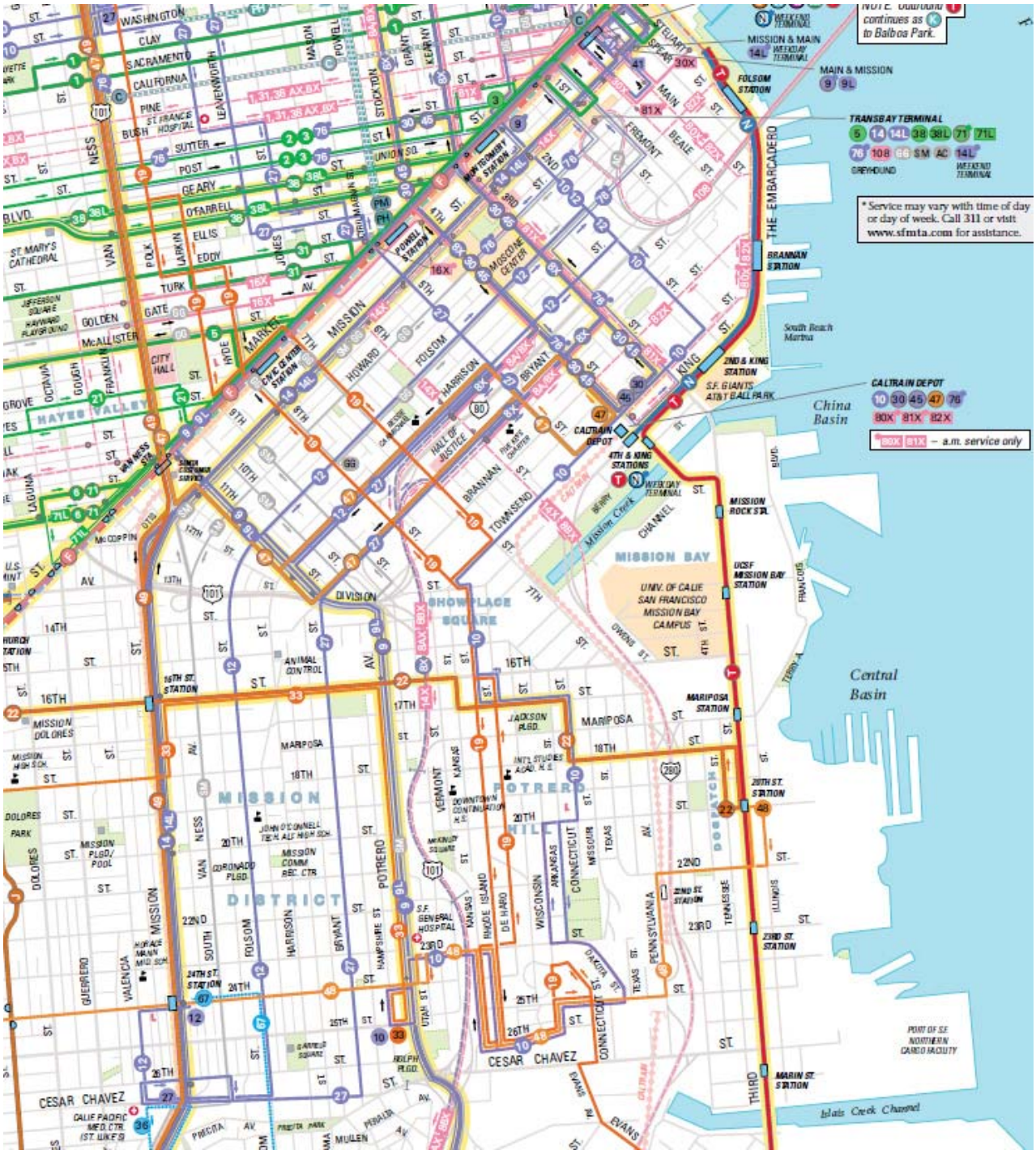
As illustrated by Figure 3-3, in the Eastern Neighborhoods SFMTA transit boardings are most heavily concentrated around regional rail stations: the 16th and 24th Street Mission BART stations are the busiest locations, followed by the Fourth and King Caltrain Station. There are also large numbers of boardings at other stops along Mission Street, at Potrero Avenue's intersections with 16th and 24th Streets, and along Third Street.

Figure 3-1 General Plan Primary Transit Network in the Eastern Neighborhoods

Nelson\Nygaard consulting associates

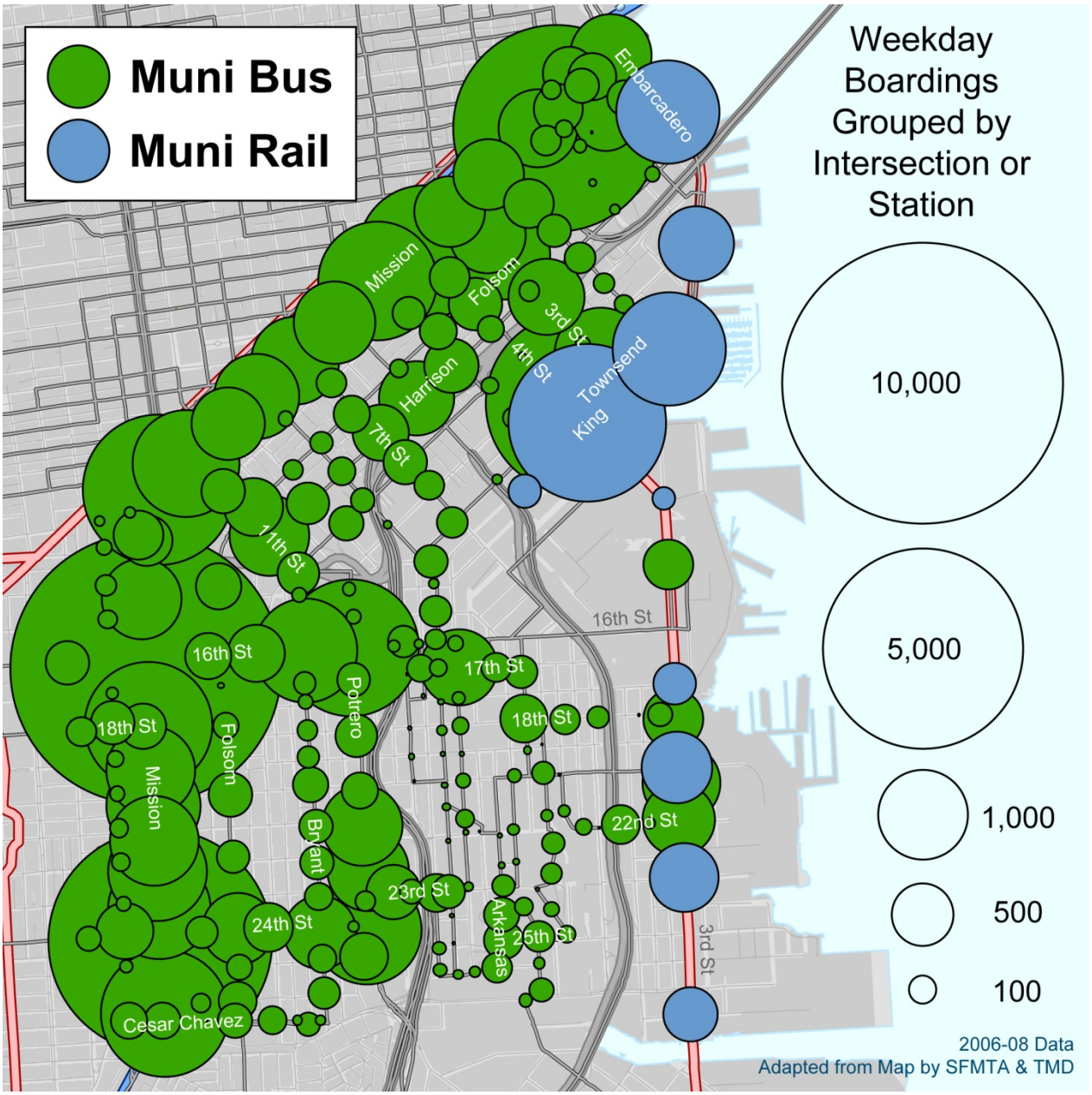
Source: San Francisco City & County GIS

Figure 3-2 Eastern Neighborhoods Transit Routes



Source: San Francisco Muni Map, SFMTA

Figure 3-3 Muni System Bus Boardings by Stop



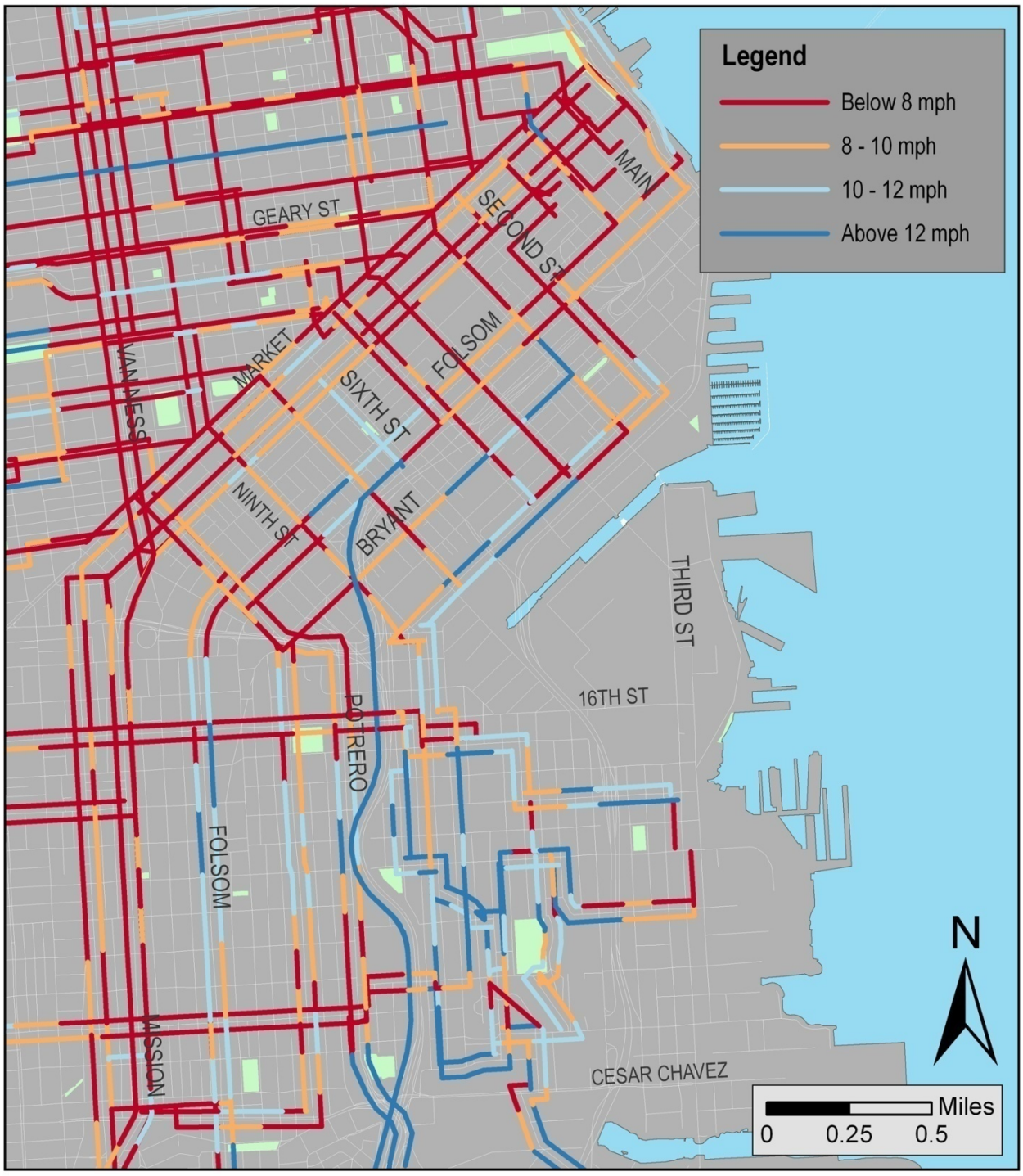
Source: SFMTA Transit Effectiveness Project

Most SFMTA transit routes must operate in mixed-flow traffic, and transit service has gradually grown slower over the last three decades (in addition to increased congestion, additional signalized or stop-controlled intersections, increased numbers of wheelchair boardings, and other operational factors might contribute to declining speeds). As recently as 1983 (shortly after SFMTA light rail vehicles began using the Market Street tunnel), SFMTA transit systemwide average speed, for all modes, was 9.5 miles per hour. By 2005, SFMTA transit average speeds had declined to 8 miles per hour; in 2007, the most recent year for which system-wide data are available; average speed was 8.3 miles per hour, a slight improvement but still well below the historic high. SFMTA transit has also had difficulty achieving its charter-mandated reliability standard of 85 percent schedule adherence (as defined by a measure of no more than one minute early or four minutes late). In recent quarters, schedule adherence has improved slightly, but remains below 75 percent systemwide.

Figure 3-4 illustrates current average PM peak hour operating speeds for transit segments within the Eastern Neighborhoods. This information is drawn from data collected for the SFCTA's 2009 Draft Congestion Management Program report. It illustrates that, within the Eastern Neighborhoods, buses on major streets generally operate at average speeds of less than 10 miles per hour during peak periods. This speed includes the time the bus spends moving, and also the time the bus spends stopped at bus stops. In several segments, including much of Mission, 16th, and 24th Streets in the Mission District and Mission Street South of Market, buses average less than 8 miles per hour during the PM peak period. Buses on 24th Street east of Guerrero Street average less than 8 miles per hour during the AM peak period. Bus speeds are somewhat higher on Folsom and Bryant Streets in the Mission, on Potrero Hill, and in parts of the Central Waterfront.

On parts of several streets in the Eastern Neighborhoods, average peak-period bus speeds are less than half of average auto speeds. This is the case on all of Mission Street and on much of Potrero Avenue in the Mission District, as well as on parts of 16th Street, Folsom Street, and segments of several of the north-south numbered streets in the South of Market.

Figure 3-4 Muni Bus Speeds, Weekday PM Peak (Spring 2009)[2]



Source: SFCTA, 2009 CMP, based on SFMTA data

[2] Notes: Muni Bus (diesel and trolley coach) APC data (stop-to-stop segments), March 2009 Weekdays, PM Peak Period (4:30pm-6:30pm). Segments with insufficient or missing data are not displayed. Two-way route segments are represented by parallel lines. Further details regarding this analysis are available in Chapter 5 of the SFCTA's 2009 Congestion Management Plan.

Figure 3-5 below, meanwhile, provides key indicators of performance – frequency, reliability, crowding, and productivity -- for SFMTA transit routes operating in the Eastern Neighborhoods.[3] Schedule adherence and load factor data are for the most recent available full fiscal year, and are drawn from SFMTA Service Standards reports. Data on passengers per hour were collected for the Transit Effectiveness Project in 2006 and 2007.

Figure 3-5 Key Performance Indicators for SFMTA Bus Lines in the Eastern Neighborhoods

Route	Base Headway (June 2010)[4]	Schedule Adherence (FY09)[5]	Load Factor (FY08)[6]	Psgrs./Hr.[7]
N Judah	10	70.5	84.8	158
T Third Street	12	64.6	75.8	124
8X Bayshore Express	10	61.6	61.6	--
9 San Bruno	12	73.9	83.1	83
10 Townsend	20	74.5	68.0	51
12 Folsom	20	73.8	70.1	47
14 Mission	9	77.6	77.3	97
14L Mission Limited	12	71.6	56.6	107
19 Polk	15	68.5	68.1	51
22 Fillmore	10	77.7	73.4	67
27 Bryant	15	76.6	68.4	54
30 Stockton	12	81.3	79.0	103
33 Stanyan	20	68.0	58.0	45
45 Union-Stockton	12	75.4	95.2	92
47 Van Ness	9	76.6	77.1	66
48 Quintara-24th Street	15	71.5	87.9	56
49 Van Ness-Mission	9	75.7	64.7	88
67 Bernal Heights	20	80.7	47.2	37

Source: SFMTA Transit Effectiveness Project and Service Standards Reports

[3] A number of routes that operate in the Eastern Neighborhoods are not included. These include routes that operate only during peak periods or on Sundays, routes that make only one or two stops in the study area, and a route only recently introduced (9L). Route 8X was introduced in 2007 as Route 9X, and renamed in December 2009.

[4] Mid-weekday typical scheduled frequency in minutes.

[5] Percentage of vehicles observed arriving at stops during both peak and off-peak periods no more than one minute before or four minutes after scheduled arrival time.

[6] Passengers observed aboard during both peak and off-peak periods as a percentage of "comfortable" seated and standing capacity as defined by SFMTA. For 40-foot buses, this is 63; for articulated buses, it is 94; and for light rail vehicles, it is 119.

[7] Boardings per hour of revenue service.

Recently, SFMTA has responded to budget deficits by cutting transit service. In December 2009, the agency implemented its most extensive service changes in 30 years. However, these changes largely consisted of efficiencies in the form of reallocations of resources to higher-demand corridors and new, more efficient operator schedules. The 2009 service changes actually resulted in increased levels of service in major corridors including Mission Street and Potrero Avenue. Unfortunately, the agency has since been forced to adopt an additional "across-the-board" cut of 10 percent. The budget crisis has forced the SFMTA Board and other policy makers to consider new sources of revenue that might make the system more fiscally sustainable; however, the transit system's financial future remains uncertain.

BART

The Bay Area Rapid Transit District, or BART, provides "third" or "heavy" rail service throughout the Bay Area. Unlike most such systems, BART service is not concentrated within the urban core of the region. Rather, a single trunk line serves San Francisco and the upper Peninsula, splitting into four branches in the East Bay. Because four of BART's five lines serve San Francisco (the fifth operates along two of the four East Bay branches), levels of service are relatively high during periods when all four lines are in operation – an average headway of 3.75 minutes until 7 p.m. Monday through Saturday. In the evening until approximately 12:30 a.m. and all day on Sundays, average headways in San Francisco are 7.5 to 10 minutes, although service is not evenly spaced, meaning that waits can be up to 12 minutes. Among commuters living in the Eastern Neighborhoods, approximately 14 percent report using BART for some portion of their trip. [8]

In the Eastern Neighborhoods, BART stations are located under Mission Street at 16th Street and 24th Street (there are also four BART/Muni Metro stations along the northern edge of the Eastern Neighborhoods, under Market Street). Using BART, connections can be made from the Mission to San Francisco International Airport (SFO), Civic Center, Union Square, the Financial District, and East Bay destinations including Downtown Oakland, Downtown Berkeley, the University of California, Berkeley, the Oakland Coliseum and Arena, and Oakland International Airport.

Located in a dense, mixed-use urban neighborhoods with a generally high-quality pedestrian network – a well-connected grid of closely spaced streets offering multiple paths – and lacking parking lots of their own, the 16th and 24th Street Mission BART stations have among the highest pedestrian mode shares for access in the BART system. Figures 3-6 and 3-7 show mode shares for travel to each station. Walking is the dominant mode of access for both stations, with more than two-thirds of both home- and non-home-based trips to each station made by foot: 81 percent of home-based and 66 percent of non-home-based trips at 16th Street Mission Station, and 73 percent of home-based and 76 percent of non-home based trips at 24th Street Mission Station.

The stations also serve as the primary transit nodes for the Eastern Neighborhoods, with several connecting SFMTA transit routes operating along 16th and 24th Streets, extending over Potrero Hill to Third Street to the east. Routes 14 Mission and 49 Van Ness Mission, which serve both stations, as well as Route 22 Fillmore, which serves 16th Street Mission Station, are among the

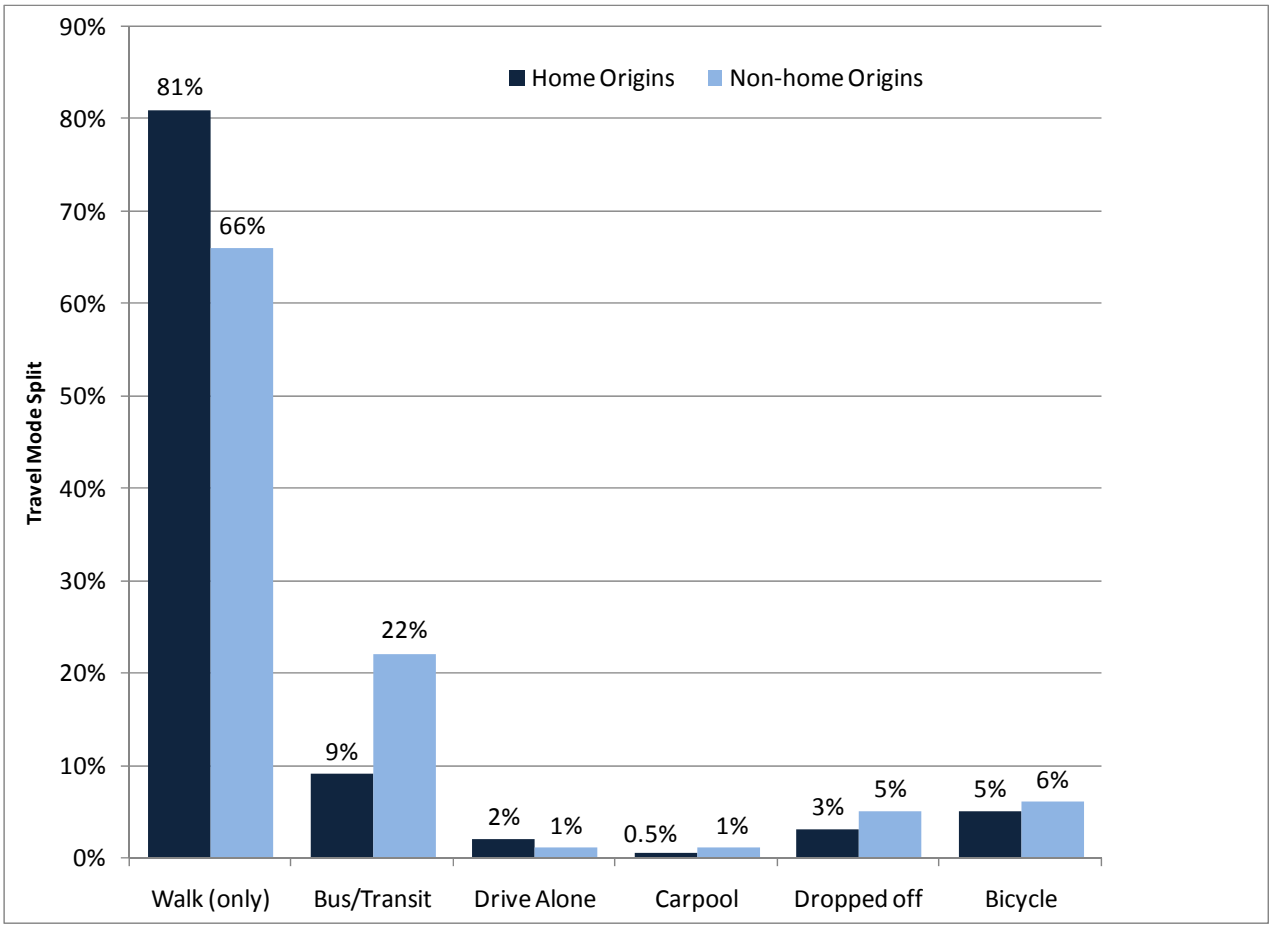
[8] Eastern Neighborhoods Travel Behavior Survey

busiest in the SFMTA transit system. 16th Street Mission Station is also served by Routes 14L Mission Limited and 33 Stanyan, while 24th Street Mission Station is also served by Routes 12 Folsom, 14L, 48 Quintara-24th Street, and 67 Bernal Heights.

Both stations provide a notable amount of bike parking: 77 spaces at 16th Street Mission Station and 147 spaces at 24th Street Mission Station. Valencia Street, parallel to Mission one block to the west, is designated as city bicycle Route 45 and features Class II bike lanes, while 17th Street is designated Route 40.

Finally, both stations are among the busiest in the BART system, particularly when stations in the downtown business districts of San Francisco and Oakland are excluded. On an average weekday, more than 11,000 riders enter BART at 16th Street Mission Station, while more than 13,000 riders enter 24th Street Mission Station.[9]

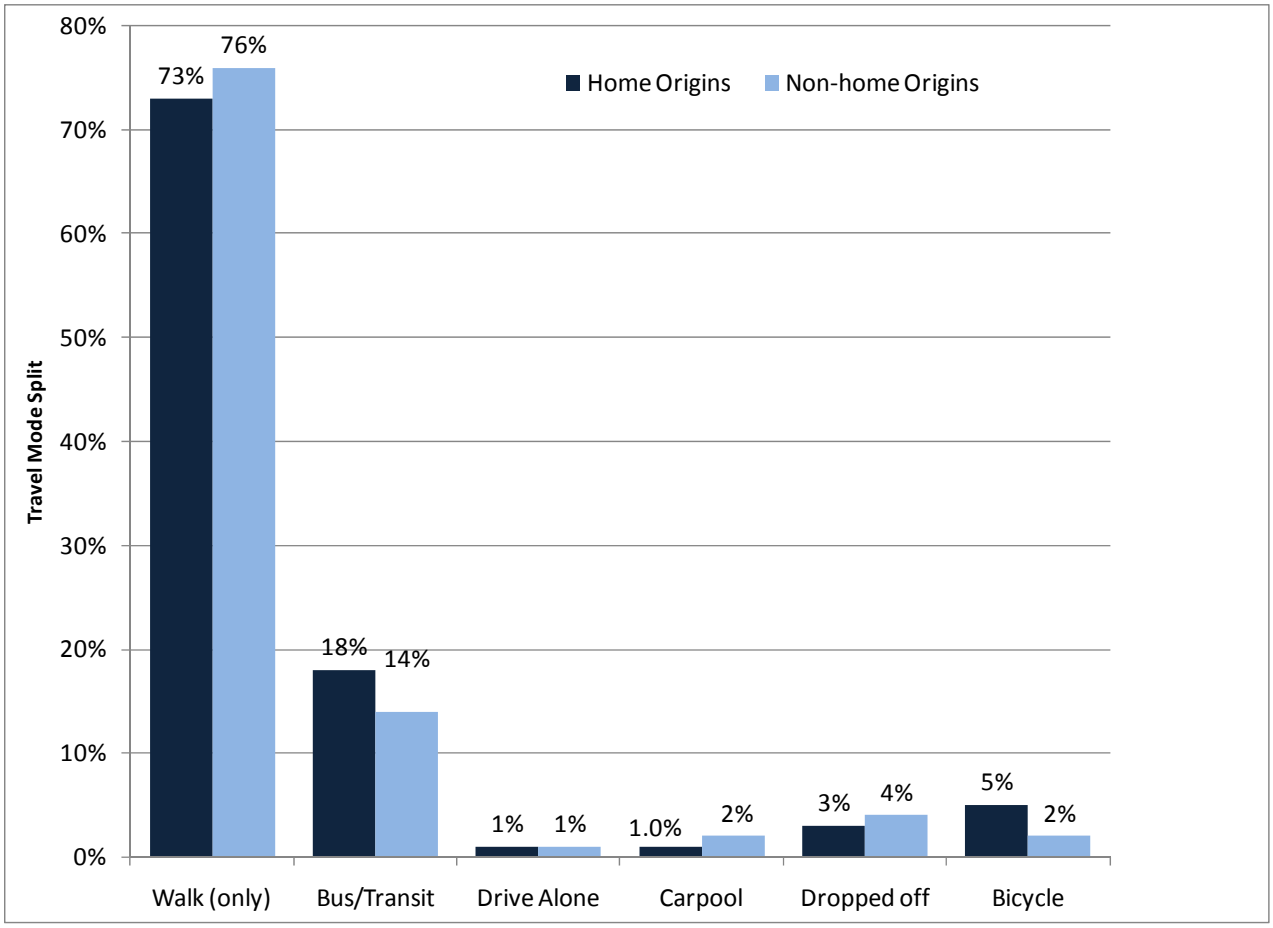
Figure 3-6 Travel Mode to 16th Street Mission BART (Home vs. Non-home Origins)



Source: BART Station Access Survey, 2008

[9] All BART data was accessed from the *2008 BART Station Profile Study*, http://www.bart.gov/docs/StationProfileStudy/2008StationProfileReport_web.pdf

Figure 3-7 Travel Mode to 24th Street BART (Home vs. Non-home Origins)



Source: BART Station Access Survey, 2008

Caltrain

A second regional rail operator, Caltrain, provides diesel-powered commuter rail service between the South Bay, Peninsula and the Fourth and King Street Station South of Market. A second Caltrain station is located at 22nd Street on the eastern flank of Potrero Hill, below Highway 280. Caltrain provides relatively frequent service during peak periods but only hourly service mid-days and on weekends. Some Caltrain services are express or limited-stop.

The Fourth and King Caltrain Station[10] is located in the southern portion of SoMa and is the San Francisco terminus for Caltrain service. Located one block to the southwest of AT&T Park, the City's Major League Baseball stadium, Fourth and King is a major transit hub served by Muni routes including the N Judah, T Third Street, 10 Townsend, 30 Stockton, 45 Union-Stockton, and 47 Van Ness. The station is at grade and is accessible to pedestrians using a number of routes; however, the sidewalk on the south side of Townsend Street, to the north of the station, ends just west of the station. Bicycle access is available via Route 36 on Townsend Street and Route 19 on Fifth Street; however, installation of bicycle lanes on these streets has been delayed by the

[10] The name "Fourth and King," while in wide usage, is unofficial. Caltrain refers to the station simply as "San Francisco."

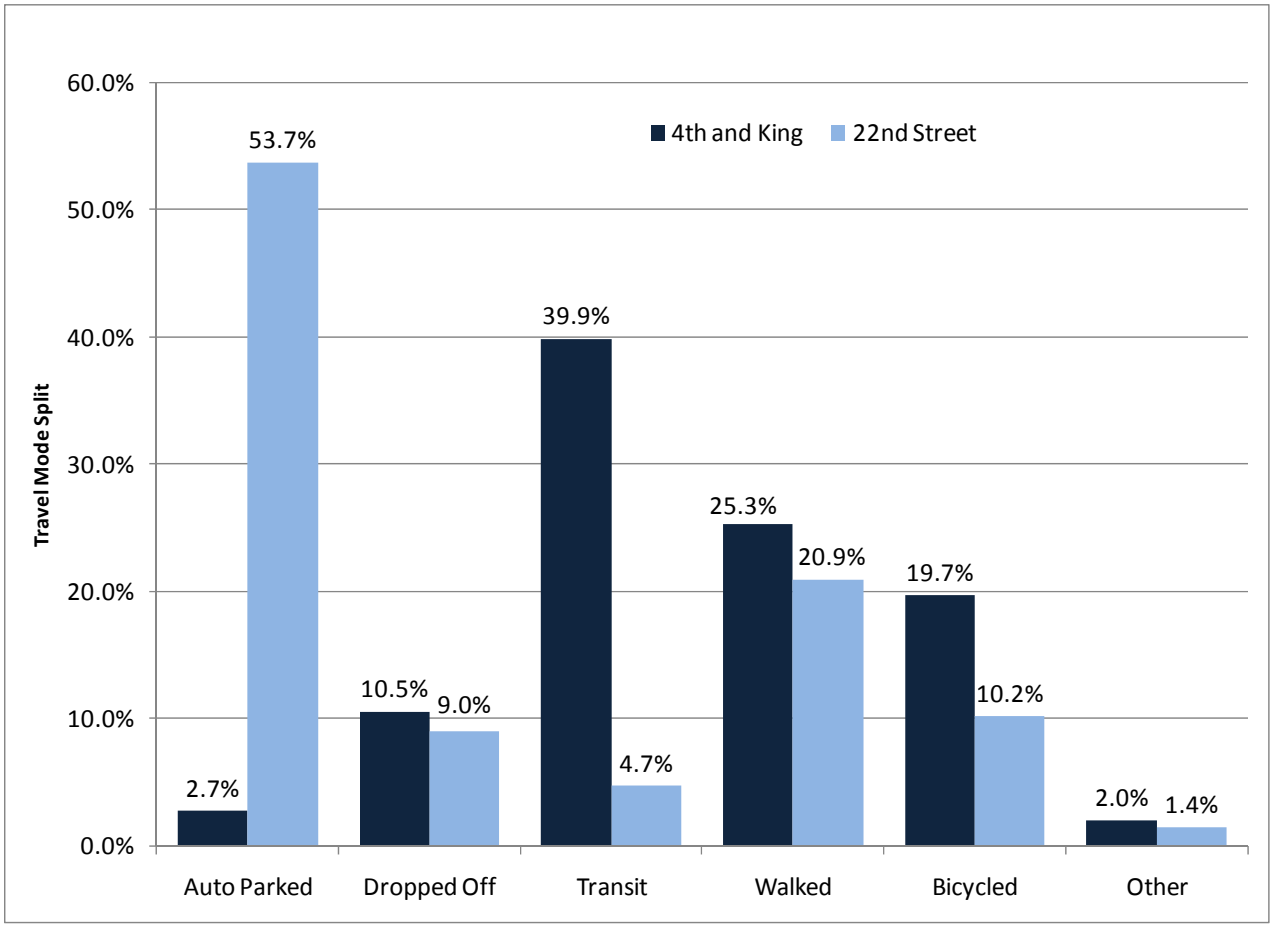
Bicycle Plan injunction. Bicycle lockers and a full-service bike station offering repairs ("Warm Planet") are provided at the station. There is no dedicated parking, but on-street parking is available, included unmetered angle parking along Townsend Street.

The 22nd Street Station is located on the western edge of the Central Waterfront, and on the eastern edge of Potrero Hill. The station is under Highway 280, just south of 22nd Street. It is directly served by just one bus route (48 Quintara-24th Street), although the T Third Street's 23rd Street Station and Route 22 Fillmore stops are a few blocks away. Given the location of the station under the freeway and below street level, pedestrians may have difficulty finding the station, and the pedestrian environment in the surrounding area is challenged by steep grades and industrial land uses. The nearest bicycle route is Route 7, which provides north-south access along Indiana and Minnesota Streets. There are no dedicated bicycle lanes on these streets, but there are sharrow treatments. There are no bicycle lockers at the station, so many cyclists lock their bicycles to a metal fence on 22nd Street. There is also no dedicated auto parking, but unmetered on-street parking is available throughout the area.

Caltrain station access data offers a snapshot view of how riders access both the stations and their final destinations from stations. In short, transit, walking, and bicycling are the predominant modes of travel to and from Fourth and King Station, while users of 22nd Street are likely to walk or bike from it, but to drive to it, a condition that is perhaps unsurprising given the relatively high availability of unregulated parking and challenges to access by other modes.

Figure 3-8 shows access modes for riders during the AM peak. At Fourth and King, nearly 40 percent of riders accessed the station by transit, while another 45 percent walked or bicycled. More than 10 percent of riders are dropped off. At 22nd Street, automobile access is much more common, with 53.7 percent of riders parking. Another 31.1 percent of riders access 22nd Street by walking and bicycling.

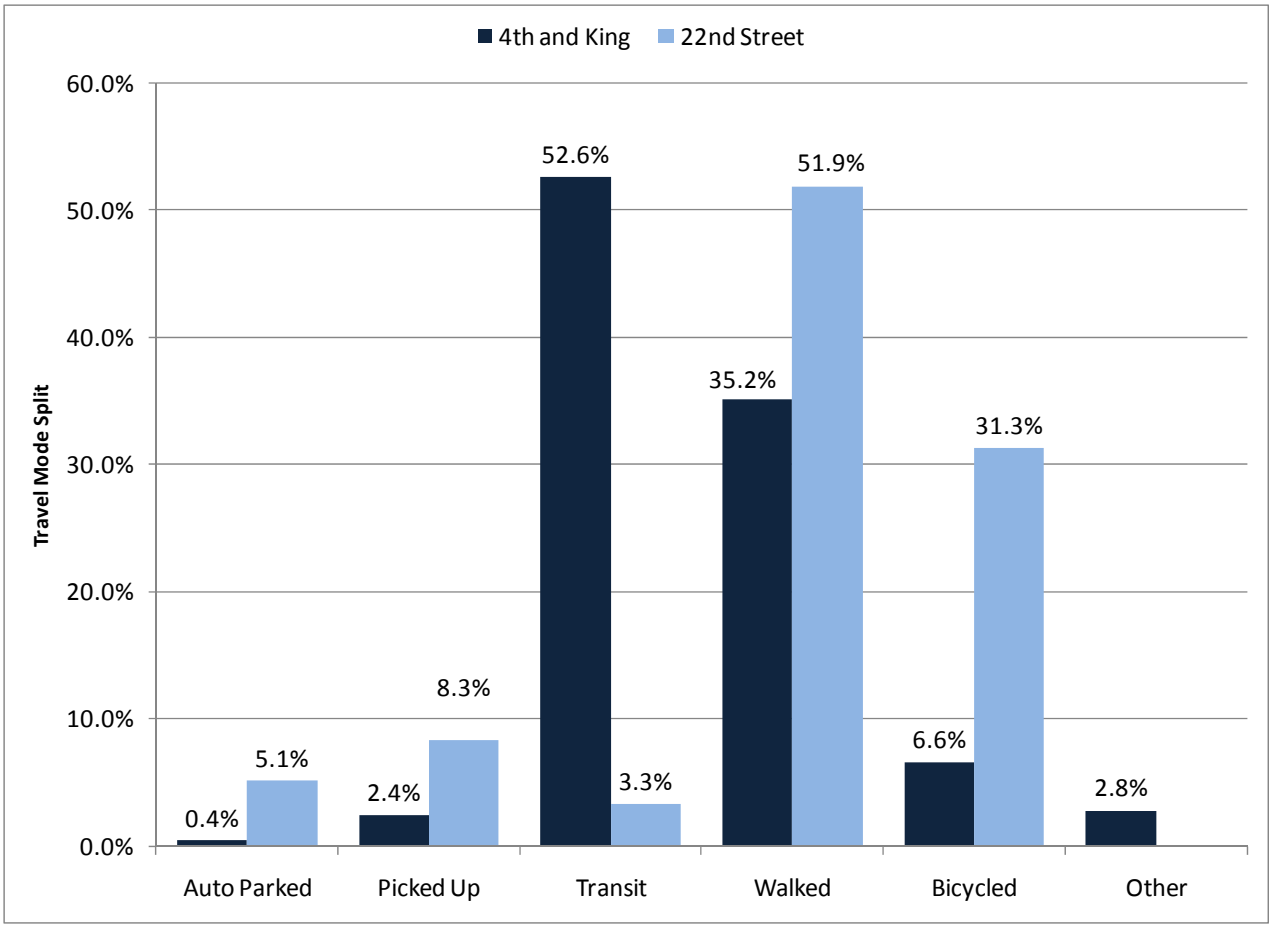
Figure 3-8 Travel Mode from Trip Origin to Caltrain Station, AM Peak (2006)



Source: 2006 Caltrain Origin and Destination Study (Ted Yurek, Caltrain - Samtrans)

Figure 3-9 shows the travel modes that riders exiting the stations use to reach their final destinations during the AM peak. At Fourth and King, 53 percent of Caltrain riders use transit to reach their final destination, while 35 percent walk and 7 percent bicycle. At 22nd Street, however, bicycling and walking are the predominant access modes, comprising 83 percent of the mode split. Pickup and parking rates are also higher at 22nd Street. (It is important to note that there are very few people exiting the 22nd Street station during the AM peak. As a result, the 22nd Street numbers may be distorted due to small sample size.)

Figure 3-9 Travel Mode from Caltrain Station to Final Trip Destination, AM Peak (2006)



Source: 2006 Caltrain Origin and Destination Study (Ted Yurek, Caltrain - Samtrans)

Regional Bus Operators

Three regional bus agencies – the Peninsula's SamTrans, the East Bay's AC Transit, and the North Bay's Golden Gate Transit – operate routes in the Eastern Neighborhoods terminating at the Transbay Terminal at First and Mission Streets, the area's fourth major transit hub (starting later this year, these routes will terminate at a temporary site at Howard and Main Streets, discussed in the next section, Plans and Projects). These services operate primarily during peak periods and are oriented toward commuters from outside the city traveling to downtown.

Ferry Operators

Ferry service to and from the East Bay and North Bay is available at the Ferry Building along the Embarcadero near the foot of Market Street. Ferries under the authority of the Water Emergency Transportation Authority, Golden Gate Transit and the Blue and Gold Fleet operate to and from Alameda, Larkspur, Oakland, Sausalito, Tiburon, and Vallejo at peak headways ranging from 30 minutes to an hour or more.

Transit Plans and Projects

This section discusses planned changes to transit service in the Eastern Neighborhoods, including both operating changes and capital investments. Currently programmed changes would achieve major improvements over existing service. New connections would be established, particularly in the Mission and Mission Bay, and levels of service would be increased in corridors including 24th Street. The neighborhoods would benefit, even more so than they already do, from their proximity to major rail hubs. However, timelines for implementation of the Transit Effectiveness Project and of the Downtown Rail Extension remain uncertain, and as a result of budget deficits, Muni has recently cut service.

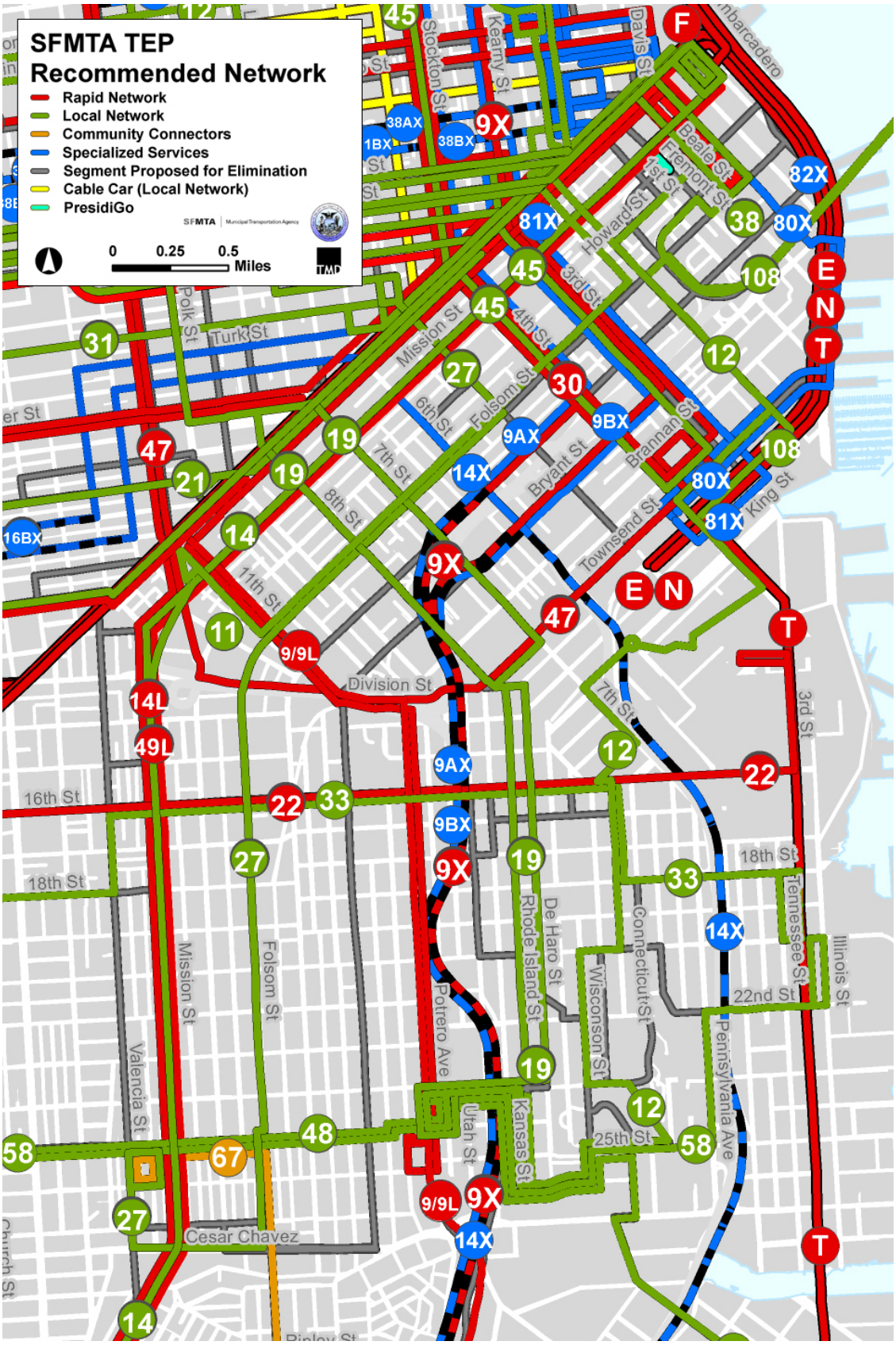
Transit Effectiveness Project

The Transit Effectiveness Project, or TEP, was a comprehensive audit of Muni service based on extensive data collection and community comment. Its final recommendations included numerous proposals to change routes and frequencies of service, as well as a package of proposed capital investments. The TEP's recommendations were endorsed by the SFMTA Board in October 2008; however, the environmental review process has not yet been completed, and its recommendations have not yet been implemented.

The TEP was the first audit of SFMTA's transit service in close to a quarter-century. Its recommendations sought to improve both speed and reliability of service by taking measures to reduce delay and strove to ensure that resources would be allocated cost-effectively. Among the project's key findings were that the great majority of SFMTA's transit boardings are concentrated in just a few corridors and neighborhoods.

In addition to the route-specific recommendations described below, some general recommendations of the TEP, such as further exploration of opportunities for optimization of stop spacing, would also apply to the Eastern Neighborhoods.

Figure 3-10 TEP-Proposed Muni Route Network



New and expanded limited-stop service

- The TEP recommended a new Route 9L San Bruno Limited. Route 9L has since been introduced as part of service changes implemented in 2009, but in a different form from what was proposed. In the TEP recommendations, Route 9L was proposed to make local stops for most of its length, but only limited stops on Potrero Avenue north of 24th Street, where additional "short-run" local Route 9 San Bruno service would be provided when the route was in operation on weekdays. The version of Route 9L since implemented also makes limited stops in the Portola and Visitacion Valleys, and there is no short-run local service on Potrero Avenue.
- The existing Route 14L Mission Limited, which formerly ran only infrequently and only during the mid-day, was proposed to be expanded into a more frequent, all-day service. Since the 2009 service changes, Route 14L has been operating every 10 minutes on weekdays and every 12 minutes on weekends. Additionally, the TEP recommended that the 49 Van Ness-Mission be converted into a limited-stop service (north of Mission Street, the route will eventually operate in the Van Ness Avenue bus rapid transitway). On Mission Street south of South Van Ness Avenue, the TEP recommended combined local and limited headways in peak periods of 2.5 minutes.

New local-stop service

- A route called the 11 Downtown Connector would operate on Folsom between Second and Eleventh Streets, replacing service currently provided by Route 12 Folsom (see "Route modifications" below) and improving connections to the Van Ness Muni Metro station. The proposal assumed that Folsom would be converted to two-way operations.
- A new 58 24th Street line would provide additional service on 24th Street (combined Routes 48 and 58 and headways would be every 7.5 minutes; the 48 currently operates every 12 to 15 minutes) and would provide connections from Noe Valley and the Mission to the 22nd Street Caltrain station, allowing Route 48 Quintara/24th Street to be realigned east of Potrero Hill to serve the Hunters Point Shipyard redevelopment area. In preliminary recommendations that were later modified, an alternative including realignment of Route 24 Divisadero onto 24th Street was included. As the 24 is an electric trolleybus line, this would have required construction of new catenary poles and wires, a proposal that failed to gain traction with the community.

