Volume II
of the
Final EIS/EIR for the
Van Ness Avenue BRT Project

Appendices I & J

Appendix I
Response to Comments

1. Introduction & Approach

During circulation of the Draft EIS/EIR for public review period (November 4 through December 23, 2011) 7 agencies, 69 individuals and 11 organizations provided comments on the Draft EIS/EIR. These comments came in multiple formats, including:

- Letters
- Emails
- Verbal comments transcribed by a court reporter at the November 30, 2011 public hearing
- Comment cards submitted by attendees at the November 30, 2011 public hearing or at a neighborhood or stakeholder meeting.

Responses to the comments have been created based on information in the Draft EIS/EIR, supporting technical studies, and updated analysis undertaken since circulation of the Draft EIS/EIR. Updated analysis was undertaken to respond to comments received on the Draft EIS/EIR and to address the LPA design which includes refinement of some center-lane configured BRT design features presented in the Draft EIS/EIR, including the Vallejo Northbound Station Variant. The results of this updated analysis are reflected in the responses to comments contained in this Appendix I, as appropriate, covering the following environmental factors: community impacts, aesthetics/visual resources, biological resources, cultural resources, utilities and public services, hydrology and water quality, transportation (including travel patterns, transit, traffic, non-motorized transportation, and parking), construction impacts, Financial Analysis, and Alternatives Analysis. The updated analysis undertaken as part of the Final EIS/EIR, including that undertaken to consider the LPA with and without the Vallejo Northbound Station Variant, did not result in the inclusion of significant new information to the Draft EIS/EIR that substantially changes the project description or environmental setting, changes the impact significance findings in the Draft EIS/EIR, results in a conclusion that more severe environmental changes would result from the proposed project beyond those identified in the Draft EIS/EIR, or identifies new feasible ways to mitigate or avoid substantial adverse environmental effects of the project that the project sponsor declines to implement. Instead, the information presented in the responses to comments "merely clarifies or amplifies or makes insignificant modifications" in the Draft EIS/EIR. (CEQA Guidelines Section 15088.5(b)).

As required under NEPA, a copy of the Final EIS/EIR, either a CD containing an electronic version of the document or a hard copy, will be sent to each person, organization or agency that submitted substantive comments on the Draft EIS/EIR.

2. Most Common Comments & Master Responses

The SFCTA's review of the public comments received in all formats identified major topics most commonly raised in the comments and during outreach activities. These most common topics are listed below in Table 1, and corresponding responses to each of these comments is provided in Section 2.1 Master Responses. The master responses comprehensively address the multiple and varied comments on these major topics.

Table 1. List of Most Common Comments

No.	Most Common Comments
1	Definition of project limits.
2	Alternatives screening and lack of alternatives that include express bus or peak period only service.
3	Private buses and shuttles.

No.	Most Common Comments
4	Cost effectiveness of Van Ness BRT and alternatives considered and withdrawn.
5	Transit stop elimination.
6	Construction Impacts on businesses and residents.
7	Tree removals and replanting opportunities.
8	Modeling traffic diversions.
9	Calculating traffic impacts.
10	Calculating air quality impacts on Van Ness Avenue, Franklin Street, and Gough Street.
11	Calculating noise and vibration impacts on Van Ness Avenue, Franklin Street, and Gough Street
12	Incorporating CPMC into analyses, including emergency services operations and construction coordination.
13	Pedestrian crossings and safety.

2.1. Master Responses

Master responses have been written for commonly expressed questions and comments received during the Draft EIS/EIR circulation period. Several responses to comments throughout Appendix I make reference to these master responses provided below.

Master Comment #1: Definition of project limits.

The following comments touch on the Master Comment #1 topic and express a desire for the project limits to be either longer, shorter or for the project to provide certain linkages with other lines: O-1-1, O-1-5, I-12-1, I-21a-1, I-21a-3, I-21b-1, I-31a-1, I-34b-1, I-41-2, I-54-1, I-55-4, and I-67-2.

