

**CHAPTER SUMMARY:** There is strong demand and ridership growth potential for high-performance transit service in the Van Ness Avenue corridor. Despite the high demand, transit speeds and reliability are poor in the corridor. Degradation in transit performance is a projected citywide problem that is largely contributing to a decline in transit mode share. The proposed project is strategic in light of these needs. Chapter 1 examines the planning context and project needs, in terms of transit performance and multimodal circulation, as a means to provide focus on the purpose of the proposed BRT project. The project purpose is developed to address these needs and provide the rationale for the proposed improvements, as follows: improve transit reliability, speed, connectivity and comfort in the corridor; improve the pedestrian experience; enhance urban design and identity of Van Ness Avenue; create a more livable street; and accommodate safe multimodal circulation and access.

# CHAPTER 1

# Project Purpose and Need

## 1.1 Introduction

The San Francisco County Transportation Authority (SFCTA or Authority) proposes, in cooperation with the Federal Transit Administration (FTA) and the San Francisco Municipal Transportation Agency (SFMTA), to implement bus rapid transit (BRT) improvements along a 2-mile stretch of Van Ness Avenue in San Francisco,<sup>4</sup> from Van Ness Avenue at Lombard Street to South Van Ness Avenue at Mission Street. In cooperation with FTA, the Authority has initiated this joint Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA) and Environmental Impact Report (EIR) under the California Environmental Quality Act (CEQA). The FTA is the Lead Agency under NEPA and the Authority is the Lead Agency under CEQA. The California Department of Transportation (Caltrans) owns the portion of Van Ness and South Van Ness avenues within the project limits, designated as U.S. Highway 101 (US 101). In this capacity, Caltrans has participated in the analysis of Van Ness BRT from the initial stages, including providing funding for the Van Ness Avenue BRT Feasibility Study (SFCTA, 2006). Caltrans continues to participate as a Responsible Agency under CEQA in the environmental review process. SFMTA is also participating as a Responsible Agency because they would implement the Van Ness Avenue BRT after project approval.

Van Ness Avenue is a major north to south artery for the eastern part of San Francisco. It also functions as a major transit street, with an average of over 16,000 daily transit trips (four times more than the two streets on either side of Van Ness Avenue combined) carried along Van Ness Avenue within the study area (see Section 3.1.1.1). SFMTA operates the Muni bus system in San Francisco. There are two Muni bus routes along the entire length of Van Ness Avenue within the project limits (Routes 47 and 49). Five other Muni routes serve a portion of Van Ness Avenue, and one (#19) operates along Polk Street, which runs parallel to Van Ness Avenue. In addition, 32 Muni transit routes cross Van Ness Avenue at various intersections along the corridor, providing transfer opportunities to other Muni routes. Several Muni routes provide regional transit connections to Bay Area Rapid Transit District (BART), AC Transit, Caltrain, Golden Gate Transit, and SamTrans. Golden Gate Transit



<sup>4</sup> The City and County of San Francisco operate as a joint government body within the same geographical boundaries. Throughout this document, this governmental body and geographic area may be referred to as the “City of San Francisco,” “San Francisco,” “City,” or “County.”

operates eight routes (Routes 54, 70, 72, 73, 76, 80, 93, and 97) along Van Ness Avenue south of Lombard Street, and one route (Route 10) crosses Van Ness Avenue at Golden Gate Avenue (inbound) and at McAllister Street (outbound).<sup>5</sup> (See Section 3.1 for more details on the city/county transit network.)

Van Ness Avenue is also designated as part of the larger US 101 highway arterial on the National Highway System (NHS), providing regional and interregional travel (i.e., commute and non-commute) and goods movement. US 101 extends from Los Angeles, California, to Olympia, Washington. Van Ness Avenue serves as one of San Francisco's key north-south arterials connecting freeway entrances and exits south of downtown with Lombard Street, which routes US 101 traffic to the Golden Gate Bridge. One block to the west is the high-capacity arterial pair of Franklin and Gough streets, which provides more than double the automobile capacity provided by Van Ness Avenue. Throughout the project corridor, Van Ness Avenue typically has six traffic lanes, a landscaped median, and parking on both sides. With approximately 45,000 jobs, 25,000 housing units, and key regional destinations such as the San Francisco Civic Center, the Van Ness Avenue corridor is one of the region's major employment and commercial centers, and supports one of the highest population densities of any transit corridor in San Francisco.

**Approximately 33 percent of private vehicle traffic in the corridor is regional, while most (67 percent) is local.**

Thus, the Van Ness Avenue corridor functions in the role of a local and a regional arterial, moving traffic to, from, and within the city. The corridor carries a mix of cars, trucks, transit, private employer shuttles, pedestrians, and bicycles. Generally, approximately 33 percent of private vehicle traffic on Van Ness Avenue in the study area is regional, while most (67 percent) is local.<sup>6</sup> Approximately 20 percent of all trips to, from, and within the neighborhoods surrounding Van Ness Avenue are currently made by transit, which is slightly above the city-wide share of 17 percent transit trips (SFCTA, 2009). At 46 percent, the percentage of households in the Van Ness Avenue corridor that do not own cars is 17 percentage points higher than the citywide average (SFCTA, 2009). Van Ness Avenue also functions as the key north/south transit "spine" of the Muni network, with 32 intersecting Muni routes between Mission and Lombard streets. These existing land use and transportation characteristics of the Van Ness Avenue corridor are highly conducive to transit use and particularly well suited to BRT.