New historic streetcar service

- The TEP endorsed a project that has long been under consideration, a new E Embarcadero historic streetcar line to complement the F Market and Wharves along the northern Embarcadero, and to extend historic streetcar service to the southern Embarcadero and King Street, connecting Fisherman's Wharf and the Ferry Building to AT&T Park and the Fourth and King Caltrain Station. Infrastructure for this service already exists; it has not yet been implemented due to a lack of available vehicles (because there is only a turnback and not a loop at Fourth and King Streets, double-ended vehicles would

be required) as well as a lack of demand (N Judah service along the alignment was recently eliminated on weekends).

Route modifications

- The route formerly known as the 12 Pacific, which now operates on Folsom Street in the Mission as the 12 Folsom, was proposed to be realigned to serve Potrero Hill (primarily via Connecticut and Wisconsin Streets), providing a direct connection between San Francisco General Hospital, the Fourth and King Caltrain Station, eastern SoMa and the Financial District. However, in 2009 Route 10 Townsend, which had been proposed for elimination (see "Routes proposed for elimination" below), was rerouted to serve this corridor instead (with northbound operations on Arkansas Street rather than Wisconsin and along Townsend Street rather than through Mission Bay). The 10's alignment in eastern SoMa was also consolidated onto Second Street, eliminating a deviation to the Transbay Terminal. Route 12's alignment was altered to serve Second Street rather than the Embarcadero and to connect to the 24th Street Mission BART station.
- Route 19 Polk is proposed to be shortened on its southern end, terminating at San Francisco General Hospital rather than Hunters Point Shipyard (Route 48 Quintara/24th Street would replace it in this segment; see below).
- The segment of the 22 Fillmore's route on Potrero Hill and in Dogpatch is proposed to be served by a realigned 33 Stanyan, which would no longer serve Potrero Avenue. Route 22 would instead continue east on 16th Street to Mission Bay before continuing north on Third Street to terminate at the Mission Rock T Third Street station. The 33 would also be realigned to operate on Valencia rather than Mission between 16th and 18th Streets.
- Route 27 Bryant was proposed to be renamed 27 Folsom, and to be shifted to serve the segment of Folsom Street now served by Route 12, leaving no north-south service between Folsom and Potrero Avenue in the Mission. It was also proposed to be extended to 24th Street Mission BART and to operate in both directions on Folsom in SoMa, west of Fifth Street. The status of this proposal is unclear, as Route 12 may remain on Folsom Street (see previous description).
- Route 47 Van Ness would be realigned from Mission, Eleventh, Harrison, Bryant, Fourth and Fifth Streets to South Van Ness Avenue and 13th, Division, and Townsend Streets. This would reduce travel times between Van Ness Avenue (where the route will eventually operate in a bus rapid transitway) and the Fourth and King Caltrain Station and would improve service to Showplace Square.
- Route 48 Quintara-24th Street (formerly known as Route 48 Quintara) is proposed to be rerouted on its eastern end to serve the Hunters Point Shipyard Redevelopment Area rather than the 22nd Street Caltrain station, the Dogpatch area, and the T Third Street station at Third and 20th Streets. In 2009, its Potrero Hill alignment was altered: it now uses 25th and Pennsylvania Streets rather than Wisconsin, Arkansas, 20th, and Texas Streets.

- The western leg of the looping Route 67 Bernal Heights along Mission Street and Crescent Avenue was proposed to be eliminated, and was eliminated as part of the 2009 service changes.

Routes proposed for elimination

- Because proposed realignments of other routes would make it largely redundant, Route 10 Townsend was proposed for elimination. However, in 2009 it was realigned instead (see previous discussion under route modifications).
- Because service on Mission Street, parallel to Valencia just one block to the east, was proposed to be expanded, the lightly used Route 26 Valencia was proposed for elimination. In 2009, the route was discontinued.
- Route 53 Southern Heights, which connected parts of Potrero Hill to the 16th Street Mission BART station, was likewise found to be largely redundant with existing and proposed services, was proposed for elimination, and was discontinued in 2009.

Proposed capital improvements

- Routes operating in the Eastern Neighborhoods, including so-called “Rapid Network” routes (the N, T, 8X, 9, 9L, 14, 14L, 22, 30, 45, 47, and 49), would be the recipients of targeted investments in infrastructure designed to incrementally improve speed, reliability, and rider comfort, including “bulb-out” stops and transit-priority signaling.
- A second set of overhead wires along Mission Street allowing both local and limited service to be provided by electric trolleybuses was recommended as part of an “enhanced” funding scenario.

Central Subway

In addition to TEP-recommended changes, there are two major transit infrastructure projects currently in development that would greatly affect the Eastern Neighborhoods: Muni’s Central Subway and the Transbay Transit Center and connected Downtown Rail Extension, or DTX.

Ground was recently broken for the Central Subway, with service currently scheduled to begin in 2018. The Central Subway is phase two of the Third Street Light Rail project: the T Third Street Metro line, which currently uses the Embarcadero to access the Market Street subway, will be extended north along Fourth and Stockton Streets, across Market Street to Chinatown. In the South of Market, there will be new surface stops along Fourth between Brannan and Bryant Streets and an underground station at Moscone Center, between Folsom and Howard Streets. Trains will operate in semi-exclusive right-of-way on Fourth (south of the Bay Bridge approach, Fourth will be reconfigured to provide one northbound and two southbound travel lanes) and will enter and exit the subway via a portal beneath the Bay Bridge approach.

The Central Subway project will improve transit connections between the Eastern Neighborhoods and neighborhoods north of Market, while degrading some existing connections. The project will sever the current direct rail link between the Central Waterfront, the Financial District, and the

Market Street tunnel. However, it will enable a more direct connection to Union Square and establish a new rail link to Chinatown: between the Fourth and King Caltrain Station and Chinatown, transit travel times are projected to be reduced from 20 to seven minutes. The Market Street/Union Square Station will also be connected to Powell Station, allowing transfers to remaining Metro lines and BART, and those traveling to Montgomery and Embarcadero stations will have the option of transferring to the N Judah line at Fourth and King. In the future, the Central Subway might be extended to North Beach or even farther to the north and/or west.

By eliminating the need to share tracks with the N Judah, the project will also serve to improve the reliability of the T Third Street, which is now often signficantly delayed where it transitions between Fourth and King Streets by an automated system designed to keep a safe distance between trains on Lines N and T. T Third trains will also no longer have to pass AT&T Park, where they are delayed by additional game-day trains and large crowds of pedestrians before and after baseball games. Finally, the new stops at Brannan and Moscone Center present "placemaking" opportunities for transit-oriented development and urban design, although planning for safe and comfortable access for pedestrians, cyclists and bus riders will be essential.

California High-Speed Rail, Transbay Transit Center, and the Downtown Rail Extension

The California High-Speed Rail Authority is managing development of a 220-mph passenger rail system connecting major urban centers and airports throughout California. Construction has not yet begun and a timeline for construction remains uncertain, although partial funding has been secured. Phase one of the network would extend from Anaheim to San Francisco, along an alignment following the Caltrain right-of-way up the Peninsula and passing through the Central Waterfront before entering SoMa.

A new Transbay Transit Center on the site of the existing Transbay Terminal on the south side of Mission Street between First and Fremont Streets would serve as the terminus for high-speed rail as well as for Caltrain, and would be a major multimodal hub, with regional and local bus service and connections to BART and Muni Metro nearby, at the Embarcadero and Montgomery Stations The Transit Center project will itself be phased; the Center is scheduled to open in 2015, but will initially accommodate only bus service. During construction, a temporary station at Main and Howard Streets will be used.

In the project's second phase, not yet funded but currently scheduled for completion in 2018, the existing Caltrain right-of-way terminating at Fourth and King Streets would be extended to the Transit Center via a new tunnel under Townsend and Second Streets as part of the Downtown Rail Extension (DTX) project. The tunnel could be used by both (electric) Caltrain regional rail as well as high-speed rail service. At Fourth and King, new underground platforms would be built, and to the south, high-speed rail service would require grade-separation at the alignment's at-grade intersections with Common and 16th Streets (it is possible that Caltrain could continue to intersect the streets at-grade, with high-speed rail in a tunnel). Caltrain's 22nd Street Station, would need to either be rebuilt or relocated as part of the project.

The High-Speed Rail, Transbay Transit Center and DTX projects would improve transit connections between the Eastern Neighborhoods and other parts of the region and state, including the Peninsula, South Bay, Central Valley, and Southern California.

Corridors and Neighborhoods

In the following sections, existing and proposed transit conditions in the Eastern Neighborhoods are discussed at the corridor and neighborhood levels.

Key Corridors

Of the numerous important transit corridors in the Eastern Neighborhoods study area, the following five stand out as requiring careful attention.

Folsom Street

Folsom Street is an east-west street located roughly midway between the northern and southern edges of the South of Market. Though designated as a primary transit corridor in the general plan, Folsom Street is not currently a major focus of Muni service. However, it has been proposed as the eventual east-west main street and transit trunk of a more densely redeveloped neighborhood.

Today, Muni Route 12 operates eastbound on Folsom and westbound on Harrison, one block to the south, while Route 27 operates westbound on Harrison and eastbound on Bryant, two blocks south. The final TEP recommendations reflected the proposal to convert Folsom into a two-way street. The TEP recommended that Route 12 be realigned to serve Mission Bay and Potrero Hill, and that it be replaced along Folsom between Fifth and Eleventh Streets by a realigned Route 27, and between Eleventh and Second Streets by a new Route 11 connecting to North Beach and Fisherman's Wharf. This change would amount to a considerable increase in transit service on Folsom Street; however, service would not extend east of Second Street into Rincon Hill, a connection deemed by the TEP to be of relatively little value as Rincon Hill residents are likely to prefer to walk to rail stations along Market Street or the Embarcadero. The planned Central Subway station at Folsom and Fourth Street (Moscone Center) would reinforce the corridor's role in the larger transit network, although connections to Routes 30 and 45 at Third and Fourth Streets would become relatively less important as their service levels were cut following extension of the T.

16th Street

The major east-west street of the northern Mission and one of only a few east-west streets to cross the entire eastern half of the city, 16th Street connects Third Street in Mission Bay to the Mission District and the Castro and serves as the dividing line between Showplace Square and Potrero Hill. Within the Eastern Neighborhoods, it is served for most its length by the 22 Fillmore, Muni's second-busiest crosstown route (after the 49 Van Ness-Mission). The 33 Stanyan also runs along 16th Street between Mission and Potrero.

The street has long been a candidate for transit-priority treatment, including potential bus rapid transit improvements. In part, this is a function of available right-of-way: at Mission Street the right-of-way is 64 feet and, depending on location the roadway, consists of three to four lanes making it the widest east-west street between 13th and Cesar Chavez. Nonetheless, transit service is relatively slow: in the PM peak period, the 22 Fillmore averages around 7 miles per hour (varying slightly by segment) in both directions between Guerrero Street and Potrero Avenue. By contrast, westbound autos average 15.2 miles per hour between Potrero Avenue and Mission Street.

There are two notable challenges introduced by the TEP proposals for 16th Street. First, the TEP would realign the eastern end of the 22 to remain on 16th Street, continuing into Mission Bay. However, this change would present a challenge if Caltrain were to remain at street level and were to be electrified, as the 22 is itself powered by overhead wires. Trolley poles on buses on the 22 would have to briefly be detached from overhead wires every time the tracks were crossed, and Caltrain service is likely to increase over the coming years, causing ever-greater delays. (The long term plans for California High-Speed Rail to operate in the Caltrain right of way might result in grade separation between 16th Street and the train tracks, eliminating this conflict.) Second, TEP proposals do not provide a direct connection between Mission Bay and neighborhoods to the west of Church Street, where the 22 turns north.

Mission Street

Mission Street is not only the Mission District's primary transit corridor and the city's second-busiest transit corridor after Market Street, but it is also the Mission's busiest street for retail activity and pedestrian traffic. Because streets to its east effectively dead-end into Bernal Heights to the south and because streets to its west don't turn toward downtown to the north, Mission also serves as an important through route for auto traffic. Traffic also sometimes comes to a stop in the street's outer lanes due to double-parking. All of these factors combine to make meeting the level of demand for transit service in the corridor a major challenge. Over the years, bulb-out stops have been added, and some stops have been combined to improve speed and reliability.

The recent expansion of Route 14L limited-stop service represents a shift in Muni's thinking about Mission Street. Previously, local service was provided as a complement to the express service offered by BART immediately beneath the street in the Mission District and roughly parallel to Mission Street a few blocks to its west in the Outer Mission and Excelsior districts. Despite the presence of BART, this local service has always been well-utilized: at its maximum load point, at 24th Street, the TEP found a daily load of more than 5,500 passengers on Route 14. On this basis, TEP planners determined that the market for transit service in the corridor was so substantial, it could support high levels of express, local, and limited-stop service, and the 14L was expanded into an all-day, relatively frequent service.

Potrero Avenue

This broad arterial running alongside San Francisco General Hospital and connecting neighborhoods in the city's south to the central city has long been a candidate for bus rapid transit improvements, potentially including expansion of the limited segment of bus-only lane (northbound between 24th and 22nd Streets) already added to the street as part of a 2005 project that reduced it from six through travel lanes to four, plus left-turn pockets. The contrast between average transit and auto speeds is greater here than anywhere else in the Eastern Neighborhoods: for both the AM and PM peak periods, the ratio of auto to transit speed southbound between 21st Street and Cesar Chavez Street is 2.79 (19.4 vs. 7.0 miles per hour), and northbound, the ratio is 2.58 (18.8 vs. 7.3 miles per hour). In 2009, new 9L-San Bruno limited service was introduced to the corridor.

24th Street

Twenty-fourth Street is not part of the General Plan-designated primary transit network, but it is important because of the 24th Street Mission BART station, and because it offers one of the Mission District's few cross-town bus corridors.

The main east-west street of the southern Mission is, like 16th Street, 64 feet wide at Mission Street; however, its roadway configuration consists of just one lane in each direction, and it does not extend east of Highway 101. Nonetheless, it is a major neighborhood commercial corridor connecting Noe Valley to the 24th Street Mission BART station and San Francisco General Hospital. The TEP proposed to greatly expand service in the corridor, either by rerouting the 24 Divisadero, which now runs east-west along Cortland on the south side of Bernal Heights, or by providing additional service using other existing or new routes. Upon encountering community resistance to the addition of electric trolleybus wires that would be required as part of a rerouting of the 24, TEP planners settled on the latter strategy, proposing a new Route 58 that would follow the existing Route 48 alignment to the east of the Mission, over Potrero Hill to the 22nd Street Caltrain station, thereby allowing Route 48 to be realigned to serve the Hunters Point Shipyard redevelopment area. Along 24th Street in the Mission and in Noe Valley, the routes would combine to provide service every 7.5 minutes, nearly double the present level.

Neighborhoods

South of Market

Much of SoMa's transit service is concentrated on the perimeter of the neighborhood along Market and Mission Streets, as well as the Embarcadero (several routes also use the one-way couplet of Third and Fourth Streets). Transit service in the interior of the neighborhood is constrained by Rincon Hill and the Bay Bridge approach, which block north-south connections between Second and Beale Streets, as well as by the pattern of one-way street couplets, which require routes to operate on different streets in different directions. Because SoMa blocks are twice as long (825 feet) and wide (550 feet) as those north of Market, stops can be farther apart, and pedestrian paths to stops can be less direct. Some routes also operate infrequently, and traffic congestion on streets leading to the Bay Bridge can cause transit delays during the PM

peak period. However, rights-of-way on South of Market's main east-west and north-south streets are 82 feet 6 inches, a relatively generous dimension that allows for multiple travel lanes, reducing the effects of congestion on transit.

The major transit expansions planned for the Eastern Neighborhoods would have their greatest effects within the South of Market. The new Transbay Transit center will replace the existing Transbay Terminal, generally within the same footprint, and feature facilities for all major regional bus transit providers, including AC Transit, Muni, Golden Gate Transit, and Sam Trans, and a train station for Caltrain and future high-speed rail service. During construction of the new Transbay Terminal, a temporary terminal located on an adjacent block bounded by Howard Street, Main Street, Folsom Street, and Beale Street will accommodate existing bus service that uses the existing building. In addition, new Muni Metro stops would be provided at Fourth and Brannan and Fourth and Howard through the Central Subway project

The TEP-recommended Route 11, meanwhile, would maintain the connectivity between eastern and western SOMA currently provided by Route 12, although it would not restore the connection to Rincon Hill provided by the 12 before it was realigned in December.

Mission District

Commuters, residents, and visitors from San Francisco and throughout the Bay Area utilize the BART Stations at both 16th Street and 24th Street. Muni's 14 and 49 buses which run along Mission Street carry almost 40,000 riders daily. 16th Street within the Mission plays a key role as an east-west transportation link. Sixteenth Street is the only corridor that provides a continuous uninterrupted connection between the Mission, Showplace Square, Mission Bay, and the Eastern Waterfront, a critical connection for all of the Eastern Neighborhoods. It also provides a critical link between local (Muni Third Street light rail) and regional transit (16th Street Mission BART). Mission transportation facilities are described in detail in Chapters 3-6.

A substantial amount of both local and limited-stop bus service is also available on the surface of Mission Street, and along Potrero Avenue on the neighborhood's eastern edge. A number of incremental improvements have been made to reduce delay for buses on Mission in recent years, including bulb-out stops at key locations. However, Mission remains a relatively constrained right-of-way, with high pedestrian volumes and frequent double-parking, and bus speeds along 16th, Potrero, and 24th are little better.

While it enjoys high levels of transit service in some corridors, the natural and manmade constraints around the perimeter of the Mission District have resulted in notable gaps in the transit network: east of Mission Street, there are no east-west routes between 16th and 24th Streets, a distance of nearly a mile, and west of Mission there are no east-west routes between 18th and 24th. Since elimination of the 26 Valencia, there are no north-south routes between Mission and Church Streets, a distance of roughly one-half-mile. If the TEP recommendation to eliminate bus service on Bryant Street is implemented, there will be no north-south routes between Folsom and Potrero, a distance nearly as great. The barrier created by Highway 101 constrains connections to Potrero Hill, and because the 22 Fillmore turns south off of 16th Street

east of the Mission to serve Potrero Hill, there are currently no direct connections between the Mission and Mission Bay.

Potrero Hill and Showplace Square

The Transit Effectiveness Project identified a lack of direct transit service from Potrero Hill to downtown San Francisco as a key deficiency in the city's transit network. This issue has since been addressed via realignment of the 10 Townsend. Between the 10 and the 19 Polk, which serve the Civic Center and Van Ness corridor, Potrero Hill is now served by several relatively infrequent north-south bus routes. However, Highways 280 and 101 on the Hill's eastern and western flanks continue to complicate east-west connections and the December 2009 elimination of Route 53 and realignment of Route 48 exacerbated this situation. For most residents of Potrero Hill, it is faster to walk or bike to the 22nd Street Caltrain station than to take a connecting bus, despite the steep slopes that must be traversed. Formerly direct connections to 16th Street Mission BART now require transfers. If the TEP recommendation to reroute the 22 Fillmore along 16th Street on the neighborhood's northern edge and serve its Potrero Hill segment using the less-frequent 33 Stanyan are implemented, connections to the 16th Street Mission BART Station would further be weakened.

The Showplace Square area likewise enjoys direct connections to both the eastern and western portions of downtown via Routes 10 and 19. The 22 Fillmore along its southern edge provides a connection to the 16th Street Mission BART Station; however, until the 22 is realigned as recommended by the TEP, there will be no direct link between Showplace Square and Mission Bay despite their relatively proximity.

Central Waterfront and Mission Bay

Despite remaining relatively sparsely populated, Mission Bay and the Central Waterfront have enjoyed a recent expansion of rail service: the T Third Street Metro line now runs north-south roughly through the center of both neighborhoods, providing connections to Caltrain and downtown. This investment is justified in part because of planned redevelopment on former railyards near the Fourth and King Caltrain Station.

However, most of Mission Bay and the whole of the Central Waterfront, including the Dogpatch neighborhood, are separated from the remainder of the city by the barriers of Mission Creek, Highway 280, and Potrero Hill, and as a result there is little existing bus service. Since realignment of Route 48, more direct crosstown service is now available from the Central Waterfront and 22nd Street Caltrain Station to San Francisco General Hospital and the 24th Street Mission BART Station.

Muni has proposed, as part of its Transit Effectiveness Project (TEP), to realign the 22 Fillmore, a major crosstown line that currently runs along 16th Street to the west of Mission Bay before continuing through Potrero Hill to the Central Waterfront: It would continue east along 16th Street into Mission Bay before turning north along Third Street to connect to the T Third Street line at its UCSF Mission Bay and Mission Rock stops. If the 22 is realigned, Mission Bay will enjoy a direct

crosstown link to the 16th Street Mission BART station (while the Central Waterfront would retain its link via a rerouted Route 33, albeit operating less frequently).

The TEP also recommended that Route 12 be extended through the heart of Mission Bay to Potrero Hill; however, the December 2009 service changes might complicate this plan, as Route 10 was realigned along essentially the same alignment over Potrero Hill (but not through Mission Bay). If Muni Route 12 is not realigned to serve the neighborhood south of the creek (and to provide direct connections to additional destinations such as the Financial District, which will no longer be served by the T Third Street line following construction of the Central Subway), then another candidate for rerouting should be identified to serve Mission Bay.

The signaling system at the intersection of Fourth and King, where light rail vehicles currently experience frequent delays, may be reconfigured. And while there are no plans to relocate the existing T Third Street platform across King Street from the Caltrain terminus to a site immediately in front of the station, the Central Subway project might make such a relocation possible if so desired (while it would improve connections to the regional rail network, relocation would reduce access for residents south of King).

To the south of Mission Creek, the T Third Street line continues south in the median of Third Street toward the Central Waterfront, Bayview, and Visitacion Valley districts. However, there is as yet no public bus service in Mission Bay south of the creek (there are private Mission Bay and UCSF shuttles), and the planned street grid remains incomplete. Fourth Street, which is parallel to Third a block to the west, has recently opened and is planned to eventually become a pedestrian- and retail-oriented neighborhood main street featuring bicycle lanes (there are already bike lanes along Terry Francois Boulevard, on the waterfront). The partially built Mission Bay Boulevard will eventually connect the neighborhood to Seventh Street to the west, but will otherwise serve a largely ceremonial purpose. Farther south, 16th Street connects the neighborhood to Potrero Hill, Showplace Square, and the Mission District to the west.

Perhaps the greatest opportunity to improve the transportation network serving Mission Bay is presented by the planned expansion of the Fourth and King Station and accompanying reconstruction of the Caltrain right-of-way along the neighborhood's western edge to accommodate high-speed rail service. As high-speed rail rights-of-way must be fully grade-separated, the current at-grade crossings at 16th and Common Streets would have to be reconfigured, and a crossing planned for Mission Bay Boulevard would likewise need to be grade-separated.

Issues and Opportunities for Transit in the Eastern Neighborhoods

Based on analysis of existing and proposed transit conditions throughout the Eastern Neighborhoods, at the neighborhood level and at the corridor level, a number of noteworthy issues and opportunities will be taken into consideration in further planning for changes to transit service in the area.

- *Major transit routes operate relatively slowly.* The highly variable relationship between travel speeds for buses and for other vehicles indicates that while traffic congestion is a factor slowing transit at some times and on some streets, other issues are also important. Dwell time, for example (both the large number of transit stop and the length of time spent at each stop), is an important factor slowing transit. The study area's key transit corridors could benefit from transit-priority treatments including: bulb stops, signal prioritization, ticket-vending machines enabling all-door boarding, raised platforms enabling level boarding onto low-floor vehicles, and transit-only lanes where feasible (including "queue jumps" at busy intersections). Many could also benefit from stop consolidation. Future planning efforts should consider these treatments for key corridors, including but not necessarily limited to Folsom, 16th Street, Mission, Potrero and 24th Street.
- *Transit on 16th Street faces substantial existing and future challenges.* The 22 Fillmore is among the slowest of major SFMTA transit routes, with an average speed as determined by the TEP of just 7 miles per hour. Along Church Street north of Market and along Fillmore Street south of Sacramento Street, where its right-of-way is particularly constrained, it averages less than 6 miles per hour. While improvements to 16th Street to improve its speed and reliability would not directly benefit operations in other segments, 16th Street's relatively broad right-of-way and relatively light traffic volumes present an opportunity to improve the route's overall performance with relatively little effect on other users of the street. Furthermore, extension of the 22 into Mission Bay would establish an important connection for residents of Mission Bay as well as Potrero Hill, Showplace Square, and the Mission. An important issue that must be addressed as part of this extension is the crossing of the existing Caltrain right-of-way at Highway 280.
- *The South of Market's one-way street network can make transit confusing to use.* Conversion of Folsom to a two-way street would present the opportunity to consolidate transit service and improve the legibility of the overall transit network within the South of Market. Folsom might serve as a single, easily identifiable east-west transit spine across the neighborhood's midsection. On the other hand, conversion of Folsom and other South of Market streets to two-way operation might increase traffic congestion, affecting bus speeds, and maintenance of Folsom as a one-way street may present an opportunity to maximize the benefits of transit signal priority.
- *There are considerable gaps in east-west transit service through the study area.* No easy solution exists to the problems of distance between routes in the Mission District and east-west connectivity on Potrero Hill, given the geography of both areas and the relatively light demand in these areas. However, creative solutions may exist, such as community-based transit service or private "jitney" services. Implementation of the TEP-recommended Route 58 would improve transit service in the 24th Street corridor.
- *The potential exists for greatly enhanced transit demand at the Fourth and King rail station*. While construction of the Transbay Transit Center and Downtown Rail Extension (DTX) would mean that the station would no longer serve as the terminus for Caltrain, it is likely that service to the station would be expanded, as electrification would reduce the

cost to provide service and extension to downtown would increase the demand for service. The station's exact configuration as part of the DTX has not yet been finalized; it is also not yet known just what effects on surrounding land uses introduction of high-speed rail and expansion of regional rail service to the station might have. However, planning for the area should take into account the potential for greatly increased demand for transit service both at the station and along feeder routes connecting to the station. In particular, bus and Muni Metro stops outside of the station might be reconfigured and/or redesigned to improve connectivity at this important hub, and a coordinated wayfinding strategy should be part of any such process.

- *The 22nd Street Caltrain Station may have a greater or different role to play.* While lightly used relative to Caltrain's terminus at Fourth and King Streets in Mission Bay, 22nd Street is an express stop serving "reverse commutes" from San Francisco to Silicon Valley, a growing market. If Muni Route 48 were realigned as proposed, the proposed Route 58 would be necessary to maintain a direct connection to the station from Noe Valley and the southern Mission. Access to the station could be enhanced if new transit service were implemented between the station and growing areas just outside of its walk shed, including the Northeast Mission and northern Potrero Hill. Alternatively, if high-speed rail service were implemented along the Caltrain right-of-way, requiring reconstruction of the corridor, it might be worthwhile to study alternative locations for the station, most obviously near 16th Street, which would allow a direct connection to Muni Route 22 Fillmore (if realigned per TEP recommendations) and pedestrian access to and from the south side of Mission Bay, including the UCSF-Mission Bay campus and planned hospital.

Chapter 4. Non-Motorized Transportation

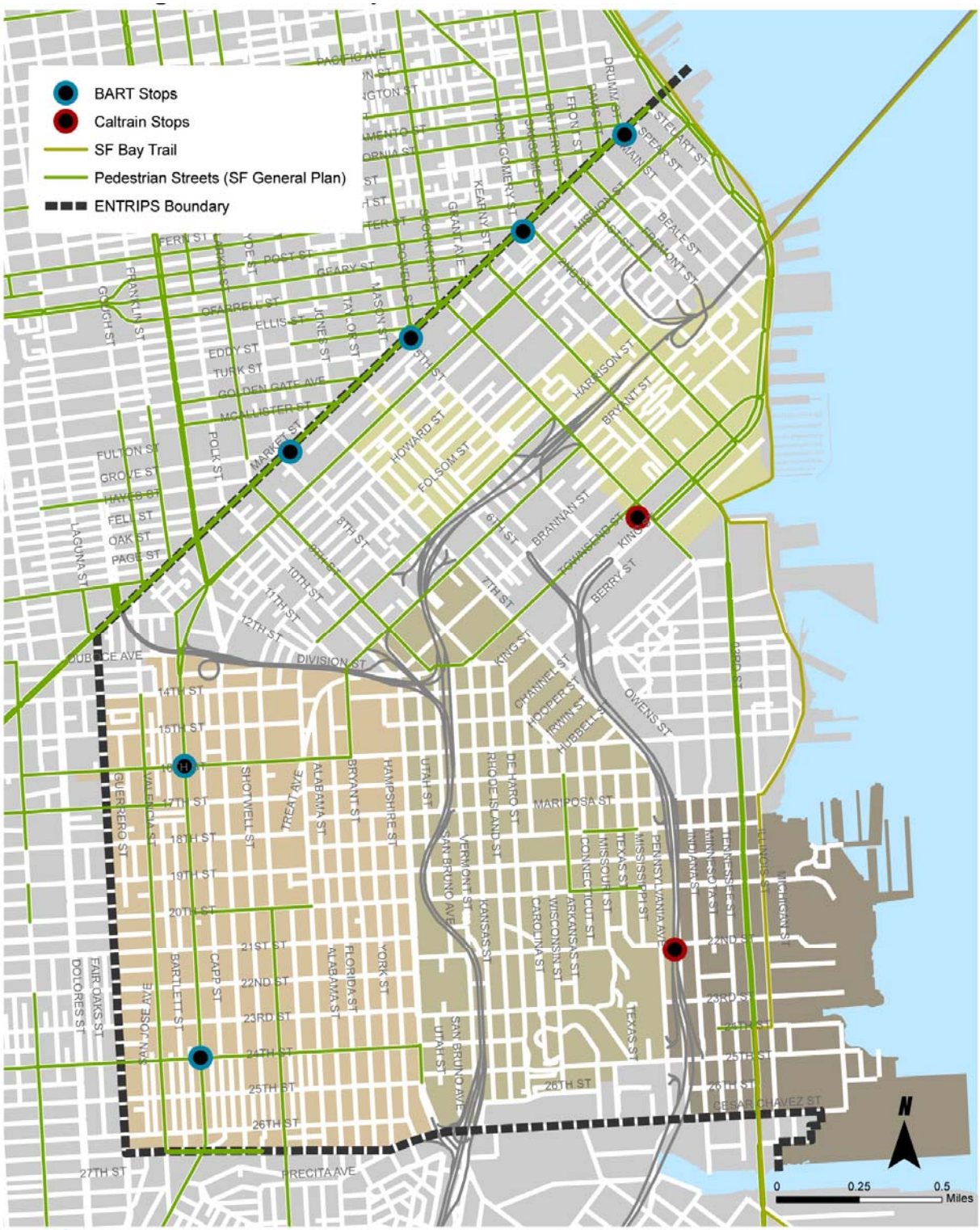
4.1 Walking

In the study area as a whole, walking is a major travel mode. Approximately 26 percent of daily trips made in the study area are walking trips. An additional 17 percent of trips are made by walking to transit.[1] The Eastern Neighborhoods are home to a wide variety of conditions for pedestrians: they include busy commercial and transit corridors with high-volumes of pedestrians and quiet residential areas on steep topography; there are streets with strong connectivity and an abundance of amenities like wide sidewalks, ample street trees, and well-designed crossings. There are also areas that present obstacles to comfortable pedestrian travel. First, there exist a number of multi-lane streets that are dominated by vehicle use and prioritize the flow of vehicle traffic. Second, large lots, long blocks, and a lack of pedestrian scale street grids do not promote connectivity and accessibility. Third, a lack of amenities on some streets creates an uninviting environment for pedestrians. Finally, elevated freeways, railroad tracks, port infrastructure, and natural barriers create obstacles to pedestrian travel. All four recently approved plans for the East SoMa, Mission, Showplace Square/Potrero Hill, and Central Waterfront areas prioritize comprehensive multimodal transportation strategies for existing and future businesses and residents. Each area plan articulates walking as a priority component of the Eastern Neighborhoods' future transportation network.

The San Francisco General Plan's adopted pedestrian network designates the citywide pedestrian network, neighborhood commercial streets, and neighborhood network connection streets. While these streets, illustrated in Figure 4-1, represent important corridors for pedestrian travel within San Francisco, the pedestrian experience for the remaining street grid is also an important contributor to quality of life.

[1] SF-CHAMP, 4.1, ABAG P2007.

Figure 4-1 General Plan Adopted Pedestrian Network in the Eastern Neighborhoods



Nelson\Nygaard consulting associates

Source: San Francisco City & County GIS, San Francisco General Plan

Pedestrian Collisions

Safety is an important consideration in the performance of the transportation system. One metric for evaluating pedestrian safety is the incidence of pedestrian injury collisions.

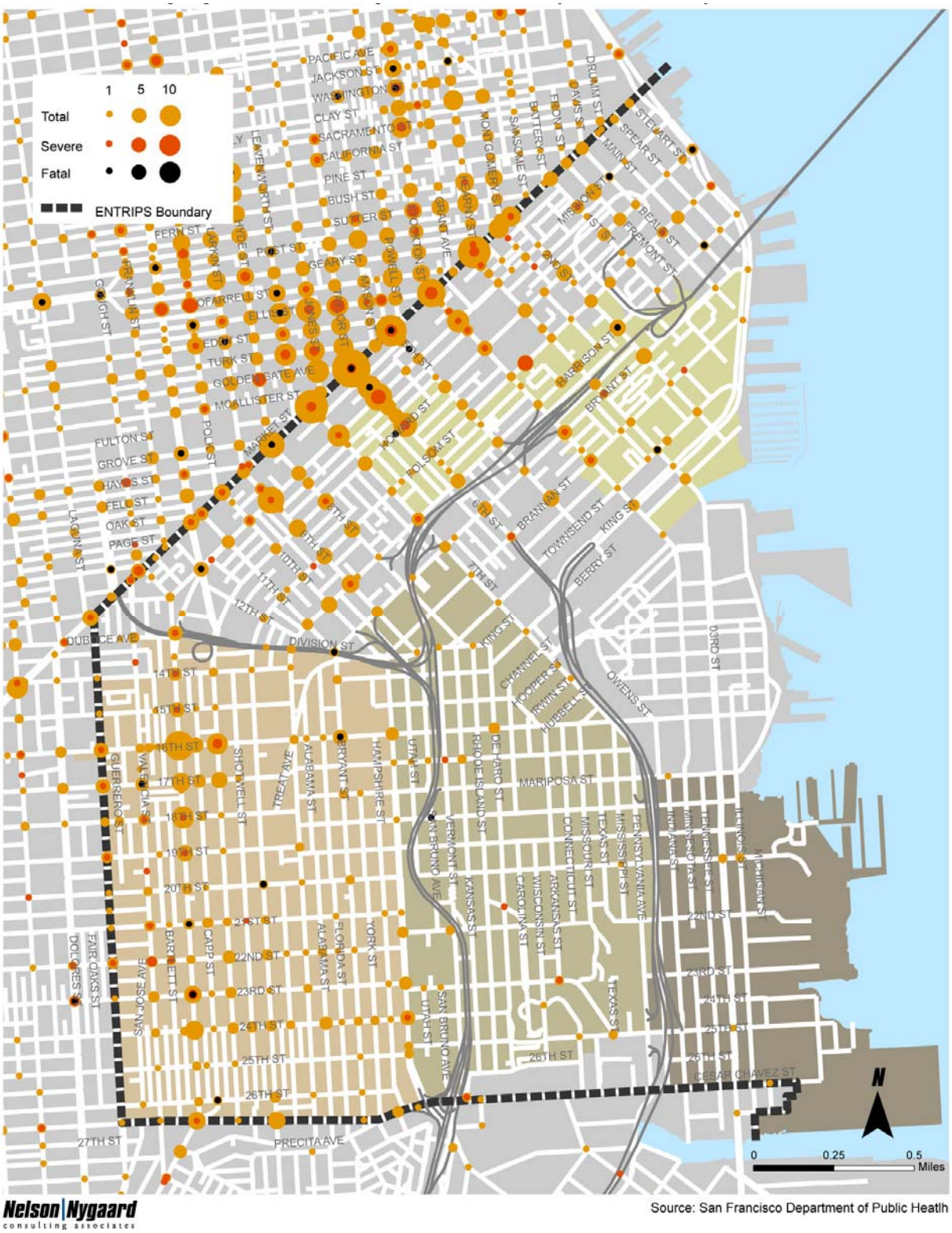
Pedestrian injury collisions between 2004 and 2008 are illustrated in Figure 4-2. It is important to note that these are *reported* collisions and are likely not a complete representation of *all* pedestrian collisions in the Eastern Neighborhoods. Non-injury and property damage collisions, for example, are often not reported to the police. Within the Eastern Neighborhoods, the largest share of collisions has occurred in the South of Market and in the Mission, most notably in those corridors that carry high volumes of both vehicle and pedestrian traffic.

In the South of Market, with high volumes of fast-moving traffic, long blocks, and high pedestrian volumes, nearly all of the major arterial corridors from Bryant to Market Street and from Eleventh to Second Street have had injury collisions. Sixth Street had the most collisions and the highest occurrence of severe collisions, particularly north of Howard Street. There were also numerous injury collisions on Fourth and Fifth Streets.

In the Mission District, the majority of pedestrian collisions have occurred along the major commercial corridors of Mission, 24th, and 16th Streets, where pedestrians, private vehicles, and transit vehicles are all present in high volumes. Along Guererro and Valencia Streets, there have been fewer collisions overall, but a higher number of severe collisions. With lower populations and fewer pedestrian trips, Showplace Square/Potrero Hill and the Central Waterfront have had few serious pedestrian collisions.

Pedestrian injury collisions are discussed in more detail in the neighborhood sections that follow.

Figure 4-2 Eastern Neighborhoods Reported Pedestrian Injury Collisions (2004-08)



Nelson|Nygaard consulting associates

Source: San Francisco Department of Public Heatlh

Policies and Plans

Nearly all transportation planning projects now underway in the City seek to address the needs of pedestrians. The Better Streets Plan (BSP), initiated by the San Francisco Planning Department aims to establish a comprehensive, citywide plan that offers a new vision for how San Francisco streets should be designed to serve a multitude of users. Among its other uses, this Plan can serve to guide other ongoing transportation planning projects on how to best serve pedestrians.

The BSP seeks to transform city streets into public spaces that respond to more than just transportation needs, but also social, ecological, and recreational functions. The BSP does not focus on specific neighborhoods in the city, nor does it describe individual projects. Instead, it develops "concepts" for the City's different street typologies and presents specific design guidelines based upon a street's ideal function. The BSP articulates a set of goals for San Francisco's streets that emphasize accessibility, connectivity, safety, sustainability, public health, aesthetics, diversity, and preservation of San Francisco's history. The BSP was developed by the SF Planning Department in coordination with a number of city agencies. The BSP was released for public review in 2008 and is now awaiting adoption by the Board of Supervisors. However, implementation of the concepts in the BSP is ongoing, as the City prioritizes its recommendations and identifies funding opportunities. EN TRIPS projects will ultimately be developed in accordance with the BSP guidelines.

Ongoing plans in the Eastern Neighborhoods study area that will consider pedestrian components include the Western SoMa Community Transportation Plan, Mission Streetscape Plan, Cesar Chavez Redesign, Transbay Transit Center District Plan (TCDP), Showplace Square Open Space Plan, Pier 70 Master Plan, the Regional Bay Trail and the Blue Greenway. Because pedestrian planning tends to occur at a neighborhood-scale, these projects are described in detail in the appropriate neighborhood-level discussion below.

Corridors and Neighborhoods

In the following sections, existing pedestrian conditions in the Eastern Neighborhoods are discussed at the neighborhood level.

South of Market

San Francisco's travel demand model estimates that pedestrian travel represents 30 percent of all trips in the South of Market – the highest rate of pedestrian travel in the Eastern Neighborhoods. A further 19 percent of all trips are walk trips to transit. Pedestrian travel is common in the South of Market despite the fact that the streets are primarily vehicle-oriented and present a variety of challenges to pedestrian comfort. These include high volumes of fast moving traffic, wide streets, long blocks with few crossing opportunities, and paths of travel obstructed by freeway ramps and crosswalks on only two legs of an intersection. Furthermore, South of Market streets have had limited streetscape or pedestrian scale improvements, such as lighting designed to illuminate the sidewalk as opposed to just the roadway.

As shown in Figure 4-2, there are a number of streets in the SoMa where pedestrian collisions are concentrated. Most of the streets in the SoMa had at least one pedestrian injury collision, but Fourth, Fifth, Sixth, Seventh, Mission, Howard, and Harrison Streets were all corridors that had multiple collisions. Sixth Street is of particular note, especially between Mission and Howard Streets. The intersections of Sixth and Howard and Sixth and Mission have had the highest number of pedestrian injury collisions. Additional hot spots include the Harrison and Bryant Streets just north and south of I-80. For example, a fatal collision occurred at Second and Harrison Streets.

In recent years the SFMTA has conducted speed surveys of a number of streets in the SoMa during uncongested, midday periods on weekdays. In 2007 speed surveys of 100 vehicles on Sixth Street between Folsom and Harrison Streets showed that in the southbound direction the 85th percentile speed was 30.5 miles per hour, and 30.8 miles per hour in the northbound direction. The posted speed limit for that street is 25 miles per hour. It appears that during non-peak periods, vehicle speeds are often exceeding posted speed limits, which may be contributing to high number of pedestrian collisions in the Sixth Street corridor. Other streets for which data was available are summarized below in Figure 4-3.

Figure 4-3 SoMa - 85th Percentile Vehicle Speed Data[2]

Street	Between	Direction	Speed Limit	85th % Speed	Date
Sixth St.	Folsom & Harrison Sts.	NB	25	30.8	2007
Sixth St.	Folsom & Harrison Sts.	SB	25	30.5	2007
Seventh St.	Folsom & Howard Sts.	NB	25	29.6	1998
Eighth St.	Howard & Folsom Sts.	SB	30	29.3	2006
Tenth St.	Howard & Mission Sts.	SB	30	33.3	2007
Tenth St.	Bryant & Harrison Sts.	SB	30	31.3	2007
Bryant St.	Eighth & Ninth Sts.	EB	30	31	2005
Bryant St.	Fifth & Sixth Sts.	EB	30	34.3	2005
Folsom St.	Ninth & Tenth Sts.	EB	30	29.8	2004
Folsom St.	Sixth & Seventh Sts.	EB	30	29.4	2004
Folsom St.	Third & Fourth Sts.	EB	30	33.5	2004

[2] 85% of the observed traffic is going the speed shown or slower; 15% of the traffic is going faster than speed shown.

Street	Between	Direction	Speed Limit	85th % Speed	Date
Harrison St.	Fourth & Fifth Sts.	WB	30	34	2006
Harrison St.	Eighth & Ninth Sts.	WB	30	30.3	2006
Howard St.	Fourth & Fifth Sts.	WB	30	31.5	2005
Howard St.	Eighth & Ninth Sts.	WB	30	29.4	2005
King St.	Third & Fourth Sts.	EB	35	26.6	2007
King St.	Third & Fourth Sts.	WB	35	34.5	2007

Source: SFMTA speed studies recorded during uncongested midday hours

It is also important to note that there is variability in traffic conditions and street characteristics depending on the time of day and exact location in the study area. For example, the high-capacity, four lane arterials in the SoMa area present different conditions for pedestrians and transit vehicles (as discussed in Chapter 3) in the peak and non-peak periods. During the peak periods on Fourth, Folsom, and Howard Streets, for example, which funnel vehicles to and from I-80 and US-101, congestion reduces vehicle speeds. Vehicle speeds increase during non-peak periods. In short, Eastern Neighborhood streets perform differently for all modes throughout the day, and these variations are more pronounced on corridors that feed the freeway, serve regional transit, or are proximate to a major trip generator. The practical application of these changing conditions is that the streets in the Eastern Neighborhoods must be designed to ensure the safety, comfort, and convenience of all modes under changing conditions.

In contrast to challenging pedestrian conditions on many of SoMa's arterial streets, the neighborhood's alleys present a more mixed situation. Throughout SoMa, pedestrian-scale alleys can be found tucked inside large blocks bordered by busy multi-lane streets. Many of these alleys are enjoyable pedestrian environments, with historic homes, mature street trees, and low volumes of slow moving traffic. These alleys allow additional access to buildings and provide key short-cuts for pedestrians and bicyclists. Some alleyways, however, are without sidewalks and are underutilized, offering the potential for pedestrian upgrades (or even pedestrian-only street treatments) off of main arterials. Other alleys offer adequate sidewalks, but have higher traffic volumes and/or higher speeds, and would benefit from traffic calming treatments to improve the pedestrian environment.

Because of the high pedestrian volumes, difficult conditions in the South of Market, and because future phases of EN TRIPS will evaluate the need for circulation changes to the South of Market street grid, this study has collected supplementary pedestrian, bicycle, and vehicle data for key South of Market intersections. Where new data was collected for EN TRIPS, the intersections were recorded with video and then post-processed to tally pedestrian crossings, bicycle use, and vehicle turning movements during the AM and PM peak periods respectively. Pedestrian volume

data, as well as two methods of assessing pedestrian Level of Service (LOS), are presented below. Vehicle data is presented in Chapter 5.

Figure 4-4 illustrates that among study intersections the highest pedestrian volumes occurred at Third at Mission and at Howard, Fourth at Mission and at Howard, and on Sixth at Mission. Each of these intersections had more than 1,500 pedestrian crossings during the peak hour. The Third Street and Fourth Street intersections with Folsom also had more than 1,000 pedestrian crossings, as did Seventh and Mission Streets. The pedestrian crossings shown at each intersection represent the sum of crossings in all movements during the PM peak hour.

Figure 4-4 Existing Peak Hour Pedestrian Volumes

Pedestrian Level of Service Thresholds

There are many ways to evaluate "level of service" (LOS) for pedestrians. The two most common are LOS based on delay at intersections and LOS based on density (crowdedness) of walkways. These methodologies are used for this analysis, but should not be interpreted as providing a comprehensive assessment of pedestrian conditions. Comfort-based indices that describe the experience of being a pedestrian will be included in the 2010 Highway Capacity Manual (HCM). Delay- and density-based LOS tools for pedestrians are lacking in sensitivity to many urban design factors, so they are of limited utility at present.

The 2000 *Highway Capacity Manual* provides the following equation for calculating pedestrian delay:

$$\textbf{Approach Pedestrian Delay} = \frac{0.5 * ([\text{Intersection Cycle Length}] - [\text{Approach Pedestrian Green Time}])^2}{\text{Intersection Cycle Length}}$$

This methodology takes into account the average amount of delay experienced by pedestrians waiting for a "walk" signal to cross the street much in the same way that intersection delay's main determinant, control delay, takes into account average delay experienced by vehicles waiting for a "green" signal to proceed through the intersection.

The *Highway Capacity Manual* provides the following equation for calculating pedestrian density in crosswalks. This equation requires peak 15 minute pedestrian volumes, crosswalk space, and crossing time into consideration:

$$\textbf{Crosswalk Density} = \frac{\text{Time Space (sq. feet/second)}}{\text{Occupancy Time}}$$

Whereby:

Time Space = ([Area of Crosswalk (length x width)] * ([Pedestrian Green Time] – [0.5*Length] / [Walk Speed])

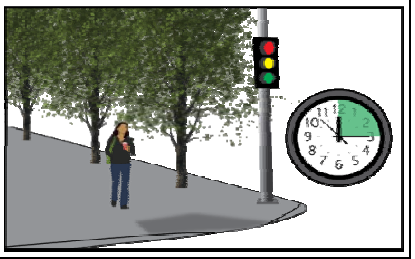
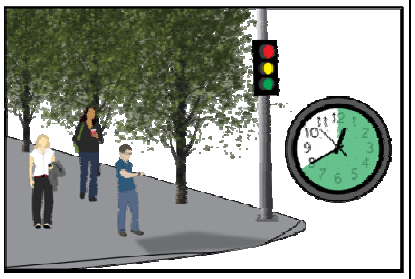
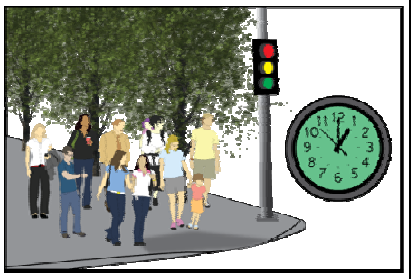
Occupancy Time = (Approach Pedestrian Flow) / (Crossing Time)

Walk Speed = 3.5 feet/second

By their nature, dense, urban areas characterized by complimentary land uses such as office, retail, and residential, like those found in parts of SoMa, will have higher numbers of pedestrians. HCM methodology does not take this or the quality of physical space into account when determining crosswalk density levels of service and thus may have limited value. Qualitative determinants of the pedestrian experience, such as availability and connectivity of sidewalk and overall environment, may have more practical value.