Master Response #1:

The project limits were determined based on the findings of multiple planning studies and supporting analysis. As noted in Sections 1.1 – 1.3 of both the Draft and Final EIS/EIR, Van Ness Avenue has been identified as a high priority transit improvement corridor in a number of planning studies undertaken by the City and in a voter approved transit funding plan. The Authority first identified Van Ness Avenue for transit priority treatments in 1995 when it developed a Long-Range Fixed Guideway plan for the four transit corridors included in the Prop B Expenditure Plan, approved by voters in 1989. The Four Corridors Plan defines the waterfront as the northern end of the corridor, and states that the southern terminal point for the Van Ness Avenue corridor is "still open to discussion." Muni's Vision for Rapid Transit (2000) identifies Van Ness Avenue and Mission Street as a combined priority transit corridor, noting that the integration of light rail on Van Ness Avenue with operations on Mission Street would be challenging since the latter Mission Street does not have as much street width as Van Ness Avenue. For this reason, the plan called for the planned BRT treatments to be implemented from Mission/South Van Ness to Lombard Street. Building on the 2000 Muni's Vision for Rapid Transit and the 2003 Countywide Transportation Plan, the Authority prepared the Van Ness Avenue BRT Feasibility Study. The study outlined BRT treatments over the same project limits, which were considered to have logical termini based on the findings of the aforementioned planning studies and supporting analysis.

The southern terminus of the project limits is defined as Mission/South Van Ness Avenue for similar reasons to those cited in those previous studies. The width on Mission Street does not allow for the same types of treatments as on Van Ness Avenue. Additionally, this intersection marks the start of the corridor where the 47 and 49 routes run along the same right of way. Thus Mission/South Van Ness Avenue is a logical terminus for the southern limits of the project.

The SFMTA, through the proposed Transit Effectiveness Project (TEP) is currently studying potential transit improvements for the length of Mission Street to enhance the travel time and reliability of all routes that utilize that corridor. The TEP is undergoing environmental review, and if approved is proposed for implementation in a similar timeframe as the Van Ness Avenue BRT Project. Information about the TEP, including where and how to comment on the proposed project and its environmental review process, can be found at http://www.sfmta.com/cms/mtep/tepover.htm.

The northern terminus of the project limits is defined as Lombard Street because traffic patterns show a significant decrease north of Lombard, thus causing significantly less delay to transit than south of Lombard Street. Existing traffic counts show that during the PM peak period, the block of Van Ness Avenue north of Lombard Street has less than 450 vehicles northbound (versus more than 1,400 vehicles on the block south of Lombard Street – nearly 70% less) and 620 vehicles southbound (versus nearly 1,300 on the block south of Lombard Street – more than 50% less) (source: Vehicular Traffic Analysis Technical Memorandum, Appendix 4). The traffic counts on Van Ness Avenue are lower north of Lombard Street because northbound traffic on Van Ness Avenue heading towards the western neighborhoods in San Francisco and the Golden Gate Bridge turn off of the corridor at Lombard Street and similarly, southbound inter-neighborhood and regional traffic tends to turn onto Van Ness Avenue from Lombard Street as opposed to from streets further north due to those streets' lower capacity and connectivity as compared with Lombard Street. Due to the lower traffic volumes, transit delays on Van Ness Avenue north of Lombard Street are significantly less frequent and severe as they are within the project limits. Thus, full BRT treatments were not proposed for the corridor north of Lombard Street.

Master Comment #2: Alternatives screening and lack of alternatives that include express bus or peak period only service.

The following comments touch on the Master Comment #2 topic, which included comments recommending alternative locations for the project, and more limited options such as adding buses only, bulb-outs only, eliminating some stops, running an express bus line, and eliminating parking during peak times: A-7a-4, O-6a-2, O-9-2, I-6-1, I-13-2, I-20-1, I-25-2, I-31a-3, I-31b-5, I-32-8, I-33-2, I-38-9, I-41-5, I-55-1, I-55-2, I-68-4, and I-69-2.

Master Response #2:

As described in Chapters 1 and 2, based on the outcome of the Van Ness Avenue BRT scoping and screening processes the Draft EIS/EIR defined four project alternatives to be evaluated, including the No Build Alternative. Section 2.6 of the Final EIS/EIR includes Alternatives Considered and Withdrawn during the screening process and the rationale for withdrawing them from consideration. Alternatives that were considered and then withdrawn from further consideration included Curb-Lane BRT-No Parallel Parking, Surface Light Rail-Subway, Transit Priority Streets (TPS) Treatments without a Dedicated Bus Lane, and a Peak Period Dedicated Bus Lane.