The Authority and SFMTA have identified the Van Ness Avenue corridor in long-range planning studies as a top priority route for rapid transit treatments, and the corridor is included in the San Francisco Transit Priority Network. The San Francisco Transit Priority Network is intended to address the current citywide decline in transit mode share, which is a trend expected to continue into the future unless action is taken to improve transit travel times, reliability, and productivity (SFCTA, 2004) (see Section 3.1). The 2003 Proposition K Expenditure Plan and the 2004 Countywide Transportation Plan (CWTP) identify BRT on Van Ness Avenue as part of a strategic investment in a citywide network of rapid transit.

The Van Ness Avenue BRT Feasibility Study, completed by the Authority in 2006, identified the need for and purpose of BRT on Van Ness Avenue, developed conceptual BRT design alternatives, and identified preliminary initial impacts and benefits. The Van Ness Avenue BRT Feasibility Study found that several BRT configurations are possible for Van Ness Avenue and are likely to provide significant benefits. With the adoption of the Van Ness Avenue BRT Feasibility Study, both the Authority and SFMTA also called for the next phase of project development – environmental analysis and preliminary engineering. Following environmental scoping, four alternatives were defined and carried forward for evaluation in this Draft EIS/EIR, including one no-build alternative and three build alternatives, with a design variation. The project alternatives considered in the Draft EIS/EIR are presented in Chapter 2, Project Alternatives.

<sup>5</sup> Throughout the document, transit service reflects operations at the time of issuance of the Notice of Preparation (NOP) in September 2007.

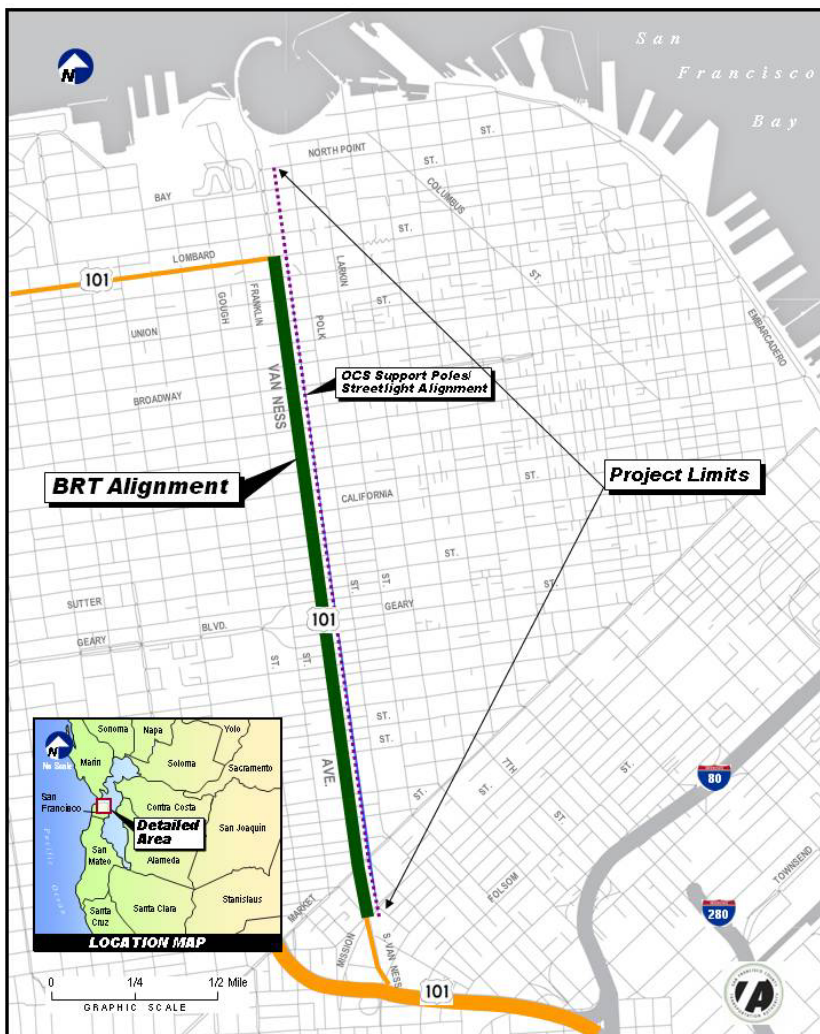
<sup>6</sup> Regional versus local traffic varies by location within the corridor, with higher proportions of regional traffic in the northern portion and lower proportions in the southern portion (SFCTA, 2009).

This Final EIS/EIR presents the environmental analysis and findings related to the Locally Preferred Alternative (LPA), which is the project design recommended by the SFCTA and SFMTA staffs to be carried forward for final design and construction. The LPA is a refinement of center-running alternatives (Build Alternatives 3 and 4) with the design variation, called Design Option B, that eliminates left turns, as described in Sections 2.2.2.4, 10.3, and 10.4. The LPA also incorporates a southbound (SB) station at Vallejo Street in response to community concerns regarding stop spacing. Furthermore, a northbound (NB) transit station at Vallejo Street is included as a design variant, referred to as the Vallejo Northbound Station Variant. The decision on whether to include the variant will be made at the time of project approval. Section 2.2.2.4 provides a detailed description of the LPA.