Pedestrian delay LOS thresholds for signalized intersections are described in Figure 4-5. Crosswalk density levels of service thresholds are summarized in Figure 4-6.

Figure 4-5 Pedestrian Delay Level of Service Thresholds for Signalized Intersections

LOS	Average Control Delay (seconds/vehicle)	Description	Likelihood of Non-Compliance	
A	≤ 10.0	Short waits for pedestrians at intersections. Little delay for pedestrians crossing.	Low	
B	10.1 – 20.0	Waits are slightly longer, but pedestrians still have little delay at crossings.	Low - Moderate	
C	20.1 – 30.0	Moderate waits for pedestrians crossing at each approach. Delays feel longer to pedestrians but are still moderate.	Moderate	
D	30.1 – 40.0	Longer amounts of green time are given to each approach at a signalized intersection, meaning longer wait times for pedestrians at a given approach. Pedestrians feel long delay at intersection.	Moderate - High	
E	40.1 – 60.0	Long gaps in pedestrian green time at intersection. Length of cycle feels very long and wait time between green times can cause pedestrian crowding at intersection.	High	
F	> 60.0	Wait time between pedestrian green times are unacceptable for many pedestrians. Over one minute of waiting at intersection for pedestrian signal.	Very High	

Source: Highway Capacity Manual (HCM), Transportation Research Board, 2000, Fehr & Peers, 2010.

Figure 4-6 Crosswalk Density Level of Service Thresholds

LOS	Space per Pedestrian Crossing (square feet/person)[1]	Description	
A	>60	Pedestrians move in desired paths without altering their movements in response to other pedestrians. Walking speeds are freely selected, and conflicts between pedestrians are unlikely.	
B	40.1 – 60	There is sufficient area for pedestrians to select walking speeds freely, to bypass other pedestrians, and to avoid crossing conflicts. At this level, pedestrians begin to be aware of other pedestrians, and to respond to their presence when selecting a walking path.	
C	24.1 – 40	Space is sufficient for normal walking speeds and for bypassing other pedestrians in primarily unidirectional streams. Reverse-direction or crossing movements can cause minor conflicts, and speeds and flow rate are somewhat longer.	
D	15.1 – 24	Freedom to select individual walking speed and to bypass other pedestrians is restricted. Crossing or reverse-flow movements face a high probability of conflict, requiring frequent changes in speed and position. The LOS provides reasonably fluid flow, but friction and interaction between pedestrians is unlikely.	
E	8.1 – 15	Virtually all pedestrians restrict their normal walking speed, frequently adjusting their gait. At the lower range, forward movement is possible only by shuffling. Space is not sufficient for passing slower pedestrians. Cross- or reverse-flow movements are possible only with extreme difficulties. Design volumes approach the limit of walkway capacity, with stoppages and interruptions to flow.	
F	≤8	All walking speeds are severely restricted, and forward progress is made only by shuffling. There is frequent, unavoidable contact with other pedestrians. Cross- and reverse-flow movements are virtually impossible. Flow is sporadic and unstable. Space is more characteristic of queued pedestrians than of moving streams.	
Source: *Highway Capacity Manual (HCM)*, Transportation Research Board, 2000, Fehr & Peers, 2010.			

Intersection Operations Analysis – Pedestrian Delay

Figure 4-7 summarizes PM peak hour level of service for pedestrians according to the HCM pedestrian delay methodology. All study intersections operate at acceptable levels for pedestrians. The highest levels of pedestrian delay are found at the intersections of Bryant Street and Fourth Street and Brannan Street/Tenth Street/Division Street, both five-legged intersections with higher than median signal cycles for the area.

Figure 4-7 Pedestrian LOS (PM)

FEHR & PEERS
TRANSPORTATION CONSULTANTS

EN Trips

EXISTING PEDESTRIAN DELAY INTERSECTION LEVELS OF SERVICE - PM PEAK HOUR

Intersection Operations Analysis – Crosswalk Density

Figures 4-8 and 4-9 present the number of pedestrian crossings, density of pedestrians in the crossing, and corresponding level of service for each study intersection. Figure 4-10 summarizes the PM peak hour level of service based on the crosswalk density methodology.

As shown, all study intersections operate acceptably according to HCM crosswalk density methodology. In the AM peak hour, intersections operate at LOS A and B. In the PM peak hour, intersections mainly operate at LOS A to C with the majority of intersections at LOS A. Study intersections with the highest number of pedestrian crossings are found primarily in the northwest portion of the study area, where there are a large number of office buildings and civic uses such as the Yerba Buena Center and the Moscone Center, as well as nearby Muni/BART stations on Market Street. At the intersection of Mission Street and Fourth Street there were more than twice as many pedestrian crossings observed than at any other study intersection.

Figure 4-8 Existing Crosswalk Density Levels of Service (LOS) – EN TRIPS

Intersection	AM Peak Hour			PM Peak Hour		
	Pedestrian Volume	Space per Ped Crossing (sq. ft/ped) [1]	LOS[2]	Pedestrian Volume	Space per Ped Crossing (sq. ft/ped)	LOS
1. Mission Street/Third Street	--	--	--	2,118	41	B
2. Mission Street/Fourth Street	--	--	--	5,464	20	D
3. Mission Street/Sixth Street	--	--	--	1,556	30	C
4. Mission Street/Seventh Street	--	--	--	1,150	48	B
5. Mission Street/Eighth Street	--	--	--	974	100	A
6. Mission Street/Ninth Street	--	--	--	670	136	A
7. Mission Street/Tenth Street	--	--	--	432	275	A
8. Howard Street/Third Street	--	--	--	1,866	42	B
9. Howard Street/Fourth Street	--	--	--	1,746	28	C
10. Howard Street/Sixth Street	--	--	--	651	103	A
11. Howard Street/Seventh Street	--	--	--	797	78	A
12. Howard Street/Eighth Street	--	--	--	640	97	A
13. Howard Street/Ninth Street	--	--	--	492	106	A
14. Howard Street/Tenth Street	--	--	--	205	220	A
15. Howard Street/13th Street/ South Van Ness Avenue	--	--	--	222	248	A
16. Folsom Street/Third Street	929	55	B	1,113	42	B
17. Folsom Street/Fourth Street	737	123	A	1,111	43	B
18. Folsom Street/Sixth Street	308	110	A	352	99	A
19. Folsom Street//Seventh Street	685	53	B	570	66	A
20. Folsom Street/Eighth Street	328	166	A	405	101	A
21. Folsom Street/Ninth Street	200	273	A	315	184	A
22. Folsom Street//Tenth Street	161	239	A	232	213	A
23. Folsom Street//13th Street	92	565	A	200	233	A
24. Harrison Street/Third Street	--	--	--	824	49	B
25. Harrison Street/Fourth Street	--	--	--	925	60	A
26. Harrison Street/Fifth Street	--	--	--	350	173	A
27. Harrison Street/Sixth Street	--	--	--	350	217	A

Notes:

Space per pedestrian crossing (sq. ft/ped = square feet per pedestrian) consistent with methodology presented in the Highway Capacity Manual, 2000 Edition.

LOS based on lowest space per pedestrian crossing at intersection.

Source: Fehr & Peers, 2010.

Figure 4-9 Existing Crosswalk Density Levels of Service (LOS) – EN TRIPS

Intersection	AM Peak Hour			PM Peak Hour		
	Pedestrian Volume	Space per Ped Crossing (sq. ft/ped)	LOS	Pedestrian Volume	Space per Ped Crossing (sq. ft/ped)	LOS
28. Harrison Street/Seventh Street	350	96	A	250	134	A
29. Harrison Street/Eighth Street	--	--	--	200	154	A
30. Harrison Street/Ninth Street	--	--	--	150	327	A
31. Harrison Street/Tenth Street	--	--	--	200	295	A
32. Harrison Street/13th Street	--	--	--	200	377	A
33. Bryant Street/Third Street	568	75	A	702	78	A
34. Bryant Street/Fourth Street	515	46	B	850	26	C
35. Bryant Street/Fifth Street	385	55	B	520	55	B
36. Bryant Street/Sixth Street	235	118	A	300	89	A
37. Bryant Street/Seventh Street	216	141	A	300	49	B
38. Bryant Street/Eighth Street	221	115	A	150	183	A
39. Bryant Street/Ninth Street	172	164	A	250	175	A
40. Bryant Street/Tenth Street	200	189	A	200	147	A
41. Bryant Street/Eleventh Street/Division Street	143	317	A	200	123	A
42. Brannan Street/Tenth Street/Division Street	--	--	--	200	170	A
43. Townsend Street/Eighth Street/Division Street/Henry Adams	--	--	--	250	152	A
44. Guerrero Street/16th Street	--	--	--	888	95	A
45. Mission Street/16th Street	400	342	A	400	394	A
46. South Van Ness Avenue/16th Street	350	144	A	350	164	A
47. Folsom Street/16th Street	250	400	A	250	400	A
48. Potrero Avenue/16th Street	--	--	--	353	96	A
49. De Haro Street/16th Street	--	--	--	144	39	C
50. Seventh Street//16th Street	--	--	--	81	307	A
51. Third Street/16th Street	--	--	--	80	843	A
52. Third Street/Mariposa Street	--	--	--	80	920	A

Notes:

Space per pedestrian crossing (sq. ft/ped = square feet per pedestrian) consistent with methodology presented in the *Highway Capacity Manual*, 2000 Edition.

LOS based on lowest space per pedestrian crossing at intersection.

Source: Fehr & Peers, 2010.

Figure 4-10 Pedestrian LOS-Density (PM)

FEHR & PEERS
TRANSPORTATION CONSULTANTS

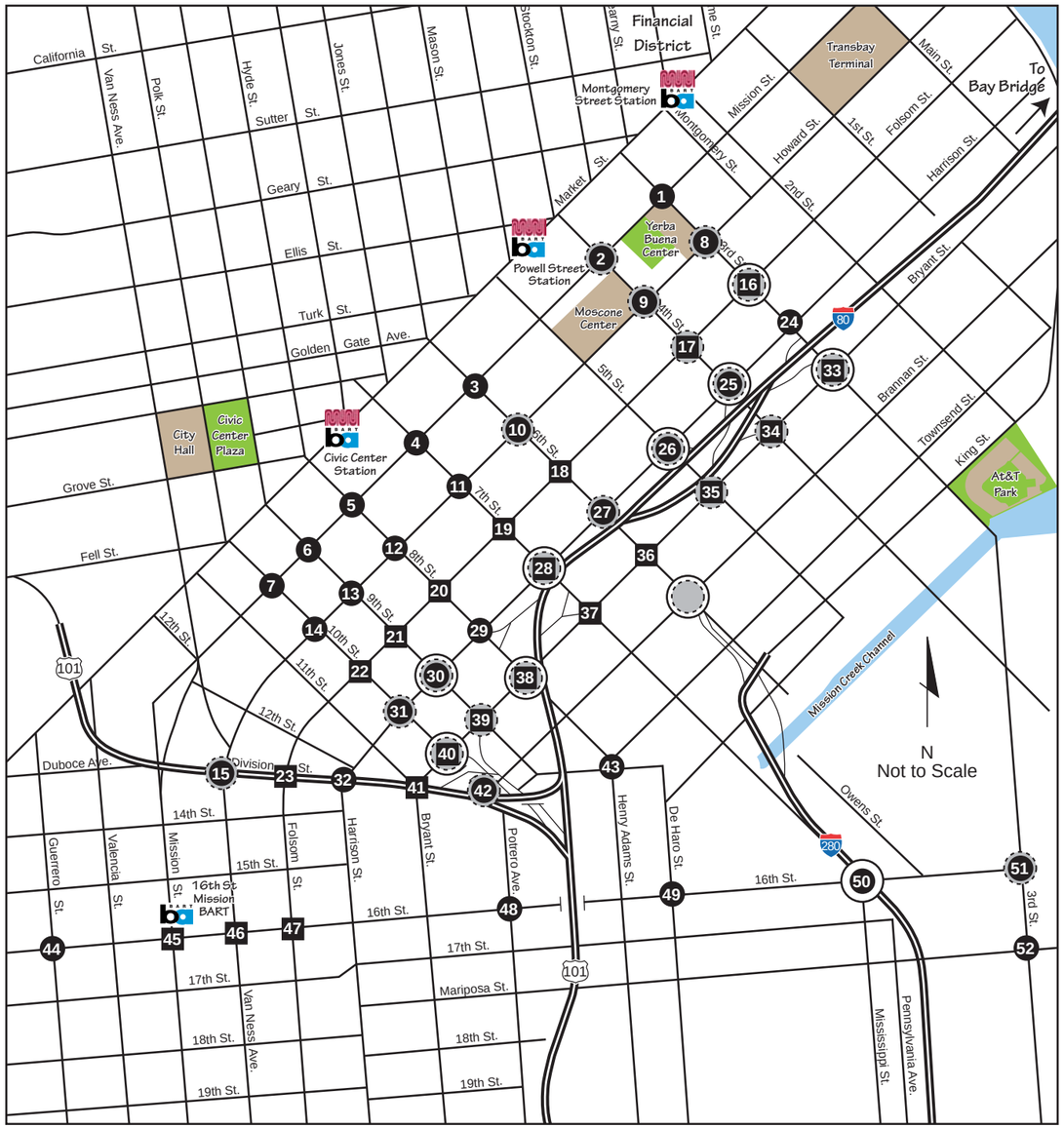
EN Trips

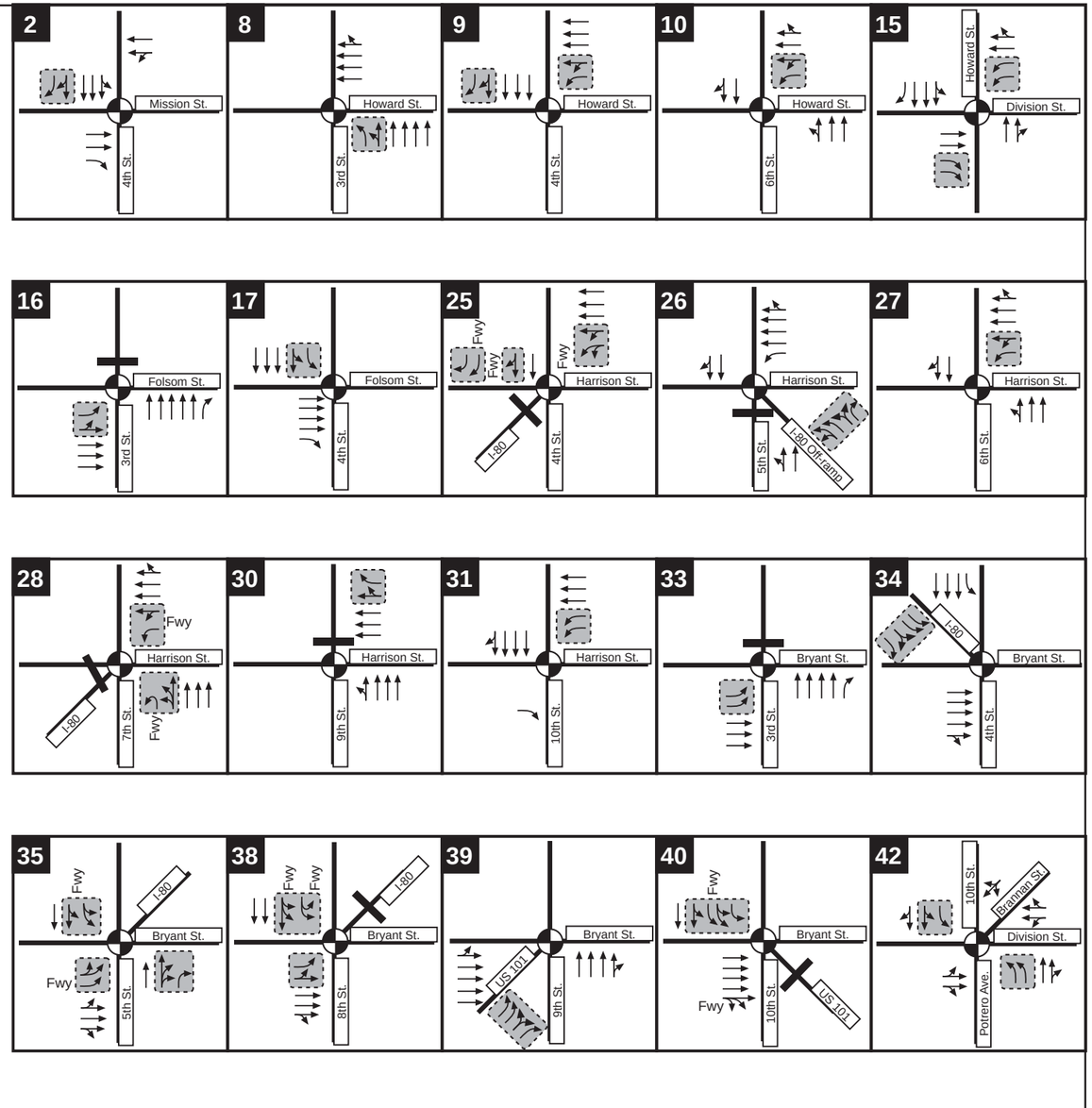
EXISTING PEDESTRIAN CROSSWALK DENSITY LEVELS OF SERVICE - PM PEAK HOUR

Closed Crosswalks and Multiple Turn Lanes

There are many closed crosswalks and multiple turn lanes in the South of Market. Closed crosswalks obstruct the path of travel for pedestrians. Multiple turn lanes can make it difficult for a motorist driving in the inside lane to see a pedestrian entering the crosswalk. For this reason, crosswalks are frequently closed at the site of multiple turn lanes. A common factor in the presence of either closed crosswalks or multiple turn lanes is proximity to freeway ramps.

Twenty-one of the study intersections have multiple turn lanes, and nine of the study intersections have closed crosswalks. Figure 4-11 summarizes the locations of the intersections with multiple turn lanes and closed crosswalks in SoMa.





LEGEND:

- 16 = AM and PM Peak Hour Study Intersection
- 1 = PM Peak Hour Study Intersection
- = Study Intersection with Multiple Turn Lanes
- = Study Intersection with Closed Crosswalk
- = Traffic Signal
- Fwy = Freeway on-ramp accessible from lane
- = Multiple Turn lanes
- = Closed Crosswalk

FEHR & PEERS
TRANSPORTATION CONSULTANTS

May 2010
SF09-0446\graphics\0446-_ turnlanes_xwalks

EN Trips

MULTIPLE TURN LANES AND CLOSED CROSSWALKS

FIGURE _

The major challenges to pedestrian travel in the South of Market include the following:

- There are a number of gaps in the pedestrian network and barriers to easy pedestrian travel. The area's freeway on- and off-ramps, designed to facilitate multiple lanes of turning traffic and wide turning radii, also create intersections inhospitable to pedestrians. In some cases, pedestrian crossings are prohibited, making it inconvenient to cross the street. There are multiple freeway on- and off-ramp intersections that do not allow pedestrian crossing on one or more legs of the intersection. Rincon Hill and the I-80 freeway structure create a visual and physical barrier to pedestrian access as pedestrians cannot cross under the freeway between Second and Beale Streets.
- Some SoMa arterials streets have high vehicular travel speeds, which decreases pedestrian comfort.
- The block pattern in SoMa is also much larger than elsewhere in the city, with double the typical distance between intersections. These long blocks require pedestrians to walk out of their way or risk jaywalking across busy streets. At the same time, SoMa has very wide arterial streets. Combined with vehicle travel speeds, street widths can make even crossing at intersections challenging for some pedestrians.
- Sidewalks in SoMa are typically narrow given the high pedestrian volumes, ranging from 10 to 12 feet in width. Many of the sidewalks have also been encroached upon by newspaper boxes, trees, utility poles, bicycle racks, and furniture or accessories in front of local businesses.
- Townsend Street (from Fourth to Seventh Streets) lacks sidewalks on the north side of the street. The south side of Townsend Street has a continuous walkway between the parked cars and the Caltrain fence, but this walkway is narrow and is often obstructed by utility poles, parked vehicles, and motorcycle parking. Often times pedestrians accessing local businesses and the Caltrain Station are forced to walk in the travel lane adjacent to the perpendicularly parked vehicles. The future Caltrain extension to Downtown provides an opportunity to not only rebuild Townsend Street to accepted standards, but to also implement a redesign of Townsend to make it a more pedestrian-oriented street.
- Ritch Street and Clarence Place are minor streets that do not have sidewalks on one or both sides of the street.
- Lighting in SoMa is vehicle-oriented, with tall lamps that do not fully illuminate the sidewalks. For example, poorly illuminated streets and alleyways, along with Division Street under the Central Freeway and crossings under I-80, create challenges for pedestrians in the South of Market.
- Finally, tree coverage is extremely sparse in SoMa. The trees that do exist are young, provide limited coverage, or are in need of maintenance.

SoMa Pedestrian Planning Efforts Underway

A small number of planning efforts are currently underway to improve pedestrian conditions in parts of the South of Market. They include:

Western South of Market Community Plan and Neighborhood Transportation Plan. The Western South of Market neighborhood, defined as the area between Fourth and Twelfth Streets and Howard and Townsend Streets, has been the focus of a Community Plan process that envisions land use and transportation changes to improve livability in the neighborhood, while preserving its historical character. Created through a multi-year process led by the Western SoMa Citizens Planning Task Force, the Western SoMa Community Plan recommends policies that emphasize the improvement of pedestrian and bicycle facilities to promote safety, connectivity, and quality of life; calming traffic and reducing vehicle speeds, particularly near freeway ramps and alleys; retaining on-street parking while managing parking demand more effectively; reducing the effects of freight vehicles on neighborhood-serving streets; and improving transit speed, reliability, and connectivity. The Plan also includes several transportation policies designed to support the designation of Folsom Street as a "civic boulevard" and a center for neighborhood-serving retail, including the conversion of Folsom Street to two-way operations.

The Neighborhood Transportation Plan (NTP) for Western SoMa, sponsored by the San Francisco County Transportation Authority, will support the implementation of the Community Plan by further identifying and refining specific transportation projects for implementation. Specifically, the NTP will develop selected priority improvements from the Community Plan to grant-ready status by providing cost estimates, conceptual designs, and other relevant project development work so that the community and implementing agencies are able to pursue implementation funding.

San Francisco Redevelopment Agency Alleyway Upgrade Project. Just outside the Western SoMa Plan area, the San Francisco Redevelopment Agency has undertaken an alleyway upgrade project. These projects are located to the east of Seventh Street on one-block sections of Minna, Natoma, Russ, Harriet, and Ross Streets. The proposed upgrades include raised crosswalks at entrances and exits, chicanes, and special paving (street print with different color, possibly texture). Special paving will include a stretch at the entrance to an alley, and then regularly spaced circles to tie the treatments together. The plans propose that traffic patterns remain one way. The project tried to minimize parking loss, but parking would be shifted to accommodate chicanes, which will possibly require action by the Board of Supervisors. New landscaping would be added in chicanes. The Plan also proposes new light fixtures.

Mission District

Pedestrian travel represents 26 percent of all trips in originating in the Mission. A further 18 percent of all trips are walk trips to transit. The Mission District's commercial corridors and many of its residential streets offer vital and inviting pedestrian environments, and the street grid generally offers good connectivity for pedestrians wishing to reach many of the commercial, recreational, and transit assets within the area. Most of Mission District streets have sidewalks and crosswalks. Pedestrian volumes are generally low to moderate in residential and industrial

areas and moderate to high in the core of the commercial areas. The block lengths in the Mission are typically small and there exists a network of small alleys throughout the neighborhood that present easy access routes for pedestrians.

The Mission has several commercial corridors that have heavy pedestrian use. These include Mission Street, Valencia Street, 16th Street, and 24th Street. Typical streets in the Mission District have 520 foot block lengths and 64 foot rights-of-way. In the commercial areas all intersections along the major streets are signalized, and include crosswalks. Most of the signalized intersections include pedestrian signal heads, and some have pedestrian countdown timers (exceptions are the intersections of 24th/Bryant and 24th/Harrison). Pedestrian volumes are especially high in the core of Mission Street from 16th Street to 24th Street, and particularly in the vicinity of the 16th Street and 24th Street BART stations.

Given the high volumes of pedestrians in the Mission, it is not surprising that there are a number of pedestrian collisions in this neighborhood. As shown in Figure 4-2, pedestrian injury collisions have occurred in all parts of the Mission, but it is clear that there is a higher concentration on the primary transportation and commercial corridors in the western and southern portions of the district: Mission, Valencia, 16th, 17th, and 24th Streets. Mission Street has a particularly high incidence of collisions, especially at 16th, 17th, 18th, 23rd, and 24th Streets. Furthermore, the streets that border the Mission District, namely Guerrero Street, Potrero Avenue, and Cesar Chavez Street all have high incidences of pedestrian injury collisions.

Speed survey data also shows that a number of streets in the Mission District are experiencing higher vehicle speeds than the posted speed limit. Of particular note is Guerrero Street between 17th and 18th Streets and Potrero Avenue between 17th and Mariposa Streets.

Figure 4-12 Mission – 85th Percentile Speed Data

Street	Between	Direction	Speed Limit	85 % Speed	Date
Cesar Chavez	Harrison & Folsom Sts.	EB	25	26	2007
Cesar Chavez	Harrison & Folsom Sts.	WB	25	28	2007
Guerrero St.	17th & 18th Sts.	NB	25	33.8	2007
Guerrero St.	17th & 18th Sts.	SB	25	31.4	2007
Guerrero St.	20th & 22nd Sts.	NB	25	30.6	2007
Guerrero St.	20th & 22nd Sts.	SB	25	28	2007
Potrero Ave	17th & Mariposa Sts.	NB	25	32.4	2003
Potrero Ave	17th & Mariposa Sts.	SB	25	33	2003
Potrero Ave	22nd & 23rd Sts.	NB	25	30.6	2003
Potrero Ave	22nd & 23rd Sts.	SB	25	32.8	2003
South Van Ness Ave	19th & 20th Sts.	NB	25	29.6	2006

Street	Between	Direction	Speed Limit	85 % Speed	Date
South Van Ness Ave	19th & 20th Sts.	SB	25	29	2006
South Van Ness Ave	23rd & 24th Sts.	NB	25	29.4	2006
South Van Ness Ave	23rd & 24th Sts.	SB	25	30.5	2006

Source: SFMTA speed studies recorded during uncongested midday hours

While many parts of the Mission have well-developed pedestrian infrastructure, the neighborhood does present challenges for pedestrians. These include:

- Valencia Street receives a high level of pedestrian use. The street between 15th and 19th streets is currently being rebuilt to better accommodate pedestrian and bicycle travel (this project is described in more detail below).
- The industrial core of the Mission, located north of 20th Street between Potrero Avenue and Folsom Streets, has limited pedestrian amenities compared to the commercial corridors and older residential areas. Marked crosswalks are present primarily on major streets and there are very few mid-block marked crosswalks. A few streets in the north-east Mission industrial areas, such as Alabama and Florida Streets, do not have sidewalks along small sections.
- In the residential portions of the Mission District, many signalized intersections do not include pedestrian signal heads, such as South Van Ness at 20th, 21st, and 22nd Streets; Guerrero at 14th and 15th Streets; and Folsom at 20th Street.
- On some residential streets, including Capp, Hampshire, 20th, and 26th Streets, speeding traffic has been identified as a concern by residents and community members.
- There are a number of major arterial streets passing through and bordering the area that carry high volumes of vehicle traffic, including Guerrero, South Van Ness, and Potrero Streets running north-south, and Cesar Chavez Street running east-west. These streets have four to six lanes of vehicle traffic and can present a challenging environment for pedestrians.

Mission District Pedestrian Planning Efforts

Three ongoing planning efforts seek to improve pedestrian conditions in the Mission District. They are:

Mission Streetscape Plan. The Mission Streetscape Plan is a community-based planning process that seeks to identify improvements to streets, sidewalks, and public spaces in the Mission District. The ultimate goal of the Mission Streetscape Plan is to re-imagine Mission District streets as vital public spaces that serve the needs and priorities of the community. The Plan seeks to address pedestrian deficiencies and safety concerns within the Mission neighborhood. The Plan's designs will improve pedestrian safety and comfort, increase the amount of usable public space

in the neighborhood, and support environmentally sustainable storm water management. Specific proposals include:

- A number of new plazas at the "gateways" to the neighborhood, such as at Dolores Street and San Jose Avenue.
- Traffic calming projects on Capp, Hampshire, 20th, and 26th Streets.
- Road diets on Folsom and Bryant Streets.
- Intersection improvements, including bulb outs and raised crosswalks, throughout the Mission.
- A design overhaul – sustainable paving, "greening" elements, improved crosswalks – of many of the small alleys that permeate the neighborhood, such as Cunningham, Hoff, and Osage.

The Mission Streetscape Plan is currently in the planning, design revision, and environmental review phase. Funding for implementation is still being identified. The draft Plan has been released, but the implementation timeline remains uncertain. Given the difficult funding environment, however, it is possible that many of the projects proposals will not be implemented in the near term.

Valencia Streetscape Project. The City is currently rebuilding Valencia Street between 15th and 19th Streets. The goal is to provide residents and visitors with safe and easy access to businesses, schools, shopping, and regional transit connections, enhancing the sense of place with unified streetscape improvements. Specific improvements include sidewalk widening (from 10 feet to 13 or 15 feet, depending on the presence of left turn pockets), bulb-outs, more accommodating curbside loading zones for trucks, improved traffic flow and parking accommodation due to traffic lane realignment, the removal of the striped center median, pedestrian scale lighting, art elements, and new street trees. Specific bicycle improvements include the widening of the bicycle lane from five to six feet, and the addition of bicycle racks. The project is scheduled to be completed in June of 2010.

Cesar Chavez Street Design Plan. The Cesar Chavez Street Design Plan is a San Francisco Planning Department project that will redesign Cesar Chavez Street from Hampshire to Guerrero Streets. Currently, Cesar Chavez Street is primarily a vehicle-oriented travel corridor that funnels traffic through the southern part of the Mission to the US-101 freeway. The project's goals are to make Cesar Chavez Street a safer place for all users, redesign the street to include a wide range of pedestrian-scale amenities, ensure that Cesar Chavez Street provides a better connection within and to/from the neighborhood, improve bicycle connectivity, and improve storm water management through sustainable design features. The project has been in the planning phase since 2008 and a preferred alternative was selected in 2009. The preferred alternative calls for the removal of two traffic lanes to accommodate a new 14-foot center median, new left turn pockets, corner bulb outs, new street trees, pedestrian refuge areas, new lighting, and storm water planters. The Plan also calls for new 5-foot bicycle lanes. The Plan is currently being finalized and construction is scheduled to begin in 2010.

Showplace Square/Potrero Hill

The San Francisco travel demand model estimates that pedestrian travel represents 18 percent of all trips in the Showplace Square/Potrero Hill Plan area. For a further 13 percent of all trips, travelers walk to transit. Pedestrian volumes in this area are generally low when compared to the Mission or SoMa. As a result, collision totals are also lower than in most parts of the city (Figure 4-2).

The two neighborhoods that make up this Plan area, Showplace Square and Potrero Hill, offer distinctly different pedestrian environments and levels of facilities. The Showplace Square subarea of the neighborhood can be roughly defined as the portion of the neighborhood north of 16th Street. While this area has gone through a major transformation in the past 20 years, many streets still reflect the historic industrial nature of the area.

The Showplace Square/Potrero Hill neighborhood has had a number of pedestrian injury collisions, but far less than other areas of the study area. Collisions are dispersed throughout the neighborhood, with some concentration on Seventh Street as it heads south from SoMa. Other hot spots include 16th and 17th Streets on the western portion of the neighborhood, as well as along Potrero Avenue and the Mission District border. There was only one fatal collision and a handful of severe collisions.

Data from vehicle speed studies in the Showplace Square/Potrero Hill neighborhood is listed in Figure 4-13. Eighty-fifth percentile speeds typically exceed the posted speed limits, but a few streets are more notable than others. For example, 85th percentile speeds on northbound Pennsylvania Street between 22nd and 23rd Streets are more than ten miles per hour than the posted speed limit. Although no pedestrian collisions were reported on Pennsylvania Street, this trend is worth monitoring given its proximity to the 22nd Street Caltrain Station. In addition, the higher vehicle speeds on Seventh Street merit additional attention given the number of pedestrian collisions in this corridor.

SFMTA collected data on pedestrian network deficiencies in Potrero Hill and Showplace Square in March 2008. Findings are summarized in Figure 4-14.

Figure 4-13 Showplace Square/Potrero Hill 85th Percentile Speed Data

Street	Between	Direction	Speed Limit	85 % Speed	Date
Seventh St.	Berry & Hooper Sts.	NB	25	34.8	1998
Seventh St.	Brannan & Bryant Sts.	NB	25	27.6	1998
Eighth St.	Brannan & Townsend Sts.	SB	30	27.8	2006
16th St.	San Bruno & Utah Sts.	EB	25	29.8	2008
16th St.	San Bruno & Utah Sts.	WB	25	30.3	2008
16th St.	Connecticut & Missouri Sts.	EB	25	34.7	2008
16th St.	Connecticut & Missouri Sts.	WB	25	34.2	2008
Cesar Chavez	Evans Ave. & Kansas St.	EB	30	37.3	2008
Cesar Chavez	Evans Ave. & Kansas St.	WB	30	36.5	2008
Cesar Chavez	Indiana & Minnesota Sts.	EB	30	30.8	2008
Cesar Chavez	Indiana & Minnesota Sts.	WB	30	29.8	2008
Pennsylvania St.	22nd & 23rd Sts.	NB	25	35.3	2008
Pennsylvania St.	22nd & 23rd Sts.	SB	25	32	2008
Pennsylvania St.	26th & Cesar Chavez Sts.	NB	25	31.5	2008
Pennsylvania St.	26th & Cesar Chavez Sts.	SB	25	33.2	2008
Potrero Ave	17th & Mariposa Sts.	NB	25	32.4	2003
Potrero Ave	17th & Mariposa Sts.	SB	25	33	2003
Potrero Ave	22nd & 23rd Sts.	NB	25	30.6	2003
Potrero Ave	22nd & 23rd Sts.	SB	25	32.8	2003

Source: SFMTA speed studies recorded during uncongested midday hours

Figure 4-14 Observed pedestrian network deficiencies in Showplace Square/Potrero Hill

Street	From	To	Pedestrian Deficiencies
Seventh St.	King St.	16th St.	East side: No sidewalk, debris, overgrown vegetation and fence for Caltrain. West side: sidewalks are adequately wide but pavement is uneven and poor quality in segments.
17th St.	Mississippi St.	Pennsylvania St.	North side: loading driveway for SF Metal Shop, 80 ft. sidewalk fronting condo, remaining street side has no sidewalk. South side: half block of narrow 4 ft. sidewalk blocked by 90 degree parking, second half block has no sidewalk and 90 degree parking
23rd St.	Arkansas St.	Dakota St.	Missing gap in sidewalk north side
23rd St.	Dakota St.	Missouri St.	Vegetation covering narrow sidewalk on north side near curve. Maintenance needed.
25th St.	Dakota St.	Mississippi St.	South side: No sidewalk from Mississippi St. to approximately 140 ft. west of Dakota St.
25th St.	Wisconsin St.	De Haro St.	North side: No sidewalk, steep hillside.
26th St.	De Haro St.	Rhode Island St.	North side: No sidewalk from Rhode Island St. approximately 100 ft. east.
Berry St.	Seventh St.	De Haro St.	South side: No sidewalk half block east of De Haro St. 90 degree parking against fence. North side: no sidewalk half block east of De Haro St.
De Haro St.	15th St.	16th St.	East side: No sidewalk, 90 degree parking adjacent to building, existing wheel blocks.
Henry Adams St.	Division St.	Alameda St.	East side: No sidewalk, 90 degree parking on asphalt and cobblestones. On bike route 123.
Hooper St.	Seventh St.	Eighth St.	North side: Three quarters of block needs sidewalk improvement, has substandard asphalt and gravel/dirt surface. South side: narrow asphalt path, substandard sidewalk.
Hubbell St.	Seventh St.	16th St.	South side: No sidewalk, 90 degree parking along fenced empty land parcel. North side: Existing sidewalk and truck loading driveways for Economy Restaurant Fixtures. 90 degree parking.
Irwin St.	Seventh St.	Eighth St.	Some substandard sidewalk pavement conditions: Both sides. for middle third of block's sidewalk, low curbs. North side 90 degree parking, south side parallel parking. Several 90 degree, truck loading docks.
Pennsylvania St.	17th St.	Mariposa St.	East side: No sidewalk, 90 degree parking. West side: From Mariposa St. North approx. 200 ft. has sidewalk and deck into Hilti business. Remaining block has a truck loading driveway and building wall with no sidewalk and 90 degree parking.

Street	From	To	Pedestrian Deficiencies
Rhode Island St.	Division St.	Alameda St.	West side: No sidewalk. East side: No sidewalk except for half a block. 90 degree parking on segment with no sidewalk.
Townsend St.	Seventh St.	Eighth St.	South side: Narrow compared to north side due to rail tracks on south side of street.
Utah St.	15th St.	Alameda St.	East side: No sidewalk, 90 degree parking against SF Jewelry Center wall. West side: No sidewalk along south end of block in front of MACLAC business.
Wisconsin St.	16th St.	17th St.	East side: No Sidewalk, 90 degree parking blocks pedestrian asphalt pathway.

Source: SFMTA observation, March 2008.

Challenges for pedestrians in the Showplace Square area include:

- Sidewalks and crosswalks usually exist in the core commercial area. Beyond that, however, many streets lack sidewalks and marked crosswalks, such as Berry, Hopper, and Hubbell Streets, and portions of De Haro, Rhode Island, Kansas, Vermont, Ninth, and Utah Streets.
- Many intersections lack signals at major crossings. More specifically, there are few signalized intersections, and a relatively large number of partially controlled or uncontrolled intersections in the Showplace Square area, except the northernmost portion of the area. The presence of crosswalks at non-signalized intersections is inconsistent. The lack of signalized intersections makes pedestrian crossings difficult, especially crossing a major arterial road, such as 16th Street.
- Parking patterns obstruct pedestrian travel. Vehicles of various sizes (from standard size vehicles to large size trucks) often park perpendicular to buildings. Double-parked trucks and trailers are a common phenomenon in the eastern part of this subarea, particularly along De Haro Street. These vehicles often partially or completely block the sidewalks or, in the absence of sidewalks, block the portion of the street closest to the property lines. Along these streets, pedestrian circulation is restricted and pedestrians must often walk in the roadways and mix with vehicles.

Since traffic volumes are generally low in Showplace Square, there are minimal conflicts between pedestrians and vehicles. As additional housing and commercial growth occurs, more vehicle and pedestrian conflicts are likely.

The Potrero Hill neighborhood is generally defined as the area south of 16th Street. It consists primarily of residential uses with some retail uses along 18th and 20th Streets. The area includes no signalized intersections: many intersections in the Potrero Hill area have four-way stops signs, though others are only partially controlled. Almost all of the streets in the Potrero Hill study area have sidewalks on both sides of the street for the entire length of roadway. With low traffic volumes, complete sidewalks and crosswalks, and plentiful street trees, the pedestrian environment on Potrero Hill's residential streets is generally pleasant. Challenges to pedestrians in this area include the following:

- Vehicular speeding on residential streets reduces comfort for pedestrians. As documented by the Potrero Hill Traffic Calming project (described below) vehicles traveling on Potrero Hill streets exceed speed limits in numerous locations.
- US-101 is a barrier for pedestrian travel between Potrero Hill and the Mission. Potrero Hill is almost entirely separated from the Mission to the west by US-101. The freeway presents a barrier, as there is no east-west bicycle or pedestrian access from 18th Street to 22nd Street and from 23rd Street to Cesar Chavez Street. There are pedestrian bridges over US-101 located at 18th, 22nd and between 24th and 25th Streets. Some of these pedestrian bridges are in disrepair and the 25th Street bridge has been closed for safety reasons. I-280 freeway to the east also presents a barrier to pedestrian travel.

- Perhaps the biggest barrier in the area is the intersection of US-101, Cesar Chavez Street, Potrero Avenue, and Bayshore Boulevard. Bicyclists and pedestrians are allowed to cross under the freeway and over Cesar Chavez Street, but the area does present a number of challenges to non-motorized travel, including high speeds from vehicles entering and exiting the freeway ramps, minimal sightlines for bicyclists, pedestrian, and motorists, as well as limited wayfinding and lighting for bicyclists and pedestrians.
- Steep grades limit pedestrian travel for persons with disabilities. Several streets in the area, such as portions of 18th, 19th, and 20th Streets, have steep grades, which makes pedestrian access difficult, especially for persons with disabilities. There are also a small number of locations where the roadway dead-ends because of substantial changes in elevation, such as 22nd Street. At these locations stairways are provided for pedestrian access.

Showplace Square/Potrero Hill Pedestrian Planning Efforts

Two ongoing planning efforts seek to improve pedestrian conditions in the Showplace Square/Potrero Hill Plan area. They are:

Showplace Square Open Space Planning Process. The Showplace Square Open Space Planning Process is an outgrowth of the Eastern Neighborhoods Area Plan. It was established to identify and design open spaces contained in the Showplace Square Area Plan. This process will attempt to create a clear Open Space Plan for the area, develop models, and obtain environmental clearance for those projects. While the focus of this Plan is open space, many of the project scopes include pedestrian improvements, such as bulb outs on the connecting streets adjacent to these sites. The Planning Department conducted community outreach and held four meetings in mid to late 2009. Eight priority sites were identified, with a number of future sites for additional study. The Plan is currently being written and will be submitted to the community for review in mid 2010.

Potrero Hill Traffic Calming Project. In December, 2009, the SFMTA completed the Potrero Hill Traffic Calming Project. The purpose of this project was to improve access and safety for pedestrians, transit users, and motorists in the neighborhood. The project collected detailed traffic speed and volume data throughout the study area, compared it with historical data, and organized two neighborhood-wide community workshops. It recommends several strategies to calm vehicular traffic and improve the pedestrian environment in the neighborhood. The project aims to encourage through traffic to remain on arterials like 16th and Cesar Chavez Streets rather than cutting through Potrero's residential areas, calm traffic on residential streets without shifting traffic between residential streets, improve safety and access, and accommodate SFMTA transit and emergency vehicles.

The project proposes:

- Gateway treatments on Mariposa, 23rd, and 26th Streets to announce to drivers that the conditions have changed from the nearby arterials and freeways to a residential street with a 25 MPH speed limit.

- A speed hump on 19th Street that will slow traffic.
- Bulb-outs at numerous locations near local schools and parks to ease pedestrian crossings and improve pedestrian visibility.
- A variety of parking changes, striping changes, and median islands on Kansas, Wisconsin, Vermont, Mariposa, Rhode Island, Pennsylvania, and Dakota Streets that will narrow the roadway and slow vehicles.
- Chicanes on 18th and 26th Streets to break up long sightlines and slow vehicles on these east-west streets.

The project will progress in four phases, with the first phase including the Mariposa Street gateways, 18th Street chicane, 19th Street speed hump, Kansas Street islands and edge lines, and Rhode Island/Southern Heights intersection improvements. More than two thirds of the cost of Phase One improvements will be paid for with Proposition K funds. The remaining proposed improvements are to be paid for in part with Proposition K funds, but at least $3.6 million in additional funds will have to be secured through competitive funding programs such as Safe Routes to School, Transportation Fund for Clean Air (TFCA), Regional Bicycle and Pedestrian Program (RBPP), and Transportation for Livable Communities (TLC) grants.

Central Waterfront

With the smallest residential population of the four Eastern Neighborhoods, the Central Waterfront has relatively low pedestrian travel volumes. Pedestrian travel represents 11 percent of all trips in the Central Waterfront Plan area. For a further 17 percent of all trips, travelers walk to transit.

Third Street is the area's major travel corridor. Construction on the Third Street light rail project included sidewalks, crosswalks, and new pedestrian countdown signals. While the facilities on Third Street have been greatly improved, the historical land use patterns in the rest of the Central Waterfront have limited the development of a complete pedestrian network for the neighborhood. Some blocks, primarily residential blocks, have complete sidewalks and attractive pedestrian environments. In areas that retain industrial uses, the sidewalk networks are interrupted, obstructed, or simply absent. There are also few pedestrian amenities in these areas.

East of Illinois Street, traditional land uses include heavy industry, including the Port at Pier 70 and, to the south, the power plant. These areas have no established pedestrian network. However, proposed redevelopment of Pier 70 to a mix of uses would include a new street network, as well as investment in pedestrian, bicycle, and public realm amenities. Future development in the Mission Bay may also generate more pedestrian travel to and from the Central Waterfront.

The Central Waterfront was home to very few pedestrian injury collisions from 2004 to 2008, although there were a few collisions around Third Street. These low totals reflect that fact that there are fewer pedestrian trips overall in this area. As growth occurs, especially along Third Street, collision trends merit additional monitoring.

Figure 4-15 provides a summary of speed study data in the Central Waterfront.

SFMTA collected data on pedestrian network deficiencies in the Central Waterfront in March 2008. Findings are summarized in Figure 4-16.