Through the scoping and screening processes described in both the Draft and Final EIS/EIR, alternatives were screened out of further environmental analysis if they indicate a "fatal flaw" or overall low performance:

- Fatal Flaws. The Curb-Lane BRT-No Parallel Parking and Surface Light Rail-Subway alternatives failed to address one or more screening criteria or were found to worsen existing conditions. The screening process considered the inability to provide improvement with respect to one or more of the screening criteria a fatal flaw. These two alternatives failed to meet one or more of the screening criteria so they were dropped from consideration in the EIS/EIR.
- Low Performance. The TPS Treatments without a Dedicated Bus Lane and Peak Period Dedicated Bus Lane alternatives had no fatal flaws, but through the screening process were found to provide only slight

or modest levels of improvement. These two alternatives, which did little to advance several screening criteria, were eliminated from consideration in the EIS/EIR.

The TPS Treatments without a Dedicated Bus Lane and Peak Period Dedicated Bus Lane alternatives were not recommended for further evaluation in the EIS/EIR because the magnitude of expected benefits was found to be low. TPS treatments were expected to provide about half of the reduction in travel times as BRT treatments (Van Ness Avenue BRT Feasibility Study). Additionally, without a dedicated bus lane buses would continue to operate in mixed traffic and experience associated reliability impacts, including some buses having very crowded conditions. Of all transit delays, mixed traffic delays have the greatest variability (Van Ness BRT Feasibility Study, 2007).

A peak period only bus lane would provide transit travel time and reliability benefits only during the peak period. However, Van Ness Avenue transit experiences delays and reliability problems throughout the day and on weekends; additionally, transit ridership on the Van Ness corridor is strong throughout the day, and not just during the peak commute periods (Van Ness BRT Feasibility Study; 2007 APC Data).

More information on this process and the criteria used to screen alternatives can be found in the Alternatives Screening Report, which can be found on the Project website, www.vannessbrt.org. This report identifies the three alternatives to be studied in the EIS/EIR, and was adopted by the Authority Board in 2008 (Resolution 08-71).

Master Comment #3: Private buses and shuttles

The following comments touch on the Master Comment #3 topic: I-1-1, I-32-6, I-45-1, I-49-3, and I-65-1.

Master Response #3:

Private shuttles are currently prohibited from using transit lanes or stops citywide. With BRT on Van Ness Avenue, both shuttle services and taxis would continue to operate in mixed-flow traffic lanes and would not travel within the dedicated BRT lanes or use BRT stations. The Draft EIS/EIR analysis of the impacts of the project on the transportation system takes into account traffic from shuttle buses operating in mixed-flow traffic lanes. The project's impact on shuttle services themselves would be similar to its impacts on other private vehicles, which are detailed in the traffic analysis in Chapter 3.3 of both the Draft and Final EIS/EIR. Chapter 3 also provides specific information regarding shuttle services in Sections 3.1.2.4, 3.2.1.2, and 3.2.3.

City agencies continue to study shuttle services citywide and work to better integrate this growing sector into the overall transportation system. In 2011, the Authority completed a Strategic Analysis Report (SAR) on the Role of Shuttle Services in San Francisco's Transportation System,[1] which examined existing shuttle services and regulations and developed policy recommendations. Following the SAR, the SFMTA is currently working to develop the Muni Partners Program, a component of the multi-agency Transportation Demand Management Partnership Project led by the Authority.[2] In February 2013, SFMTA approved an 80-foot private shuttle stop on the west side of Van Ness Ave from Union Street to 80 feet southerly. The stop will be put in place in March 2013 and is reserved for private shuttle pickups on weekdays between 6 a.m. and 10 a.m. This is the second private shuttle stop in San Francisco; the other is located near 8th and Market Streets. The design of the BRT system does not preclude the use of the facilities by private shuttles if City policy regarding their operations changes.

[1] The SAR is available at www.sfcta.org/shuttles
[2] Available on the project website at www.sfcta.org/tdm

Master Comment #4: Cost effectiveness of Van Ness BRT and alternatives considered and withdrawn

The following comments touch on the Master Comment #4 topic: O-7-1, I-13-2, and I-13-3; I-31b-4

Master Response #4:

Cost effectiveness was a key consideration in selecting the BRT build alternatives for the Van Ness Avenue corridor in the Feasibility Study, the Screening Report, and in the Draft EIS/EIR. As part of the screening process, a wide range of alternatives was considered for further evaluation, including potentially lower-cost transit improvements such as Transit Preferential Streets (TPS) treatments without a dedicated bus lane, express buses, and more expensive alternatives including surface rail or a subway. As explained in greater detail in Master Response #2, alternatives were screened out of further environmental analysis if they contained a "fatal flaw" or overall low performance in meeting the project purpose and need. Section 2.6 of both the Draft and Final EIS/EIR includes additional information on alternatives considered and withdrawn (and the rationale for withdrawing them from consideration). Transit improvements that did not include a dedicated bus lane were screened out due to low performance, while the rail options were eliminated from further consideration based on high capital costs and construction intensity/duration.