### 1.1.1 | Project Location

The proposed project is located in the northeastern quadrant of the City and County of San Francisco, California. Figure 1-1 provides a project location map. The BRT project alignment follows South Van Ness and Van Ness avenues, which comprise a north-south primary arterial, extending approximately 2 miles from Mission Street in the south to Lombard Street in the north. The project includes replacement of the Overhead Contact System (OCS) support pole/ streetlight network, which extends from Mission Street north to North Point Street, also shown in Figure 1-1.

**Figure 1-1: Project Location Map**



The north and south project limits, or project “termini” constitute logical termini for the reasons described below. The project limits were identified in accordance with the project purpose and need, described in the following section, and in accordance with opportunities and constraints of the local environment. The southern project terminus, the intersection of Mission Street and South Van Ness Avenue, was identified in part due to the fact that the width of Mission Street does not allow for the same types of treatments that are proposed on Van Ness Avenue. Additionally, this intersection marks the start of the corridor along Van Ness Avenue where the 47 and 49 bus routes follow the same right-of-way (ROW).

The northern project terminus, the intersection of Lombard Street and Van Ness Avenue, was identified based on traffic patterns that show a significant decrease in traffic volume north of Lombard Street. Due to the lower traffic volumes, transit delays on Van Ness Avenue north of Lombard Street are significantly less frequent and severe than transit delays within the project limits.

### 1.1.2 | Uses of this Environmental Impact Statement/Environmental Impact Report

#### KEY CONCEPT

**This document informs the public and governmental decision makers of environmental effects associated with the project and describes the measures that would be undertaken to mitigate those effects.**

This EIS/EIR is prepared pursuant to the requirements of NEPA, the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 *Code of Federal Regulations* [CFR] 1500-1508), and CEQA, Title 14, California Code of Regulations (CCR), Guidelines for Implementation of the California Environmental Quality Act (Sections 15000 to 15387). As required by NEPA and CEQA, this document informs the public and governmental decision-makers of environmental effects associated with the project and describes the measures that would be undertaken to mitigate those effects. This document will be used by federal, state, regional, and local agencies to assess the environmental impacts of the project on resources under their jurisdiction, to make discretionary decisions regarding the project, and to exercise review and permit authority over the project. Upon certification and approval of this document, the City of San Francisco will include the proposed project in their land use planning, zoning processes, and transportation planning, and will depict the proposed project on the circulation element maps of the City of San Francisco General Plan and supporting Area Plans.

## 1.2 Planning Context

As discussed in the next two sections, rapid transit in the Van Ness Avenue corridor has been consistently identified as a priority in local and regional transportation planning. At the same time, the role of the Van Ness Avenue corridor as part of US 101 and the state highway system is a critical component to the planning context.

### 1.2.1 | Countywide Planning Context

Van Ness Avenue has been identified as a high-priority transit improvement corridor in a number of planning studies and funding actions by the City. The Authority’s Four Corridors Plan (1995) and Muni’s Vision for Rapid Transit (2000) identified Van Ness Avenue as a priority corridor for rapid transit improvements. Since 1996, Muni’s Short-Range Transit Plan has called for rapid transit on Van Ness Avenue. In 2000, MTA’s Vision Plan also called for rapid transit on Van Ness Avenue. In 2003, San Francisco voters approved Proposition K, which is the reauthorization of the City’s ½ cent transportation sales tax. The Prop K Expenditure Plan serves as the investment component of the 2004 CWTP, which sets forth the City’s “blueprint to guide the development of transportation funding priorities and policy.” A key objective of the CWTP is the promotion and implementation of San Francisco’s transit first policy through development of a network of fast, reliable transit,

including BRT. The purposes of the multimodal transportation investment package recommended in the CWTP are to:

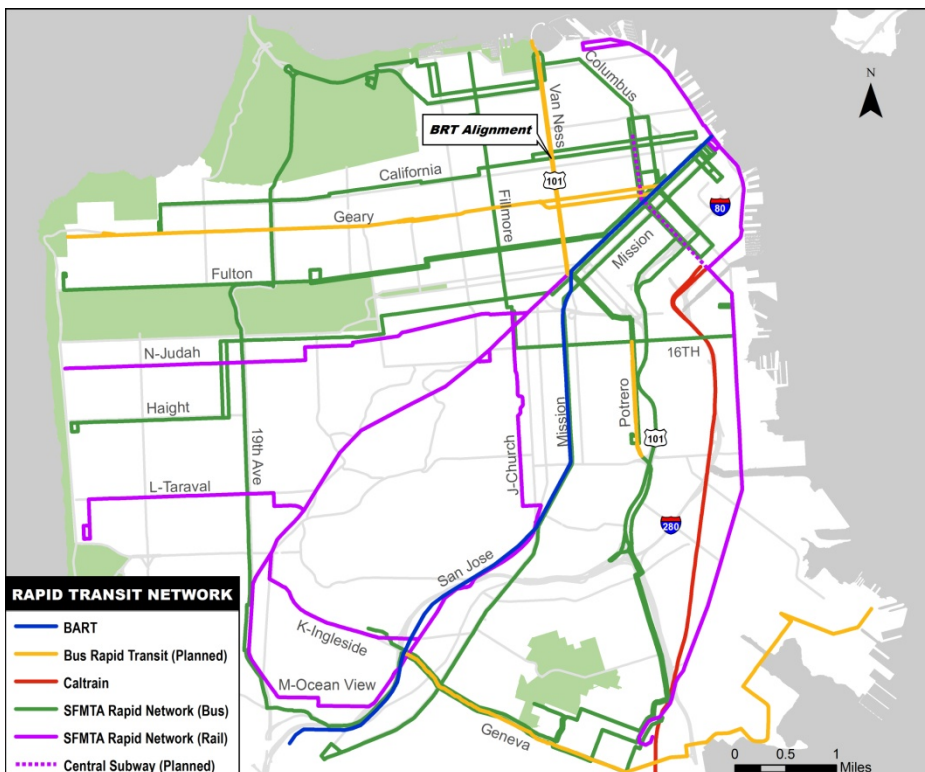
- Support the City’s growth and development needs by addressing expected transportation system congestion impacts;
- Stem and reverse the trend toward transit mode share loss within San Francisco affordably and in the near term; and
- Improve the cost effectiveness and operational efficiency of the City’s mature transportation system infrastructure and service.