Figure 4-15 Central Waterfront 85th Percentile Speed Data

Street	Between	Direction	Speed Limit	85 % Speed	Date
Third St.	Fourth & 16th Sts.	NB	35	37.5	2002
Third St.	Fourth & 16th Sts.	SB	35	38.1	2002
Third St.	18th & 19th Sts.	NB	35	30	2002
Third St.	18th & 19th Sts.	SB	35	32	2002
Third St.	25th & Cesar Chavez Sts.	NB	35	39.6	2002
Third St.	25th & Cesar Chavez Sts.	SB	35	36	2002
16th St.	Fourth & Owens Sts.	EB	30	34.4	2008
16th St.	Fourth & Owens Sts.	WB	30	33.5	2008
Cesar Chavez	Evans Ave. & Kansas St.	EB	30	37.3	2008
Cesar Chavez	Evans Ave. & Kansas St.	WB	30	36.5	2008
Cesar Chavez	Indiana & Minnesota Sts.	EB	30	30.8	2008
Cesar Chavez	Indiana & Minnesota Sts.	WB	30	29.8	2008

Source: SFMTA speed studies recorded during uncongested midday hours

Figure 4-16 Observed Pedestrian Network Deficiencies in the Central Waterfront

Street	From	To	Pedestrian Deficiencies
Seventh St.	King St.	16th St.	East side: No sidewalk, debris, overgrown vegetation and fence for Caltrain. West side: sidewalks are adequately wide but pavement is uneven and poor quality in segments.
17th St.	Mississippi St.	Pennsylvania St.	North side: loading driveway for SF Metal Shop, 80 ft. sidewalk fronting condo, remaining street side has no sidewalk. South side: half block of narrow 4 ft. sidewalk blocked by 90 degree parking, second half block has no sidewalk and 90 degree parking
23rd St.	Arkansas St.	Dakota St.	Missing gap in sidewalk north side
23rd St.	Dakota St.	Missouri St.	Vegetation covering narrow sidewalk on north side near curve. Maintenance needed.
25th St.	Dakota St.	Mississippi St.	South side: No sidewalk from Mississippi St. to approximately 140 ft. west of Dakota St.
25th St.	Wisconsin St.	De Haro St.	North side: No sidewalk, steep hillside.
26th St.	De Haro St.	Rhode Island St.	North side: No sidewalk from Rhode Island St. approximately 100 ft. east.
Berry St.	Seventh St.	De Haro St.	South side: No sidewalk half block east of De Haro St. 90 degree parking against fence. North side: No sidewalk half block east of De Haro St.
De Haro St.	15th St.	16th St.	East side: No sidewalk, 90 degree parking adjacent to building, existing wheel blocks.
Henry Adams St.	Division St.	Alameda St.	East side: No sidewalk, 90 degree parking on asphalt and cobblestones.
Hooper St.	Seventh St.	Eighth St.	North side: Three quarters of block needs sidewalk improvement, has substandard asphalt and gravel/dirt surface. South side: narrow asphalt path, substandard sidewalk.
Hubbell St.	Seventh St.	16th St.	South side: No sidewalk, 90 degree parking along fenced empty land parcel. North side: Existing sidewalk and truck loading driveways for Economy Restaurant Fixtures. 90 degree parking.
Irwin St.	Seventh St.	Eighth St.	Some substandard sidewalk pavement conditions: Both sides. for middle third of block's sidewalk, low curbs. North side 90 degree parking, south side parallel parking. Several 90 degree, truck loading docks.
Pennsylvania St.	17th St.	Mariposa St.	East side: No sidewalk, 90 degree parking. West side: From Mariposa St. North approx. 200 ft. has sidewalk and deck into Hilti business. Remaining block has a truck loading driveway and building wall with no sidewalk and 90 degree parking.

Street	From	To	Pedestrian Deficiencies
Rhode Island St.	Division St.	Alameda St.	West side: No sidewalk. East side: No sidewalk except for half a block. 90 degree parking on segment with no sidewalk.
Townsend St.	Seventh St.	Eighth St.	South side: Narrow compared to north side due to rail tracks on south side of street.
Utah St.	15th St.	Alameda St.	East side: No sidewalk, 90 degree parking against SF Jewelry Center wall. West side: No sidewalk along south end of block in front of MACLAC business.
Wisconsin St.	16th St.	17th St.	East side: No Sidewalk, 90 degree parking blocks pedestrian asphalt pathway.

Source: SFMTA, March 2008.

Pedestrian travel in Central Waterfront faces the following key challenges:

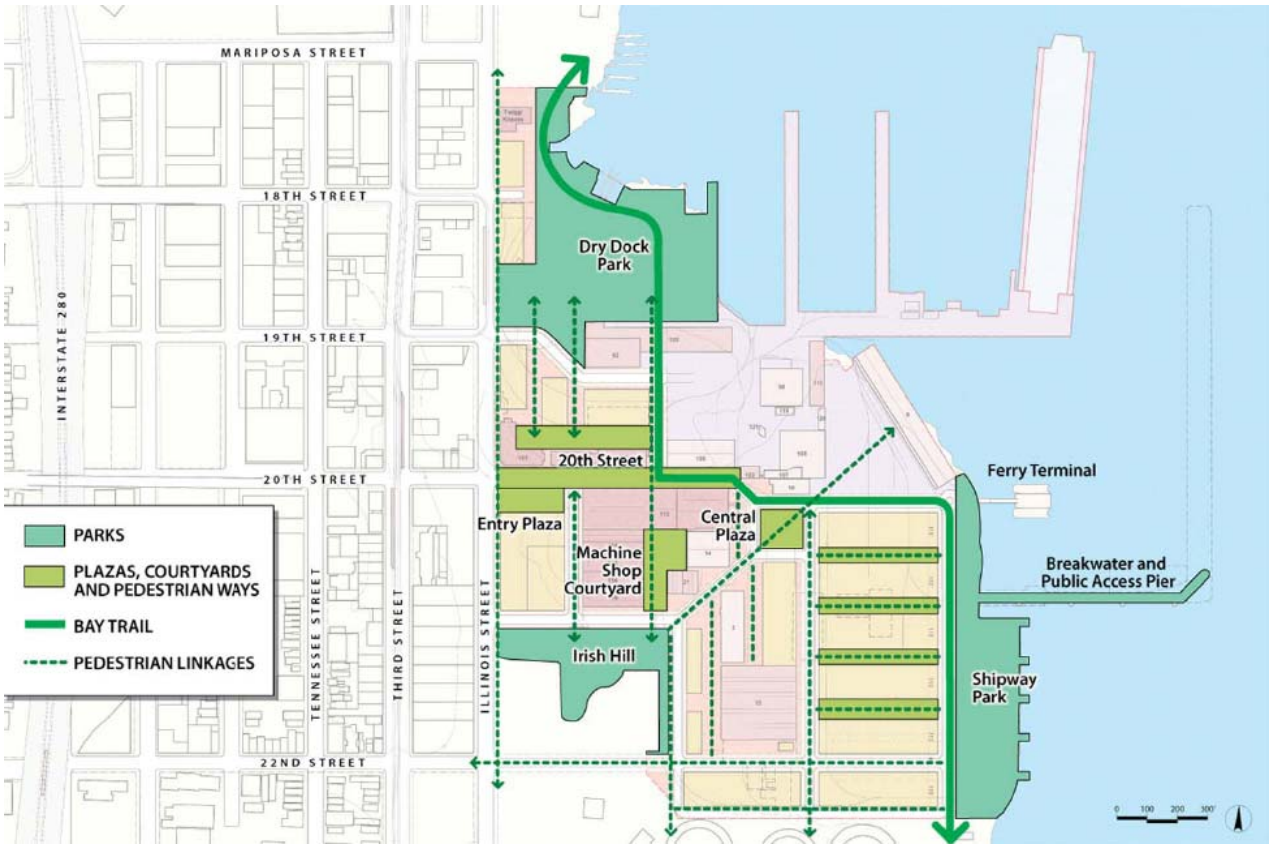
- Interstate 280 creates a barrier between the Central Waterfront and Potrero Hill. Nineteenth Street dead ends at the freeway. Bridges are available at 18th and 20th Street and there is an underpass at 22nd Street.
- There are gaps in the network of sidewalks and pedestrian pathways in the mixed residential and industrial areas west of Third Street. Of the neighborhood's north-south streets, sidewalks are intermittent along Illinois Street. Indiana, Minnesota, and Tennessee Streets all have sidewalk gaps, particularly industrial zone areas south of 24th Street.
- Parking patterns obstruct pedestrian travel. On streets located in the southern and eastern section of the Central Waterfront, vehicles of various sizes (from standard size vehicles to large size trucks) park perpendicular to buildings. Double-parked trucks and trailers are common phenomenon in the southern part of this subarea, especially along Tennessee and Minnesota Streets. These vehicles often partially or completely block the sidewalks or, in the absence of sidewalks, block the portion of the street closest to the building face. Along these streets, pedestrians often walk in the roadways and mix with vehicle traffic.
- There is currently very limited pedestrian access to the waterfront. As land uses transition, pedestrian connectivity to the waterfront may improve, particularly along 20th, 22nd, and 23rd Streets. The Pier 70 Plan (described in more detail below) proposes to create a greenway along 24th Street that will connect Warm Water Cove to the rest of the Central Waterfront.
- Currently, there are challenges for pedestrian comfort accessing the Caltrain station at 22nd Street and Pennsylvania Avenue. Located under I-280, the station has few amenities. It feels isolated and is out of sight of surrounding land uses, creating security concerns for passengers. Furthermore, there is limited access for those wishing to be dropped off as there are no on-street passenger loading zones or taxi zones near the 22nd Street Station. Arriving by motorcycle is also problematic because there are no motorcycle parking spaces, although motorcycles are occasionally parked in off-street spaces designated for bicycles. It may be possible to make the station more prominent and pedestrian access more comfortable by providing improved lighting, wider sidewalks, emergency call boxes, and way finding signage around the station.

Central Waterfront Pedestrian Planning Efforts

Three ongoing planning efforts seek to improve pedestrian conditions in the Central Waterfront. They are:

Pier 70 Master Plan. The Port of San Francisco recently completed a Draft Preferred Master Plan for Pier 70 along the Central Waterfront. Pier 70 is a large portion of the Central Waterfront Plan area. The Pier 70 Plan covers the area from Illinois Avenue to the Bay, and south of Mariposa Street to the power plant, just south of 22nd Street. The Plan includes investment in pedestrian and public realm infrastructure sufficient to close the existing network gaps. The Plan seeks to transform the 65 acre site into a redeveloped neighborhood that combines substantial preservation of the area's historic maritime uses with open space and infill development. The transportation element of the Plan articulates a goal of increased mode shifts to transit, biking, and walking. The Plan proposes the extension of 19th, 20th, 21st and 22nd Streets from the existing city street grid to integrate Pier 70 and the waterfront with adjacent neighborhood districts. Similarly, the Plan promotes creating north-south streets through the site, which interface with the network of Pier 70's historic rail spurs, pathways, and internal access routes. Finally, the Plan calls for investment in pedestrian and bicycle infrastructure, but offers little details as to the location and type of facility. The Draft Master Plan was submitted in 2009 and was open to public comment until October of 2009. The Regional Bay Trail and Blue Greenway (described below) would run through the Pier 70 Plan area.

Figure 4-17 Pier 70 Draft Preferred Master Plan Street Grid and Open Space proposal



Source: Pier 70 Area - Draft Preferred Master Plan

Regional Bay Trail and Blue Greenway. The Bay Trail is a 500-mile recreational corridor and shoreline trail encircling the San Francisco Bay. Overseen by the Association of Bay Area Governments (ABAG), the planning process for the Bay Trail began in the late 1980s. To date, roughly 300 miles of the Bay Trail have been completed, with the alignment on both off-street bicycle paths and on-street bicycle facilities. The Bay Trail travels through both the SoMa and Central Waterfront areas of the Eastern Neighborhoods along the Embarcadero, behind AT&T Park, through Pier 48 to Terry Francois Boulevard, and then onto the bicycle route network on Illinois Street, Third Street, and Cargo Way to the south.

The Blue Greenway refers to not only the 13-mile portion of the Bay Trail along the southeast shoreline from China Basin to Candlestick Point State Recreation Area, but also to enhanced bicycle and pedestrian facilities designed to improve connectivity to a series of new waterfront parks. The exact alignment of the Blue Greenway is under study, but it will generally follow the alignment of the Bay Trail from Mission Creek on the north to the County line on the south. The final alignment is ultimately dependent on a number of larger scale development projects within the area.

Key Issues and Opportunities for Pedestrian Travel in the Eastern Neighborhoods

The following issues and opportunities will be evaluated in detail for further planning for changes to the pedestrian environment in the study area:

- The arterial streets in the South of Market present substantial challenges to pedestrians. These streets are built to accommodate high volumes of vehicle traffic moving at high speeds, and their design can affect comfort of pedestrians. Narrow sidewalks, wide streets, double and triple turn lanes, closed crosswalks, and a lack of pedestrian-scale lighting all present challenges. Because SoMa arterials serve vehicles traveling to and from the Bay Bridge (see vehicle circulation section), the design of some arterials must continue to accommodate high volumes of vehicle traffic. However, even on streets that retain high vehicle volumes, pedestrian conditions may be able to be improved despite this limitation. Urban design features such as pedestrian scale lighting and street trees could improve the pedestrian experience. Signal timing and strategic narrowing of lane widths could be used on some streets to reduce average vehicles speeds without reducing overall throughput of vehicles. In some cases, the addition of mid-block crossings may shorten pedestrian paths of travel and offer additional points of access.
- For certain key streets in the South of Market, wholesale redesign of the right-of-way may be possible, changing the character of the street from vehicle-oriented street to a more complete, multimodal street, with more space allocated to pedestrians. The Eastern Neighborhoods Area Plans, as well as the Western South of Market Community Plan, designate the Folsom Street corridor in the South of Market for conversion to a “civic boulevard” with investment in new pedestrian amenities.
- The number of alleys in the Eastern Neighborhoods also presents a unique opportunity for future growth and development of the area. These alleys offer tremendous potential to pedestrians in the Eastern Neighborhoods as they can improve the quality of the pedestrian experience and offer a substantial opportunity to expand public/shared space.
- Among those streets in the South of Market lacking sidewalks, Townsend Street between Fourth and Seventh Streets is of particular concern for two reasons. First, it is currently a street that must be improved to meet standards which ensure pedestrian access and comfort. The north side of the street does not currently have sidewalks, while the sidewalks on the south side of the street are very narrow and impeded by parked vehicles, especially the motorcycle parking area adjacent to the Caltrain station. Furthermore, the lack of pedestrian amenities on these blocks, such as lighting or landscaped buffers between pedestrian, Caltrain facilities, and parked vehicles makes pedestrian travel challenging. Second, because this corridor represents a major access route for pedestrians wishing to get to and from the Fourth and King Caltrain Station, its enhancement is vital to not only improving conditions for the high numbers of existing pedestrians, but also for increasing non-motorized access to regional transit services.

- The difficulty of crossing 16th Street currently presents a barrier to pedestrian connections between Showplace Square and Potrero Hill. Pedestrian travel between these two neighborhoods could be improved through appropriate treatments of 16th Street, including enhanced crosswalks, curb bulb outs and countdown signals at signalized intersections. Any changes to improve pedestrian crossings of 16th Street would need to be made with careful consideration of changing land use patterns and transit operations on that street.
- In a neighborhood poised for substantial growth, the pedestrian network in the Central Waterfront has major weaknesses. West of Illinois Street, there are substantial gaps and obstructions in the sidewalk network. In the Pier 70 area, redevelopment is envisioned, and an entirely new pedestrian network will need to be created. Similarly, a number of side streets in Showplace Square suffer from incomplete or obstructed sidewalks and a lack of pedestrian amenities. New development in these areas may be an additional catalyst for pedestrian improvement efforts.
- EN TRIPS could work to support complementary pedestrian improvement projects that have been identified through other public planning processes. The Mission Streetscape planning process included a comprehensive evaluation of the needs for pedestrians in that neighborhood and created a series of priority capital projects, focused on improving pedestrian comfort. The projects include neighborhood gateways, traffic calming, road diets on key arterials, and intersection improvements throughout the neighborhood. Similarly, the Potrero Hill Traffic Calming Project has identified and designed a group of traffic-calming projects that respond directly to the needs of pedestrians in that neighborhood and require additional funding for the second through fifth phases of project implementation. For both Plans, additional effort from City agencies will be required to secure funding and develop a clear path to implementation for the Plans' projects.

4.2 Bicycling

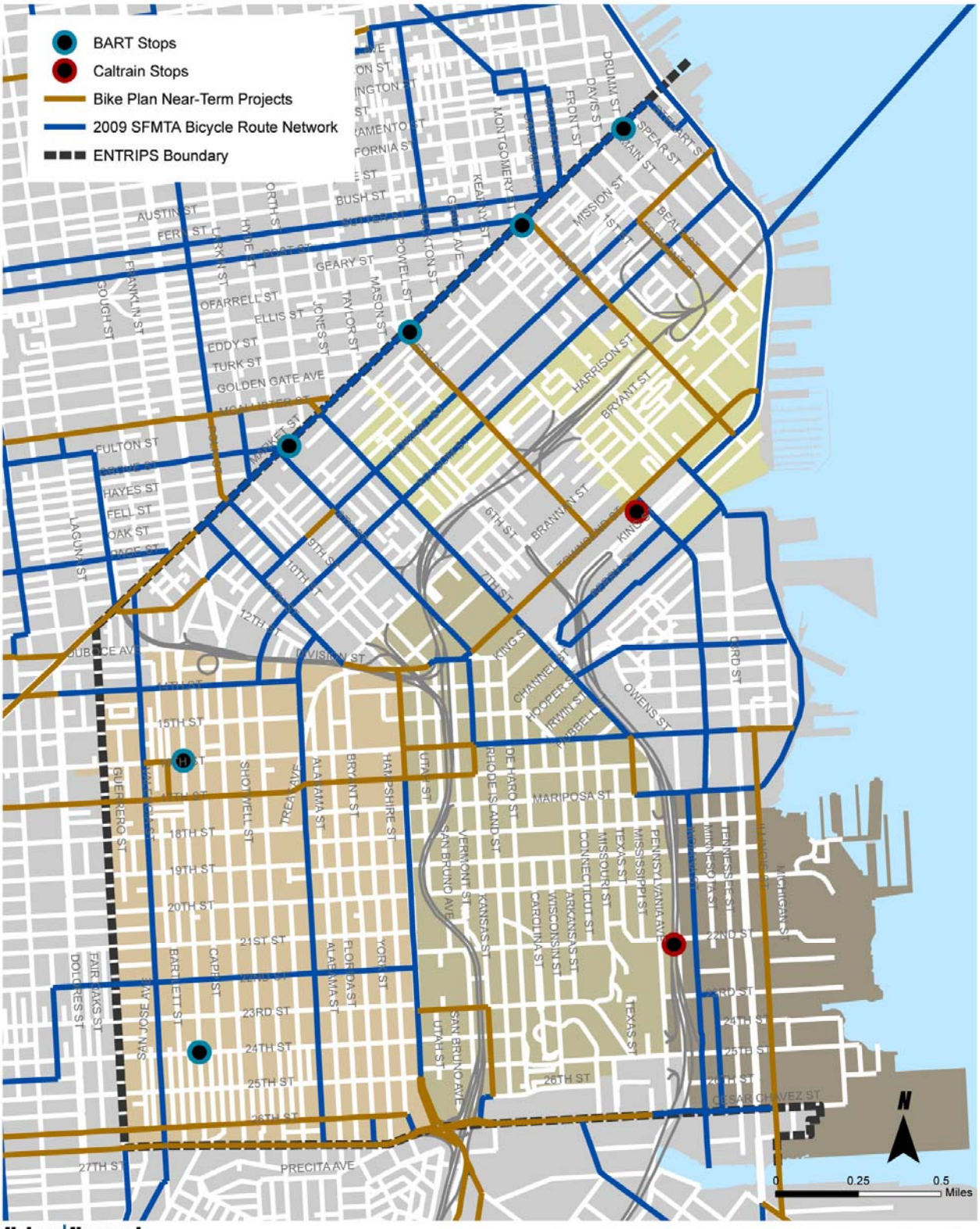
The Eastern Neighborhoods has an established network of bicycle routes, offering crucial connections between downtown, regional transit services, and some of the City's most popular residential neighborhoods and commercial corridors. As a result, the study area is home to many of the city's most heavily used bicycling corridors. For example, SFMTA 2009 bicycle counts show that 17th and Valencia was the intersection with the second highest number of bicyclists (out of 33 count locations), with 690 bicyclists counted during the PM peak. Furthermore, the area's typography and climate are particularly conducive to bicycling. With the notable exception of Potrero Hill, the Eastern Neighborhoods provide the flattest bicycling environments in San Francisco. Each Eastern Neighborhoods Area Plan recognizes bicycling as a priority component of the Eastern Neighborhoods future transportation network.

San Francisco's travel demand model estimates that bicycling represents 4 percent of all trips originating in the Eastern Neighborhoods, as compared to 2 percent in the city as a whole. The SFMTA's *2008 State of Cycling Report* used roughly 400 phone and roughly 400 intercept surveys to solicit travel diaries from San Francisco residents and found that 6 percent of all trips in the City are completed via bicycle. Two potential limitations with the SFMTA finding was that the intercept surveys were completed by "practicing bicyclists" and the travel diaries were done on only one day during May of 2008 when gas prices were approaching historic highs. Additional surveys are to be conducted in future years and should be useful in confirming this bicycle mode share. Furthermore, the SF-CHAMP model is in the process of being updated, and it is possible that revisions to the bicycle modeling methodology will result in different bicycle mode shares. Nevertheless, the prominence of bicycling in the Eastern Neighborhoods Area Plans reflects recognition of the growing popularity of bicycling and the potential benefits of further improvements in bicycle facilities. The recent upward trend in bicycling in the Eastern Neighborhoods is clear: counts within or adjacent to the Eastern Neighborhoods study areas have shown a 47.4 percent increase from 2006 to 2009. This increase reflects citywide trends, as bicycling as a mode of transportation has become increasingly popular in recent years in San Francisco.[3]

This trend has occurred despite ongoing challenges to bicyclists. First, gaps remain in the area's bicycle network. While a large number of bicycle network improvement projects designed to close these gaps have been proposed through the SFMTA's San Francisco Bicycle Plan, most have yet to be implemented. Pending implementation, many designated bicycle routes lack bicycle lanes. On streets designed for high traffic volumes and speeds, the lack of a dedicated lane can be a barrier to bicycling. Second, there is limited street connectivity in some areas, due to freeways, the historic land use patterns, and natural barriers. Third, bicycle parking in the area is limited in both quantity and variety, with on-street racks comprising the vast majority of parking options. Finally, as the City has had to defer and modify its street repaving schedule due to budget constraints, the condition of pavement has become a key factor for the comfort of bicyclists. Furthermore, the poor condition of a street's pavement can cause bicyclists to seek out alternate paths of travel, which may or may not be on the designated bicycle network.

[3] The SFMTA's annual bicycle counts revealed a 53.5 percent citywide increase in bicyclists from 2006 to 2009.

Figure 4-18 San Francisco Bicycle Network



Nelson\Nygaard consulting associates

Source: San Francisco City & County GIS, San Francisco General Plan

Policies and Plans

San Francisco's Bicycle Plan is the city's principal document for guiding the development and implementation of policies and projects that promote bicycling. In 2005, an update to that Plan was developed and approved by the SFMTA and Board of Supervisors. The updated Plan breaks down bicycle projects into one of three types: 1) near-term bicycle improvement projects – high priority bike lanes, intersection improvements, as well as more innovative treatments like cycle tracks; 2) minor improvements to the bicycle route network – typically sharrow[4] treatments and route signage; and 3) long-term bicycle improvement projects that require additional study. The Bicycle Plan identified 60 near-term projects, hundreds of miles of streets for minor improvements, and several corridors and neighborhoods for additional analysis and planning.

In 2006, the Plan was legally challenged in San Francisco Superior Court and an injunction was issued in June of 2006 ordering the city to stop implementation of the Bicycle Plan until an environmental impact report (EIR) was completed. The legal injunction prevented the SFMTA from installing any new physical bicycle infrastructure. Over the next three years, the SFMTA worked to complete the court-ordered Bicycle Plan EIR and finalize designs to the specific projects outlined in the Bicycle Plan. In June of 2009, the SFMTA Board, Planning Commission, and Board of Supervisors approved the EIR and voted to adopt the Bicycle Plan. Of the 60 near-term projects, 45 were adopted and given approval for implementation. The remaining 15 projects are undergoing additional study, community input, and design review before they are approved. The remainder of the Bicycle Plan was approved in full. In late November 2009, the San Francisco Superior Court agreed to partially lift the injunction against the City's Bicycle Plan, which allowed the SFMTA to begin implementation of some bicycle network improvements, including 10 of the Bicycle Plan's 45 approved near-term bicycle lane projects, all minor improvements, and bicycle racks. The City will return to the Superior Court in the summer of 2010 to ask for a complete lifting of the injunction.

Given the uncertainty around the injunction, the implementation schedule for the Bicycle Plan has not been finalized. Many of near-term project and minor improvements, including bicycle racks, have secured funding. As a result, the ten recently released projects will be fully constructed in the first half of 2010. All minor improvements and bicycle racks are scheduled to be completed by the end of 2010. The SFMTA is continuing to identify and secure funding for all of the 60 near-term projects, and full implementation of the Bicycle Plan is scheduled to take three years. Figure 4-18 shows the citywide bicycle network. Specific bicycle projects planned for the Eastern Neighborhoods are discussed in the neighborhood-level section below.

Separate from the San Francisco Bicycle Plan, the Mission Creek Bikeway project proposes to create a mixed-use pathway along the old Southern Pacific Railroad right-of-way. The path would parallel Division Street and the underground Mission Creek, providing a connection from the Mission District to Mission Bay, the Fourth and King Caltrain Station, and the waterfront. However, the Mission Creek Bikeway Bay Trail Connector Study, funded by the Association of

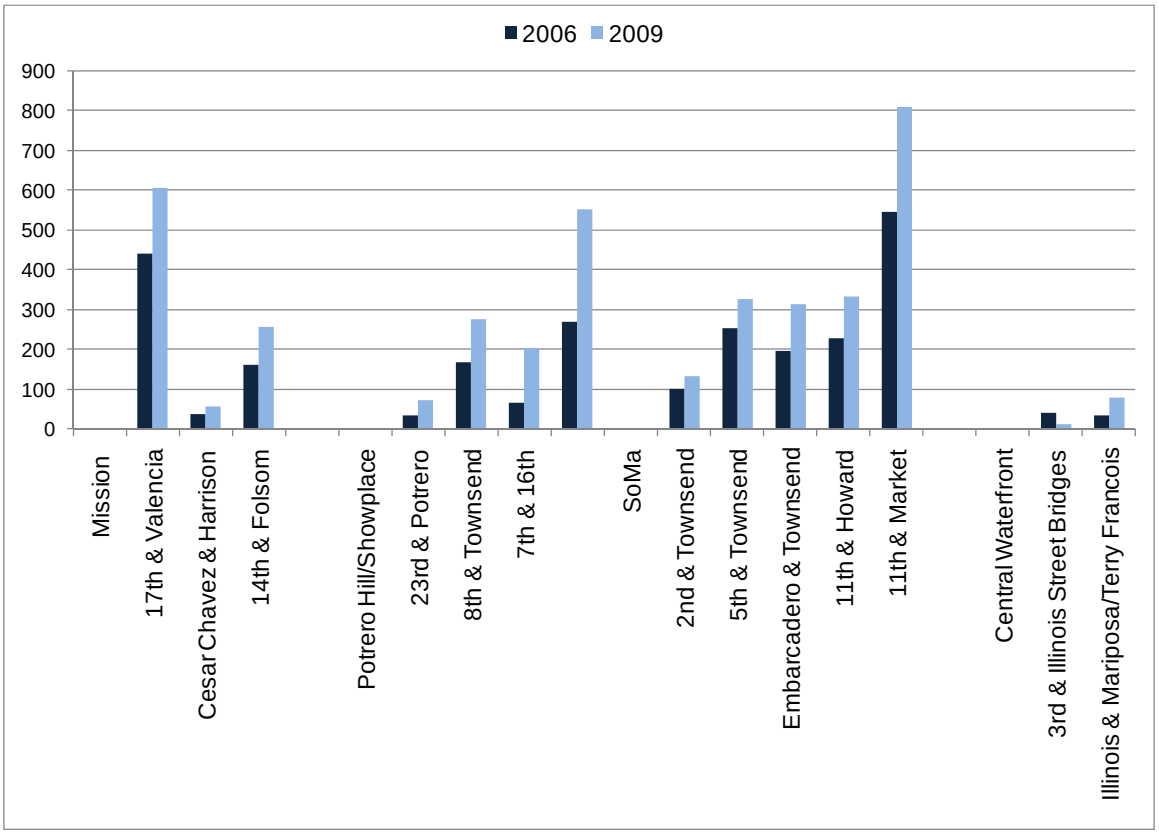
[4] Sharrows are shared roadway markings which are intended to show where bicyclists can ride on the street so as to avoid the "door zone."

Bay Area Governments (ABAG) and completed by the Rails-to-Trails conservancy, found feasibility issues with the project. A portion of the right of way is owned either by private parties or the California Department of Transportation (Caltrans). Because the land under Division Street is Caltrans property and considered part of an active right-of-way, near-term challenges exist to implementing the bikeway as originally envisioned. However, alternative medium-term bike improvements in this corridor may be possible.

Corridors and Neighborhoods

As mentioned above, bicycling is on the rise the Eastern Neighborhoods. The SFMTA conducts annual bicycle counts during a three week period in August at 33 locations throughout the City. Of the 33 SFMTA count locations 11 are within the study area and another five are nearby. Bicycle counts were performed manually by SFMTA staff. A total of 35 counts were conducted at 33 locations. 31 counts occurred during the evening peak period, three counts in the morning peak period, and 1 count in the mid-day period. All bicyclists observed passing through an intersection during the count period are noted. While the SFMTA's count methodology, one count per year, only offers a "snapshot" view of bicycling in San Francisco, the data reveal a consistent upward trend in bicycle ridership. Market Street, Mission Street, and SoMa corridors represent a large share of the count volume. As shown in Figure 4-19 below, there were large increases in bicycling at nearly all count locations in the Eastern Neighborhoods between 2006 and 2009.

Figure 4-19 Bicycle Volume Comparisons for Study Area (2006-09)



Source: SFMTA Bicycle Count Report, 2009

The Eastern Neighborhoods are also home to a number of the City's high collision intersections and corridors. Over the last five years, five intersections within or adjacent to the study area ranked among the city's highest for bicycle injury collisions, as shown in Figure 4-20.

Figure 4-20 SF Intersections with the Highest Number of Bicycle Collisions (2004-08)

Intersection	Number of Collisions
Fell Street and Masonic Avenue	20
Market Street and Octavia Blvd	18
Duboce Avenue and Valencia Street	12
Market Street and Valencia Street	11
14th Street and Guerrero Street	9
16th Street and Valencia Street	8
Geary Blvd and Polk Street	8
Market Street and Gough Street	8
14th Street and Folsom Street	7
Sixth Street and Folsom Street	7
Market Street and South Van Ness Ave	7
McAllister Street and Polk Street	7

Source: SFMTA Bicycle Collision Report

Similarly, many of the City's high collision corridors are located in the Eastern Neighborhoods. From 2004 to 2008, the Mission Street, Valencia Street, 16th Street, and Folsom Street corridors comprised four of the city's top seven highest bicycle collision corridors.

Figure 4-21 SF Corridors with the Highest Number of Bicycle Collisions (2004-08)

Corridor	2004-08
Market Street	200
Mission Street	115
Valencia Street	94
Polk Street	85
Van Ness Avenue	79
16th Street	71
Folsom Street	63
Turk Street	47
Divisadero Street	44
Geary Boulevard	43

Source: SFMTA Bicycle Collision Report

South of Market

An estimated 4 percent of all trips originating in SoMa are bicycle trips. SoMa is also one the most heavily trafficked areas for bicycle through trips in the city, as it provides direct connections between Downtown and neighborhoods to the south. There exist a number of well-established bicycle routes within this area. Route 30 on Folsom and Howard Streets provide major east-west connections, while Route 23 on Seventh and Eighth Streets provide major north-south connections. Like pedestrians, bicyclists in SoMa face a challenging environment. The grid is dominated by one-way streets, fast moving traffic during non-peak periods, and freeways. The one-way orientation can require bicyclists to circle around very large blocks in order to reach a destination. While SOMA's alleyways enhance connectivity, most are also one-way. As a shortcut, some bicyclists will ignore one-way streets by either riding against traffic for a brief period to connect with a two-way street or simply riding on the sidewalk for a longer distance rather than finding a designated bicycle facility. Even when proceeding with the flow of traffic, fast-moving vehicles can make the marked bicycle lanes on Folsom or Howard Streets uncomfortable for some cyclists.

Because of the importance of SoMa streets in the City's bicycle network, and because future phases of EN TRIPS will evaluate the need for potential circulation changes to the South of Market street grid, this study has collected supplementary bicycle volume data for key intersections in SoMa. SoMa bicycle counts, along with vehicle and pedestrian counts, are summarized in the South of Market and 16th Street circulation analysis in Chapter 5.2.

Proposed north-south connections on Second Street (Route 11) and Fifth Street (Route 19) are crucial projects within the Bicycle Plan that have been delayed by the injunction. Bicycle facilities are also scarce south of Folsom Street, largely due to the presence of the freeways. Improvements to Townsend, Beale, and Fremont Streets have likewise been delayed. Once implemented, these projects will improve connectivity and safety for bicyclists.

Figure 4-22 Proposed Bicycle Projects in SoMa

Study Area	Proposed Bicycle Projects
East SoMa	(Project 2-1) Second Street Bicycle Lanes, King Street to Market Street
	(Project 2-2) Fifth Street Bicycle Lanes, Market Street to Townsend Street
	(Project 2-5) Beale Street Bicycle Lane, Bryant to Folsom Streets
	(Project 2-7) Fremont Street Bicycle Lane, Harrison to Howard Streets
	(Project 2-16) Townsend Street Bicycle Lanes, Eighth Street to The Embarcadero
	Long-term project: Mission Creek Bikeway between Fourth Street and Harrison Street
	Sharrows: Third Street, Townsend Street to China Basin
	Sharrows: Fourth Street, Townsend Street to Channel Street

Furthermore, citywide zoning code amendments require bicycle parking for new and renovated commercial buildings of a certain size, residential buildings with more than four dwelling units, and all City-owned parking garages and all privately-owned parking garages[5]. On-street bicycle parking should continue to be expanded to serve shoppers, employees, and residents. Secure bicycle parking like the bicycle parking facility provided at the Caltrain station at Fourth and King Streets helps facilitate intermodal connections and transit use.

South of Market Bicycle Volumes

Bicycle counts during the AM and PM peak hours were collected in January 2010 at selected intersections in the South of Market. As shown in Figure 4-23, there is a correlation between number of observed bicyclists and the presence of a Class II bicycle lane, particularly on bicycle Route 30 (Folsom Street), the highest used bicycle facility during the PM peak hour.

[5] SF Planning Code – Article 1.5, Section 155.1-155.5

Figure 4-23 South of Market PM Peak-Hour Bicycle Volumes

FEHR & PEERS
TRANSPORTATION CONSULTANTS

EXISTING PM PEAK HOUR BICYCLE VOLUMES

Mission

The presence of regional transit, strong commercial corridors, proximity to downtown, and flat terrain has made the Mission District a very popular area for bicyclists making both local and through-trips. The Valencia Street bicycle lanes (Route 45) and Harrison Street bicycle lanes (Route 33) are busy with bicyclists during commute times and throughout the day. The rise in bicycling in the Mission has been substantial, as indicated by the 37 percent increase observed at 17th and Valencia from 2006 to 2009. The Mission, Valencia, and 16th Street corridors have also seen a large share of the city's bicycle collisions in recent years. From 2004 to 2008, Mission Street had the second most collisions with 115, Valencia Street had the third most with 94, and 16th Street had the sixth most with 71.

The Mission has robust north-south bicycle connections, but lacks strong east-west bicycle facilities. The Bicycle Plan proposes various east-west improvements in the Mission: bicycle lanes on 17th Street (Route 40), bicycle lanes on Cesar Chavez Street[6] (Route 60), and sharrows on 22nd Street. The Bicycle Plan also identifies Shotwell Street (between 14th and 26th Streets) and Capp Street (between 15th and 26th Streets) as locations for long-term bicycle improvements. These low-volume streets might be ideal locations for new "bicycle boulevards" within the Mission.

Figure 4-24 Proposed Bicycle Projects in Mission

Study Area	Proposed Bicycle Projects
Mission	(Project 2-4) 17th Street Bicycle Lanes, Corbett Avenue to Kansas Street,
	(Project 5-6) Cesar Chavez/26th Streets Bicycle Lanes, Sanchez Street to US-101
	Long term project: Capp Street between 15th Street and 26th Street
	Long-term project: Shotwell Street between 14th Street and 26th Street
	Sharrows: Harrison Street, 23rd Street to 26th Street
	Sharrows: Bryant Street, 26th Street to Cesar Chavez Street
	Sharrows: Hampshire Street, 26th Street to Cesar Chavez Street

Bicycle parking in the Mission has also become a priority. The Valencia, Guerrero, and Mission commercial corridors currently do not have enough bicycle parking capacity. In addition, bicycle parking at the 16th and 24th Street BART station is limited. This shortage is partially due to a backlog from the injunction, but also due to conflicts between traditional sidewalk bicycle racks, pedestrian travel, and increasingly popular outdoor seating. On-street bicycle "corrals," which provide 15-20 bicycle spaces and require the removal of vehicle parking spaces, can provide additional bicycle parking. Merchants in the Mission have expressed interest in such facilities and the SFMTA has begun to evaluate potential locations.

[6] This project is part of the larger Cesar Chavez Street Design Project.

Showplace Square/Potrero Hill

The periphery of the Showplace Square and Potrero Hill study area is well-served by bicycle routes. Potrero Avenue (Route 25) offers a north-south connection on the western edge, while 16th Street (Route 40) on the northern edge offers an east-west connection. A major impediment to bicycle travel within and to/from the area is the discontinuous street network caused by US-101 on the west, I-280 on the east, and the Caltrain tracks. In addition, the land uses on the southern and eastern edge are predominantly industrial and do not offer an environment conducive to bicycling. Finally, the steep terrain of Potrero Hill, unique in the Eastern Neighborhoods, limits accessibility for bicyclists.

Nevertheless, SFMTA count data indicates that bicycling is also increasing this study area, particularly in the Showplace Square area. For example, bicycle counts at Eighth and Townsend increased 65 percent from 2006 to 2009. A number of bicycle projects are proposed for this area, most notably the improvements to Cesar Chavez Street on both the east and west sides of US-101. Additional near-term projects are planned for Potrero Avenue, 23rd, Kansas, 17th, Division, and Mississippi Streets. The proposed Mission Creek Bikeway also presents the opportunity for a future landscaped bicycle path from the edge of the Mission District, east through Showplace Square to Mission Bay. The Bicycle Plan identifies this bikeway as a long-term improvement project from Fourth Street to Harrison Street.

Figure 4-25 Proposed Bicycle Projects in Showplace Square/Potrero Hill

Study Area	Proposed Bicycle Projects
Potrero Hill/Showplace Sq.	(Project 2-4) 17th Street Bicycle Lanes, Corbett Avenue to Kansas Street
	(Project 2-6) Division Street Bicycle Lanes, Ninth to Eleventh Streets
	(Project 4-5) Mississippi Street Bicycle Lanes, 16th to Mariposa Streets
	(Project 5-1) 23rd Street Bicycle Lanes, Kansas Street to Potrero Avenue
	(Project 5-8) Kansas Street Bicycle Lanes, 23rd to 26th Streets
	(Project 5-11) Potrero Ave. and Bayshore Blvd. Bicycle Lanes, 25th to CC Street
	Long-term project: Mission Creek Bikeway between Fourth St. and Harrison St.
	Sharrows: 22nd Street, Chattanooga Street to Potrero Aveneue
	Sharrows: Kansas Street, Division Street to 16th Street

Collisions in this area have been limited over the past decade, but that is likely due to the relatively limited number of bicyclists in this corridor. As bicycle infrastructure is designed and implemented, attention should be paid to better incorporating bicycling within each street's functionality.

Central Waterfront

The Central Waterfront has traditionally not been a travel corridor or destination for bicyclists. Heavy industrial uses and truck movements have largely discouraged bicycle travel. However, recent growth and development in waterfront areas, such as the Dogpatch and the nearby Mission Bay redevelopment, have led to an increase in bicycling. This area also offers a flat and

direct connection between downtown and the Bayview and Hunters Point neighborhoods. The primary north-south corridors are on Illinois Street (Route 5) and Indiana/Minnesota Streets (Route 7). Indiana Street provides direct access to the 22nd Street Caltrain Station, Esprit Park, and Islais Creek open space. Illinois Street connects the neighborhood with downtown to the north via Terry Francois Boulevard and south to Bayview/Hunters Point via the Illinois Street Bridge over Islais Creek. The implementation of bicycle facilities on these streets, however, has been delayed by the injunction. Existing bicycle lanes on Terry Francois Boulevard, Seventh Street and 16th Street provide routes to and around Mission Bay. Still under construction, the Mission Bay street grid will need to provide dedicated routes through the new neighborhood.

Figure 4-26 Proposed Bicycle Projects in Central Waterfront

Study Area	Proposed Bicycle Projects
Central Waterfront	(Project 4-3) Illinois Street Bicycle Lanes, 16th Street to Cargo Way
	Long-term project: Pier 70 between 18th Street and 22nd Street
	Sharrows: Indiana Street, Mariposa Street to Cesar Chavez Street
	Sharrows: 23rd Street, Indiana Street to Minnesota Street
	Sharrows: Minnesota Street, 23rd Street to Cesar Chavez Street
	Sharrows: Mariposa Street, Mississippi Street to Illinois Street
	Sharrows: Cesar Chavez Street, Third Street to Illinois Street

The introduction of the T-Third light rail along Third Street resulted in the shift of Route 5 from Third Street to Illinois Street. It appears from the SFMTA bicycle counts, however, that many bicyclists still choose to ride down Third Street. Observed bicycle traffic in this corridor dropped when the count location was moved from the Third Street Bridge to the Illinois Street Bridge to reflect the route shift.

Collisions in this area have been limited over the past decade, but that is likely due to the relatively limited number of bicyclists in this corridor. As bicycle infrastructure is designed and implemented, attention should be paid to better incorporating bicycling within each street's functionality.

Key Issues and Opportunities for Bicycling in the Eastern Neighborhoods

- The adopted Bicycle Plan addresses the identified short-term existing needs. The near-term bicycle projects in the Bicycle Plan are designed to accommodate much of the immediate growth, as well as address concerns about collision risk. As the injunction is lifted and implementation continues to progress over the coming years, bicycling infrastructure in the Eastern Neighborhoods will grow substantially.
- Additional investment will be required to meet longer-term needs. Given the objectives of the four area Plans, current and future residential development, and observed bicycling ridership trends it is likely that bicycling will continue to rise in the Eastern Neighborhoods. The EN TRIPS future conditions analysis will take into account this likely upward trend.

- The Mission Creek Bikeway presents a major opportunity for a new bike route through San Francisco, connecting major Eastern Neighborhoods destinations and providing needed recreational space. However, development of this project faces challenges, including a joint City and Caltrans decision about the future of the Division Street right-of-way.
- There is insufficient bicycle parking available, particularly in the Mission District. The Valencia, Guerrero, and Mission commercial corridors, as well as the 16th and 24th Street BART stations, require additional bicycle parking. The Bicycle Plan will address some of the need through sidewalk racks, but additional capacity may be needed. On-street bicycle corrals offer a potential solution. Additional monitoring of bicycle parking in new developments might also be needed to ensure adequate bicycle parking facilities.
- The high volume, one-way streets in SoMa present perhaps the most intriguing opportunities for innovative bicycle treatments. Separated bicycle lanes, or cycle tracks, have been installed on similar streets in New York (Ninth Avenue, as one example), and they offer bicyclists a safer and more comfortable riding environment. Additional innovative treatments, such as bike boxes or colored bicycle lanes, have been shown to reduce conflicts, enhance visibility, and improve safety. Many SoMa streets are potential candidates for such treatments.
- Further development of South of Market alleys into bicyclist “cut-throughs” and shared spaces present an opportunity to enhance the connectivity and streetscape quality of the Eastern Neighborhoods.

Chapter 5. Motor Vehicles

5.1 Motor Vehicle Circulation

San Francisco's Transit First policy prioritizes the movement of people using transit and non-motorized modes of transportation over the circulation of private vehicles. Nonetheless, private vehicle travel represents just over half of all trips made in the study area (52%), and cars will continue to be an important part of the transportation system for the foreseeable future. In keeping with City policy, EN TRIPS will not propose investments in new vehicular capacity. However, the project will seek to more gracefully integrate vehicles into the multimodal transportation system in order to improve system performance for all modes. In particular, the project will focus on opportunities to better manage circulation in the South of Market.

This chapter reviews vehicle conditions on San Francisco's primary vehicle network – the system of freeways and major arterials that carry the bulk of the vehicle traffic in the Eastern Neighborhoods. It then presents a more detailed look at circulation at key intersections in the South of Market and on the 16th Street corridor, using data collected in January 2010.

Policies and Plans

As a matter of policy, the City of San Francisco tolerates congestion on its freeways and arterials. Rather than creating new automobile capacity, the City focuses on creating and preserving space for non-automobile travel modes, and prioritizes investments that maximize the mobility of people.

However, several policies work to manage vehicle congestion in the Eastern Neighborhoods. The policy of limiting downtown parking limits the demand for auto trips during peak periods. To further reduce peak-hour auto travel and congestion, the City has a group of Transportation Demand Management (TDM) policies that apply to employers. TDM can include subsidized transit passes, guaranteed rides home for non-auto commuters, and promotion of ridesharing. In the South of Market Area and Mission Bay district, employers are required to have a Transportation Management Program and to provide Transportation Brokerage Services (TBS). The Transportation Management Association (TMA) of San Francisco, in operation since 1989, is an association of more than 60 building owners and managers that implements the required Transportation Demand Management programs of member buildings.

The City is currently investigating two other promising ways to reduce auto congestion without increasing capacity. The first, discussed further in the Parking section, is the SF*park* program, which will use parking pricing to better manage the demand for parking spaces. The goal is to achieve a balance between supply and demand, eliminating the traffic generated by vehicles circling for parking while encouraging non-auto modes. SF*park* will further reduce auto congestion by directing drivers to available parking spaces. The second congestion management strategy now under evaluation is congestion pricing. The San Francisco County Transportation Authority is now working on a study of a congestion pricing program to manage peak-period congestion. This study is known as the Mobility, Access, and Pricing Study (MAPS).

Figure 5-1 San Francisco General Plan Designated Primary Vehicle Network

Nelson|Nygaard consulting associates

Source: San Francisco City & County GIS, San Francisco General Plan

Corridors and Neighborhoods

San Francisco's primary vehicle network consists of 35 miles of freeways and 202 miles of major arterials. This section describes the primary vehicle network in the vicinity of the EN TRIPS study area, as defined in the San Francisco General Plan. The Central Waterfront and Mission Bay are served by one major arterial – Third Street. In the north-south direction, the Mission District has two primary north-south arterials (South Van Ness Avenue and Potrero Street), and Guerrero Street is designated as a secondary arterial. Running east-west along the southern boundary of the neighborhood, Cesar Chavez Street is a major arterial, and 16th Street is designated as a secondary arterial. Potrero Hill has two freeways (I-280 and US 101), but no major arterials. In contrast to this limited arterial network in the rest of the study area, nearly every through street within the South of Market is designated as a major arterial (Mission, Howard, Folsom, Harrison, Bryant).

Freeways

Interstate 80 (I-80)

I-80 provides regional access to the Eastern Neighborhoods area from the east. I-80 is an urban freeway within the City of San Francisco and the East Bay. I-80 connects Alameda County with the City of San Francisco via the San Francisco-Oakland Bay Bay Bridge. I-80 provides vehicle access to the East Bay communities of Oakland and Berkeley, as well as to other major freeways in the East Bay (I-580 and I-880), before extending northeast to Sacramento. The I-80 freeway ramps are located at Fourth Street (EB off and WB on), Fifth Street (WB off and EB on), Seventh Street (EB off and WB on), and Eighth Street (WB off and EB on).

United States Highway 101 (US 101)

US 101 provides regional access to the Eastern Neighborhoods area from the North Bay via the Golden Gate Bridge and the South Bay/San Francisco Peninsula. In the Eastern Neighborhoods area, US 101 is an urban freeway south of the Duboce Street off- and South Van Ness Avenue on-ramps. US 101 intersects I-80 near the corner of 16th Street and San Bruno Avenue, and then exits the study area south of Ceasar Chavez Boulevard. US 101 serves San Francisco and the Peninsula, the South Bay, and extends north via the Golden Gate Bridge to the North Bay. To the north US 101 connects Marin County with the City of San Francisco via the Golden Gate Bridge. To the south, I-80 merges with US 101, connecting San Francisco to the East Bay via the San Francisco-Oakland Bay Bridge. The US 101 freeway ramps within the project area include Ninth Street and Duboce Street off-ramps and Tenth Street and South Van Ness Avenue on-ramps.

Interstate 280 (I-280)

US 101 also provides primary access to I-280, a second major freeway extending south from the SOMA through the Peninsula towards San Jose. I-280 provides direct freeway access to Mission Bay, Portero Hill and Cesar Chavez Street.