The capital cost estimates for BRT range from $93 to $136 million. BRT would provide annual operating cost savings because faster speeds and reduced travel times allow fewer vehicles to provide the same service frequency. These savings would range from $1.2 to $2.4 million annually. Thus, the BRT project is expected to have a positive impact on Muni's annual operating budget. The BRT project is expected to result in operational cost savings, reducing strain on Muni's operating budget. By increasing transit speeds, fewer vehicles are needed on Van Ness Avenue to provide the same service frequency.[3] As a result, the project is projected to reduce annual transit operating costs by 2.4 million for the LPA. These savings could be reinvested in additional service for the 47 or 49 which would further reduce crowding or elsewhere in the Muni system. In 2035, Mitigation M-TR-1 calls for an additional vehicle to be added into service on both the 47 and the 49. The operations costs analysis indicates that these vehicles could be added at no additional operating costs due to the costs savings from lower BRT travel times. For more information on project operations and maintenance costs, see Section 9.2 of the Final EIS/EIR.

Alternatives without the full BRT features, like express bus service, showed significantly lower benefits than the alternatives under consideration in the EIS/EIR (Van Ness BRT Screening Summary Report, 2008; Van Ness BRT Feasibility Study, 2007). Adding express or limited-stop buses on Van Ness Avenue would save capital cost compared with the BRT project, but would require higher SFMTA annual operating costs.

Lastly, the Van Ness Avenue BRT has received the Federal Transit Administration's highest cost-effectiveness rating several years in a row. It is the only Small Starts Project in the country to receive at least a "medium-high" rating for Project Justification (which incorporates cost effectiveness), and is one of only two projects in Bay Area identified for Small Starts funding through MTC's Resolution 3434, in part due to its cost effectiveness. Funding to construct the BRT project is not interchangeable with Muni operations funding for existing operations or additional vehicle operations. The identified funding sources for the project primarily include the Federal Transit Administration's Small Starts program and San Francisco's Prop K sales tax, both of which are legally restricted to providing funding to construct capital transit improvements. They are not permitted to fund ongoing transit operations. For more detail on project funding sources, please see Sections 9.1.3 and 9.1.4 of the EIS/EIR.

Master Comment #5: Transit stop elimination

[3] The project will increase the size of buses from 40 ft to 60 ft, increasing capacity by 25 percent between the two SFMTA bus lines operating on the Van Ness BRT corridor (49 and 47) without adding any additional vehicle.

The following comments touch on the Master Comment #5 topic: A-7a-41, O-7-2, O-11b-2, I-3-2, I-42-4, I-49-6, I-53-3, I-56-4, I-56-5, I-57-3, and I-57-5.

Master Response #5:

As described in Section 2.2.2, under all build alternatives, six northbound and six southbound existing Muni bus stops on Van Ness Avenue which serve the 47 and 49 Muni lines would be discontinued. Under the LPA, a seventh northbound stop at Mission/South Van Ness would be discontinued, with the nearby 47 stop located on South Van Ness Avenue, just south of Mission Street. Under the LPA, the proposed project would have 8 or 9 northbound stations depending on if the Vallejo Northbound Station Variant is included, and 9 southbound BRT stations instead of the 15 northbound and 14 southbound Muni stops in each direction currently on Van Ness Avenue. The reason for eliminating, or consolidating, stops is to reduce dwell and overall travel time and to achieve greater reliability of service, which are key features of rapid transit such as BRT. Existing bus stops on intersecting and nearby streets would not be affected by the proposed project. For example, stop spacing would remain unchanged on the 19-Polk Muni line, which provides local Muni service one block east of Van Ness Avenue. Table 2-3 in the Final EIS/EIR shows the locations of proposed stations in each build alternative, including the LPA. All proposed stations would be within one block of Muni Rapid cross routes. Figures 2-2 and 2-3 show the locations of existing Muni bus stops, and the locations of the proposed LPA stations.