The CWTP evaluated alternative approaches toward meeting these system needs and recommended a preferred scenario that calls for development of a citywide Bus Rapid Transit Network (defined initially by a core BRT network encompassing Van Ness Avenue, Geary Boulevard, and Potrero Avenue). The purpose of this rapid transit network is to:

- Improve transit levels of service for existing users quickly and cost effectively;
- Strengthen the citywide network of rapid transit services;
- Raise the cost effectiveness of Muni services and operational efficiency of the city’s Transit Preferential Streets (TPS) roadway network; and
- Contribute to the urban design, identity, and livability of the BRT corridors as signature TPS streets.

Figure 1-2 shows the city’s Rapid Transit Network identified in the CWTP. San Francisco currently lacks north-south rapid transit service in the northern half of the city. Van Ness Avenue, combined with Mission Street, functions as the primary north-south transit corridor in San Francisco; however, Van Ness Avenue lacks rapid transit service treatments, and existing transit services suffer from poor performance in terms of speed and reliability. These conditions affect two Muni transit lines (49 and 47) and eight Golden Gate Transit regional bus routes (54, 70, 72, 73, 76, 80, 93, and 97).

**Figure 1-2: San Francisco Rapid Transit Network Map**





**Transportation 2035, adopted in 2009, serves as the blueprint for the development of transportation facilities in the nine-county San Francisco Bay Area. An update to this plan, Plan Bay Area, is currently underway and is scheduled for adoption in 2013.**

Since adoption of the Van Ness Avenue BRT Feasibility Study, SFMTA has developed and adopted the Transit Effectiveness Project (TEP) (SFMTA, 2009). The TEP recommended comprehensive revisions to the Muni route structure to improve efficiency and meet emerging travel demand patterns. In addition, the TEP recommended a Rapid Network designation composed of the most critical and productive Muni lines. Van Ness Avenue is included in the rapid network and identified in the TEP as a high-priority route for rapid transit and BRT treatments.

As a result of recommendations in the CWTP, the Van Ness Avenue BRT Feasibility Study was initiated in 2004 and completed in 2006. During this time, the City defined BRT in San Francisco as a “full-featured” system with the following general elements:

- Dedicated lane
- Transit signal priority
- High-quality stations
- Distinctive vehicles
- Level or near level/all-door boarding (or proof-of-payment)

The Feasibility Study evaluated the feasibility of four alternative BRT configurations on Van Ness Avenue. Four BRT alternatives were developed and compared with a no project scenario, in conjunction with a comprehensive public and agency participation program. The feasibility study was unanimously approved by both the Authority and SFMTA Boards in December 2006.

## 1.2.2 | Regional Planning Context

### 1.2.2.1 | METROPOLITAN TRANSPORTATION COMMISSION

The Metropolitan Transportation Commission (MTC) serves as the Bay Area’s transportation planning, coordinating, and financing agency for the nine-county San Francisco Bay Area. The MTC functions as both a regional transportation planning agency for California, and for federal purposes, as the region’s metropolitan planning organization (MPO). As such, it is responsible for regularly updating the Regional Transportation Plan (RTP), which is a comprehensive blueprint for the development of mass transit, highway, airport, seaport, railroad, bicycle, and pedestrian facilities. The most recent RTP, *Transportation 2035*, was adopted in 2009 and specifies how \$218 billion in anticipated federal, state, and local transportation funds will be spent in the Bay Area during the next 25 years. Improvements to local and express bus services are included as a major project in the 2009 RTP, with BRT service on Van Ness Avenue specifically identified as part of this plan. Due to its regional reach, Van Ness Avenue BRT is one of only two Small Starts (FTA funding program for projects under \$250 million) priorities in the region. MTC has made a programming commitment to the project, including \$87.6 million in committed funds in the financially constrained and adopted 2009 RTP.

### 1.2.2.2 | CALTRANS

As part of US 101, the Van Ness Avenue corridor provides part of the surface street link of US 101 through San Francisco. US 101 is a major component of the Caltrans Interregional Transportation Strategic Plan (ITSP). Thus, accommodating traffic operations in the Van Ness Avenue corridor is essential; at the same time, Vision D of the June 1998 ITSP notes that mass transit can support interregional travel improvements with cost-effective investments in corridors that are densely populated and heavily traveled.

Development of BRT on Van Ness Avenue is consistent with Caltrans Deputy Directive 98 (October 2008), entitled “Integrating Bus Rapid Transit into State Facilities.” The directive supports the integration of BRT on the State highway system, recognizing its potential to increase the “person-throughput” and vehicle occupancy rate, reduce congestion, mitigate pollution, reduce greenhouse gas (GHG) emissions, and improve goods movement. Deputy

Directive 98 places strong emphasis on the responsibility of Caltrans to ensure that BRT is integrated with other transportation modes on the State highway system through revised design policies and standards, as well as maintenance/operations functions.