Central Freeway

The Central Freeway is a high-profile component of both the roadway network and the landscape of the Eastern Neighborhoods. A wide elevated viaduct, it extends west from the Highway 101/I-80 interchange, in the vicinity of Ninth and Division streets, to the intersection of Market Street and Octavia Boulevard, a distance of roughly one mile. For most of this distance, the Central Freeway is directly overhead of Division Street, 13th Street and Duboce Avenue, which together effectively constitute a single broad arterial. Access to the Central Freeway is provided by westbound off-ramps at Mission Street and Duboce Avenue, and an eastbound on-ramp at South Van Ness Avenue.

The freeway formerly continued north of Market Street to connect with Fell, Oak, and Gough Streets. The northern segment was removed in stages following the 1989 Loma Prieta Earthquake, and was replaced by an at-grade arterial, Octavia Boulevard, that opened in 2005. Octavia Boulevard connects I-80 and US 101 via the Central Freeway to the one-way couplet of Fell and Oak streets, which provide auto access to and from the west side of the City. The remaining Central Freeway segment between Market and Mission Street was completely reconstructed as part of this process in order to touch down at Market Street.

As an elevated structure, the Central Freeway is a visual barrier in this area, and the lack of pedestrian amenities on Division Street below the freeway reinforces the feeling of separation between the parts of the neighborhood on either side. Two of SFMTA's busiest transit routes, the 14-Mission and 49-Mission/Van Ness, include a bus stop on a triangular traffic island between Mission and the two branches of the Mission/Duboce off-ramp (one allowing right turns onto Mission Street, and the other continuing directly onto Duboce Avenue).

Arterials

This section describes the arterials in the Eastern Neighborhoods study area. Arterials in San Francisco are classified for the various roles they serve in the City. The *San Francisco General Plan* classifies streets for their transit, pedestrian, and bicycle roles. The *General Plan* identifies Transit Preferential Streets (TPS) that are further classified as Transit Oriented and Transit Important streets – both serving a high frequency of transit vehicles or high volumes of passengers. The distinction is that a Transit Oriented street should emphasize the efficient operations of transit vehicles and automobile traffic should be of secondary concern, while Transit Important streets seek to balance uses. The *General Plan* also classifies key Neighborhood Pedestrian Streets as either being a Neighborhood Commercial Street or Neighborhood Network Connection Street. Bicycle routes are mapped in the *General Plan* and also specified in the *San Francisco Bicycle Plan* with a route designation. Vehicular use classifications are specified in the San Francisco County Transportation Authority's (SFCTA) Congestion Management Program (CMP) network for streets that serve a countywide (citywide) purpose in people and goods movement. Classifications within the CMP network include Freeways, Major Arterials, and Transit Conflict Streets. A transit conflict street is defined by the General Plan as a non-major arterial street that serves a primarily transit function but experiences conflicts with automobile traffic. Transit conflict streets are included in San Francisco's Congestion Management Plan in

accordance with State Congestion Management legislation. Additionally, the Metropolitan Transportation Commission (MTC) classifies regionally important roads in its Metropolitan Transportation System (MTS).

Mission Street

Mission Street is an east-west Transit Conflict Street, according to the CMP, and Transit Oriented TPS, according to the *San Francisco General Plan*. In the Eastern Neighborhoods Study area, between South Van Ness Avenue and the Embarcadero, Mission Street is four lanes consisting of one through auto lane in each direction and one transit-only lane. The transit lanes are in effect 7-9 AM & 4-6 PM in the eastbound direction and 4-6 PM in the westbound direction but may be used for right turning vehicles at all times. Generally, left turns are permitted on Mission Street only for taxis and SFMTA transit buses. East of Fifth Street, SFMTA transit buses operate at frequencies of up to 17 buses per hour in the peak hours of 7-9 AM & 4-6 PM (prior to service cuts effective May 8, 2010), not including service provided by SamTrans and Golden Gate Transit. On-street parking is generally provided on both sides of the roadway, with the exception of the segment between Third Street and Fifth Street. The parking lanes become tow-away zones during the same hours and same sides of street as the transit-only lanes to allow for less potential obstructions to buses and bicycles, but do not add an additional lane of travel. The roadway width is generally 50 feet, including on-street parking and includes 12 foot sidewalks. South of South Van Ness Avenue, southbound Mission Street traffic is three through lanes and follows Otis Street until 13th Street, where it meets northbound traffic and becomes a two-way Mission Street. Northbound Mission Street traffic between 13th Street and South Van Ness Avenue is a one-way, three-lane street. South of 13th Street, Mission is a four-lane, two-way street.

Howard Street

Howard Street is an east-west Major Arterial in the CMP network and part of the MTS network. Between Fremont Street and The Embarcadero, this roadway has two travel lanes in each direction while west of Fremont Street to Eleventh Street it is three lanes westbound. Howard Street has 60 feet of street width, 12-foot wide sidewalks, and on-street parking on both sides of the street for most of its length. Howard Street serves adjacent commercial, industrial, and residential properties. Between Beale Street and Eleventh Street, Howard Street has a Class II (bicycle lane) designated as part of Citywide Bicycle Route #30. In the downtown area, Howard Street has extensive transit facilities, with nine bus routes running on at least one block of the roadway.

Folsom Street

Folsom Street is an east-west Major Arterial in the CMP network and part of the MTS network in the study area. Between Eleventh Street and The Embarcadero, this roadway is one-way eastbound, with four travel lanes, 60 foot street width, ten-foot wide sidewalks and on-street parking on both sides of the street for most of its length. Folsom Street serves adjacent commercial,industrial, and residential properties. One SFMTA transit service operates eastbound at six buses per hour during the peak hours (prior to service cuts effective May 8, 2010) not

including Golden Gate Transit service. The street also has a Class II (bicycle lane) between the Embarcadero and 14th Street, designated as part of Citywide Bicycle Route #30.

Harrison Street

Harrison Street is an east-west Major Arterial in the CMP network, a Transit Important TPS and a Neighborhood Commercial Street according to the *General Plan*, and part of the MTS network in the study area. Between Third Street and The Embarcadero, this roadway has two eastbound travel lanes, three westbound travel lanes, 65 foot street width, nine-foot wide sidewalks and on-street parking on both sides of the street for most of its length. West of its intersection with Third Street, the roadway is one-way westbound, with five travel lanes, twelve-foot wide sidewalks and on-street parking. At Fourth Street, Harrison Street has access to the westbound on-ramps to I-80. The intersection with Fifth Street features westbound I-80 off-ramps. The street serves adjacent commercial, industrial, and residential properties. Between Fifth Street and Eleventh Street, SFMTA transit buses operate at approximately 18 buses per hour during the peak hours (prior to service cuts effective May 8, 2010).

Bryant Street

Bryant Street is an east-west Major Arterial in the CMP network, a Transit Important TPS and a Neighborhood Commercial Street according to the *General Plan*, and part of the MTS network in the study area. Between Eleventh Street and Second Street, this roadway is one-way eastbound, providing five travel lanes, 65 feet of street width, nine-foot wide sidewalks and on-street parking on both sides of the street for most of its length. Between Cesar Chavez Street and Eleventh Street, Bryant is two-way, one-lane in each direction, with 50 feet of street width and fifteen foot wide sidewalks and on-street parking on both sides of the street. At Fourth Street, an off-ramp from eastbound I-80 releases traffic onto Bryant Street. The on-ramps at Fifth Street permit access onto eastbound I-80. East of Second Street, Bryant Street provides access to HOV on-ramps onto the eastbound Bay Bridge. Bryant Street serves adjacent commercial, institutional, industrial, and residential properties. Between Eleventh Street and Fifth Street, SFMTA transit buses operate at approximately 13 buses per hour during the peak hours (prior to service cuts effective May 8, 2010).

Third Street

Third Street is a north-south Major Arterial in the CMP network, a Transit Important TPS and Neighborhood Commercial Street according to the *General Plan*, and part of the MTS network in the study area. Between King Street and The Market Street, this roadway is one-way northbound, with four travel lanes (three during off-peak) and one transit-only lane, 60 feet of street width, ten-foot wide sidewalks and on-street parking provided intermittently north of Harrison Street on either side of the street. There is a tow-away parking lane on the west side of the street between the hours of 7-9 AM and 3-7 PM to provide four peak period travel lanes. Third Street serves adjacent commercial, industrial, and residential properties. SFMTA transit buses operate at approximately 30 buses per hour during the AM peak hours (prior to service cuts effective May 8, 2010).

Fourth Street

Fourth Street is a north-south Major Arterial in the CMP network, a Transit Important TPS and Neighborhood Commercial Street according to the *General Plan*, and part of the MTS network in the study area. Between Market Street and Townsend Street, Fourth Street is a one-way roadway southbound with 60 feet of street width, between nine and twelve foot wide sidewalks, and on-street parking provided intermittently between Market Street and Bryant Street on either side of the roadway. There is a tow-away parking lane on the west side of Fourth Street between Howard Street and Folsom Streets that is used for a transit-only lane between 3-7 PM. SFMTA transti buses operate at approximately 30 buses per hour during the PM peak hours (prior to service cuts effective May 8, 2010). Between Mission Street and Bryant Street, Fourth Street varies between three auto lanes and one bus travel lane and four auto lanes. At locations where a transit lane exists, such as its intersection with Harrison Street, right turn pockets may also exist.

Fifth Street

Fifth Street is a north-south Major Arterial in the CMP network and is part of the MTS network. Fifth Street is a two-way roadway with two travel lanes in each direction between Market Street and Townsend Street with 60 feet of roadway width, nine foot wide sidewalks, and on-street parking on both sides of the street for most of its length. SFMTA transit bus routes operate at approximately 6 buses per hour during the peak hours (prior to service cuts effective May 8, 2010). This street has a Class III (bicycle route) between Townsend Street and Market Street, designated part of Citywide Bicycle Route #19.

Sixth Street

Sixth Street is a north-south Major Arterial in the CMP network, a Neighborhood Commercial Street (between Market and Howard Streets) according to the *General Plan*, and is part of the MTS network. In the study area, between Brannan Street and Mission Street, Sixth Street is a two-way roadway with two travel lanes in each direction, 60 feet of roadway width, nine-foot sidewalks, and on-street parking on both sides of the street with tow-away parking during the AM and PM peak periods. At Brannon Street, Sixth Street merges with off- and on-ramps to I-280 to connect to areas south of the study area. Additionally, at the intersection of Sixth Street and Howard Street, left turns are permitted only for taxis and SFMTA transit buses, however, no regular scheduled SFMTA transit service operates on Sixth Street.

Seventh Street

Seventh Street is a north-south Major Arterial in the CMP network, a Neighborhood Commercial Street (between Market and Mission Streets) according to the *General Plan*, and is part of the MTS network. Within the study area, Seventh Street is a one-way four lane street northbound between Brannon Street and Market Street and two-ways south of Brannon Street to 16th Street (one lane in each direction between 16th and Townsend Streets and two lanes northbound and one lane southbound between Townsend and Brannon Streets). The roadway is 60 feet wide with nine foot sidewalks and on-street parking on both sides of the street for most of its length in the study area. An I-80 eastbound off-ramp and I-80 westbound on-ramp intersect Seventh Street

between Bryant and Harrison Streets. SFMTA transit buses operate at approximately 6 buses per hour northbound during the peak hours (prior to service cuts effective May 8, 2010). There is a Class II (bicycle lane) along Seventh Street from Berry Street to Market Street; this is part of Citywide Bicycle Route #23.

Eighth Street

Eighth Street is a north-south Major Arterial in the CMP network and is part of the MTS network. Between Market Street and Brannon Street, Eighth Street is a one-way southbound roadway with a 60 foot roadway width, nine foot sidewalks, and on-street parking on both sides of the street for most of its length in the study area. An I-80 westbound off-ramp and eastbound on-ramp intersect Eighth Street between Harrison and Bryant Streets. South of Brannon Street, Eighth Street becomes a two-way roadway with one travel lane in each direction. SFMTA transit buses operate at approximately 6 buses per hour southbound during the peak hours (prior to service cuts effective May 8, 2010).. There is a Class II (bicycle lane) along Eighth Street from Division Street to Market Street, which is part of Citywide Bicycle Route #23.

Ninth Street

Ninth Street is a north-south Major Arterial in the CMP network and is part of the MTS network. Ninth Street is a one-way roadway with four northbound travel lanes between Division Street and Market Street with a 60 foot street width, nine foot sidewalks, and on-street parking on both sides of the street with tow-away lanes between 4PM and 7PM for most of its length in the study area. A US-101 northbound off-ramp connects to Ninth Street at Bryant Street.

Tenth Street

Tenth Street is a north-south Major Arterial in the CMP network, a Neighborhood Connection Street according to the *General Plan,* and is part of the MTS network. Tenth Street is a one-way, four lane roadway with travel in the southbound direction with a 60 foot roadway width, nine foot sidewalks and on-street parking on both sides of the street between Market Street and Bryant Street. A US-101 southbound on-ramp connects to Tenth Street at Bryant Street. Between Bryant Street and Division Street, Tenth Street is generally a two-lane roadway with left turn pockets, and with angled parking in portions of the roadway in addition to parallel parking on the opposite side of the street.

Eleventh Street

Eleventh Street is a north-south two-way, one travel lane in each direction, roadway that runs from Bryant Street to Market Street. It has 60 feet of roadway width, nine foot sidewalks, and on-street parking on both sides of the street for most of its length. SFMTA transit buses operate at approximately 13 buses per hour during the peak hours (prior to service cuts effective May 8, 2010). There is a Class II (bicycle lane) along Eleventh Street from Bryant Street to Market, which is part of both City Bicycle Route #25 and #30.

13th /Division Street

13th Street/Division Street is an east-west Major Arterial in the CMP network and is part of the MTS network. Between Eighth Street, its eastern terminus, and Eleventh Street, 13th Street/Division Street is a two-way divided arterial with two travel lanes in each direction with roadway widths varying between 60 and 85 feet and on-street parking on both sides of the street. Sidewalks are generally provided, although some segments can be as narrow as three feet in locations of supporting columns for the Central Freeway/US 101 overhead. Between Eleventh Street and Howard Street, 13th Street/Division Street has three travel lanes in each direction. From Howard Street to Mission Street, roadway widths vary between two and three travel lanes in each direction. There is a small segment of a Class II (bicycle lane) facility along Division Street between Eighth and Ninth Streets, which becomes a Class III (bicycle route) facility from Ninth Street to Eleventh Street; this is a portion of City Bicycle Route #36.

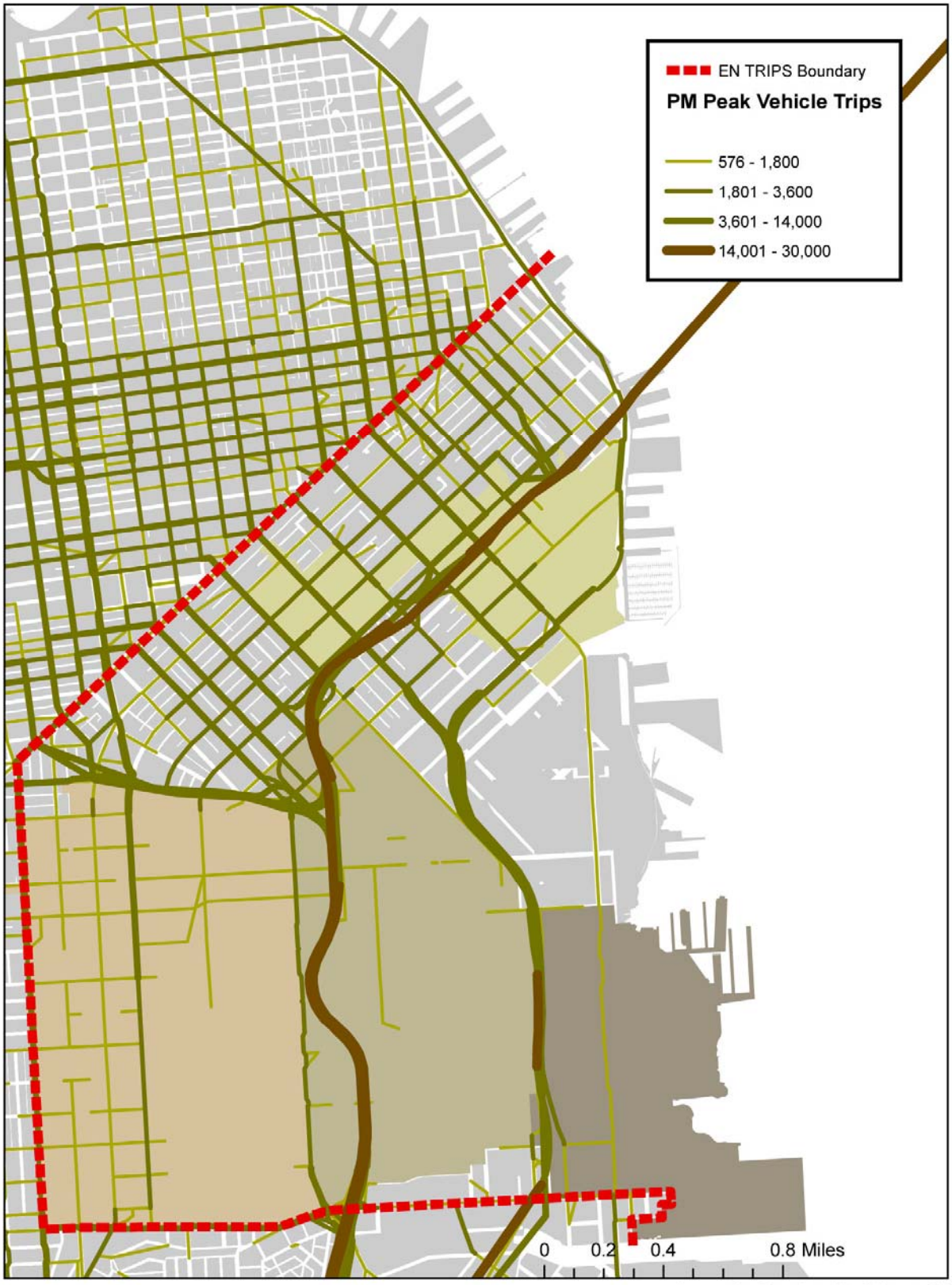
16th Street

16th Street is an east-west Major Arterial in the CMP network, a Transit Oriented TPS and Neighborhood Commercial Street according to the *General Plan*, and part of the MTS network in the study area. From Illinois Street to South Van Ness Avenue, 16th Street has two travel lanes in each direction, 50 feet of street width, ten to sixteen feet wide sidewalks, and on-street parking on both sides of the street. Between South Van Ness Avenue and Market Street, there are two travel lanes in the westbound direction and one travel lane in the eastbound direction. SFMTA transit buses operate at frequencies of approximately 13 buses per hour during the peak hours of operation (prior to service cuts effective May 8, 2010). There is a Class III (bicycle route) (City Route #5) along 16th from Illinois Street to Third Street. From Third Street to Henry Adams Street, 16th Street has a Class II (bicycle lane, City Route # 40).

Traffic Volumes

Figure 5-2 illustrates the typical PM peak period vehicle traffic volumes on San Francisco's designated roadway network within and near the study area, as estimated by the San Francisco travel demand model (SF-CHAMP 4.1). Lines on the map represent individual roadway segments. The thickness and shade of the line represent the magnitude of PM peak hour volumes estimated by SF-CHAMP. As shown, many of the north-south streets in the Eastern Neighborhood area, such as Fremont, First, Third, Fourth, Sixth, Seventh, and Eighth Streets, have the highest street volumes in the area. Much of this traffic can be attributed to pass-through traffic (with neither an origin nor destination in the area) since the highest volume segments are between the I-80/US-101 and I-280 freeways and the North of Market area. Traffic on the I-80/US-101 freeway represents a large portion of pass-through traffic as large volumes of traffic do not exit the freeway in the area. Segments of east-west streets, such as Howard Street between New Montgomery Street and Fourth Street, are observed to have high volumes, but these segments mostly serve to connect traffic to the major north-south streets. South of Division Street, Potrero and South Van Ness carry the highest traffic volumes.

Figure 5-2 PM Peak Vehicle Volumes



Source: San Francisco City & County GIS
SFCTA SF-CHAMP Model Data

Nelson\Nygaard consulting associates

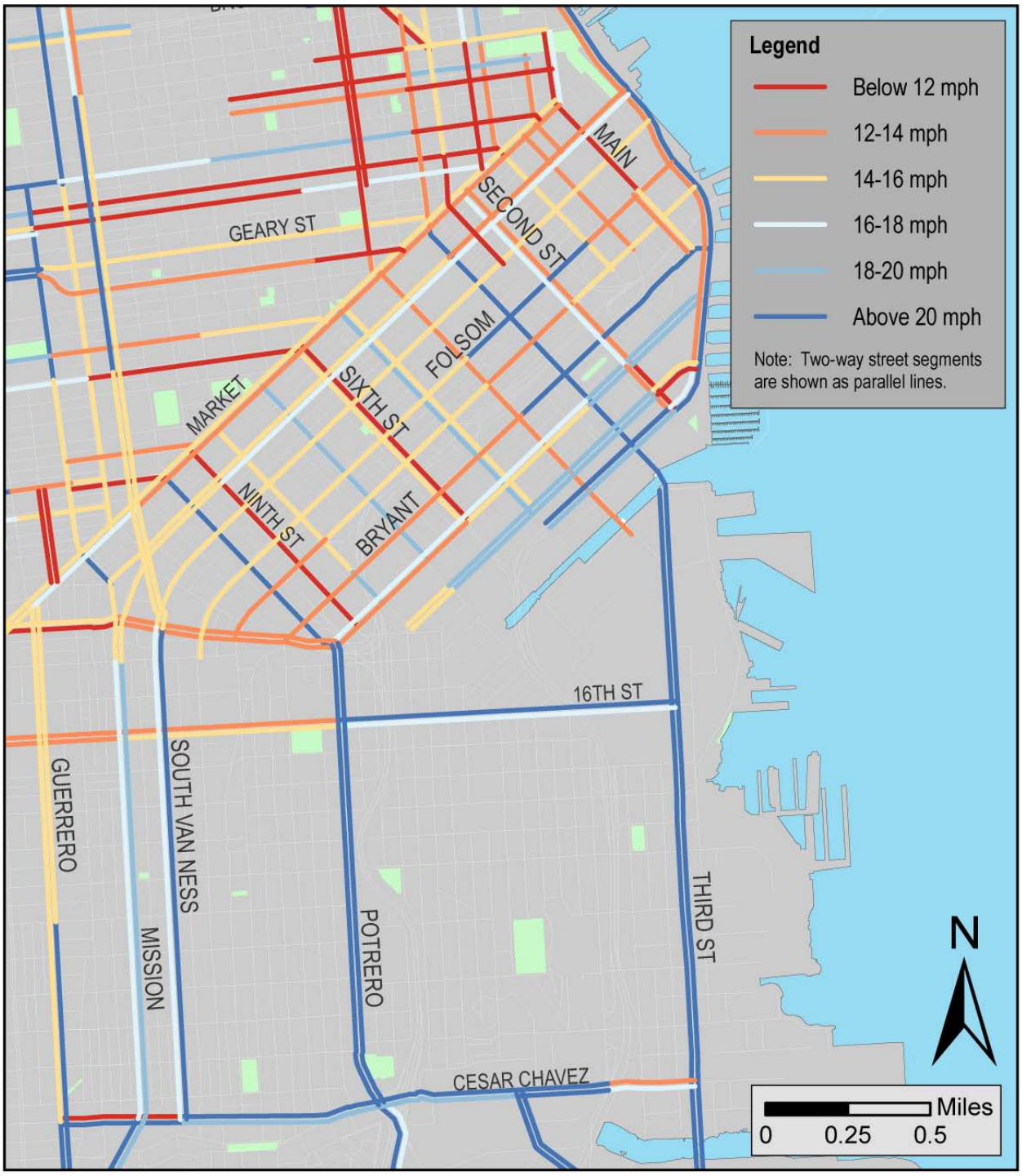
Corridor Travel Speeds

Figures 5-3 and 5-4 below illustrate vehicle travel speeds on major Eastern Neighborhoods arterials in the AM and PM peak periods. This data was collected as part of the SFCTA's 2009 spring performance monitoring. The displayed speed includes total travel time, including all delay. Only segments for which monitoring was performed in spring 2009 are included. Freeways are not displayed.

Figure 5-3 illustrates that for most South of Market arterials during the AM peak period, the typical vehicle travel speeds are below 16 miles per hour. Travel speeds drop below 12 miles per hour on Ninth Street and on Sixth Street. In the rest of the study area, vehicle travel speeds are generally faster during the AM peak period. Roadways with travel speeds below 16 miles per hour include most of Guerrero Street, short segments of Cesar Chavez Street, and 16th Street between Potrero and Guerrero.

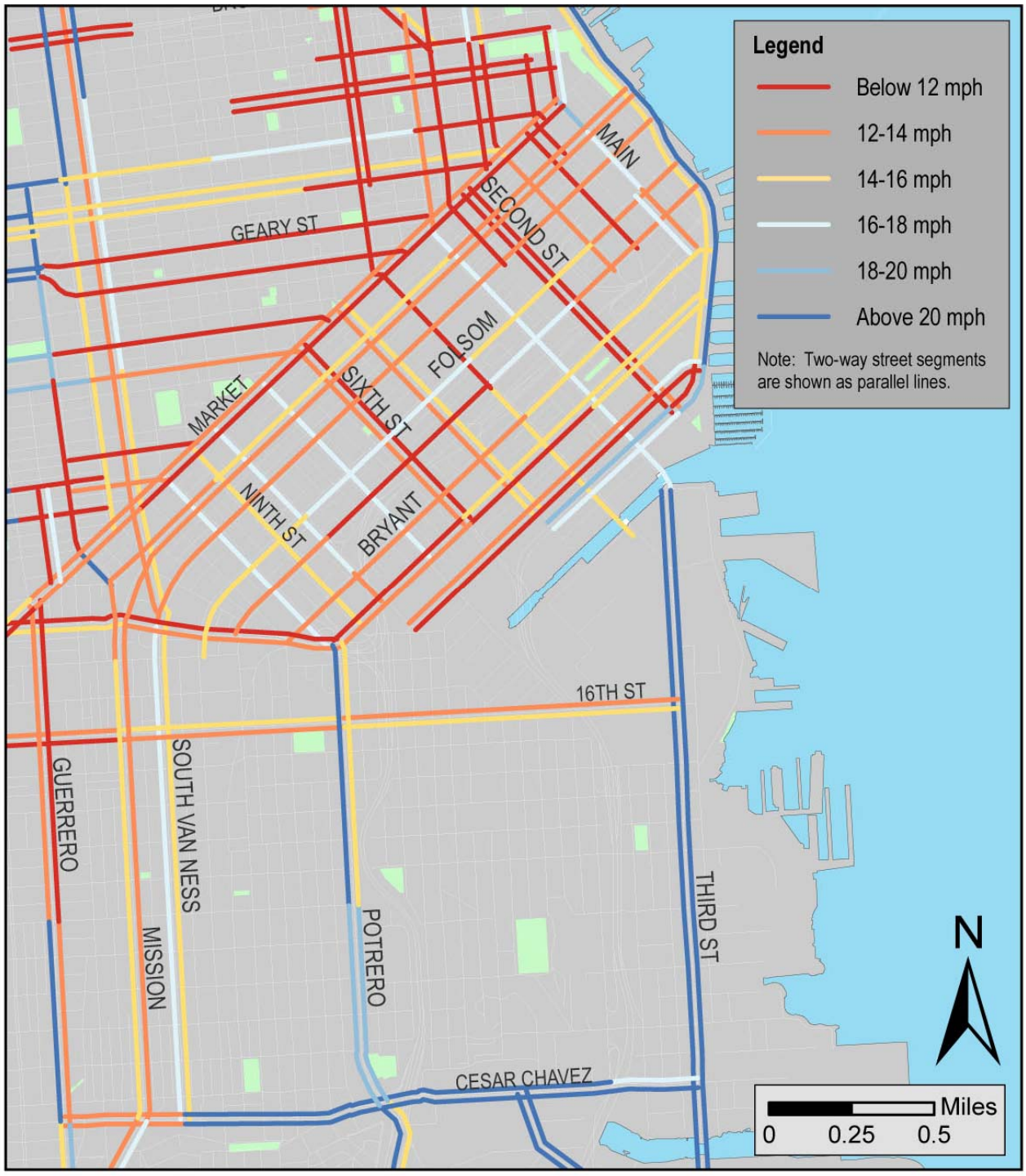
Figure 5-4 illustrates that, during the PM peak period, travel speeds throughout the study area slow considerably. This is particularly true in the South of Market, as high demand for travel to the Bay Bridge results in the delay. The slowest travel speeds in the South of Market occur on Second, Fourth, Sixth, Harrison, and Brannan Streets. Of these streets, Fourth and Sixth Streets were identified as having a high vehicle demand in Figure 5-2. Seventh and Eighth Streets, with an extra lane of vehicle capacity, move faster during the peak period. In other parts of the study area, vehicle travel slows considerably on Division, Mission, Guerrero, and 16th Streets during the PM peak period.

Figure 5-3 AM Peak Period Average Travel Speeds on Major Arterials



Source: SFCTA Spring 2009 System Performance Monitoring

Figure 5-4 PM Peak Period Average Travel Speeds on Major Arterials

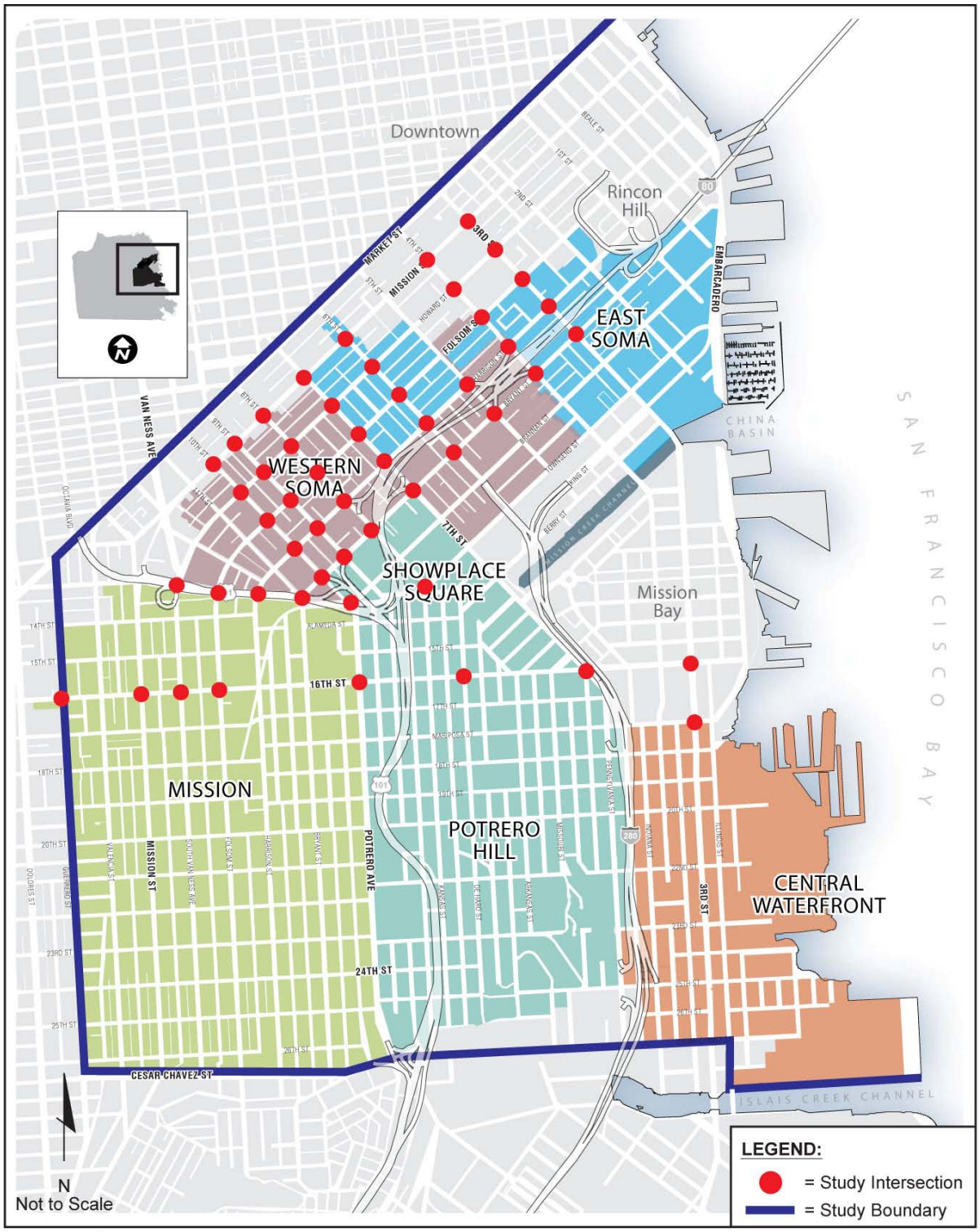


Source: SFCTA Spring 2009 System Performance Monitoring

South of Market and 16th Street Circulation Analysis

This section provides a detailed evaluation of existing conditions for traffic circulation at key intersections in the South of Market area (SoMa) and on 16th Street. It evaluates vehicle, pedestrian, and bicycle volume data and presents vehicle and pedestrian level of service findings for each intersection. In combination with future conditions analysis to be undertaken in the next phase of the study, this analysis will inform the development of alternatives for circulation changes in these areas. Study intersections are illustrated in Figure 5-5.

Figure 5-5 Circulation Study Intersections



EN Trips

FEHR & PEERS
TRANSPORTATION CONSULTANTS

EASTERN NEIGHBORHOODS STUDY AREA

Major Issues affecting circulation in the study area

The following factors are important for understanding vehicle circulation in the South of Market and on 16th Street.

San Francisco-Oakland Bay Bridge/I-80 Operations

The San Francisco-Oakland Bay Bridge (Bay Bridge) is a major travel corridor in the Bay Area, providing the most direct route from San Francisco to many points east, including Oakland and other cities in the East Bay. Among the eight Bay Area toll bridges, it is the most heavily-used, serving approximately 250,000 vehicles per day. There are five lanes in both the eastbound and westbound directions. Within the City of San Francisco, the Bay Bridge connects to US 101.

The Bay Bridge currently operates at or near vehicular capacity in the peak direction most weekdays during the morning and evening peak periods. Queues are often observed on the approaches to the bridge from the East Bay during the AM and PM peak periods and from San Francisco on weekdays beginning in the early afternoon and continuing through the PM peak period. This occurs when the demand for travel onto the bridge in the peak direction (westbound in the morning and eastbound in the evening) is greater than the capacity of the bridge and acts to 'meter' traffic into and out of downtown San Francisco.

Prior to the Loma Prieta (1989) Earthquake, the elevated Embarcadero Freeway and Terminal Separator Structure served as queuing areas for traffic waiting to merge east on I-80 to cross the Bay Bridge. After the removal of these structures due to damage caused by the earthquake, queues on surface streets in SoMa grew due to lack of replacement storage capacity, growing and receding depending on the operations of the bridge. They are generally seen near ramps to the bridge and I-80, including on roadways within the project study area. The following roadway facilities in the study area can be affected by queues due to Bay Bridge and I-80 operations:

- The Embarcadero
- Beale Street
- First Street
- Main Street
- Essex Street
- Second Street
- Fourth Street
- Fifth Street
- Seventh Street
- Eighth Street
- Folsom Street
- Harrison Street
- Bryant Street

Figure 5-6 shows typical weekday queuing areas and observed lengths of queues traveling to the Bay Bridge. Field observations of queues leading to the Bay Bridge were observed as part of the Treasure Island and Yerba Buena Island Redevelopment Plan EIR. Field observers recorded the locations of the back of the queues in fifteen minute increments over several days during the PM peak period (4-6 PM).

Figure 5-6 San Francisco – Oakland Bay Bridge Queue Lengths

Source: Fehr & Peers, 2010

EN Trips

FEHR & PEERS
TRANSPORTATION CONSULTANTS

BAY BRIDGE APPROACHES - SAN FRANCISCO
PM PEAK HOUR QUEUE OBSERVATION STUDY AREA

San Francisco Transbay Terminal

As discussed in the Transit section previously, the Transbay Terminal is located in the South of Market Area in downtown San Francisco on a block roughly bounded by Mission Street to the north, Beale Street to the east, Howard Street to the south, and Second Street to the west. The Transbay Terminal is a major transit hub several regional and local transit operators, including AC Transit to/from the East Bay, Golden Gate Transit to/from the North Bay, Muni to/from points within San Francisco, and SamTrans to/from the Peninsula. The building produces pedestrian traffic in the area connecting to transit as well as high transit vehicle and pick-up and drop-off activity in the area. The terminal also serves as an informal drop-off point for the casual-carpool riders from the East Bay where many riders are observed being dropped off during the morning commute hours on Fremont Street. The main entrance to the structure is located on Mission Street between First Street and Fremont Street.

The Transbay Terminal in its current form is scheduled to be demolished and newly constructed starting in autumn of 2010. A temporary terminal has been completed on the block encompassed by Howard, Main, Folsom, and Beale Streets, about two blocks from the current Terminal, and will serve the transit lines currently stopping at the Transbay Terminal.

Special Events

AT&T Park, which is home to the San Francisco Giants Major League Baseball team, is located just east of King Street between Second Street and Third Street. Parking for AT&T Park is located south of the ballpark, and is separated by Mission Creek, a channel spurring from the San Francisco Bay. The average home game draws about 35,000 spectators. AT&T Park has a capacity of approximately 42,000 attendees.

On game days, attendees may choose to park at the designated ballpark facility, designated and non-designated parking lots, or on surface streets within the eastern SoMa neighborhood. Including the designated ballpark facility south of the ballpark there are approximately 6,500 parking spaces for attendees within a five to ten minute walk of the ballpark.

Attendees access the ballpark's designated parking facilities, which has a capacity of approximately 2,000 spaces, via Third Street, Fourth Street, and King Street. On game nights, vehicle and pedestrian queuing is greatest between 6:00 and 7:00 PM (baseball games typically start at 7:15 PM), as spectators travel from other parts of the City and Bay Area to the ballpark via autos and Muni. Before and after home games traffic along King Street is slowed owing to the large number of pedestrian crossings. Before and after home games, two lanes of the Lefty O'Doul Bridge (Third Street crossing Mission Creek Channel) are closed to auto traffic to increase foot traffic capacity so attendees using the Giants designated parking facility can walk to/from AT&T Park efficiently.

Tow-Away Lanes

In an effort to increase peak period capacity on roadways, reduce congestion and speed travel, the City of San Francisco has designated parking lanes on some roadways as "Tow-Away" Zones during peak periods. These roadways generally allow on-street parking, but parking and loading

is generally prohibited between the hours of 7-9 AM and/or 3-7 PM (hours vary by location). Prohibiting parking during the peak periods provides an additional travel lane between intersections and/or a right or left turn pocket at intersection approaches. Within the study area, Mission, First , Third , Fourth, Sixth, and Ninth Street have designated tow-away parking areas.

Anecdotal observations indicate that tow-away lanes are subject to frequent violations, where vehicles are often observed parking or loading in the lanes for during restricted hours.

Muni-Only Lanes

The City has designated bus-only lanes along some transit corridors. On these roadways, one travel lane is restricted to automobiles in order to improve travel times for SFMTA transit buses. The designated bus-only lane can either be located in the center of the roadway or in the outer lane, near stations. If located in the outer lane, bus-only lanes can sometimes be used for automobiles making right turns at the intersection. Within the study area, Mission, Fremont, First Street, Third Street, and Fourth Streets have bus-only lanes.

Anecdotal observations indicate that bus-only lanes are subject to frequent violations, where vehicles other than Muni were observed using the lanes for an extended period of time.

Intersection Operating Conditions

Weekday evening peak hour intersection turning movement counts were compiled for 52 study intersections from PM peak period data (4-6 PM). Additionally, a subset of 20 peak hour turning movement counts was compiled from morning peak period data (7-9 AM). Figures 5-7 and 5-8 display the lane configurations and traffic control devices at each intersection, and identify whether transit-only lanes, parking restricted tow-away lanes, and Muni/taxi-only turns are present.

Intersection turning movement counts were conducted in April, September, and December of 2009 and January and February of 2010. These counts represent the most comprehensive data set available on traffic conditions in the South of Market.

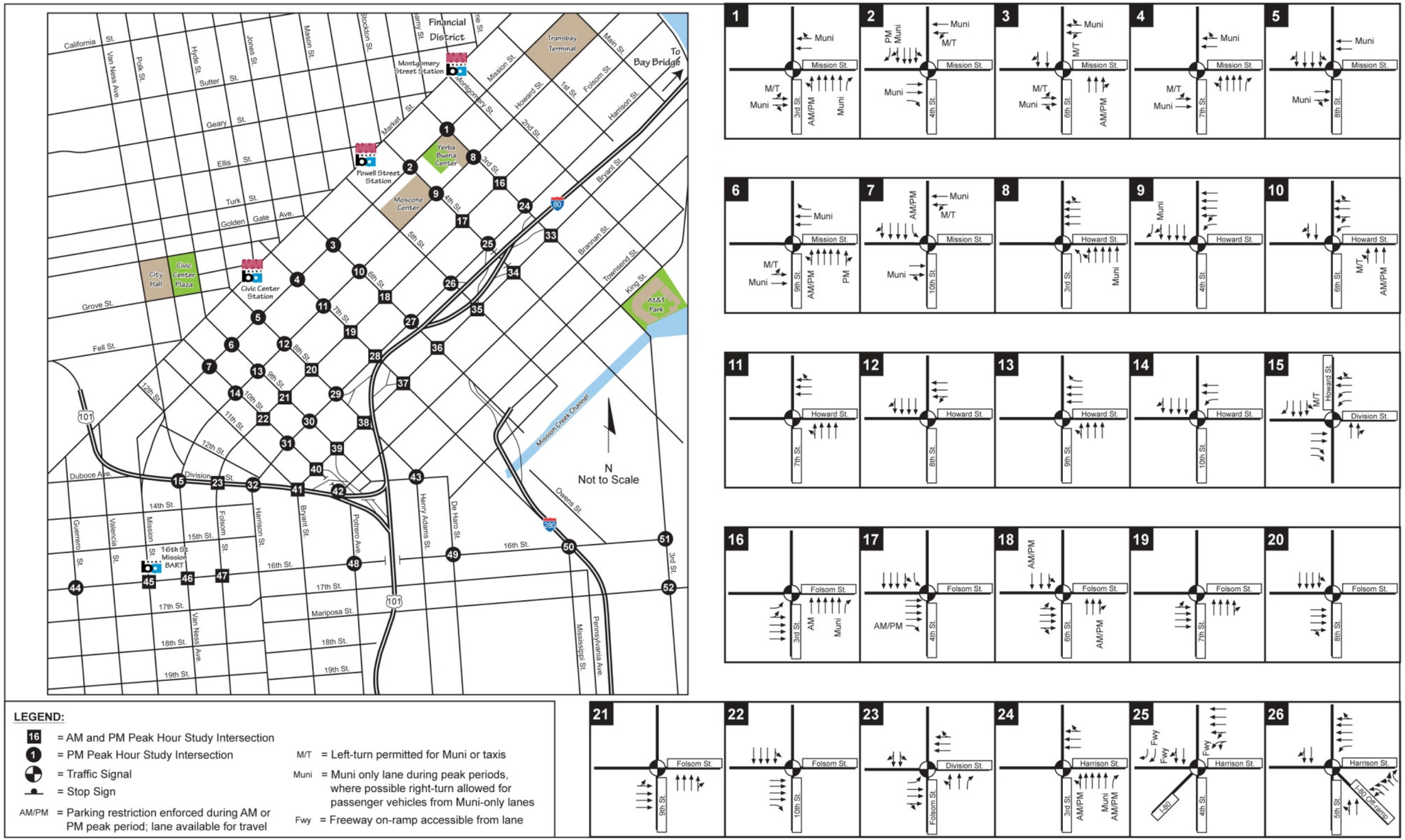
In some instances, intersections which had a freeway on- or off-ramp entering it were not counted as part of the original intersection count. Counts were conducted for these locations in the PM peak period (4-6 PM) in January 2010, but not the AM peak period. These locations include ramp intersections on Harrison Street and Bryant Street and Fourth, Fifth, Seventh, and Eighth Streets and Bryant Street and Ninth and Tenth Streets. Volumes of these segments were obtained from the most recently available count from the California Performance Measurement System (PeMS) database and turning movements were estimated using ratios of volumes along those segments. The most recently available counts for the AM peak Period (7-9 AM) at these locations varied from October 2002 to December 2008.

Counts that were conducted in January and February of 2010 include vehicle, pedestrian, and bicycle counts at each intersection, whereas previous counts only recorded vehicle turning movement counts. At intersections missing pedestrian and bicycle count data, volumes were

estimated using adjacent pedestrian and bicycle counts and knowledge of adjacent land uses and bicycle routes.

Figures 5-7 and 5-8 indicate peak period lane configurations and intersection control devices for the study intersections in the study area. Details on the peak periods of enforcement for tow-away lanes and transit-only lanes are discussed earlier in the Arterials section of Section 5.1. Figures 5-9 and 5-10 display the existing AM and PM peak hour traffic volumes for the 52 study intersections as well as critical movements. Critical movements are the movement of a signal phase (usually corresponding to intersection approaches: left-turn, through movement, right-turn) which are most constrained in the cycle. Adding lane capacity or adjusting signal phases to better accommodate these movements may improve intersection levels-of-service.