Another relevant Caltrans Deputy Directive, Directive 64 (October 2008), is entitled “Complete Streets – Integrating the Transportation System.” This directive supports the development of complete streets, encouraging alternative modes of transportation, during system planning and continuing through project development. A “complete street” is defined as a transportation facility that is planned, designed, operated, and maintained to provide safe mobility for all users, including bicyclists, pedestrians, transit riders, and motorists, appropriate to the function and context of the facility.

In 2003, Caltrans supported local planning efforts by providing a Community Planning Grant to study whether BRT can address transit needs and opportunities in the Van Ness Avenue corridor. This was important initial funding for the Van Ness Avenue BRT Feasibility Study, which was also supported by Proposition K funding.

## 1.3 Project Purpose and Need

### 1.3.1 | Project Purpose

The purpose of the Van Ness Avenue BRT Project has its origins in the 2004 CWTP, discussed above in Section 1.2.1, which identified the need for a rapid transit network citywide. The CWTP describes the purpose of the rapid network as follows:

- Improve transit levels of service for existing users quickly and cost effectively;
- Strengthen the citywide network of rapid transit services;
- Raise the cost effectiveness of Muni services and operational efficiency of the city’s Transit Preferential Streets (TPS) roadway network; and
- Contribute to the urban design, identity, and livability of the BRT corridors as signature TPS streets.

Van Ness BRT is a key element of the rapid network (see Figure 1.2), and is intended to fulfill in part the more general purpose described above through improvements to Van Ness Avenue.

The project is intended to support the City’s growth and development demands by addressing expected transportation system performance needs – including to stem and reverse the trend toward transit mode share loss within San Francisco – affordably and in the near term. The project is also intended to improve the cost effectiveness and operational efficiency of the City’s mature transportation system infrastructure and service. The travel time and reliability benefits of BRT on Van Ness Avenue are expected to ripple throughout the City’s transit network, facilitating transfers to other transit routes and systems. More than 40 percent of all Muni Routes 47 and 49 riders make at least one transfer to the many heavily used east-west cross routes, including Muni Metro, as well as regional services such as Golden Gate Transit, BART at 16<sup>th</sup> Street, and Caltrain at 4<sup>th</sup>/King. Van Ness Avenue riders with destinations along the Mission, Market, SOMA, Geary Boulevard, and Union Street corridors will benefit through shorter travel times and enhanced rider experience with the implementation of BRT.

With a goal of having the Van Ness corridor meet the rapid network purpose, the Feasibility Study identified specific needs for the corridor (see Section 1.3.2), and improvements identified in the Study attempt to achieve that end. From this bottom-up perspective, the purpose of Van Ness BRT is to improve the safety and operational efficiency of Van Ness Avenue in order to:

#### DEFINITION

**USER BENEFIT: Benefits of the project bestowed on existing passengers (e.g., shorter travel time, enhanced rider experience).**

- Significantly improve transit reliability, speed, connectivity, and comfort;
- Improve pedestrian comfort, amenities, and safety;
- Enhance the urban design and identity of Van Ness Avenue;
- Create a more livable and attractive street for local residential, commercial, and other activities; and
- Accommodate safe multimodal circulation and access within the corridor.

Attainment of the project objectives must be balanced with the needs to accommodate mixed traffic, bicycle, and goods circulation and access within the corridor, as well as maintain some on-street parking for loading/unloading and drop-off access.

### 1.3.2 | Project Need

The 2004 CWTP found that San Francisco's 17% transit mode share among San Francisco residents will decline by 2025 if measures are not taken to provide a competitive transit alternative to auto travel in major corridors such as Van Ness Avenue. In addition, the CWTP determined that trends towards lower transit productivity and rising operations costs must be reversed in order to provide sustainable transit service in San Francisco that will meet future demands. Van Ness Avenue BRT is expected to help address these citywide needs, and others, through specific improvements in the Van Ness corridor. The specific improvements identified in the Feasibility Study were based on the project's purpose described in the previous section and the corridor needs described in this section.

#### 1.3.2.1 | TRANSIT PERFORMANCE NEEDS

There is an existing strong demand in addition to large ridership growth potential for high transit service levels in the project corridor. Van Ness Avenue transit services currently operate at high frequencies (the Muni bus routes provide an average combined headway of 3.75 minutes during peak periods and 6 to 8 minutes in the off peak). Approximately 43,000 passengers use Muni bus routes 47 and 49 and the Golden Gate Transit routes 54, 70, 72, 73, 76, 80, 93, and 97 daily, with more than 16,000 daily passenger boardings within the project limits. A number of major east-west transit routes cross Van Ness Avenue and generate major bus-to-bus and bus-to-rail transfers with Van Ness Avenue transit services, including the Muni Metro lines at Market Street and Muni bus lines 38 (Geary) and 38L (Geary Limited). Transit has a 20 percent mode share for trips to, from, and within the neighborhoods surrounding Van Ness Avenue, which is greater than the 17 percent daily transit mode share citywide.