Figure 5-7 Study Intersections, Peak Period Lane Configurations, and Traffic Controls A

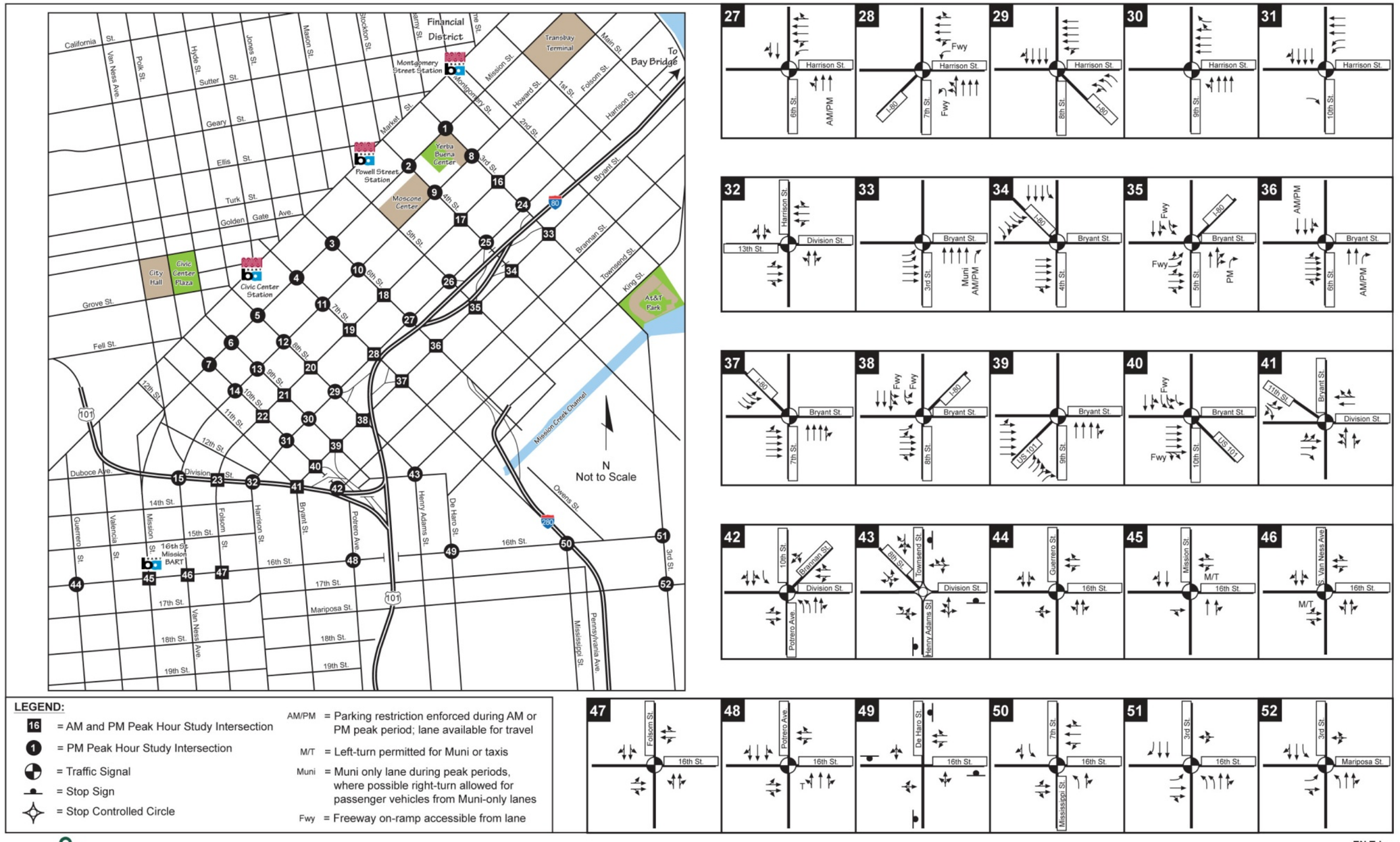


EN Trips

FEHR & PEERS
TRANSPORTATION CONSULTANTS

STUDY INTERSECTIONS, PEAK PERIOD LANE CONFIGURATIONS, AND TRAFFIC CONTROLS

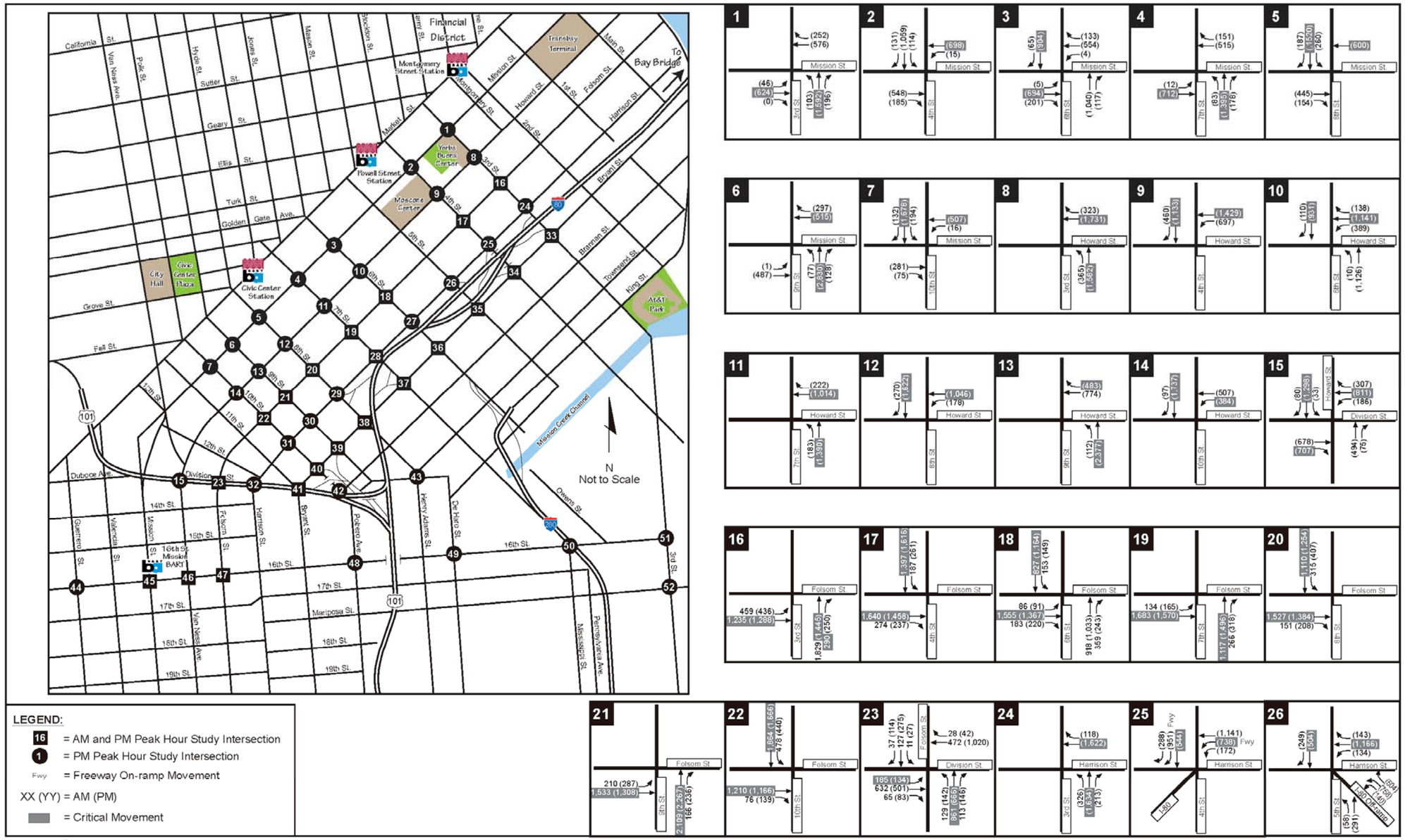
Figure 5-8 Study Intersections, Peak Period Lane Configurations, and Traffic Controls B



FEHR & PEERS
TRANSPORTATION CONSULTANTS

STUDY INTERSECTIONS, PEAK PERIOD LANE CONFIGURATIONS, AND TRAFFIC CONTROLS

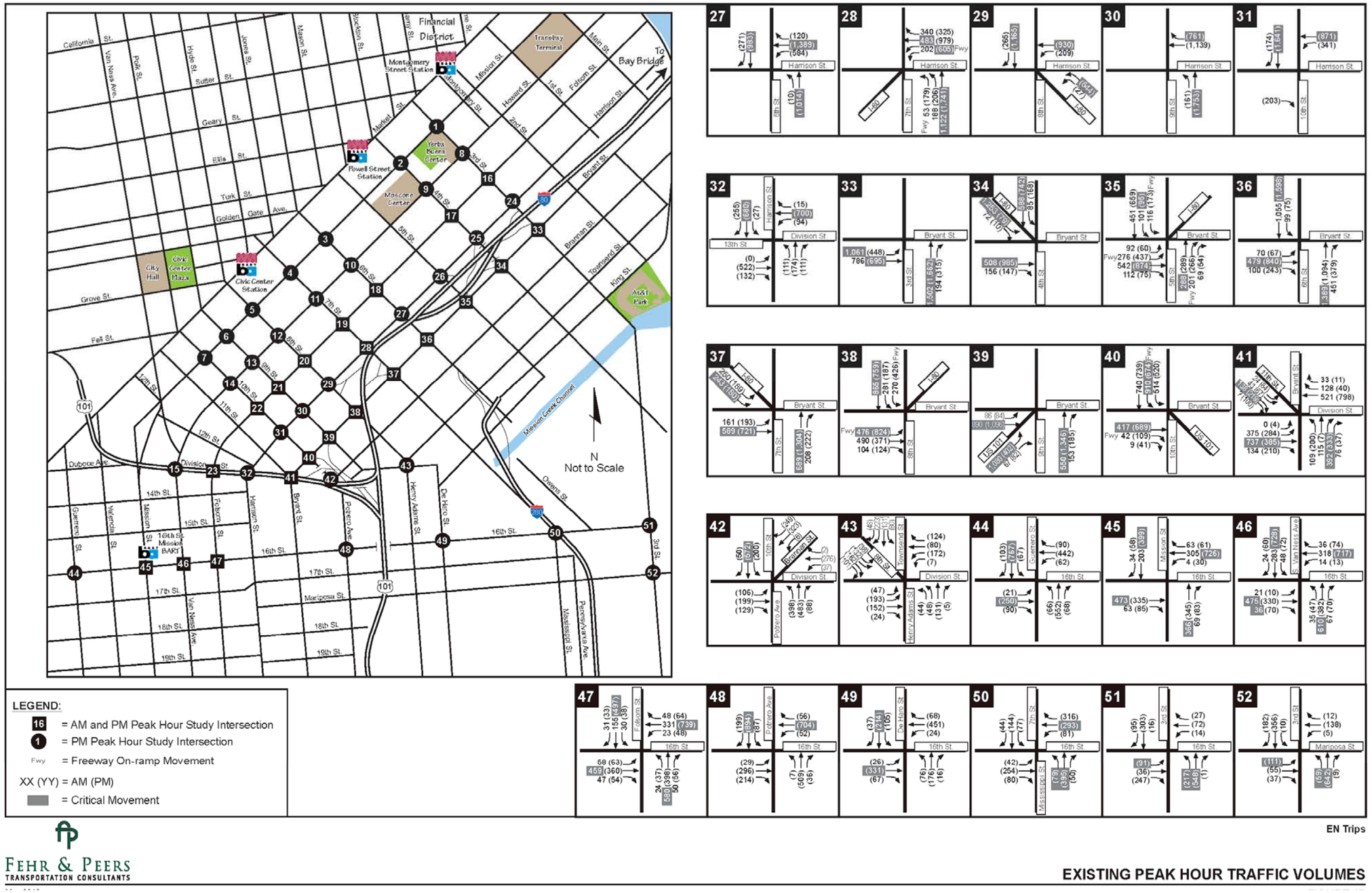
Figure 5-9 Existing Peak Period Traffic Volumes A



FEHR & PEERS
TRANSPORTATION CONSULTANTS

EXISTING PEAK HOUR TRAFFIC VOLUMES

Figure 5-10 Existing Peak Period Traffic Volumes B



FEHR & PEERS
TRANSPORTATION CONSULTANTS

EXISTING PEAK HOUR TRAFFIC VOLUMES

Vehicle Level of Service Thresholds

Vehicle operations at intersections are typically described in terms of "Level of Service" (LOS). LOS is a qualitative measure of the effect of several factors on traffic operating conditions including speed, travel time, traffic interruptions, freedom to maneuver, safety, driving comfort, and convenience. Transportation planners and engineers generally measure LOS quantitatively in terms of vehicular delay and describe LOS using a scale that ranges from LOS A, which indicates free flow or excellent conditions with short delays, to LOS F, which indicates congested or overloaded conditions with long delays. LOS A through LOS D is considered excellent to satisfactory operating conditions, and LOS E represents "at-capacity" operations. When traffic volumes exceed capacity, stop-and-go conditions result, and operations are designated as LOS F. In San Francisco, intersection LOS E and LOS F are considered highly congested.

To evaluate existing traffic conditions, peak hour Synchro models were developed for the study intersections. Synchro is a sophisticated traffic software application that is based on procedures outlined in the Transportation Research Board's *2000 Highway Capacity Manual* and used to optimize traffic signal timing and perform capacity analysis. The Synchro models were coded with the peak hour traffic and pedestrian volumes, vehicle mix, and signal timings. Additional details, including turn pocket lengths were coded based on field measurements. Adjustments to the Synchro model were made to account for the vehicle delay caused by pedestrians and constrained lane widths at study intersections. Synchro does not explicitly model transit-only lanes or behavior of transit vehicles in those lanes. The behavior of traffic in relation to those lanes was replicated as appropriate to the intersection.

For unsignalized intersection, the LOS is assigned based on the worst approach delay. Unsignalized intersections are considered to operate unsatisfactorily if the critical approach operates at LOS E or F and the intersection meets Caltrans traffic signal warrants. Figure 5-11 presents the relationship between LOS and worst approach delay for unsignalized intersections.

Figure 5-11 LOS thresholds for unsignalized intersections

Level of Service	Unsignalized Intersection Control Delay (sec/veh)[1]	General Description
A	0 – 10.0	Little to no congestion or delays.
B	10.1 – 15.0	Limited congestion. Short delays.
C	15.1 – 25.0	Some congestion with average delays.
D	25.1 – 35.0	Significant congestion and delays.
E	35.1 – 50.0	Severe congestion and delays.
F	> 50.0	Total breakdown with extreme delays.

Notes:

1. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and acceleration delay.

Source: *Highway Capacity Manual*, Chapter 16 (Signalized Intersections) and Chapter 17 (Unsignalized Intersections), Transportation Research Board, 2000.

Figure 5-12 below identifies LOS thresholds for signalized intersections.

Figure 5-12 Signalized Intersection Level of Service Thresholds

LOS	Average Control Delay (seconds/vehicle)	Description	
A	≤ 10.0	Operations with very low delay occurring with favorable progression and/or short cycle length.	
B	10.1 – 20.0	Operations with low delay occurring with good progression and/or short cycle lengths.	
C	20.1 - 35.0	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	
D	35.1 – 55.0	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicle stop and individual cycle failures are noticeable.	
E	55.1 - 80.0	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	
F	> 80.0	Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths.	

Source: Highway Capacity Manual (HCM), Transportation Research Board, 2000.

Intersection Operations Analysis - Delay

Figures 5-13 and 5-14 present the LOS analysis and corresponding delay for each study intersection for both vehicles and pedestrians.

As shown, three study intersections in the AM peak hour and six intersections in the PM peak hour operate unacceptably for traffic:

- Mission Street/Fourth Street (PM)
- Folsom Street/Third Street (AM/PM)
- Harrison Street/Fifth Street (PM)
- Bryant Street/Fourth Street (AM)
- Bryant Street/Fifth Street (PM)
- Bryant Street/Eleventh Street/Division Street (AM/PM)
- Townsend Street/Eighth Street/Division Street/Henry Adams (PM)

Intersections operating unacceptably in the AM peak hour are located along streets that are generally heavily used as regional routes in the inbound (to San Francisco) commute direction, particularly for corridors such as Third Street (approaching Market Street) which may experience frequent congestion during off-peak periods such as the late morning, mid-day and early afternoon periods. Relative to the Eastern Neighborhoods study area, this is generally in the northbound and westbound directions towards downtown. The intersection of Folsom Street and Third Street is between two major one-way arterials accommodating traffic in the northbound and westbound directions. The intersection of Bryant Street and Fourth Street is the last off-ramp for I-80 eastbound/US 101 northbound traffic heading to downtown. The intersection of Bryant Street and Eleventh Street/Division Street serves as a major entry point for “reverse commuters” or commuters accessing the East Bay or South Bay via the Bryant Street on-ramps to I-80 eastbound at Eighth Street and US 101 southbound at Tenth Street.

Intersections operating unacceptably in the PM peak period are located along streets that are generally heavily used as regional routes in the outbound (from San Francisco) commute directions and with freeway access. Four of the failing intersections are on either Harrison Street or Bryant Street near the on-ramps to I-80 at Fourth and Fifth Streets. Fourth Street and Mission Street provide a major egress point from downtown to I-80 via Fourth Street. Folsom Street and Third Street also continues to operate unacceptably in the PM peak hour.

Most unacceptable operations in the SoMa neighborhood are as a result of queues from the Bay Bridge rather than a localized capacity constraint.

Intersection LOS and pedestrian LOS, when compared for each intersection, highlights intersections with conflicting needs. Intersections with an LOS of D or worse, combined with pedestrian LOS of D or worse indicate locations where vehicles and pedestrians both experience high delay. But intersections with an intersection LOS of C or better combined with pedestrian LOS of D or worse may indicate intersections in which an opportunity exists for pedestrian

improvements either through phase timing or crossing length. The following intersections are locations which had a pedestrian LOS of D or worse.

- Bryant Street & Fifth Street: Intersection LOS: D, Pedestrian LOS: D
- Brannon/Tenth/Division: Intersection LOS: D, Pedestrian LOS: D

Figure 5-15 and 5-16 summarize peak hour level of service for autos (AM and PM peak hour).

Figure 5-13 Existing Intersection Levels of Service (LOS) – EN TRIPS

Intersection	Traffic Control[1]	Vehicle LOS[3]				Pedestrian Delay LOS			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay[2] (V/C Ratio)	LOS	Delay (V/C Ratio)	LOS	Delay[4]	LOS	Delay	LOS
1. Mission Street/Third Street	Signalized	--	--	45.0	D	--	--	10	B
2. Mission Street/Fourth Street	Signalized	--	--	60.1	E	--	--	12	B
3. Mission Street/Sixth Street	Signalized	--	--	24.4	C	--	--	12	B
4. Mission Street/Seventh Street	Signalized	--	--	25.0	C	--	--	11	B
5. Mission Street/Eighth Street	Signalized	--	--	26.8	C	--	--	10	B
6. Mission Street/Ninth Street	Signalized	--	--	24.6	C	--	--	11	B
7. Mission Street/Tenth Street	Signalized	--	--	24.7	C	--	--	17	B
8. Howard Street/Third Street	Signalized	--	--	26.6	C	--	--	11	B
9. Howard Street/Fourth Street	Signalized	--	--	32.5	C	--	--	26	C
10. Howard Street/Sixth Street	Signalized	--	--	15.2	B	--	--	11	B
11. Howard Street/Seventh Street	Signalized	--	--	2.9	A	--	--	11	B
12. Howard Street/Eighth Street	Signalized	--	--	51.7	D	--	--	13	B
13. Howard Street/Ninth Street	Signalized	--	--	30.4	C	--	--	12	B
14. Howard Street/Tenth Street	Signalized	--	--	24.5	C	--	--	17	B
15. Howard Street/13th Street/ South Van Ness Avenue	Signalized	--	--	24.7	C	--	--	17	B
16. Folsom Street/Third Street	Signalized	63.9	E	79.3	E	11	B	12	B
17. Folsom Street/Fourth Street	Signalized	40.9	D	35.6	D	26	C	26	C
18. Folsom Street/Sixth Street	Signalized	12.6	B	10.5	B	14	B	12	B
19. Folsom Street//Seventh Street	Signalized	14.0	B	8.9	A	13	B	13	B
20. Folsom Street/Eighth Street	Signalized	8.6	A	3.8	A	13	B	10	B
21. Folsom Street/Ninth Street	Signalized	22.6	C	22.8	C	10	A	10	A
22. Folsom Street//Tenth Street	Signalized	18.9	B	14.0	B	19	B	19	B
23. Folsom Street/13th Street	Signalized	26.2	C	16.3	B	13	B	13	B
24. Harrison Street/Third Street	Signalized	--	--	37.0	D	--	--	13	B
25. Harrison Street/Fourth Street	Signalized	--	--	46.0	D	--	--	16	B
26. Harrison Street/Fifth Street	Signalized	--	--	>80 (1.17)	F	--	--	23	C
27. Harrison Street/Sixth Street	Signalized	--	--	20.0	C	--	--	12	B
28. Harrison Street/Seventh Street	Signalized	10.0	B	20.0	C	13	B	13	B
29. Harrison Street/Eighth Street	Signalized	--	--	45.2	D	--	--	15	B

Figure 5-13 Existing Intersection Levels of Service (LOS) – EN TRIPS cont'd.

Intersection	Traffic Control[1]	Vehicle LOS[3]				Pedestrian Delay LOS			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay[2] (V/C Ratio)	LOS	Delay (V/C Ratio)	LOS	Delay[4]	LOS	Delay	LOS
30. Harrison Street/Ninth Street	Signalized	--	--	11.9	B	--	--	10	B
31. Harrison Street/Tenth Street	Signalized	--	--	13.1	B	--	--	20	B
32. Harrison Street/13th Street	Signalized	--	--	14.1	B	--	--	10	B
33. Bryant Street/Third Street	Signalized	51.3	D	37.2	D	13	B	10	B
34. Bryant Street/Fourth Street	Signalized	>80 (0.81)	F	25.2	C	13	B	16	B
35. Bryant Street/Fifth Street	Signalized	41.1	D	68.2	E	32	D	32	D
36. Bryant Street/Sixth Street	Signalized	10.8	B	11.1	B	15	B	15	B
37. Bryant Street/Seventh Street	Signalized	16.9	B	20.6	C	13	B	18	B
38. Bryant Street/Eighth Street	Signalized	13.2	B	9.7	A	15	B	15	B
39. Bryant Street/Ninth Street	Signalized	23.4	C	38.0	D	23	C	23	C
40. Bryant Street/Tenth Street	Signalized	9.8	A	15.9	B	30	C	27	C
41. Bryant Street/Eleventh Street/ Division Street	Signalized	>80 (1.20)	F	72.1	E	27	C	27	C
42. Brannan Street/ Tenth Street/Division Street	Signalized	--	--	38.0	D	--	--	36	D
43. Townsend Street/Eighth Street/Division Street/Henry Adams	AWSC	--	--	>50	F	--	--	27	C
44. Guerrero Street/16th Street	Signalized	--	--	14.8	B	--	--	10	B
45. Mission Street/16th Street	Signalized	16.2	B	9.5	A	11	B	10	A
46. South Van Ness Avenue/16th Street	Signalized	11.1	B	12.4	B	13	B	11	B
47. Folsom Street/16th Street	Signalized	11.7	B	14.3	B	6	A	6	A
48. Potrero Avenue/16th Street	Signalized	--	--	19.3	B	--	--	23	C
49. De Haro Street/16th Street	Signalized	--	--	14.6	B	--	--	13	B
50. Seventh Street//16th Street	Signalized	--	--	45.8	D	--	--	29	C
51. Third Street/16th Street	Signalized	--	--	22.5	C	--	--	24	C
52. Third Street/Mariposa Street	Signalized	--	--	24.4	C	--	--	21	C

Notes:

Bold denotes unacceptable intersection LOS in San Francisco (LOS E or F)

Signalized = Signal controlled; AWSC = All-Way Stop-Controlled.

Delay presented in seconds per vehicle.

For signalized and all-way stop controlled intersections, LOS is based on average intersection delay consistent with methodology presented in the Highway Capacity Manual, 2000 Edition.

Pedestrian delay for the worst approach of each intersection is reported.

Source: Fehr & Peers, 2010.

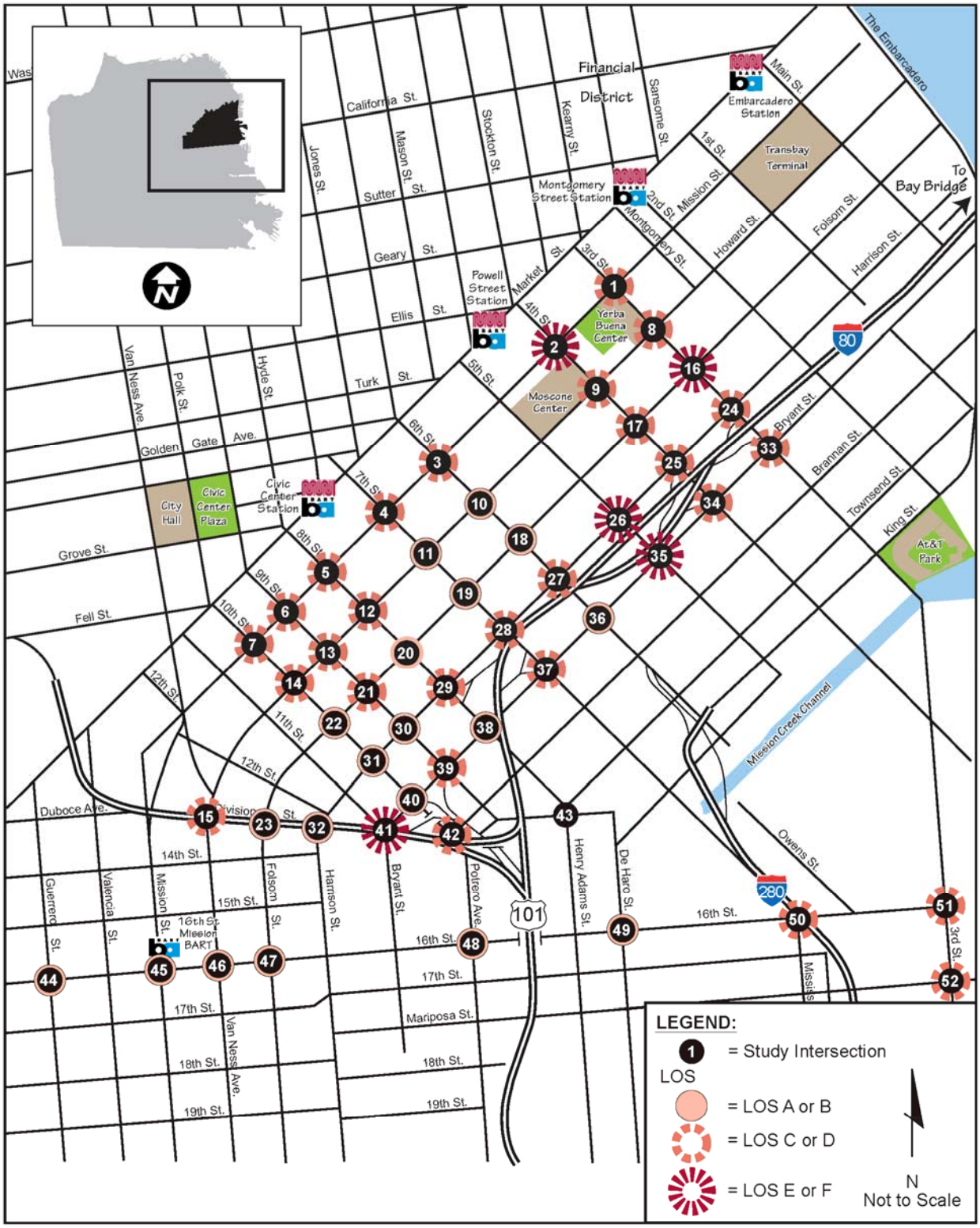
Figure 5-14 Vehicular LOS (AM)

FEHR & PEERS
TRANSPORTATION CONSULTANTS

EN Trips

EXISTING VEHICLE INTERSECTION LEVELS OF SERVICE - AM PEAK HOUR

Figure 5-15 Vehicular LOS (PM)



FEHR & PEERS
TRANSPORTATION CONSULTANTS

EN Trips

EXISTING VEHICLE INTERSECTION LEVELS OF SERVICE - PM PEAK HOUR

SoMa Vehicle Trips – Analysis of Pass-Through Traffic

As discussed above, the high volumes of vehicle traffic in the South of Market are an important challenge for transportation planning in the Eastern Neighborhoods. The role of the South of Market street grid in collecting and distributing regional vehicle traffic to and from the Bay Bridge and regional freeways has implications for vehicle congestion, noise and pollution, as well as transit performance, and pedestrian and cyclist comfort and safety. This section provides additional details concerning the origin and destinations of vehicle trips within the South of Market, focusing on the portion of trips that are "pass-through vehicle trips" traveling through the area to and from the regional freeways.

To estimate the share of pass-through vehicle trips in the South of Market, two 'select zone' and 'select link' analyses were conducted based on the SF-CHAMP travel demand model:

- *Select zone analyses* track the distribution and assignment of trips starting at one traffic analysis zone (TAZ), referred to as a centroid, and terminating at another.
- *Select link analyses* track the travel patterns of vehicle trips traveling on a single roadway segment, but do not necessarily identify the ultimate origins and destinations.

Vehicle trips with origins or destinations in SoMa and/or other portions the Eastern Neighborhoods ('I-X' or 'X-I') or trips with both origins and destinations in the study area ('I-I') were collected by recording volumes from centroid connectors within SoMa or the Eastern Neighborhoods. Vehicle trips traveling through SoMa or the Eastern Neighborhoods were identified by counting through-trip roadway volumes at the boundary of the study area ("cordons"). A sum of each trip type was collected as follows described for the SoMa neighborhood and illustrated in Figure 5-17:

- *Internal-Internal (I-I)* – trips originating and terminating in the SoMa:
  - I-I trip volumes were identified at centroid connectors from the select zone analysis
  - I-I trip volumes for the total study area were added together
  - Since I-I trip volumes have both their origins and destinations within the study area, the total I-I volumes were divided by two, so that trips were not be double-counted
- *Internal-External (I-X)* – trips originating in SoMa and terminating outside of SoMa:
  - I-X volumes were identified at centroid connectors from the select zone analysis
  - I-X trip volumes for the total study area were added together
- *External-Internal (X-I)* – trips originating outside of SoMa and terminating in SoMa:
  - X-I volumes were identified at centroid connectors from the select zone analysis
  - X-I trip volumes for the total study area were added together
- *External-External (X-X)* – trips originating and terminating outside of SoMa, but passing through the SoMa:

- X-X volumes were determined by adding together the through-trip volumes at the boundary around the Eastern Neighborhoods study area
- X-X volumes were then divided by two, since each through-trip would enter and exit the neighborhood thus being counted two times at cordon locations, even though constituting a single pass-through vehicle trip
- X-X volumes were also determined for freeway ramp locations within the model, to identify the percentage of through trips that were traveling through the neighborhood to or from the freeway

Figure 5-16 Origin/Destination Trip Type Summary

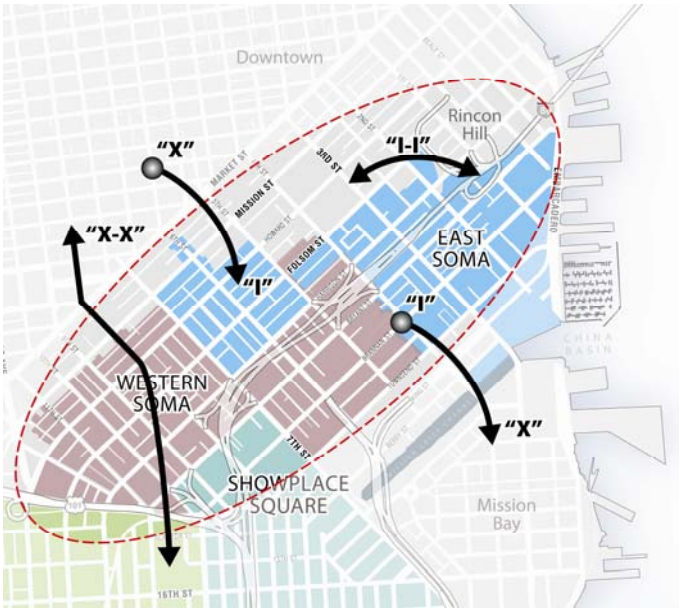


Figure 5-18 identifies the total number of trips for the AM and PM peak periods, by origin/destination trip type in the SoMa neighborhood.

Figure 5-17 SF-CHAMP Model Traffic Volumes by Origin/Destination Trip Type – SoMa

Trip Type	AM Peak Period		PM Peak Period	
	Volume	Percentage	Volume	Percentage
Internal-Internal (I-I)	1,000	0.9%	1,500	1.0%
Internal-External (I-X)	8,500	8.2%	21,500	16.1%
External-Internal (X-I)	18,000	17.4%	14,000	10.3%
External-External (X-X)	76,500	73.5%	98,000	72.6%
Total	104,000	100%	135,000	100%

Note Volumes rounded to nearest 500.
Source: Fehr & Peers, 2010, SF-CHAMP 4.1.

As shown, over 70% of vehicle trips are traveling through SoMa during both the AM and PM peak periods are estimated to be “pass-through” trips based on the model analysis described above. This includes freeway trips that do not exit into the neighborhood. Intra neighborhood (I-I) trips make up a small percentage (one percent or less) of vehicle trips within the South of Market, most likely due to the likelihood that these trips may cover less distance than other trips and may not be as convenient as walking, bicycling, or transit trips. Approximately 27% of peak period trips in SoMa either begin or end there (internal-internal, internal-external, and external-internal trips).

Beyond estimating the total number of external-external trips, through-trip data was collected at the model’s freeway ramp locations within SoMa. This analysis allowed trips that are traveling through SoMa to or from the freeways to be identified and counted. Of the total pass-through (external-external) vehicle trips through SoMa, approximately 40% are estimated to travel on a freeway ramp, meaning that they travel to the freeway from adjacent neighborhoods, or they exit the freeway and travel through SoMa en route to another destination (such as downtown). These trips would therefore pass through SoMa streets, and may be going to or coming from other neighborhoods within San Francisco, such as Bernal Heights or Bayview, or may have an origin or destination outside of the City. Nonetheless, these are the vehicle trips that can affect traffic conditions on surface streets within SoMa. The through trips that do not travel on a freeway ramp include the following: through trips traveling along an arterial roadway through the City, or through trips that remain on the freeway throughout the distance of the neighborhood. Arterial roadways within the study area, such as Sixth Street, have the ability to carry vehicles through the neighborhood to other destinations within the City. These trips would not be stopping within SoMa but add traffic to the roadway system. The vehicle trips that start on the freeway outside of the neighborhood and end outside of the neighborhood, on the other hand, will generally be traveling longer distances. These trips do not affect the traffic conditions on neighborhood streets or surface streets, since they remain on the freeway mainline.

An assessment of selected links within the study area identified that there is a difference in through traffic characteristics between roadways with direct access to freeway ramps and those without. In general, roadways with direct freeway access (particularly the numbered streets) will have a majority of through trips taking access to the freeway to destinations outside of the study area. The trips to ramps can account for 80-95% in many cases. As previously noted, these would likely be longer trips. Roadways without direct freeway access, such as Mission Street and Market Street have most through trips remaining on the surface street throughout. These roadways provide access through the neighborhood without traveling on the freeway. Roads such as these generally have a modest amount of traffic that will end up on a freeway; about 20% of the total through trips.

South of Market Lane Capacity

Figure 5-18 tabulates the number of travel lanes available in the South of Market. North and south bound lanes are summarized for the area between 7th and 8th Streets during the PM Peak. Sixteen travel lanes, including dedicated transit lanes, are available in each direction during the PM Peak period. There are ten parking lanes and two bicycle lanes available.

East and west bound lanes are summarized for the area between Market and Mission Streets during the PM Peak. Twenty-eight travel lanes are available in the northbound direction, including dedicated transit lanes. Twenty southbound lanes are available, including dedicated transit lanes. There are ten parking lanes and one bicycle lane available.

Figure 5-18 Lanes by Type at Select Screen Lines in the South of Market

South of Market East-West Street Capacity (PM Peak Hour)				
Streets	East Bound Travel Lanes	West Bound Travel Lanes	Parking Lanes	Bicycle Lanes
Market Street	2	2		
Mission Street	2	2		
Howard Street		4	2	1
Folsom Street	4		2	1
Harrison Street		5	2	
Bryant Street	5		2	
Brannan Street	2	2		
Townsend St.	1	1	2	
Total	16	16	10	2
Screen line between Seventh and Eighth Streets				

South of Market North-South Street Capacity (PM Peak Hour)				
	North Bound Travel Lanes	South Bound Travel Lanes	Parking Lanes	Bicycle Lanes
11th Street	1	1	2	
Tenth Street		5	2	
Ninth Street	6			
Eight Street		4	2	
Seventh Street	4		2	1
Sixth Street	3	2		
Fifth Street	2	2	2	
Fourth Street	4			

South of Market North-South Street Capacity (PM Peak Hour)				
	North Bound Travel Lanes	South Bound Travel Lanes	Parking Lanes	Bicycle Lanes
Third Street	4			
New Montgomery		3		
Second Street	1			
First Street		3		
Fremont Street	3			
Total	28	20	10	1
Screen line between Market and Mission Streets				

Issues and Opportunities for Auto Circulation

- South of Market arterial streets are designed to accommodate high volumes of vehicle traffic, and every arterial street in the South of Market is designated as part of the primary vehicle network. There may be an opportunity to change the character of at least some of these arterials in ways that better accommodate the needs of other modes of transportation. Even on streets that remain part of the primary vehicle network, the City may have the opportunity to reduce the effects of vehicle traffic on quality of life for residents and visitors, and on other travel modes.
- The study observed seven intersections on the Folsom, Harrison, Bryant, and Townsend Street corridors with high levels of congestion during either in the AM or PM peak periods. In addition, observations during peak and off-peak periods indicate that north-south corridors such as Third and Fourth Street experience queuing due to high volumes of I-80 traffic in the inbound or outbound direction.
- I-80 traffic is the key factor overloading the SoMa road network. Most congested intersections in the SoMa neighborhood during the PM peak hour are worsened by queues extending back from the Interstate 80, on southbound corridors such as Fourth Street. During other periods of the day, volumes of traffic from Interstate 80 result in congestion in the northbound corridors, such as Third Street, that have limited throughput capacity across Market Street.
- The City has options for managing congestion in the Eastern Neighborhoods without creating new vehicle capacity. Potential solutions include parking management (discussed further below). There may also be opportunities to pursue congestion pricing strategies in coordination with regional partners. Additional investment in Transportation Demand Management (TDM) strategies may also help to reduce vehicle congestion.
- Most of the streets in the Mission District, Potrero Hill, Showplace Square, and Central Waterfront areas are not designated as primary vehicle corridors, and on many of these streets there may be opportunities to focus on multi-modal transportation improvements.

In those areas, street design plans can focus on prioritizing travel for other modes and creating quality public spaces. Automobile travel speeds through these areas could be reduced through traffic calming measures where needed, and parking could be priced to ensure availability so that drivers circling for parking do not generate unneeded traffic.

5.2 Parking

The supply and management of parking is critically important to the functioning of the transportation system in the Eastern Neighborhoods. This section describes the major City policies governing parking management in the study area, describes on- and off-street parking facilities, and discusses parking issues by neighborhood. It addresses several categories of parking:

- **Accessory off-street parking.** Land use regulations administered by the San Francisco planning department govern the construction of parking through the new development.
- **Metered on-street parking.** The on-street parking supply is regulated in some areas through parking meters.
- **Unmetered on-street parking.** In some areas, unmetered off-street parking is regulated through the City's Residential Parking Permit program (RPP), and in some areas it is unregulated.
- **Publicly available off-street parking.** The study area also includes public off-street parking garages, some of which are managed by the SFMTA and others that are privately managed.

Policies and Plans

Several major policy documents and plans govern the regulation and management of parking in San Francisco, and in the Eastern Neighborhoods. General Plan objectives for parking include developing and implementing programs to "efficiently manage the supply of parking at employment centers throughout the City." The planning code includes the specific regulations that determine, for example, minimum and maximum parking provided by new development.

The General Plan and the Planning Code are periodically adjusted through neighborhood area plans prepared by the planning department, including the Eastern Neighborhoods area plans. There are also a number of recent planning studies and policy documents that provide recommendations for the regulation of parking in the Eastern Neighborhoods.

- The recently-completed *SFCTA On-Street Parking Management and Pricing Study (2009)* developed recommendations on the regulation of parking in San Francisco. These recommendations prioritize short-term parking and parking management through the appropriate use of prices; reform of the Residential Parking Permit program; and neighborhood-level parking management.[1]
- The *Better Streets Plan* provides guidance on the regulation of parking in San Francisco as it relates to the design of streets. The plan recommends using parking management strategies to make more efficient use of the existing parking supply. The plan recognizes the potential for curb parking to serve a valuable role in buffering pedestrians from roadway traffic in areas with high auto volumes, but also recommends taking advantage of

[1] SFCTA On-Street Parking Management and Pricing Study

> opportunities to convert curb parking to other uses. For example, curb parking can be used for landscaping, or for flexible uses such as temporary cafe seating.[2]

Within the policy framework established by these policy documents and studies, two City agencies are responsible for implementing the City's parking policies.

First, the San Francisco Planning department regulates the supply and design of dedicated off-street parking provided from new development. The department enforces planning code regulations and can allow for exceptions to parking standards through variances and conditional use permits. The Planning Department also regulates curb cuts that provide access to off-street parking. As defined in *Planning Code* section 155(r), curb cuts are prohibited or only permitted with Conditional Use authorization on some streets within the Eastern Neighborhoods.

Second, SFMTA is responsible for managing both the supply of on-street curb parking and city-owned off-street parking garages. SFMTA has several important parking reforms underway, structured through its SF*park* program. The program will manage the City's parking supply to help achieve SFMTA goals for the transportation system, including improvements to the reliability and on-time performance of the public transit system; reduction in the environmental consequences of all modes of transportation; promoting public health and traffic safety; and enhancing the convenience of parking by improving availability. The primary parking management strategy will be the use of demand-responsive pricing to achieve turnover and availability goals. As discussed in the next section, a major initiative under SF*park* is the implementation of a series of pilot tests of demand-responsive pricing of parking in important commercial corridors.

Corridors and Neighborhoods

Accessory off-street parking

The planning code includes the specific regulations that determine the amount of off-street parking that must be built as part of new developments, and the curb cuts that provide access to off-street parking.

Traditionally, parking in San Francisco, as in most communities in the United States, has been managed by requirements for a minimum amount of off-street parking to be constructed with all new development. Each land use category has been assigned a specific amount of required accessory off-street parking space corresponding to the number of residential units, the square footage of commercial space, or other factors depending on the type of land use. This policy reduces the pressure on the on-street parking supply. However, San Francisco has come to recognize that minimum parking requirements also have the effect of increasing traffic, raising the price of housing, creating barriers to new development, and subsidizing driving as the preferred mode of transportation, and City parking policy has evolved in the last three decades. Beginning in 1985, residential construction in downtown San Francisco, including parts of the South of Market, has been subject to maximum amount of allowable parking. These controls were updated

[2] San Francisco Better Streets Plan.

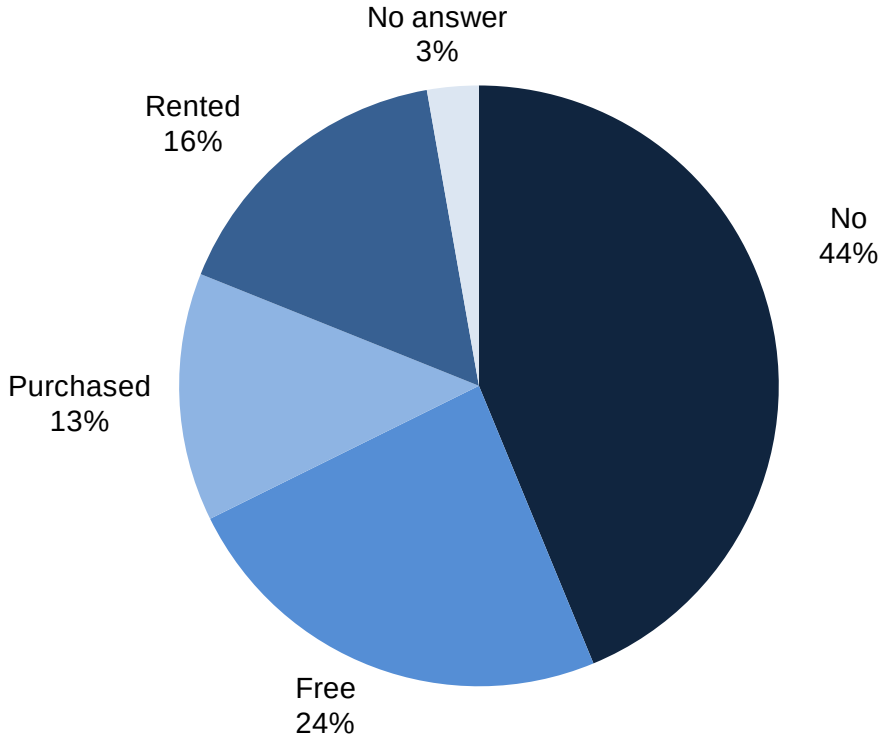
in 2006 to strictly limit the amount of parking in new development in the downtown commercial area to 1 space to every 4 units by right.

The Eastern Neighborhoods area plans modify parking regulations in parts of the plan areas. The plans apply zoning categories that eliminate minimum parking requirements and introduce parking maximums in mixed-use areas near transit. The amount of parking that would be permitted would depend on the zoning district. For Mixed Use Residential and Neighborhood Commercial Transit zoning districts, up to 0.50 spaces per unit would be the maximum number allowed; and with conditional use development, the maximum number allowed would be 0.75 spaces per studio and one-bedroom units and 1.0 spaces per unit for two or more bedroom units. For residential development within the Mixed Use /PDR, Arts District, Residential Transit Oriented and Residential Enclave zoning districts, the maximum number of parking spaces permitted would be 1.0 space per unit. The precise amount of parking eventually constructed will depend on the type of housing that the market supplies, and in which districts. For non-residential uses, no off-street parking supply would need to be provided, and generally, current minimum Planning Code requirement would be the maximum allowed. For office uses, however, the permitted maximum would be up to 7 percent of the gross floor area.

As in other dense San Francisco neighborhood plan areas, residential development in the Eastern Neighborhoods is also subject to “unbundled” parking requirements – they must sell or rent parking spaces separately from dwelling units. This policy is intended to improve housing affordability and remove an incentive for auto ownership for new construction transit-rich areas. Under the adopted plans, maximum allowable parking in the Eastern Neighborhoods for non-residential development is generally equal to previous minimums. For office uses, parking is limited relative to transit proximity.

Nearly all housing built in the Eastern Neighborhoods over the last 10 years (see Figure 2-7) has had residential parking ratios of at least one parking space per unit. Despite lower parking requirements and unbundled parking mandates under the Eastern Neighborhoods plans, it is expected that most of the new residential development in the Eastern Neighborhoods will continue to have at least some accessory parking. New parking contrasts with the existing housing stock in the study area, much of which was built before accessory parking became commonplace. Figure 5-19 illustrates access to parking at home for Eastern Neighborhoods residents. Of those responding to the Eastern Neighborhoods travel behavior survey, 53% of current Eastern Neighborhoods residents indicated that they had access to private off-street parking at their residence. Twenty-four percent had access to free parking at their residents, 13 percent purchased residential parking, and sixteen percent rent residential parking.

Figure 5-19 Private Parking at Residence (Eastern Neighborhoods Residents, Self Report)



Source: Eastern Neighborhoods Travel Behavior Survey, 2008

Publicly available off-street parking

The SFMTA Parking Authority Commission and the SFMTA Board of Directors oversee management of SFMTA-operated off-street metered parking garages and lots. Proposition E (1999), which created SFMTA, limits the Parking Authority's ability to expand or construct new parking facilities. The last City-owned garage to be constructed was the North Beach garage, which began operations in 2002.

The SFMTA operates 20 City-owned off-street parking garages (14,575 spaces total). Some City-owned parking garages offer monthly parking, and the monthly rate is set to be competitive with commercial garages. Rates in city-owned garages favor short-term parking to support shopping and visitor trips to nearby businesses. For long-term parking, the rates are generally higher than for privately-owned garages. Commercial garages are concentrated downtown but located throughout the study area. The City assesses a 25 percent tax on off-street parking fees, of which 80 percent is allocated to SFMTA. The 80 percent share amounts to approximately $50 million per year in total.

On-street parking

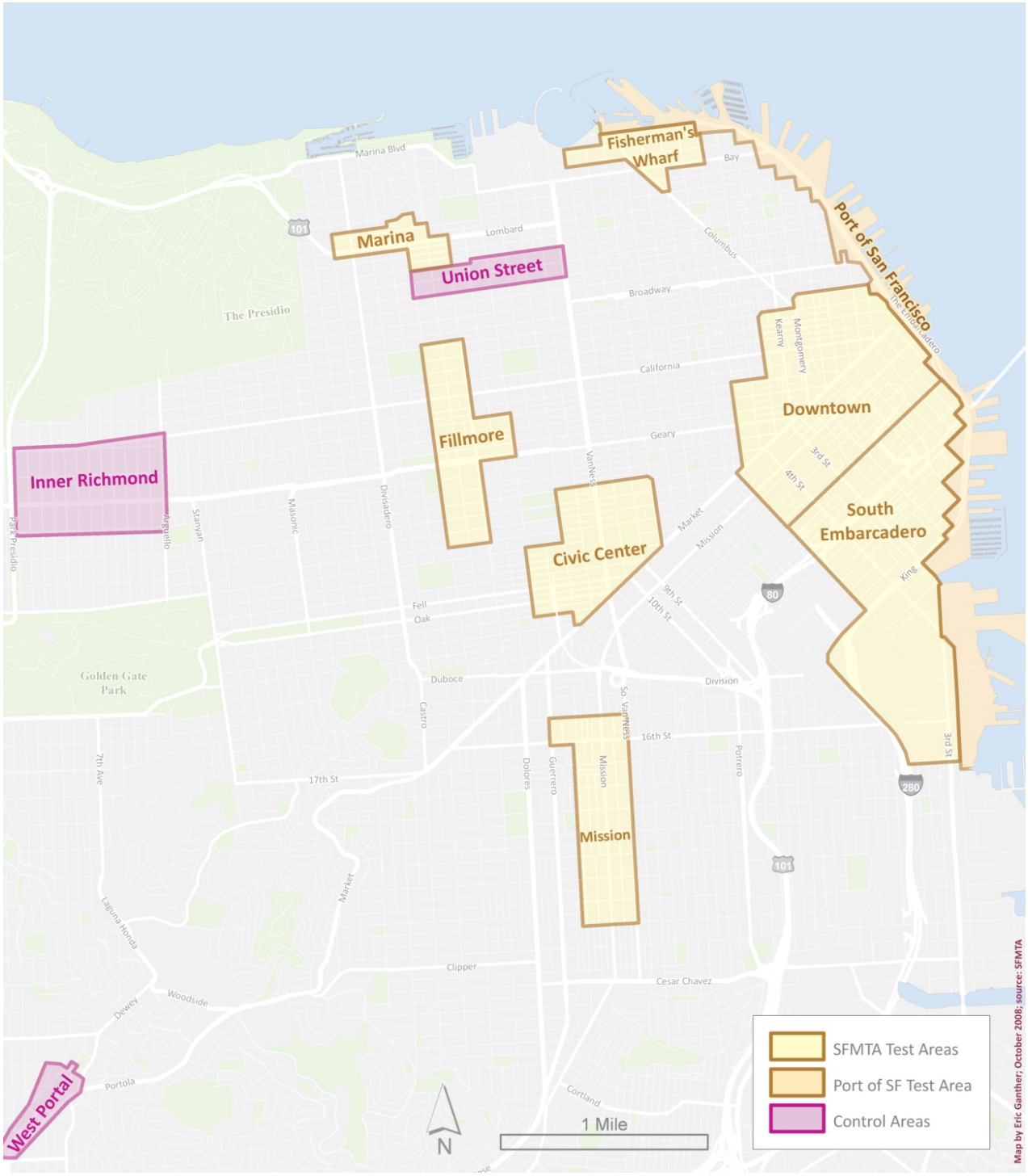
The SFMTA is responsibility for regulating, managing, and enforcing on-street parking operations. It oversees both metered and unmetered spaces.

Metered on-street parking

The SFMTA manages approximately 24,000 on-street metered parking spaces, most of which are operated from 9 a.m. to 6 p.m. Monday through Saturday. The SFMTA board is currently evaluating a proposal to extend meter hours in some areas. The Port of San Francisco operates approximately 1,000 metered spaces along 45 blocks within its jurisdiction, many of which are in inside the Eastern South of Market or Central Waterfront plan areas.

The SFMTA is currently working on an update to its on-street parking management practices through the SF*park* program. The program is implementing a group of pilot tests of new parking meters. In these pilot areas, the SFMTA will adjust prices to achieve a balance between supply and demand, working towards turnover and availability goals. Price structures will be adjusted every 4-6 weeks until availability targets are met. The pilot projects will also test new networked parking meters, parking occupancy sensors, and parking information systems that will increase convenience for customers. There are eight SF*park* pilot areas, of which 3 are in the Eastern Neighborhoods plan area, as shown in Figure 5-20.

Figure 5-20 SFpark On-Street parking management pilot areas



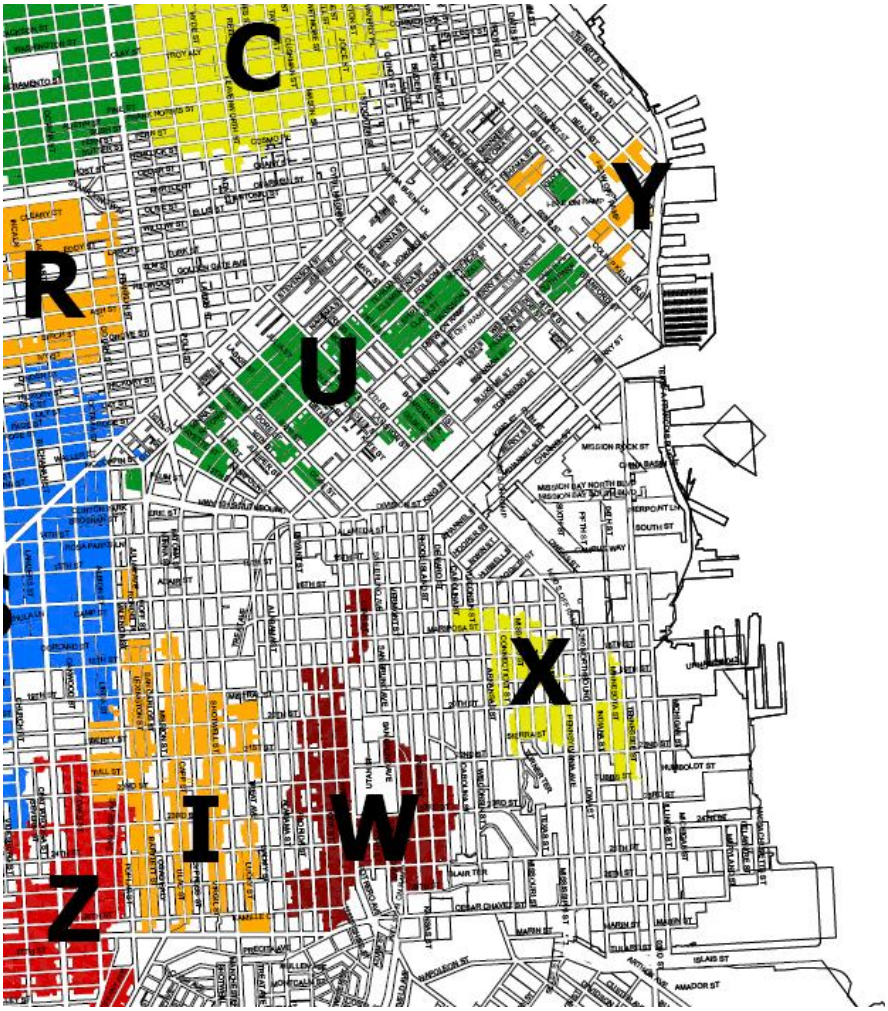
Source: SFTMA SF*park* program.

Unmetered on-street parking

The SFMTA manages metered parking spaces through the curb color program and the residential parking permit program (RPP). The curb color program restricts parking at marked curb areas. There are "No Parking" zones (red), disabled permit parking zones (blue), freight loading zones (yellow), 10-minute short term parking zones (green), and 5-minute passenger loading zones (white).

The SFMTA also administers the City's Residential Parking Permit Program (RPP). The Residential Parking permit program issues permits that allow permitted vehicles to exceed time limits within a designated area. Time limits for non-permitted vehicles vary from zone to zone, but are generally in effect during daylight hours Monday through Friday (or Saturday in some cases). Households residing in a RPP district are permitted to purchase up to four permits, at a cost of $96 per year. Owners of businesses in an RPP district are also permitted to purchase up to three permits for business vehicles. RPP districts may be established or expanded via a petition process. As illustrate in Figure 5-21, there are 7 RPP zones in the EN TRIPS area.

Figure 5-21 Eastern Neighborhoods Residential Parking Permit Zones



Source: SFMTA

Ownership of an RPP permit does not assure on street parking availability for residents. In many RPP areas, the number of issued RPP permits approaches or exceeds the number of available on-street parking spaces. Especially combined with additional demand from non-residents, demand frequently exceeds supply. At present, the SFMTA has a limited number of tools to manage residential and, in particular, spillover parking demand in residential areas.

South of Market

The on-street parking regulations in SoMa include Residential Permit Parking and metered parking. Metered parking spaces are typically provided on both sides of the street. Some of the smaller side streets only have parking on one side.

Figure 5-22 illustrates off-street and paid on-street parking in the South of Market (free customer parking means time limited commercial parking for customers only. Permit holder spaces are available only to permit holders at particular garages, and free publicly available parking is available to all). The figure shows that the South of Market has a large amount of metered, unmetered, and off-street parking. There are two City-owned parking facilities in the general SoMa area. These include an off-street metered parking lot at Seventh & Harrison Streets and a 59 space parking garage at Mission and Otis Streets. In addition, there are several privately-owned parking lots and garages available to the general public. Paid publicly available parking is concentrated in the downtown financial district area, but the area's largest publicly available paid off-street parking facility is the Fifth and Mission garage. The Western South of Market has a mix of medium-sized publicly available parking lots and small permit-only facilities.

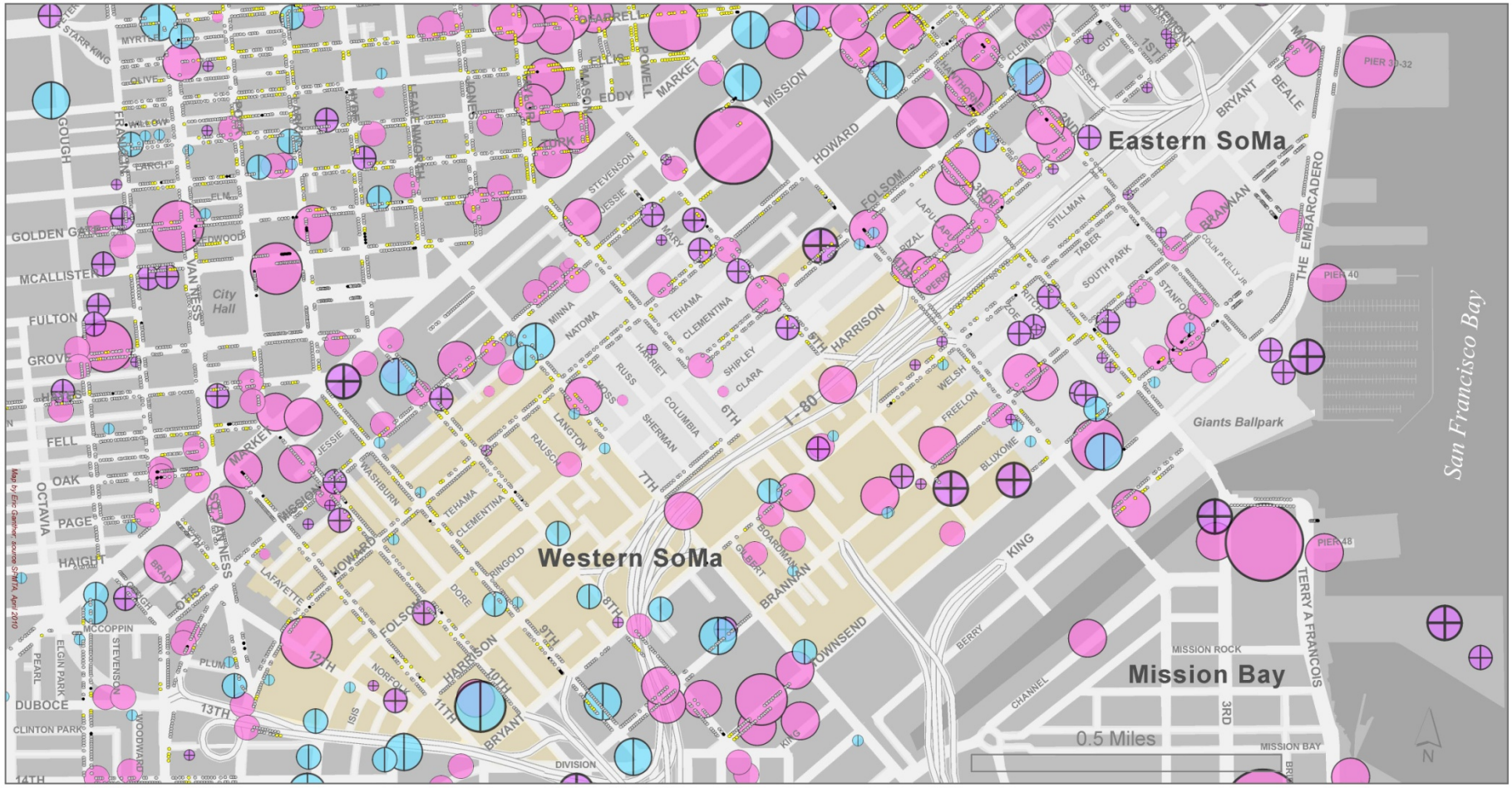
Most on-street parking in the South of Market is metered east of Eighth Street, and the length of Mission and Howard Streets, although there are gaps in parking meter coverage through these areas. A wide stretch of the western South of Market, roughly from Townsend to Harrison between Ninth and Eleventh Streets, lacks parking meters.

Townsend Street between Seventh and Fourth has angled parking on both sides, with cars parked up to the building face and obstructing the pedestrian path of travel.

RPP regulations generally restrict on-street parking to a one-hour or two-hour period, but vary on the days of week and the time of day that the regulations are in effect. There are two Residential Permit Parking areas: Area “Y” in the eastern portion of SoMa, and Area “U” in the western portion. In the “Y” Zone (South Beach), the number of issued RPP permits is roughly twice the number of on-street parking spaces, the highest "saturation" of any zone. In the “U” Zone (SoMa), saturation is 87 percent.[3]

[3] SFMTA SF*park* program.

Figure 5-22 Publicly Available Parking in the South of Market



Parking in SoMa

capacity
> 2500
501-2500
101-500
26-100
5-25

	Off-Street Parking			On-Street Parking				
				Meters				
	Paid	Customer	Permit	Motorcycle	General	Commercial	Unmetered	**Total**
Eastern SoMa Totals >>	4,817	225	673	57	954	174	2,350	**9,193**
Western SoMa Totals >>	2,468	1,370	847	58	693	95	2,525	**8,163**

Source: SFMTA SF*park* program

Mission District

On the Mission District's commercial corridors, parallel on-street parking spaces, both metered and unrestricted, are provided on both sides of the street. Figure 5-23 illustrates off-street and paid on-street parking in the Mission (free customer parking means time limited commercial parking for customers only. Permit holder spaces are available only to permit holders at particular garages, and free publicly available parking is available to all).

Parking is metered on the Mission, Valencia, and 24th Street corridors, but occupancies exceed 100% during peak periods and turnover is low. Vehicles often double-park on Mission Street and on the cross-streets, obstructing buses on an important transit corridor. Mission and Valencia streets are included in an SF*park* pilot area, which will result in more active parking management for these corridors.

In the Mission's residential areas, a number of streets between Harrison and Hampshire Streets have 90-degree angle parking on one side and parallel parking spaces on the other side. The residential areas in the western portion of the Mission District generally have parallel parking on both sides of the street (exception is on Bartlett Street between 21st and 22nd Streets).

There are four Residential Permit Parking areas in the Mission District: areas "S", "W", "I", and "Z". In the RPP zone that covers most of the Mission, the 'I' Zone, there are permits representing 107% of the total curb parking supply. Three other zones (S, W, and Z) cover parts of the Mission, and permit saturation varies between 96% and 105% in these zones. [4]

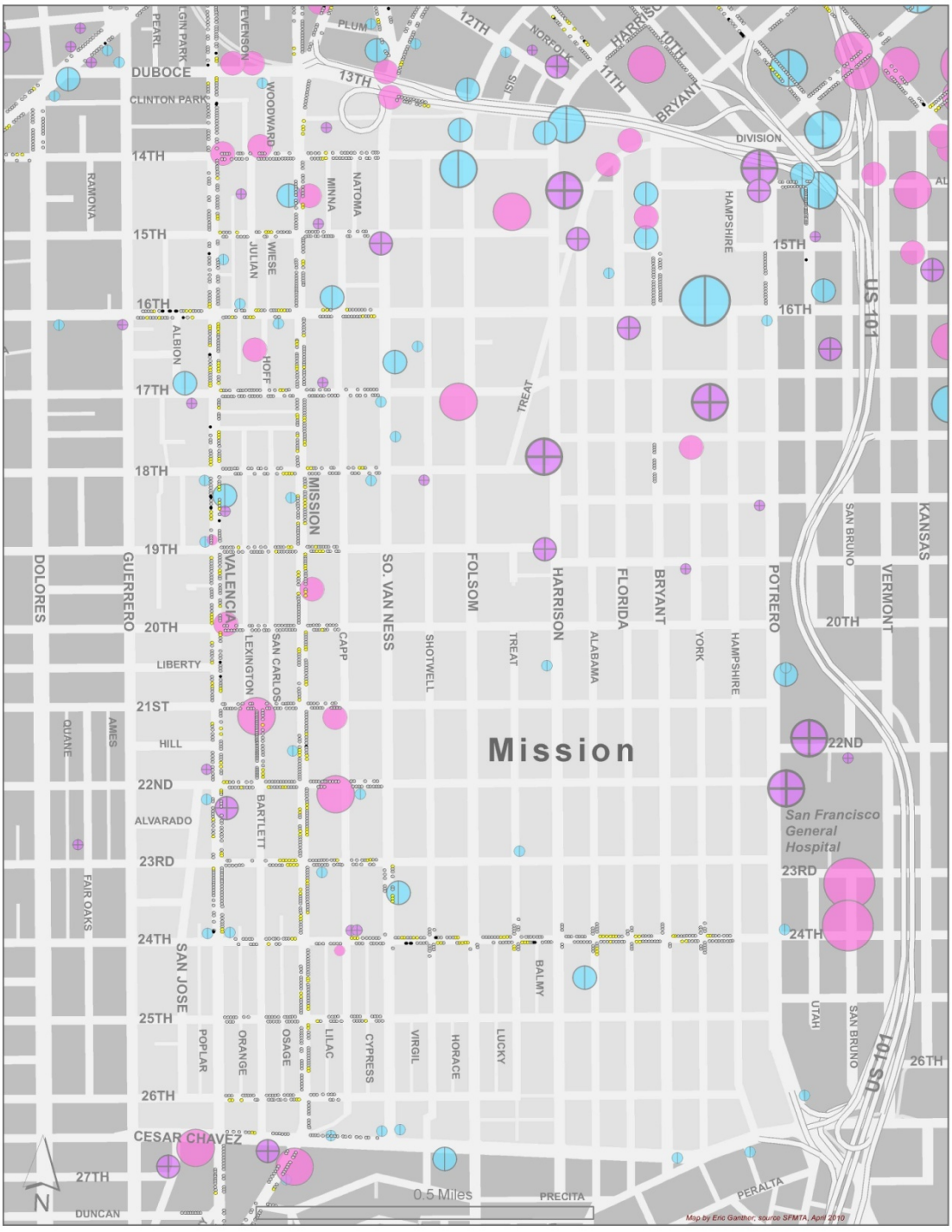
The industrial areas in the northeast Mission District have more irregular parking conditions, and both parallel and 90-degree angle parking is provided. In general, there are fewer restrictions on parking in the industrial portions than in the other portions of the Mission District.

There are three City-operated off-street parking facilities in the Mission District: the Mission and Bartlett garage with 350 spaces, 16th & Hoff garage with 98 spaces, and the 24th & Capp surface parking lot with 19 spaces. The 16th & Hoff garage is valet parking only; and the 24th & Capp lot contains only metered parking spaces. During the weekday midday period these facilities are generally fully occupied. These facilities also support evening activities in the Mission District, and are often full on Friday and Saturday evenings.

There are numerous privately-owned parking facilities in the Mission, and almost all of them serve the employees and visitors to the businesses adjacent to them and are not available for general public parking. The Mission's two BART stations have no dedicated vehicle parking, and most passengers arrive at the station by bus or on foot.

[4] SFMTA SF*park* program.

Figure 5-23 Publicly Available Parking in the Mission



Parking in the Mission

Off-Street Parking

capacity
> 500
101-500
26-100
5-25

On-Street Parking

Meters

	Paid	Customer	Permit	Motorcycle	General	Commercial	Residential	**Total**
Totals >>	1,521	1,761	1,051	64	1,548	257	9,300	**15,502**

Source: SFMTA SF*park* program

Showplace Square/Potrero Hill

Figure 5-24 illustrates off-street and paid on-street parking in Showplace Square and Potrero Hill (free customer parking means time limited commercial parking for customers only. Permit holder spaces are available only to permit holders at particular garages, and free publicly available parking is available to all).

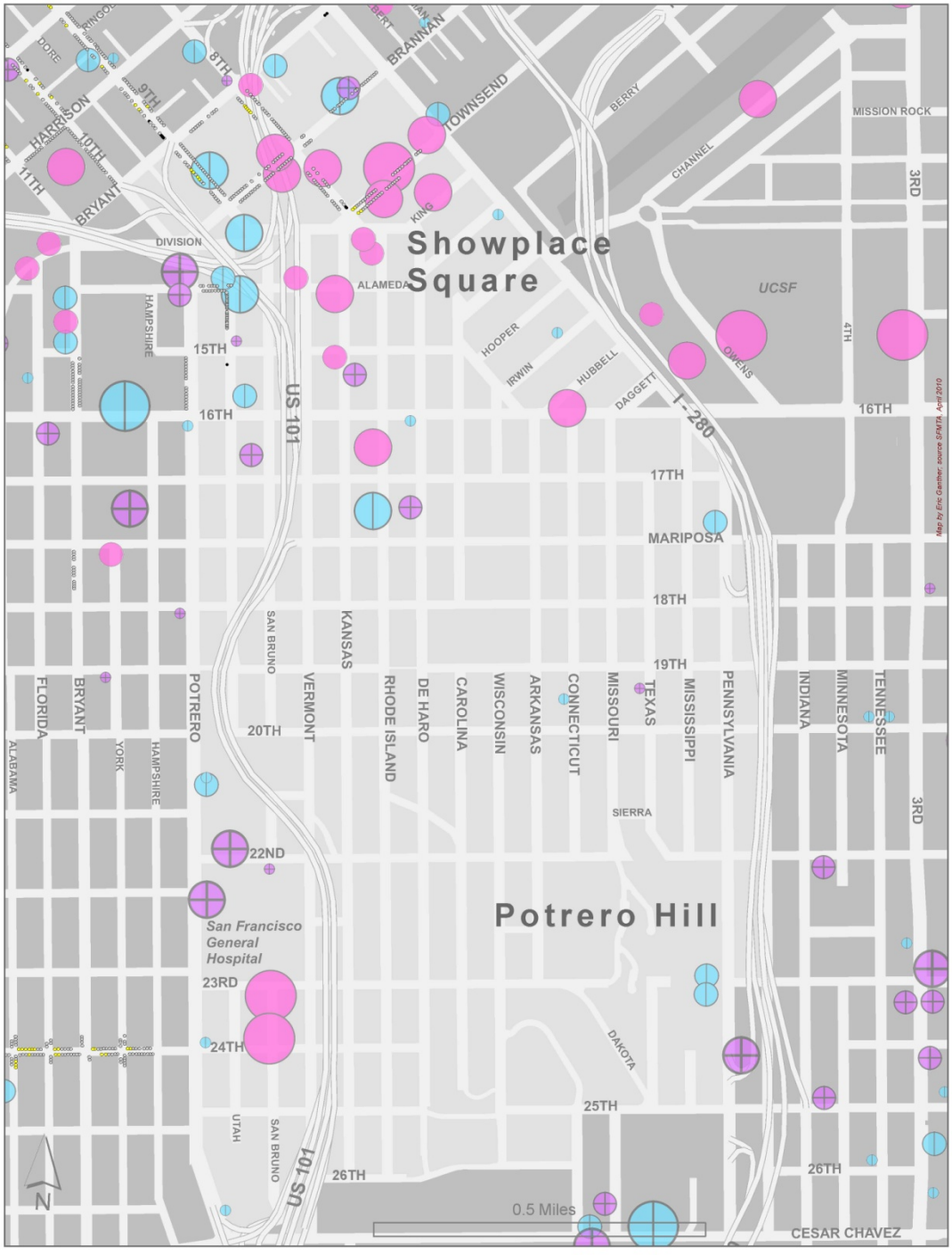
Within the Showplace Square/Potrero Hill neighborhood, on-street parking south of Division Street primarily consists of unrestricted parking spaces, whereas the on-street parking north of Division Street consists of metered parking spaces. On-street parking occupancies in the Showplace Square area are high, and with new growth predicted in this neighborhood, addition of meters may be required to ensure a balance of supply and demand.

On-street parking in the industrial and some commercial portions of the Showplace Square subarea consists of a combination of parallel and 90-degree angle parking. Since the layout of the roadway, sidewalks, and parking spaces varies from street to street, and sometimes from block to block on the same street, it can be difficult for drivers to tell what the standard is for parking on any given block. There are several paid publicly available parking garages in Showplace Square, clustered near Division Street and south along Henry Adams.

The Showplace Square area has many one and two hour unmetered time limit zones. These zones are more difficult to enforce than metered spaces, since the Parking Control Officer must make two observations before citing a violator.

On-street parking in the Potrero Hill area is usually parallel to the street, and mostly unregulated. Several blocks with commercial stores have metered parking spaces. A portion of the Potrero Hill area is in the Residential Parking Permit “W” area, which also includes San Francisco General Hospital. In this area, there are roughly the same numbers of issued RPP permits as legal curb spaces. The rest of Potrero is in the “X” RPP zone, which has a much lower (49%) rate of permit saturation. On-street parking is observed to be moderately occupied during the weekday midday period, and fully occupied during the weekday evening period. The San Francisco General Hospital garage is the only City-owned facility in the Showplace Square/Potrero Hill neighborhood. This garage contains about 1,700 spaces, and, depending on activity at the hospital is fully occupied during the weekday midday period. Valet service is provided when the independently-accessible spaces are full. There are several privately-owned parking facilities in this subarea and almost all of them serve the employees and visitors to the businesses adjacent to them and are not available for general public parking.

Figure 5-24 Publicly Available Parking in Showplace Square/Potrero Hill



Parking in Potrero Hill Showplace Square

Off-Street Parking

capacity
> 500
101-500
26-100
5-25

On-Street Parking

Meters

	Paid	Customer	Permit	Motorcycle	General	Commercial	Residential	Total
Totals >>	5,124	1,355	614	10	240	13	10,950	**18,306**

Source: SFMTA SF*park* program

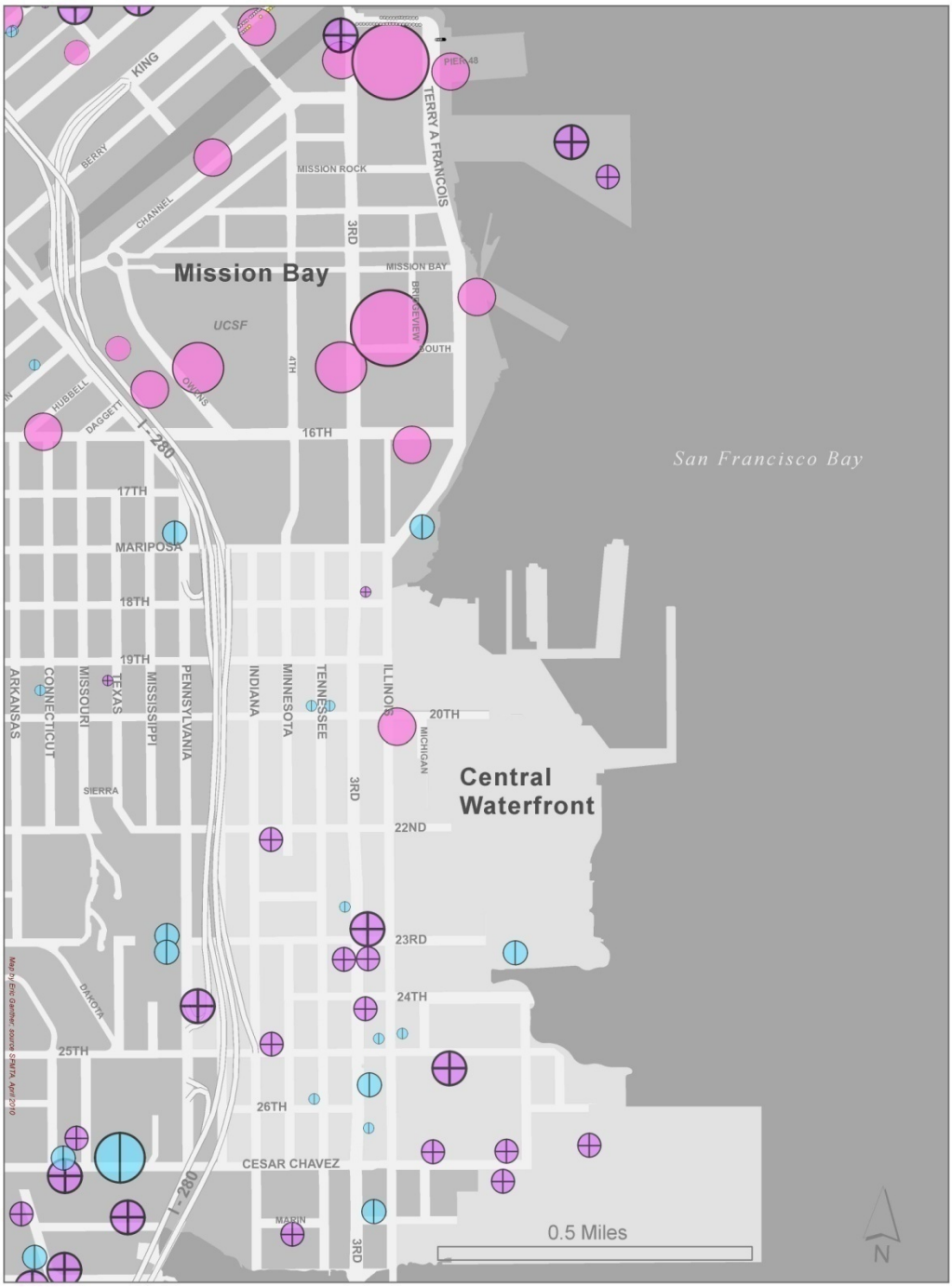
Central Waterfront & Mission Bay

Figure 5-25 illustrates off-street and paid on-street parking in the Central Waterfront. On-street parking in the Central Waterfront is generally unrestricted, and includes both parallel and 90-degree angle parking. Along Third Street on-street parking is metered, and has been removed in the vicinity of the light rail stations. There are no Residential Permit Parking areas within the Central Waterfront or Mission Bay.

There are no City-owned parking facilities in the Central Waterfront. There is limited number of privately-owned parking facilities in this subarea and most drivers rely on on-street parking. The available privately-owned off-street parking facilities serve the employees and visitors to the businesses adjacent to them and are not available for general public parking.

The UC Mission Bay campus offers 1,650 mixed use (public & permit) parking spaces in lots and garages. They are accessible from entrances off of 16th Street at the 1625 Owens Street Garage and at the 1630 Third Street Garage.

Figure 5-25 ***Publicly Available Parking in the Central Waterfront and Mission Bay***



Source: SFMTA SF*park* program

Issues and opportunities for parking

The following issues and opportunities for parking will be considered:

- Almost 10,000 new units of housing are predicted in the Eastern Neighborhoods as a result of the plans. Despite elimination of minimum parking requirements and the requirement for unbundled parking in parts of the plan area, these new housing units will likely include accessory off-street parking at higher rates than the existing housing stock, much of which was built before accessory off-street parking became common. Vehicle ownership and trip generation rates may therefore be higher among new households than the existing population.
- High on-street parking occupancy can increase likelihood of double parking. Slower traffic and traffic impediments are one of several factors contributing to slow transit speeds. SFMTA's SFpark program will collect data on parking occupancies, double parking, and transit delays on key Eastern Neighborhoods streets.
- Through the SF*park* program, SFMTA will soon begin pilot tests of new meter technology and active parking management in three pilot areas in the Eastern Neighborhood. If the pilot tests help to achieve transportation system goals as intended, the programs could be continued and expanded to other areas.
- Large areas of the South of Market and Showplace Square have high curb parking demand but lack parking meters. Particularly as the population of these areas grows, SFMTA could investigate expanding metered parking areas.
- Several residential districts in the study area have very high rates of parking occupancy. In at least one zone, peak occupancy regularly exceeds the legal supply of spaces. The SFMTA may investigate policy reforms to address parking availability in residential areas.
- Consistent with the Better Streets Plan, there may be opportunities in the Eastern Neighborhoods for the conversion of some curb parking to other uses such as landscaping; flexible uses such as temporary cafe seating; or to accommodate more pedestrian walking space, bicycle lanes and transit only lanes. The use of some existing curb parking capacity for other uses may become more feasible in the Eastern Neighborhoods once active parking management creates an appropriate balance between supply and demand.

5.3 Goods Movement

Goods movement is an essential function of the transportation network citywide; however, it is an issue of even greater importance in the Eastern Neighborhoods, where not only retail business but heavy industry and production, distribution and repair (PDR) businesses are prevalent. Delivery vehicles, ranging in size from vans to multi-axle trucks, must navigate the street network and find space to load and unload. Transportation plans for the Eastern Neighborhoods must accommodate the delivery needs of businesses while managing potentially negative consequences of truck traffic on residents, workers, and visitors.

Commercial uses in the Eastern Neighborhoods may broadly be grouped into four categories, each with distinct needs related to goods movement.

- **Heavy Industry and Port Uses.** Along the waterfront is a complex of heavy industrial and Port of San Francisco facilities including maritime terminals, warehouses and container freight stations. These facilities rely heavily on high-capacity modes for movement of cargo and freight including oceangoing ships, trains, and semi-trucks.
- **Light Industry and Production, Distribution, and Repair (PDR).** The light industrial and production, distribution and repair category encompasses a broad range of business types, including (but not limited to) specialty manufacturing, food production and catering, construction, delivery services, auto repair, arts uses, publishing and printing, and media services. These businesses are likewise served by diverse vehicle types including large trucks, commercial vans, sport utility vehicles, and pick-up trucks. Unlike heavy industrial users with dedicated loading docks, many must rely on curbside parking spaces for loading and unloading, in alleys or on main streets. Light industrial and PDR establishments can be found throughout South of Market, the Central Waterfront, Showplace Square, and the Northeast Mission.
- **Large Retail.** Grocery stores, “big box” chains, and other large-floorplate retail outlets are generally serviced by large trucks, and generally include loading docks. Grocery stores are located throughout the Eastern Neighborhoods. A major concentration of big-box retailers can be found in the vicinity of Division Street.
- **Neighborhood Commercial.** Retail storefronts in residential neighborhoods typically rely on curbside spaces for loading and unloading, and are served by smaller vehicles.

Important issues for goods movement in the Eastern Neighborhoods are summarized below.

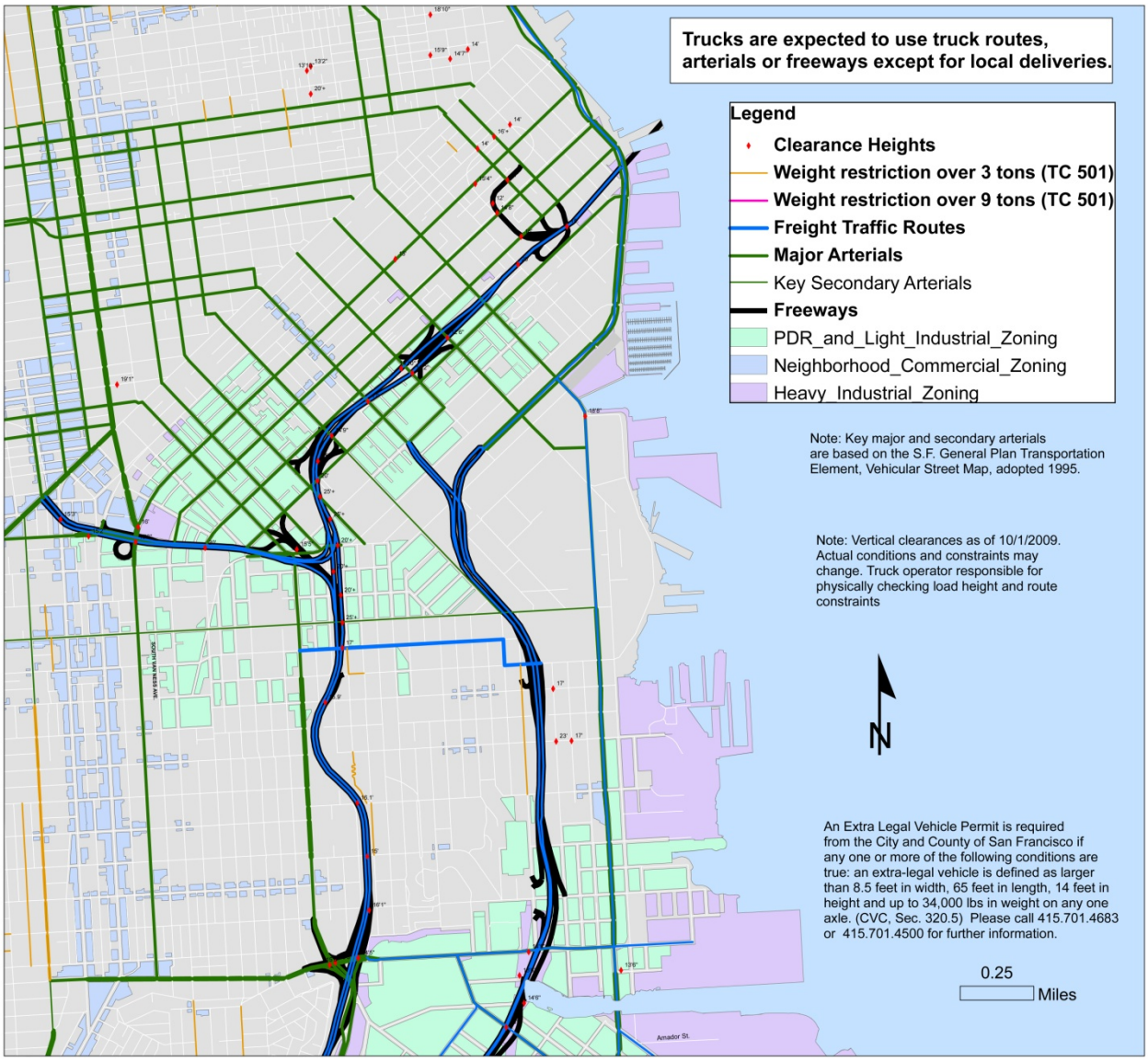
Truck Movements

Trucks in traffic can both contribute to congestion and effect the comfort and safety of nonmotorized users of the street. Although large trucks typically account for only a fraction of all vehicles, their movements and unloading requirements can be more challenging than private or public (bus) traffic, particularly on constrained streets.. Similarly, trucks can pose a hazard to pedestrians and cyclists. These effects can be addressed using the same design tools used to reduce speeds and conflicts associated with automobiles, including the full toolbox of traffic calming measures. City policy governing the movement of trucks is as follows:

- *Truck Routes.* While a citywide network of designated truck routes including highways and arterial streets is included in the General Plan, it is advisory in nature, and no signage is posted along these routes. Nonetheless, SFMTA staff have proposed an update to the network for the first time in many years. The updated network was developed in coordination with members of the public and with trucking companies. It must undergo environmental review before it can be incorporated into the City's General Plan. The parts of the proposed network that fall in the Eastern Neighborhoods, along with the industrial and commercially zoned areas, are illustrated in Figure 5-26 below. Truck routes are most enforceable for large vehicles. The routes do not apply to local deliveries. There are existing Truck Route signs on Mariposa Street and Mississippi and 17th streets.
- *Loading facility requirements.* As part of project review, the Planning Department reviews loading facilities, access to loading facilities, and when appropriate with land use peak hour loading requirements.
- *Weight Restrictions and Height Clearances.* Under the California Vehicle Code, trucks using roadways under state jurisdiction may not exceed 40 tons (80,000 pounds) of weight. Under Section 501 of the Municipal Code, much more restrictive weight limits are applied on some residential streets. Within the Eastern Neighborhoods, vehicles weighing in excess of three tons (6,000 pounds) are prohibited on a few streets on Potrero Hill and in the Western Mission. Truck movements are also physically restricted by clearances at grade-separated intersections, generally consisting of overpasses that are parts of Highways 101 and 280.[5]
- *Overweight Corridor Program.* The SFMTA and Port of San Francisco have designated all streets near the waterfront from Pier 50 in Mission Bay to Pier 96 just south of Islais Creek Channel as an "Overweight Corridor" where vehicles with a total weight of up to 46.5 tons (93,000 pounds) are permitted. This "corridor" is designed to facilitate the cargo distribution needs of Port properties.

[5] An illustration of weight-restricted streets can be seen at: http://www.sfmta.com/cms/venf/documents/restrictedtrafficstreets_000.pdf

Figure 5-26 SFMTA Advisory Truck Routes Map and Industrial/Commercial Zoning



Source: SFMTA

Loading and Unloading, Double Parking, and Sidewalk Parking

Legal space for loading and unloading can be difficult to locate or access, and delivery drivers sometimes find it impractical or inconvenient to use. In the Eastern Neighborhoods, a perceived shortage of loading and unloading space regularly results in conflicts between delivery vehicles and motorists, transit users, pedestrians and cyclists. Often, delivery vehicles double-park in travel lanes or, sometimes, in bicycle lanes. Sometimes, delivery vehicles park on the sidewalk. These practices not only reduce convenience, comfort and capacity for other users of the street; they can result in unsafe situations, for delivery drivers themselves as well as for other users. These problems are especially acute in dense neighborhood commercial corridors such as Mission Street where there is both high demand for curbside parking and little off-street loading space.

While increased enforcement might serve to reduce these effects somewhat, under the California Vehicle Code delivery vehicles may park more than 18 inches from the curb if no curbside space is available.

On-Street Loading Spaces. In commercial zones, some curbside parking spaces are reserved for use by delivery vehicles during designated periods of time. These “yellow zones” are indicated by yellow parking meter heads, signage, and/or painted curbs. Vehicles without a commercial license plate can be cited or towed for parking in these spaces. Business owners may apply for designation of yellow zones near their establishments through the SFMTA’s Color Curb Program. Some special six-wheel truck loading zones are also available. These are designated using red meter covers and signage. Section 152.1 of the *Planning Code* defines specific off-street loading requirements for the Eastern Neighborhoods. Eastern Neighborhoods Mixed Use Districts have different off-street loading requirements than the rest of the city, as referenced in Section 152.1

Off-Street Loading Spaces. Acknowledging that larger buildings have greater loading and unloading needs, Section 152 of the Planning Code requires that some offices, retail establishments, wholesale and manufacturing facilities, hotels and residential developments provide off-street freight loading docks. However, buildings constructed prior to implementation of these requirements often do not provide sufficient space for off-street loading. Even when provided, off-street truck loading docks are sometimes not deep or high enough to accommodate large trucks. In addition, trucks sometimes have difficulty maneuvering into and out of loading docks on narrow streets.

Land Use Compatibility

In the Eastern Neighborhoods, light industry frequently shares space with residential and other commercial uses. The compatibility between these differing types of uses was a major focus of the Eastern Neighborhoods land use planning process. The land use categories created through the community planning process ensure that residents, visitors, and industrial businesses will continue to share space on Eastern Neighborhoods streets for the foreseeable future. Street design projects in mixed use areas will seek to balance the need for truck movements with streetscape upgrades that benefit other users and modes.

Neighborhoods

Historically primarily industrial areas of the Eastern Neighborhoods including the Central Waterfront, Northeast Mission and Showplace Square are envisioned by their respective area plans to transition into more mixed-use districts. Coexistence among these different user groups will require careful planning.

Mission

In the northeast Mission, infill housing already exists alongside PDR businesses. Here, narrow and one-way streets encourage parking of delivery vehicles on sidewalks. Along the commercial corridors of Mission, Valencia and 24th Streets, delivery vehicles often double-park in the roadway; on Mission and 24th this can result in delay for transit vehicles, and on Valencia, it can impede cyclists in the street's Class II lanes.

Central Waterfront

West of Third Street are enclaves of both residential and PDR uses. The area east of Third Street is dominated by heavy industrial users. Here, the entire right-of-way is often used for truck maneuvering, loading, and parking, and even when not in use, many loading docks encroach on the right-of-way. Third Street, meanwhile, is both the site of a Muni Metro light rail line as well as a major corridor for truck traffic.

Showplace Square/Potrero Hill

A former warehouse and industrial district, Showplace Square is now characterized by furniture and interior-design showrooms. Many buildings feature loading docks, and streets often lack sidewalks. The Whole Foods Market and Anchor Steam Brewing Company located at the base of Potrero Hill have off-street loading facilities; however, trucks accessing them may temporarily block transit and other vehicles as they maneuver through residential streets. Potrero Hill itself, meanwhile, has almost no industrial and relatively few retail uses, and its lack of connections to the surrounding street grid serves to discourage cut-through traffic.

South of Market

Goods movement is an especially sensitive issue in the South of Market, where residential and PDR uses have long intermingled (although more housing has been added in recent years), where much of the grid of main streets consists of broad, one-way arterials, and where numerous on- and off-ramps provide convenient access to the regional freeway network. In the Western SoMa Community Plan, much attention was devoted to mitigating the impacts on residents of high volumes of truck traffic. Along Division Street bordering the Mission and Showplace Square is the city's greatest concentration of big-box retailers. Vehicle counts conducted on Ninth and Tenth streets between Howard and Folsom and on Harrison and Bryant streets between Eighth and Ninth streets indicate that mid-day truck traffic on Ninth, Tenth, and Harrison averaged

between 40 and 50 trucks per hour, while truck traffic on Bryant was lower (under 30 trucks per hour).[6]

Issues and Opportunities for Goods Movement

The following issues and opportunities for goods movements will be considered:

- In areas with high parking occupancy, delivery vehicles struggle to find legal loading spaces. Additional loading spaces or time restrictions on deliveries may present opportunities to address this issue.
- In mixed-use districts, delivery trucks share space with passenger vehicles, pedestrians, and bicyclists. Street design in these areas will require careful attention to goods movement needs, while providing the traffic calming and amenities necessary to provide safety and comfort for other users. Both street dimensions and curb design are important considerations.
- The City may wish to adjust designated truck routes in response to neighborhood and truck circulation needs. In addition, further enforcement of designated truck routes could occur. The City may also have the opportunity to increase awareness of designated truck routes using highly visible signage.
- South of Market streets are important corridors for goods movement, and any circulation changes in that neighborhood must consider the needs of trucks. A carefully considered strategy for freight management delivery in SoMa might dovetail with other efforts to prioritize different streets for different users, or to redesign streets to enhance mobility for all users. Such a strategy would reflect the long-term visions of the Western SoMa Community Plan and East SoMa Area Plan.

[6] Count collected by the SFCTA for the Western SoMa Neighborhood Transportation Plan on December 9th, 2009.

Chapter 6. Specialized Transportation Services

6.1 Shuttles

This section provides an overview of regularly scheduled shuttle services within the EN TRIPS study area. The term "shuttle" can refer to a broad range of transportation services that are both publicly and privately provided, and which serve community organizations, private employers, and academic or cultural institutions. Shuttle vehicles range from vans to full-size motor coaches. Currently, the EN TRIPS study area includes shuttle services that serve regional, intra-city, as well as local trips. These shuttles provide connections in travel corridors that are underserved or not provided by traditional transit service.

The prevalence of private shuttle services in this area has grown a great deal in recent years. This increase is due to the growth in employment centers and new residences in the SoMa and Mission Bay neighborhoods, as well as a reflection of the fact the local transit services do not currently meet the needs of those living and working in this area. Furthermore, the gaps in the pedestrian and bicycle network limit how individuals can connect to these areas from San Francisco's primary transportation corridors. Most of the new shuttles have been implemented voluntarily by private employers and developers, but a number have also been mandated by City agencies.