Transit in the Van Ness Avenue corridor has the potential to serve substantially more riders both today and in the future. Approximately 46 percent of households in the Van Ness Avenue corridor do not own cars, compared with 29 percent citywide (SFCTA BRT Feasibility Study, 2006, using BATS and Census 2000 survey data). At an average of 93 dwelling units per acre, Van Ness Avenue has the highest population density of any transit corridor in San Francisco. The existing population density, together with the concentration of employment and commercial activity along the corridor (approximately 45,000 jobs), establishes a strong transit market capable of supporting higher levels of transit investment. Furthermore, the Association of Bay Area Governments (ABAG) and the San Francisco Planning Department have targeted the Van Ness Avenue corridor for 21,000 additional jobs (50 percent increase) and 9,000 additional housing units (34 percent increase) between 2005 and 2015 (ABAG Projections, 2007), particularly near Market Street, and active infill development is underway throughout the corridor, consistent with the objectives of the Van Ness Avenue Area Plan and the Market/Octavia Better Neighborhoods Plan.

Despite the above-mentioned high existing and projected ridership demand, transit speeds and reliability are poor in the Van Ness Avenue corridor. Degradation in transit performance is a projected citywide problem that is largely contributing to a citywide decline in transit mode share. The Authority's 2004 CWTP found that the City's 17 percent transit



**High Ridership: Approximately 43,000 passengers use Muni bus routes 47 and 49 and the Golden Gate Transit routes 54, 70, 72, 73, 76, 80, 93, and 97 daily, with more than 16,000 daily passenger boardings within the project limits.**

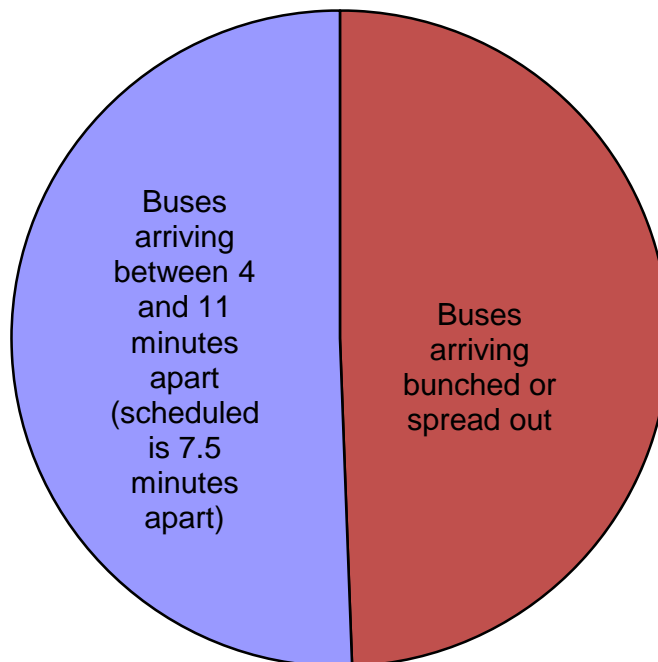


mode share among city residents will decline by 2025 if measures are not taken to provide a competitive transit alternative to auto travel in major corridors such as Van Ness Avenue. A key need for transit service on Van Ness Avenue is to close the performance gap, in reliability and in travel time, between transit and automobile travel.

- **Separate Transit from Auto Traffic to Improve Travel Time and Service Reliability.** Transit speeds and reliability (both travel time and headway reliability) are poor on Van Ness Avenue, due in large part to conflicts with mixed-flow traffic. Buses spend approximately half their time on Van Ness Avenue completely stopped; these delays occur when moving in traffic, maneuvering to and from the curb to load and unload passengers, and waiting at signals. Signal and mixed-traffic delays account for well over half of total bus delay. Travel times on Van Ness Avenue between Clay and Mission average 16 minutes by transit and fewer than 9 minutes by private vehicle (see Section 3.2 for details). Even when time spent loading and unloading passengers is subtracted from transit travel time, buses still remain as much as 35 percent slower than cars (SFCTA, 2006).

Travel in mixed traffic also causes reliability problems. As buses travel in mixed traffic, variation in headway increases, and buses begin to bunch, as shown in Figure 1-3 (Source: SFCTA field study performed as part of Van Ness BRT Feasibility Study, 2006). By the time SB Van Ness Avenue buses reach Market Street, buses are just as likely to be more than 50 percent off from scheduled spacing (i.e., less than 4 minutes apart or more than 11 minutes apart) as they are to arrive within 50 percent of scheduled spacing (i.e., 4- to 11-minute spacing). For example, buses are equally as likely to be 1 or more than 13 minutes apart (compared to the scheduled 7.5 minutes apart per route), reflecting unreliable service for waiting passengers.

**Figure 1-3: Variation in Headways (Average Wait Times) at Market Street SB during the PM Peak**



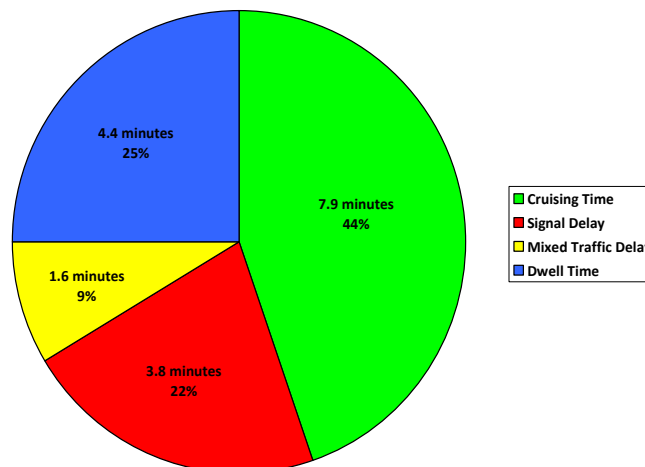
Finally, conflicts with mixed traffic affect transit operating efficiency and productivity. The delays caused by operating in mixed traffic add significantly to transit’s route cycle time, increasing the number of vehicles and operators required to provide needed service frequencies.

BRT on Van Ness Avenue is forecast to decrease transit travel times by up to 32 percent and improve reliability by up to 50 percent (see Section 3.2 for details). Moreover, BRT is estimated to improve transit operating productivity by up to 33 percent, reducing the overall cycle time of Van Ness Avenue routes and saving substantial operating resources (see Chapter 9 for details).

- **Reduce Delays Associated with Loading and Unloading and Traffic Signals.** As shown in Figure 1-4, time spent loading and unloading passengers (dwell time), while part of service, does include unnecessary delays that contribute to slow travel times for buses. Dwell times are lengthy because passengers must enter the bus through a single door, ascend from the curb into the bus doorway, and wait in line while those without passes pay bus fare onboard. Passengers with mobility disabilities often need the assistance of lifts or ramps to enter and exit buses, which can further increase dwell time.

**Figure 1-4: Components of Transit Travel Time on Van Ness Avenue (Southbound – PM Peak)**

Bus Travel Time Components (SB PM Peak in Minutes)



VAN NESS CORRIDOR  
 TRANSIT NEEDS

1. Separate transit from auto traffic to improve travel time and service reliability.
2. Reduce delays associated with loading and unloading and traffic signals.
3. Expand the City’s Network of Rapid Transit.
4. Improve the experience for transit patrons.

BRT stations with level or near level boarding platforms, proof-of-payment, and fare prepayment should facilitate faster and easier passenger loading and unloading by enabling passengers to simply walk or roll onto the bus through all vehicle doors. Boarding more passengers in less time would provide more transit capacity without the added costs of additional buses and drivers.

- **Improve the Experience for Transit Patrons.** Existing transit service on Van Ness Avenue lacks many amenities that would make the transit experience attractive to new riders and more comfortable for existing riders, both in and out of the vehicle. While waiting, transit passengers along Van Ness Avenue often lack shelter, seating, and real-time information. Waiting passengers jostle for sidewalk space with passing pedestrians. While riding, transit passengers often encounter crowded buses as a result of bunching and reliability problems, and experience poor ride quality as buses must weave around mixed traffic and into and out of sidewalk bus stops.

BRT will upgrade bus service with station amenities including larger shelters, additional seating, communications systems, ticket vending machines at selected stations, real-time

service information, improved lighting, and security features. BRT station platforms would be separated from pedestrian traffic, and would include landscape and streetscape features to offer a buffer from vehicular traffic where feasible. BRT is intended to improve ride quality by eliminating the need to pull in and out of stops, and for most alternatives, the need to weave around mixed traffic. The BRT buses would accommodate more passengers, offer additional seating, and operate at more reliable headways, relieving crowding.

PROJECT GOALS BEYOND  
TRANSIT ENHANCEMENT

1. Improve the safety and comfort of pedestrians.
2. Raise the operating efficiency of Van Ness Avenue by increasing person-throughput/vehicle occupancy rate.
3. Upgrade streetscape to support an identity as a rapid transit and pedestrian environment.
4. Support the civic destinations on the corridor and integrate transit infrastructure with adjacent land uses.

### 1.3.2.2 | MULTIMODAL CIRCULATION NEEDS

People currently use Van Ness Avenue to drive, walk, bike, and ride transit. Van Ness Avenue improvements are intended to improve multimodal circulation and the overall transportation effectiveness of the corridor, meeting the general needs identified in the CWTP and the corridor-specific needs identified in the BRT Feasibility Study. Support of non-motorized travel modes and overall system operation is critical to the success of high-quality transit in the corridor and would support local planning efforts to transform Van Ness Avenue into a pedestrian promenade, as well as a grand multimodal thoroughfare.

Multimodal circulation, corridor design, and land use planning needs for Van Ness Avenue include the following:

- **Improve the Safety and Comfort of Pedestrians.** Pedestrian trips comprise 26 percent of total daily trips to, from, and within the neighborhoods surrounding Van Ness Avenue, exceeding the citywide average of 17 percent. Every transit trip begins and ends with a walking trip, and nearly half of trips to, from, or within the Van Ness Avenue neighborhoods are a walk, bike, or transit trip, indicating the importance of non-motorized travel in the area along Van Ness Avenue. While the existing street design within the project limits meets City sidewalk width standards with its 16-foot-wide sidewalks, most intersections are without pedestrian countdown signals or Accessible Pedestrian Signals (APS), and many of the intersections do not meet San Francisco or Federal standards for minimum pedestrian speeds in order to cross Van Ness Avenue during the walk signal phase.<sup>7</sup> Pedestrians experience twice as much delay at intersections as vehicle occupants, especially waiting to cross Van Ness Avenue. The greater the delay, the higher the likelihood of noncompliance with signals, which results in compromised safety and traffic flow impacts (SFCTA 2011). At crossings without a pedestrian signal, pedestrians can be caught mid-crossing when the light turns yellow, with as little as 4 seconds to reach a curb or median refuge, indicating the strong need for pedestrian countdown and APS with sufficient crossing times at these crossings. Section 3.4 provides detailed information on pedestrian crossing conditions in the corridor.