In 2009, the San Francisco County Transportation Authority released a Shuttles Strategic Analysis Report (SAR). This document was designed to investigate benefits and impacts of shuttle services throughout the City and provide recommendations on how shuttles could be regulated in the future.

The report focused on mitigating the impacts that the inter-city employer shuttles have on San Francisco neighborhoods, including idling on neighborhood streets and conflict between shuttles and buses at Muni stops. The SAR recommended the creation of a partnership program that would increase communication and could lead to coordinated service planning between the different shuttle providers and City agencies. Such efforts could help reduce operational conflicts and provide an appropriate forum to address other concerns.

Existing Eastern Neighborhood Shuttles

The SFMTA performed a detailed inventory of shuttles in 2008, identifying over 30 shuttle bus providers running primarily in the downtown area[1]. Based on this inventory, shuttle providers operating within the EN TRIPS study area were contacted to update and verify their data. The majority of these services are last mile employer shuttles (described below) operating in the downtown area. An updated and area-specific diagram of these shuttle services is shown in Figure 6-1, along with transit hubs in the area. Operating organizations include residential and

[1] SFMTA, Existing Shuttle Service Inventory for San Francisco, April 2008.

commercial developments, employers, and other institutions. Existing shuttle services fall into three categories:

Regional corporate shuttles. A group of shuttle services provide transportation to the San Mateo Peninsula or within Santa Clara County, circulating between residential neighborhoods in San Francisco before proceeding to their commute destinations via the regional freeways. This type of service typically has dedicated stop locations and runs with regular frequency during peak commute hours. Services typically utilize full-size, 50-person-capacity, motor coach-type vehicles. Following the publication of the draft Shuttles SAR, the SFCTA is working with a group of peninsula shuttle operators to address potential shuttle coordination opportunities. During the summer of 2009, regional bus operators developed "Muni First" guidelines that outlined their standard operating policies with regard to Muni bus conflicts. After these procedures were implemented, reported Muni bus/regional bus conflicts were significantly reduced.

Continued coordination between private shuttles and Muni would ensure that future growth in either transportation service would be complimentary.

Last mile employer shuttles. One of the most common barriers to transit use is the connection, whether by biking, walking, automobile, or other transit service, to or from a passenger's transit stop and ultimate destination. This connection is often referred to the "last mile." In the study area a group of shuttle services provide "last mile" connections between regional transit providers, such as BART or Caltrain, and major employers. These services have no intermediate stop locations and run during peak commute hours. They are prevalent in the SoMa district and around Showplace Square.

Most shuttle services operating in the EN TRIPS plan area use cutaway or minivan-type vehicles with a 25-person capacity. They are also typically closed systems, requiring identification by passengers to confirm affiliation with the shuttle provider before boarding. The local developments and companies that operate major shuttle services include:

- 600 Townsend Street
- Adobe Systems
- 650 Townsend
- Dolby Laboratories
- Colliers International at 350 Rhode Island Street
- Bank of America

There are also a number of new shuttle services operating in the EN TRIPS area. First, on January 5, 2010, the Board of Supervisors approved a shuttle connecting San Francisco General Hospital and Mission Bay campuses with transit hubs at the 22nd Street Caltrain Station, the Fourth and King Caltrain Station, and the Transbay Terminal, with the possibility of connecting with the Embarcadero BART. The shuttle is funded with a $100,245 grant from the Bay Area Air

Quality Management District[2]. Second, a new Mission Bay shuttle offering connections between Powell Street BART station and Owens Street in Mission Bay was recently launched by the Mission Bay Transportation Management Association. Intermediate stops include the Fourth and King Caltrain Station and Mission Rock at Fourth Street. The shuttle is free for Mission Bay employees and operates on weekdays every 15 to 30 minutes between 7 a.m. and 10 a.m. and 3:45 p.m. and 8 p.m. Additional shuttle service between Embarcadero BART and China Basin is also provided on weekdays between 6:45 a.m. and 6:45 p.m.

Advent and Adobe, both employers in the Showplace Square plan area, have shared shuttle capacity since 2008. Discussions with these organizations revealed that the sharing arrangement has been beneficial in terms of reducing costs. Yet, a major hurdle in implementing a sharing arrangement often comes from administrative, liability, and intellectual concerns. Thus, it was recommended that a third-party, such as a transportation management association, should be involved to facilitate any coordination effort. Using a third-party operator would eliminate the burden of responsibility on any one organization and could eliminate any related proprietary/liability issues. Coordination could also include technical assistance and planning guidance from the SFMTA.

Intra-city institutional shuttles. Another group of shuttle services provide transportation from San Francisco neighborhoods to the campuses of institutions, such as the Academy of Art University or the University of California San Francisco (UCSF). Both of these services are reserved for employees/members of the operating organization.

Five institutional shuttle systems operate both inside and outside of the EN TRIPS study area. They are:

- SF Academy of Art University
- PresidiGo
- California Pacific Medical Center
- UCSF Transportation
- California College of Arts

Issues and Opportunities for Shuttles

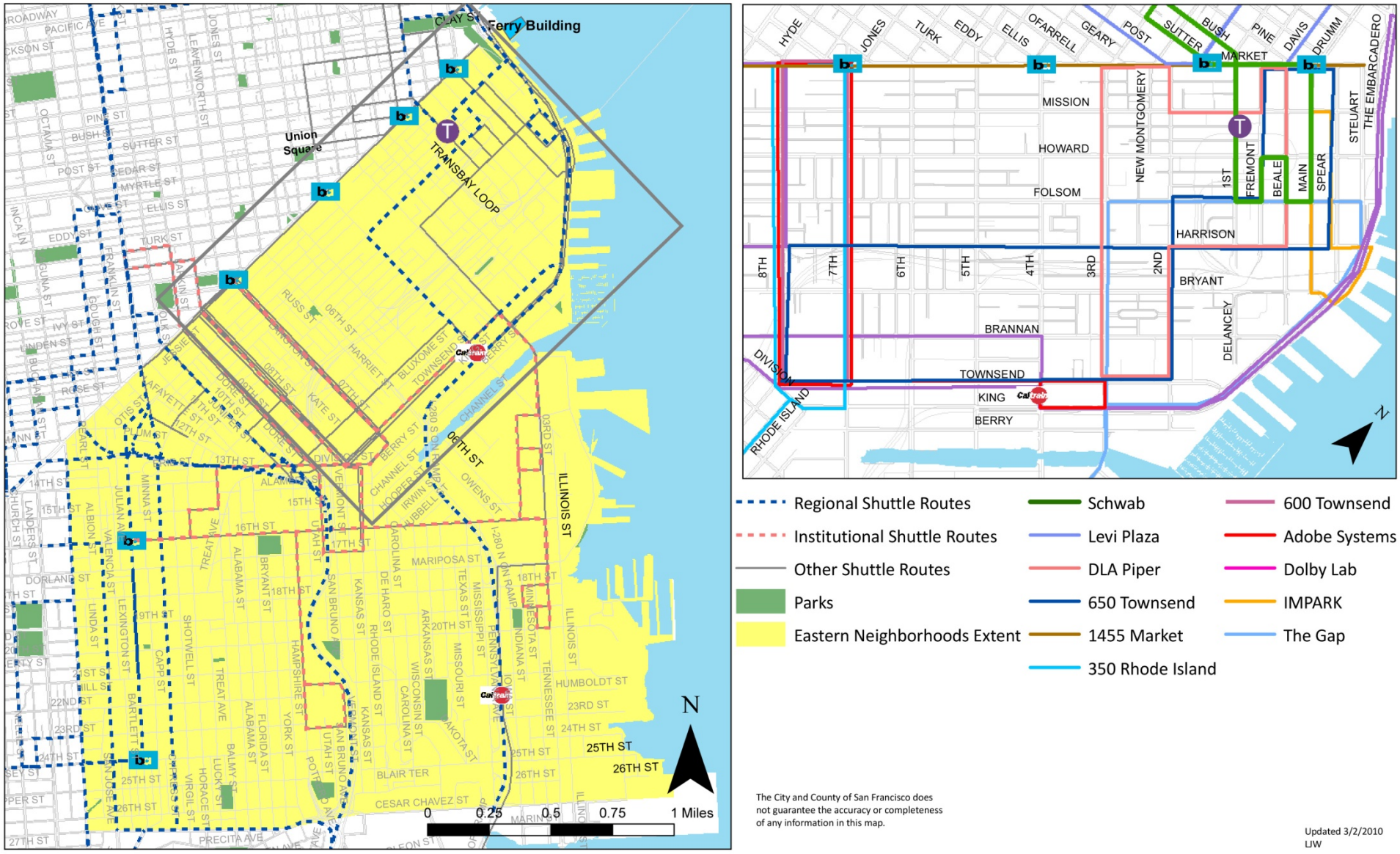
The following issues and opportunities for shuttles will be considered:

- Shuttles can be in conflict with SFMTA transit buses at bus stops. In many areas, especially residential streets where curbside space is at a premium, shuttles will often use existing Muni bus stops to pick up or unload passengers. Such shuttle behaviors can delay Muni service, as well as create safety concerns with passengers potentially being dropped off or picked up outside of the bus zone. Increased enforcement of encroachment into Muni bus stop zones by private vehicles may be needed.

[2] http://www.sfexaminer.com/opinion/blogs/under-the-dome/Supes-OK-brand-new-shuttle-service-80743697.html

- Similarly, larger shuttle vehicles may conflict with local residential traffic if they deviate from designated truck or bus routes to pick up or drop off passengers. This is especially problematic with shuttle services that are not on a fixed route.
- Shuttles serving downtown and South of Market destinations provide overlapping routes. Some of these shuttles may benefit from shuttle consolidation due to the overlapping nature of their routes and because many services operate below their full capacity, even during peak periods. Consolidation of these shuttles into a smaller group of services could significantly improve operational efficiencies while reducing overall operation costs. However, consolidation may not be efficient or cost-effective for many existing operators.
- Most shuttle systems are private and do not offer transportation to the general public. It is possible that a consolidation effort that opened the service to all trips, not only private employer trips, could leverage additional growth for retail and other uses as opposed to office employees. The transition from a privately funded, closed system to one that would be publicly funded and open to the public would represent a significant public policy initiative and would need to be vetted and justified. In all cases, SFMTA service planning staff could play a central role in advising on service planning, and private funds could be used as seed funding to leverage grant funds from foundations, regional agencies, and other sources. However, for passengers of the employment focused shuttles that now provide the private, point-to-point, non-stop service, the transition to a more open service may be unwelcome.
- Regional shuttles would benefit from the stop sharing and registration for purposes of coordinated service planning. However, consolidated service is probably not feasible for most of these operators.

Figure 6-1 Eastern Neighborhoods Shuttle Systems



The City and County of San Francisco does not guarantee the accuracy or completeness of any information in this map.

Updated 3/2/2010
LW

6.2 Taxis

Taxis serve a unique role in the city's overall transportation system. By allowing door-to-door travel by individuals and small groups of passengers, taxis can access destinations that fixed transit routes do not. Furthermore, after hours and time sensitive trips are especially well-served by taxis.

San Francisco has 1,471 taxis operating on city streets run by 32 different taxi companies. In March 2009, the Taxicab Commission merged with the SFMTA as the Division of Taxis and Accessible Services (DTAS). The SFMTA is now in charge of regulating the taxi industry and other motor vehicles for hire in San Francisco. In December of 2009, the SFMTA proposed significant revisions to the section of transportation code (Division II, Article 1100) that governs motor vehicles for hire.[3] One of the recommendations was to change how taxi medallions are distributed to an auction system. Those proposals are expected to be evaluated and refined in 2010.

Figure 6-2 provides an illustration of most taxi stand locations in San Francisco. A taxi stand is a curbside area designated for the exclusive use of taxis, at which taxis wait for passengers. Taxi stands can currently be found at most hotels and medical centers and a select number of other locations such as AT&T Park, the Moscone Center, and City Hall.

The vast majority of taxi stands in San Francisco are located in the downtown core. With respect to Eastern Neighborhoods, most taxi stands are concentrated on the Market Street, Third Street, and Fourth Street corridors in SoMa. Depending on demand for taxi services, there may be opportunity for taxi stand expansion in the study area.

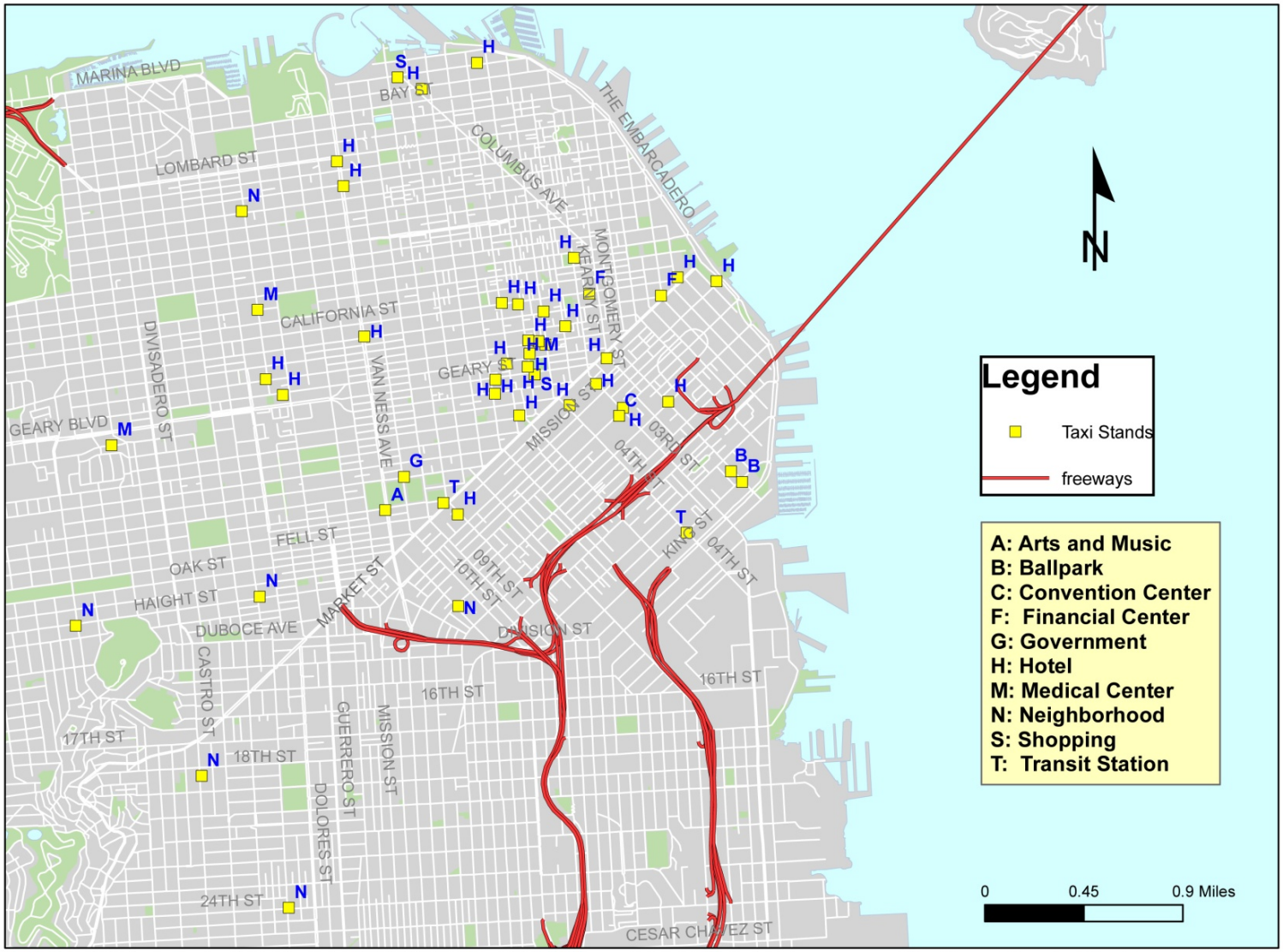
In addition to the taxi stands illustrated in Figure 6-2, a taxi stand has recently been added near the 24th Street Mission BART Station. The 16th Street BART station is not currently served by taxi stands. The Fourth and King Caltrain Station is served by a taxi stand, but the 22nd Street Caltrain station does not have a taxi stand and could be another potential location. The UCSF campus in Mission Bay stands out as a candidate for a potential taxi stand as this land use will generate a significant number of people who require on-demand, door-to-door travel. Finally, additional stands near SF General Hospital might facilitate better taxi service to the hospital.

Issues and Opportunities for Taxis

New taxi stands may be warranted in high demand areas. EN TRIPS may identify areas in the Eastern Neighborhoods that would be good candidates for the establishment of taxi stands.

[3] The SFMTA Board adopted revised taxi regulations which went into effect on June 19, 2009.

Figure 6-2 San Francisco Taxi Stand Locations



SFMTA | Municipal Transportation Agency

Sam Fielding
SFMTA Planning
Jan. 11, 2010

The City and County of San Francisco does not guarantee the accuracy or completeness of any information in this map.

6.3 Car Sharing

Car sharing is a form of car rental where individuals can use cars for shorter periods of time. Given the fee structure, car sharing is typically not cost-effective for longer trips or daily commuting, but is ideal for localized trips. Rates vary by company, but usually involve an application fee, annual membership fee, and then rental charges based on the time rented, distance driven, time of day, and day of the week. Gas, insurance, and vehicle maintenance are usually included in the fees. Most companies also offer different plans based on the travel habits of the customer, as well as a variety of discounted plans and rates for employers and major institutions (universities, hospitals, etc.). Finally, car sharing vehicles are made available at multiple locations (known as "pods") with multiple vehicle types (hybrids, compacts, SUVs, trucks, etc.) to facilitate access and meet a variety of customer needs.

Currently, there are two car share providers operating in San Francisco: City CarShare and Zipcar. City CarShare is a Bay Area non-profit, while Zipcar operates in numerous other cities. Zipcar and City CarShare offer a variety of plans to both individuals and businesses. In the Eastern Neighborhoods, both companies have several dozen dispersed pickup locations with higher concentrations of vehicles in certain neighborhoods.

As shown in Figure 6-3, the number of vehicles at each location varies from one to ten vehicles. The vast majority of car share pods are located in the Mission and SoMa study areas. In the Mission, the Valencia, 24th, and Mission Street corridors have more than a dozen car share pods, with a few dozen of cars in total. In SoMa, most of the car share pods are located along the Second, Fifth, Mission, and Howard Street corridors. A number of pods are also located around the Fourth and King Street Caltrain station. Conversely, there are a limited number of car share pods in the Potrero Hill/Showplace Square and Central Waterfront study areas.

This distribution is indicative of current conditions, but also offers an insight into potential for future growth. Currently, there is not enough demand for car sharing services in Potrero Hill and the Central Waterfront. This is reflective of population density, land uses, and proximity to transit, but is also connected to higher car ownership rates and the relative ease with which can find a parking spot in these neighborhoods. As the EN study area begins to change, there is certainly room for growth of car sharing facilities. Potential locations for new or additional car share vehicles include transit stations and major transit corridors, especially 22nd Street Caltrain station and T Third Street light rail corridor; Mission Bay; SF General Hospital; 16th and 20th Street corridors east of Potrero Avenue; Showplace Square near Seventh Street corridor; Sixth Street near Howard and Folsom Streets; and Cesar Chavez Street east of US-101.

Finally, it is important to note that City Planning Code now requires that in "newly constructed buildings containing residential uses or existing buildings being converted to residential uses, if parking is provided, car-share parking spaces shall be provided."[4] The requirements are as follows: 0-49 units: 0 spaces; 50-200 units: 1 space; 200 plus units: 2 spaces, plus 1 for every

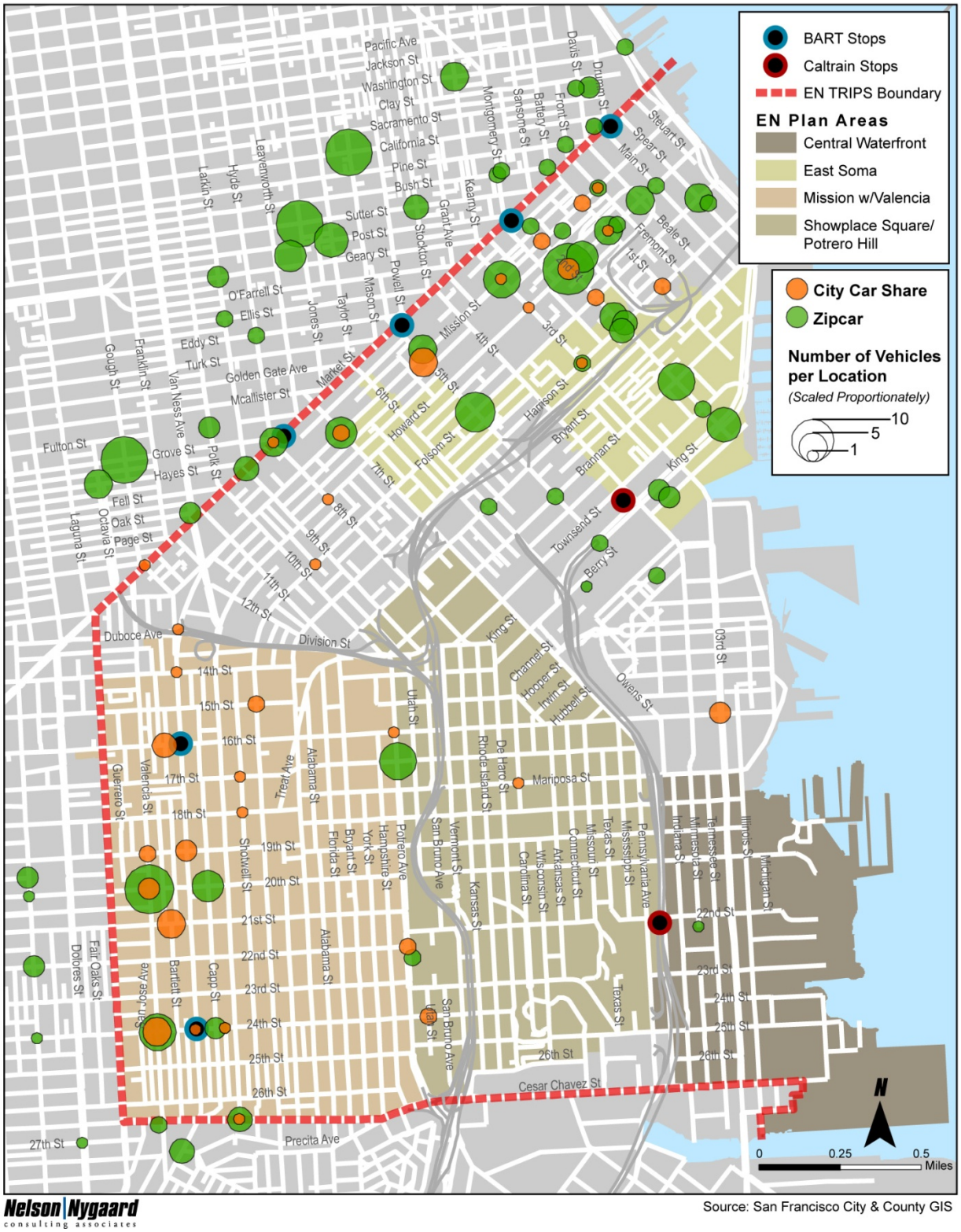
[4] San Francisco Planning Code. Article 1.5, Section 166.

200 dwelling units over 200 units. Car sharing spaces are also required for certain non-residential zones in certain zoning districts. See the Planning Code for additional information.

Issues and Opportunities for Car Sharing

Decisions about placement of car sharing vehicles are made by private entities, City Carshare and Zipcar. However, the City may be able to assist in providing car sharing parking spaces if high-need areas are identified.

Figure 6-3 Eastern Neighborhoods Car Sharing Pod Locations



Chapter 7. EN TRIPS Next Steps

Study Process

This report has identified a wide range of existing transportation conditions in the EN TRIPS study area. The list of existing needs will be further refined through public outreach. Once existing needs have been fully cataloged, the SFMTA study team will proceed with the following steps:

- **Future Conditions Analysis.** Working in close collaboration with the San Francisco County Transportation Authority, The SFMTA project team will develop a future conditions analysis that will evaluate the potential of the existing transportation system to meet long term expected needs. In particular, the future conditions analysis will focus on the residential and commercial growth planned for in the Eastern Neighborhoods land use plans, as well as the growth expected in neighboring districts such as Mission Bay and Rincon Hill.
- **Transportation Project Concept Development.** Following the completion of the future conditions analysis, the SFMTA project team will work with stakeholders to develop and prioritize a group of transportation projects and programs that best address the highest priority needs. These projects will include up to three major capital projects, but may address other needs as well.
- **Transportation Project Refinement and Design.** For priority projects, the SFMTA project team will work with stakeholders to design transportation improvement projects that help to meet the identified needs.
- **Funding and Implementation Strategy.** The SFMTA project team will create a funding and implementation plan for the proposed priority projects.
- **Environmental Review Document.** For the highest priority project or projects, the study team will perform a full environmental review to clear the project or projects for implementation under the California Environmental Quality Act (CEQA).

Throughout this process, the SFMTA team will be informed and guided by participation from the following key stakeholder groups:

- The general public, including Eastern Neighborhoods residents, workers, and other stakeholders, through a series of community workshops at key points in the study.
- The Eastern Neighborhoods Community Task Force (in coordination with Urban Ecology).
- The Eastern Neighborhoods Citizen's Advisory Committee.
- The EN TRIPS Technical Advisory Committee.

Preliminary Evaluation Framework

In order to evaluate the performance of the transportation system and consider transportation improvement projects that emerge from the existing and future conditions analysis, the SFMTA project team will rely on the system evaluation framework summarized in Figure 7-1. This framework involves a mix of qualitative and quantitative criteria. As described in the framework, EN TRIPS will evaluate the performance of the system according to the following key values:

- **Integration and access**. The transportation system maximizes safety for all users, improves efficiency of movement, optimizes connectivity between modes, and coordinates efficiently with land uses as planned in the Eastern Neighborhoods land use plans.
- **Community**. The transportation system enhances the quality of the public realm and responds to community aspirations.
- **Economy.** The transportation system supports the economic development goals in the Eastern Neighborhoods land use plans.
- **Environment.** The transportation system reduces total vehicle miles traveled and greenhouse gas emissions, and minimizes other environmental effects.
- **Deliverability.** EN TRIPS will prioritize projects that the City can design, clear environmentally, and build in a timely and cost effective way. EN TRIPS will also strategically select projects at the appropriate scale: corridor-level projects that address the needs of the Eastern Neighborhoods as a whole, but not regional-scale investments that depend heavily on regional or statewide policy decisions.

Figure 7-1 EN TRIPS System Evaluation Framework

Goal	Evaluation Criteria	Metric
Integration and Access		
Safety	Minimize number/severity of collisions	Does project address collisions hot spot identified in SWITRS data? (Yes/No) Does project design reduce 85th percentile motor vehicle speeds to 25 mph or below?
	Enhance perception of safety	Qualitative assessment
Circulation	Reduce total person delay	Modeled person-hours of delay from optimized corridor travel time
	Reduce transit delay	Modeled transit delay
	Improve transit reliability	Modeled transit reliability
	Improve reliability of motor vehicle average travel time	Modeled travel-time consistency
Multimodal network completeness	Provide complete streets (According to coordinated network typology)	Network analysis/Qualitative assessment of according to coordinated network typology
	Optimize network connectivity (All modes have complete networks)	Network analysis/Qualitative assessment
Land use coordination	Support movement of people to, from, and within existing and planned population centers	Qualitative assessment of existing and project population densities.
Community		
Quality of public realm	Adhere to Better Streets plan goals, guidelines, and typology	Qualitative assessment using Better Streets Plan guidelines
Community aspirations	Respond to needs expressed through community participation	Qualitative assessment
	Supports community goals expressed through Eastern Neighborhoods community planning process	Qualitative assessment
Economy		
Economic Development	Supports economic development criteria as adopted in EN plans	Qualitative assessment
	Supports movement of goods to, from, and within existing and planned commercial and PDR centers	Qualitative assessment of existing and projected commercial corridors and job centers.
Environment		
Climate/Air Quality	VMT reduction/local air quality improvement	Modeled change in per capita VMT
Project Deliverability		
Scale	Project is appropriately scaled for EN TRIPS analysis	Project is appropriately scaled for EN TRIPS analysis
Timeliness	Project leverage	Opportunity to coordinate with other planned projects.
	Project readiness and timeline	Estimated implementation time frame in years
Funding	Implementation cost/benefit	Estimated implementation budget in dollars/priority rank in this evaluation
	Design/environmental review cost	Estimated percentage of EN TRIPS design and analysis budget
	Funding opportunities	Meets criteria for known funding source (y/n)

Note: criteria are not listed in ranked order of importance

Appendix A. Related Plans and Projects

Prepared by Urban Ecology

General Transportation

Countywide Transportation Plan

Location: City-wide *Sponsor*: SFCTA

Status: Released *Timeline*: July 2004

The Countywide Transportation Plan is the city's blueprint for transportation system development and investment over the next thirty years. The Plan is consistent with the broader policy framework of San Francisco's General Plan and its Transportation Element. The Countywide Transportation Plan further develops and implements General Plan principles by identifying necessary transportation system improvements based on technical review of system performance; extensive public input on key issues and needs; and analysis of financial opportunities and constraints.

San Francisco General Plan - Transportation Element

Location: City-wide *Sponsor*: SF Planning

Status: Released *Timeline*: June 1996

The Plan for Transportation deals with the local and regional transportation system for San Francisco. The plan sections are (1) General, (2) Regional Transportation, (3) Congestion Management, (4) Vehicle Circulation, (5) Transit (6) Pedestrians, (7) Bicycles, (8) Citywide Parking and (9) Goods Movement. Each consists of objectives and policies regarding a particular segment of the master transportation system and related maps which describe key physical aspects. Since these various travel systems often parallel each other, they must be examined comprehensively before improvements can be made.

Eastern Neighborhoods Community Plans

Location: Eastern Neighborhoods *Sponsor*: SF Planning

Status: Released *Timeline*: 2001 - 2008

The San Francisco Planning Department has completed rezoning and area plans for the Eastern Neighborhoods of San Francisco. The community planning process sought to balance the former industrial uses of the area with the new competing residential, commercial, and arts-based uses. The central goal of the plans is to balance job creation with new housing stock, working towards "Complete Neighborhoods." Recommendations include transitioning portions of the former industrial uses into mixed-use zones with new housing and new residential zones.

Neighborhood Planning

Mission Bay Redevelopment Plan

Location: Mission Bay *Sponsor*: SF Redevelopment

Status: Ongoing *Timeline*: 1998 - Present

SFRA designated North and South Mission Bay as a redevelopment area in 1998, initiating a development plan for 6,000 residential units, new retail, a UCSF research center and hospital, and other uses. This plan also details the creation of infrastructure in Mission Bay, such as parks, roadways, and improved streetscapes. Total investment anticipated for the completion of all projects is around $4 billion. Mission Bay is expected to create 31,000 new permanent jobs, as well as hundreds of temporary construction jobs. Several of the projects have been completed to date.

Mission District Streetscape Plan

Location: Mission District *Sponsor*: SF Planning

Status: Ongoing *Timeline*: April 2008 – Present

The Mission Streetscape Plan offers recommendations on streetscape improvements in the Mission District based upon community input. These include new sidewalks, crosswalks, bicycle amenities, public space, and street landscaping, among others. The plan is organized by street typology (residential, commercial, etc.), and offers design suggestions for each type as well as specific streets that may benefit from these changes. Aside from streetscape elements, there are some site-specific projects like a new weekly market on Bartlett Street, and a special design plan for Mission Street.

Potrero Hill Traffic Calming Plan

Location: Potrero Hill *Sponsor*: SFMTA

Status: Release *Timeline*: December 2009

The purpose of this project was to improve access and safety for pedestrians, transit users, and motorists in the neighborhood. The project collected detailed traffic speed and volume data throughout the study area, compared it with historical data, and organized two neighborhood-wide community workshops. It recommends several strategies to calm vehicular traffic and improve the pedestrian environment in the neighborhood. The project aims to encourage through traffic to remain on arterials like 16th and Cesar Chavez Streets rather than cutting through Potrero's residential areas, calm traffic on residential streets without shifting traffic between residential streets, improve safety and access, and accommodate Muni and emergency vehicles.

Pier 70 Master Plan

Location: Central Waterfront *Sponsor*: Port of San Francisco

Status: Public Review Stages *Timeline*: 2009 - Present

Pier 70 is a 65-acre site along the Central Waterfront which has been identified as a future National Historic District due to its long history of ship-building and other industrial uses. This plan attempts to adaptively rehabilitate and reuse vacant buildings, create new open space and public amenities, and assist local ship repair companies to continue operating. This plan also encourages infill development and environmental remediation of the pier's brownfield sites. Its preferred master plan is currently available for public review.

Showplace Square Open Space Planning Process

Location: Showplace Square/Potrero Hill *Sponsor*: SF Planning

Status: Ongoing *Timeline*: Jan. 2009 – Sep. 2010

The Showplace Square Open Planning Process was established to identify and design open spaces contained in the Eastern Neighborhoods Community Plans. This process will attempt to create a clear Open Space plan for the area, develop models, and obtain environmental clearance for those projects. The desired completion date for outreach, planning, modeling, and environmental clearance is September 2010.

Western SoMa Community Transportation Plan

Location: West SoMa *Sponsor*: SFCTA

Status: Study underway *Timeline*: Spring 2009 – Spring 2010

The SFCTA is currently conducting a study which aims to review transportation issues in West SOMA, defined between 4th and 12th Streets and Howard and Townsend Streets. Through collaboration with the West SoMa Task Force, SFCTA is actively engaging the community stakeholders to assess transportation impacts and needs. The final plan will create conceptual designs and cost estimates for transportation improvement projects.

West SoMa Community Plan

Location: West SoMa *Sponsor*: SF Planning

Status: Released *Timeline*: 2008 – Present

The San Francisco Planning Department has been working with the Western SoMa Citizens Planning Task Force to enhance the character and diversity of the neighborhood and provide streetscape, transit, and open space improvements there. The Plan identifies land use, transportation, and design opportunities for the neighborhood, based upon a collaborative decision-making process.

Corridor Planning

Market Street Draft Strategic Analysis Report

Location: Downtown *Sponsor*: SFCTA

Status: Released *Timeline*: May 2009

This SAR investigates strategic options for improving transportation and wider economic conditions on Market Street, including consideration of possible automobile restrictions. Automobile restrictions appear necessary but only as part of a comprehensive approach to transform Market Street into a "great street". A central tenet of the transportation approach discussed in this SAR is to develop Market Street as a "shared space" where all travelers have a heightened awareness of, and respect for, one another, particularly for non-motorized modes of transportation. A phased approach is recommended to pilot, evaluate, and expand transportation and other improvement measures. The planned resurfacing of Market Street in 2013 is a major opportunity to transform the street, and a multiagency effort would be required to implement significant changes to the street by this date.

Market Street Study and Action Plan

Location: Downtown *Sponsor*: SFCTA

Status: Ongoing *Timeline*: 2004 - Present

This Study examines Market Street between Justin Herman Plaza and Octavia Street in order to address lengthy transit travel time and reliability, pedestrian circulation and safety, bicycle facility, and necessary motor vehicle trips. The Action Plan highlights several recommendations, the majority of which are streetscape improvements for new bicycle routes and pedestrian enhancements. Many of the projects recommended by this plan have been completed, with most others either underway or in the design phase.

16th Street Corridor Strategic Analysis Report

Location: Mission, Showplace Square *Sponsor*: SFCTA

Status: Released *Timeline*: Dec 2005

This SAR evaluates the 16th Street Corridor's ability to serve the increased transportation demands that are anticipated as jobs and residential units increase throughout Showplace Square, the Mission, and Mission Bay. Added housing will increase the need for 16th Street to serve local, neighborhood trips, while the development of Showplace Square and Mission Bay will generate longer distance, freight and commuter trips. Reduction of automobile commuter trips will require supply side transportation strategies, including implementing TPS, developing pedestrian infrastructure, reconnecting the street grid network, and implementing a grade separation with Caltrain. Other strategies include ensuring that new development adheres to "transit first" principles, especially a market-based approach to parking management.

Folsom Boulevard Strategic Analysis Report

Location: SoMa *Sponsor*: SFCTA

Status: Released *Timeline*: March 2006

The Folsom Boulevard SAR examines the re-designs of Folsom Boulevard and their viability as a one- or two-way thoroughfare in the context of changing land uses in SoMa. It concludes that re-design is necessary, and that conversion to a two-way thoroughfare is most appropriate, based upon existing and projected congestion levels. Folsom Boulevard has been re-imagined as a civic or green boulevard for the Eastern Neighborhoods of San Francisco, with new transit, new bicycle lanes and improved streetscape.

Cesar Chavez Street Redesign

Location: Mission District *Sponsor*: SF Planning

Status: Released *Timeline*: May 2008 – Spring 2009

The Cesar Chavez Street Redesign envisions a safer, more attractive, and more ecological Cesar Chavez Street. SF Planning has planned streetscape improvements, new bicycle lanes, and landscaping for Cesar Chavez between Hampshire and Guerrero Streets. Another significant objective of the study is to avoid re-directing traffic onto other streets in the neighborhood after these streetscape and bicycle improvements have been made.

Mission Street Corridor Study

Location: Mission District *Sponsor*: SF Planning

Status: Ongoing *Timeline*: through Spring 2010

At the request of the Board of Supervisors, the Planning Department is conducting a study of whether higher heights on Mission Street and the smart growth goals of increased density around transit can be balanced with the other important city goals of providing more affordable housing and protecting and incentivizing local businesses in order to achieve sustainable development that benefits existing residents and businesses as well as accommodates future growth.

High-Speed Rail and Transbay Transit Center

California High Speed Rail Plan

Location: SoMa *Sponsor*: CHSRA

Status: Ongoing *Timeline*: Long term

The California High-Speed Rail Authority has proposed a 220-mph rail corridor throughout California, including San Francisco. It will link California's major business, tourism, and population centers with competitive travel times. The rail corridor is currently in the planning process, though federal and state funding have been secured for the construction of the first phase segments. The Transbay Transit Center, located in SoMa, will serve as a multi-modal transit center and will

include San Francisco's high-speed rail terminal. There is no finalized timeline for the corridor's construction, but completion is over ten years away.

Transit Center District Plan

Location: East SoMa *Sponsor*: SF Planning

Status: Ongoing *Timeline*: 2007 - Present

SF Planning has received funding from SFCTA to draft a comprehensive plan for the area around the Transbay Terminal. Increased development value from proposed development will help fund the construction of the Transit Center itself, as well as other public improvements. Consistent with the Transbay Redevelopment Plan, this new effort will focus on both private properties and properties owned or to be owned by the Transbay Joint Powers Authority around the Transit Center itself. The plan's objectives include:

- Build on the Urban Design Element and Downtown Plan, analyze modifications to the downtown form based on new Transbay and Rincon Hill plans and recent development.
- Capitalize on transit investment with appropriate land uses in the downtown core.
- Set guidelines and standards for the provision of public amenities.
- Generate revenue for the Transbay Transit Center project and other public improvements.
- Publication of a draft plan was expected in early Summer 2009 but has not yet been posted.

Transbay Transit Center Plan

Location: East SoMa *Sponsor*: TJPA

Status: Released *Timeline*: 2005 - 2014

The Transbay Transit Center will be a regional and statewide transportation center in the heart of San Francisco, linking eight rail and bus lines that serve the region, including California high-speed rail. This Plan will build on the City's 1985 Downtown Plan that envisioned the area around the Transbay Terminal as the heart of the new downtown. Project construction is currently underway and project completion is expected in 2014. This plan is coupled with the Caltrain Extension Plan and a neighborhood redevelopment plan by the SFRA.

Transbay Streetscape and Open Space Plan

Location: East SoMa *Sponsor*: SF Redevelopment

Status: Ongoing *Timeline*: 2003 - 2006

This concept plan addresses the public realm within a redevelopment project area of approximately 40 acres connected through a network of ten major streets and six public alleys in the Transbay Transit Center area. Included are a neighborhood park and innovative uses below bus and freeway ramps that connect to the Bay Bridge. The project boundaries generally span

from east to west between Second and Spear Streets, and from north to south between Mission and Folsom Streets.

Public Transit

A Vision for Rapid Transit in San Francisco

Location: City-wide Study *Sponsor*: SFMTA

Status: Released *Timeline*: 2002

SFMTA completed a report in 2002 envisioning the future of MUNI in San Francisco. It focuses on tools that MUNI may use to make its service quicker and more reliable, including BRT (Bus Rapid Transit), Light Rail, and Transit-Preferential Treatments (signal timing, bus bulbs, transit-only lanes, etc.). It makes some recommendations in the Eastern Neighborhoods, including Potrero-San Bruno, SOMA, and Van Ness-Mission. Many of these recommendations have been included in the more recent Transit Effectiveness Project (TEP) completed by SFMTA in 2008.

Transit Effectiveness Project

Location: City-wide *Sponsor*: SFMTA

Status: Released *Timeline*: May 2006 – Oct 2008

The Transit Effectiveness Project is a review by SFMTA of public transit in San Francisco. Recommendations in the report will make MUNI service quicker and more reliable. These might include route changes, route extensions, increased service on certain routes, or the elimination of routes due to low ridership. MUNI also hopes to improve upon their evening network for more frequent service after PM peak hours, and improve regional connections by adding key extensions to regional transit like BART. SFMTA will begin changing MUNI corridors and service throughout the city in as early as October 2009.

Van Ness BRT Feasibility Study

Location: Van Ness Corridor, Mission *Sponsor*: SFCTA, SF Planning

Status: Released *Timeline*: 2006

The Van Ness BRT corridor was first presented in the MUNI Vision for Rapid Transit project of 2002. This SFCTA study, released in 2006, examined the feasibility of BRT on Van Ness and several different designs for a BRT corridor. The report found that several of the BRT designs would have significant transit benefits and little negative impact. The next step is to conduct Environmental Analysis for each of the designs, and construction may begin as early as 2011. A Citizens Advisory Committee (CAC) has also been formed to meet quarterly and discuss the environmental study process.

Bicycle

San Francisco Bicycle Plan

Location: City-wide Plan *Sponsor*: SFMTA

Status: Under legal review *Timeline*: 2010

SFMTA has updated the 1997 Bike Plan in their 2009 Plan, which was approved in June 2009 by SF Planning. The objective is to develop a plan for a safe, inter-connected bicycle network in the city, so that cycling and walking become attractive alternatives to automobile transportation. The plan calls for 34 new miles of bike lanes, thousands of new bike racks, programs to encourage bike access to transit, marking bike lanes with color or "sharrows", and more. The plan also includes several specific bicycle infrastructure projects in the Eastern Neighborhoods.

Bicycle Access and Parking Plan (formerly Caltrain Bicycle Master Plan)

Location: SoMa *Sponsor*: Caltrain

Status: Released *Timeline*: 2008

Only 8% of Caltrain riders reach stations by bicycles daily, and Caltrain is seeking to accommodate more cyclists at each of its stations throughout the Bay Area to encourage new cycling commuters. This plan focuses on specific improvements that can be made at each station, including the San Francisco Caltrain station. It also examines the possibilities of programs like bike-sharing, real-time onboard bicycle occupancy, and a folding bike subsidy.

Mission Creek Bikeway and Greenbelt Concept Plan

Location: Potrero Hill, SoMa *Sponsor*: Madrina Group, MTC

Status: Ongoing *Timeline*: 1991 - Present

The Mission Creek Bikeway & Greenbelt aims to replace land previously used by the Southern Pacific Railroad beside the Mission Creek Channel. Planned improvements range from bicycle boulevards to painted bike lanes, ending in Mission Creek Park. The plan also recommends traffic calming and other streetscape improvements. There is no project timeline available.

Pedestrian

Better Streets Plan

Location: City-wide Plan *Sponsor*: SF Planning

Status: Ongoing *Timeline*: February 2006 - Present

The Better Streets Plan has created a set of guidelines and recommendations for an improved pedestrian environment in San Francisco. The goals for the plan include new open space, supporting local shopping districts, ensuring accessibility for all San Francisco residents, and other quality of life improvements. Streetscape improvements like new landscaping, bus shelters,

and traffic calming elements (bulb-outs, planted medians) are also recommended design elements of this plan.

Vehicle

Congestion Management Program 2009

Location: City-wide Study *Sponsor*: SFCTA

Status: Released *Timeline*: 2005

Congestion management goals are reinterpreted here (within the constraints of State law) to add more value to San Francisco's transportation planning process. By reinterpreting congestion management as maximizing person throughput, residents can capitalize on the City's significant supply of transit services, increased densities, and pedestrian-friendly environment.

Mobility, Access and Pricing Study

Location: Downtown, SoMa *Sponsor*: SFCTA

Status: Ongoing *Timeline*: Dec 2008 – Present

The County Transportation Authority is conducting a Congestion Pricing study after receiving a $1 million study grant from the Federal Highway Administration. It will make policy recommendations about congestion pricing in the downtown area of the city, including SOMA.

On-Street Parking Management and Pricing Study

Location: Downtown, SoMa, Mission Bay *Sponsor*: SFCTA, Central Waterfront, Mission

Status: Released *Timeline*: June 2009

The On-Street Parking Management and Pricing Study examines current parking policies and pricing, existing parking supply, and revenue. Recommendations include better parking enforcement, new technologies for meters and payment, and the use of prices to improve parking management. This study relates to several of the Eastern Neighborhoods, including most of SOMA, Mission Bay, Central Waterfront, and Mission and Valencia Streets in the Mission.

SF*park* Smart Parking Management Program

Location: Mission District, East SoMa *Sponsor*: SFMTA

Status: Ongoing *Timeline*: May 2009 - Present

SF*park* creates more availability within the existing parking supply. Its main strategies are:

- Make parking more convenient by offering new payment options and longer time limits
- Increase parking availability by providing more information to direct drivers to available spaces

- Adjust prices to redistribute parking demand, by either shifting parkers to blocks, lots, or garages where spaces are available or encouraging people to park at off-peak times

There are three SF*park* pilot areas in the Eastern Neighborhoods.

Mission Bay Case Study for Parking Management (SFCTA, MTC)

Location: Mission Bay *Sponsor*: SFCTA, MTC

Status: Released *Timeline*: 2004 - 2006

This study of parking in Mission Bay was part of a larger study by the MTC on reforming parking policy to support smart growth in San Francisco. It examines current and future parking supply and other modes of transportation in the area. The reports' recommendations include emphasis on smart growth alternatives to automobile use, such as non-motorized transportation, parking caps, and pricing alternatives.

Other

4th and King Railyards Study

Location: SoMa, Mission Bay, Potrero Hill *Sponsor*: SF Planning, TJPA, SFRA, PJP

Status: Released *Timeline*: 2006 – 2009

The City Design Group of SF Planning is producing a study and concept plan for air-rights development of the 4th/King Railyards. These railyards are located within portions of SOMA, Mission Bay, and Potrero Hill. The study will evaluate increased development will fund public improvements, especially the Caltrain extension to the Transbay Terminal. It will also include implementation mechanisms of their concept plans.

SFCTA Shuttles Strategic Analysis Report

Location: City-wide Study *Sponsor*: SFCTA

Status: Released *Timeline*: Nov 2008 – January 2010

The County Transportation Authority conducted a study on usage of shuttles in San Francisco. It examined private shuttle services, inventory, neighborhood impacts, benefits, and their relationship to publicly-funded transportation. It made policy recommendations about shuttle regulation by city government. This study is city-wide, but relates to UCSF Mission Bay and other areas in the Eastern Neighborhoods.