BRT will improve pedestrian safety and conditions through the provision of curb extensions (curb bulbs) to create greater pedestrian visibility, as well as shorter crossing distances coupled with signal timings that meet City and federal targets for walking speeds. The project will also implement APS, in addition to countdown signals, at all signalized intersections, as well as enhance refuge medians to meet or exceed City standards and include nose cones. These BRT features are expected to reduce the crosswalk pedestrian collisions commonly experienced on Van Ness Avenue.

- **Raise the Operating Efficiency of Van Ness Avenue by Maintaining Person-Throughput while Increasing the Capacity and Vehicle Occupancy Rate.** The Van Ness Avenue corridor, comprised of Van Ness Avenue and parallel streets from Gough Street to Hyde Street, has the potential to carry people more efficiently, than today. Within the study area, motorized trips on Van Ness Avenue are expected to increase by up to 7.5 percent by 2015 if a BRT project is not built, while the transit mode share is expected to stay the same or decline. These trends would cause an increase in congestion on Van Ness Avenue. These increasing demands on the street's limited ROW necessitate more

<sup>7</sup> APS are devices that communicate when to cross the street in a non-visual manner, such as audible tones, speech messages, and vibrating surfaces.

efficient operations and use of space to increase capacity for person-throughput in the corridor and raise the vehicle occupancy rate.

Due to the expected increase in transit ridership with BRT, Van Ness Avenue would operate more productively. With BRT, each transit lane would carry 13 percent (Build Alternative 2) to 36 percent (Build Alternatives 3, 4, and the LPA) more people than each mixed traffic lane, and the average vehicle occupancy on the street would increase to more than two people per vehicle (see Section 3.1 for details).

In addition, by creating a dedicated lane for transit, BRT would allow for increased bus operations on Van Ness Avenue without impacting the traffic network (i.e., additional buses would not conflict with auto traffic). BRT also makes it possible to provide similar service at a lower operating cost (see Chapter 9); this is because with BRT, each bus can complete its route in less time, so less vehicles and drivers would be needed to keep the same frequencies. Preliminary results indicate that 1 to 2 more buses per hour could be added on both the 47 and 49 BRT routes at no additional operating cost based on the travel time savings in the 2015 microsimulation model (see Section 3.2). If more operating funds were dedicated to Van Ness Avenue in the future, those investments would be more cost effective with BRT because the lower travel times would allow for a greater increase in frequency of bus operations. The center-lane BRT alternatives (Build Alternatives 3 and 4) would be more cost effective than Build Alternative 2 because those alternatives would have a lower travel time (see Chapter 3.2 for more details); and Build Alternatives 3 and 4 with Design Option B, as well as the LPA, would offer additional cost effectiveness for this reason.

- **Upgrade Streetscape to Support an Identity as a Rapid Transit and Pedestrian Environment.** Existing streetscape conditions are deficient, lacking in consistency and pedestrian amenities.

A main component of the proposed build alternatives is to provide a consistent landscaped median treatment and pedestrian lighting, as well as establish a more unified identity for Van Ness Avenue as one of the City's most prominent arterials and a visible rapid transit service. The improved streetscape features of the proposed build alternatives would enhance the amenity and urban design of Van Ness Avenue as a gateway into the city.

- **Support the Civic Destinations on the Corridor and Integrate Transit Infrastructure with Adjacent Land Uses.** The project corridor is already a strong market for transit, due largely to the existing transit-supportive land use in the corridor, including the highest population density of any transit corridor in San Francisco, and nearly half of the households in the corridor do not own automobiles.

In addition to existing transit demand, the Van Ness Avenue corridor is planned by the City for high-density mixed-use development and transformation of the street into a transit-served pedestrian promenade that supports the Civic Center and commercial uses. Rapid transit service along Van Ness Avenue would contribute to the City's transit-oriented development efforts by providing high-quality, reliable, comfortable transit that improves access to destinations within the corridor and elsewhere in the city. The placement of BRT infrastructure demonstrates an investment in the corridor and provides a greater sense of permanence than typical bus facilities.

- **Accommodate private vehicles and commercial loading.** Attainment of the project objectives must be balanced with the need to accommodate mixed traffic and goods circulation and access within the corridor, as well as maintain some on-street parking for loading/unloading and drop-off access. Private vehicle traffic in the future is anticipated to become more congested on Van Ness Avenue and on the streets immediately parallel in the no project scenario. Analysis indicates that the implementation of BRT is not forecast to increase the number of congested intersections (i.e., those operating at LOS E or F) in the corridor, in year 2015, relative to the No Build Alternative (see Section

3.3 for details). Parallel parking is located along most of Van Ness Avenue throughout the project corridor, providing drop-off and loading access to businesses, residents, and institutional uses fronting the avenue. Parking also provides persons with disabilities access to the commercial, residential, civic, and cultural centers in the project corridor. Accommodating truck maneuverability is also important in supporting land uses along the corridor, as well as regional goods movement.

### 1.3.3 | Project Ability to Meet the Purpose and Need

Chapter 10 discusses the performance of each alternative and the LPA, with or without the Vallejo Northbound Station Variant, on an array of indicators related to the Project Purpose and Need, as well as other issues of interest to stakeholders. A full analysis of transportation performance can be found in Chapter 3, while analysis on the other areas of stakeholder and environmental concern can be found in Chapter 4.

This page intentionally left blank.