The average spacing of the proposed BRT station locations under the LPA would be approximately 1,130 feet, requiring an average walk of up to 565 feet (two blocks) from a location halfway between two stops; this would constitute an increase, on average, of up to approximately 215 feet of additional walking to access stops if a person had an origin or destination exactly between the proposed BRT station locations. A distance of 215 feet is less than one block along Van Ness Avenue. On average, the proposed project complies with the applicable 1,000- to 1,200-foot spacing guideline for light rail lines (source: SFMTA FY 2008-FY2027 Draft Short Range Transit Plan, 2007).[4]

In addition to considering Muni's stop spacing guideline, the BRT station locations are based on three goals: 1) place stops as evenly spread out as possible within the project corridor; 2) consider ridership and place stations where the largest numbers of passengers board and alight; and 3) facilitate easy connections with other Muni lines, particularly other Rapid network lines. Grade was also considered, and stations were not proposed on blocks with a grade of greater than 8 percent, consistent with ADA standards. Within the study area, more than 70% of the blocks along Van Ness Avenue have grades less than 5%, and there are no blocks with grades greater than 10 percent. The proposed BRT station locations were then refined based on public and agency input into the design process, including from the Van Ness BRT Citizens Advisory Committee, the Mayor's Office on Disability, and accessibility coordinators at the SFDPW and SFMTA. In recent public meetings, considerable concern was expressed by local residents regarding the lack of transit stations proposed in the vicinity of the Van Ness Avenue and Vallejo Street intersection. In response to this public concern, a southbound transit station at the intersection of Van Ness Avenue and Vallejo Street has been incorporated into the LPA. A northbound transit station in this same location, referred to as the Vallejo Northbound Station Variant, could also be implemented, and will be decided upon at the time of project approval.

The project team has also met with local groups and organizations that focus on accessibility issues during preparation of the Feasibility Study and EIS/EIR, including the Lighthouse for the Blind and Visually Impaired, the Mayors Disability Council Physical Access Committee, and the Muni Accessibility Advisory Committee, to gather input for the BRT project. Chapter 8 of the Final EIS/EIR provides additional detail on the public participation process.

As described in Section 2.2.2, existing stops for the 47 and 49 bus lines are approximately 700 feet apart on Van Ness Avenue. This is approximately 100 feet closer together than Muni recommends for the local bus network. Consolidation of existing stops will mean that some bus patrons will need to walk further to reach a bus stop compared with existing conditions. The project proponents recognize that the proposed project would increase the distance between stops, which would increase the physical effort required to reach transit relative to existing conditions for some bus patrons. This may pose a burden to some bus patrons. The Van Ness BRT project is

[4] There are no SFMTA stop spacing guidelines for BRT.

designed to be as universally accessible as possible. The Draft EIS/EIR provided a full evaluation of the project's accessibility for all users, which was updated and included in Section 3.4.3.1 of the Final EIS/EIR. The evaluation is based on the principles of Universal Design and recognizes that users, including the elderly and disabled, may have different concerns. Some may depend on transit to meet their need for efficient travel in the Van Ness corridor, while others prefer more frequent stops to minimize walking distances. The evaluation identifies the increase in physical effort required to reach a transit stop as posing a challenge to some riders, but also notes other benefits the project provides to improve accessibility in the corridor. For example, level or near level boarding at BRT stations would reduce the physical effort required to board transit vehicles, while curb bulbs, nose cones, pedestrian countdown signals, and accessible pedestrian signals at intersections would allow people with a greater range of physical abilities to safely cross the street.

Master Comment #6 Construction impacts on businesses and residents

The following comments touch on the Master Comment #6 topic: O-5-1, O-5-5, O-5-7, O-5-8, O-5-14, O-5-16, I-8-1, I-4-1, I-11-2, I-20-3, I-31a-1, and I-36-1, and I-36-8.

As explained in Section 4.15 Construction Impacts of both the Draft and Final EIS/EIR, residents and businesses would experience temporary impacts during project construction related to increased noise, dust, vibration, and air emissions from construction equipment. Also, transit patrons may be inconvenienced by relocation of transit stops and delayed transit service; and drivers would experience slower speeds along Van Ness Avenue. In addition, parking may be temporarily converted to mixed-flow traffic lanes, resulting in a loss of colored and non-colored parking spaces along Van Ness Avenue. A description of the construction plan is provided below, followed by a discussion of construction impacts and how they would be addressed.

Construction would include the following major activities along the length of the proposed project: pavement rehabilitation as needed along the transitway, pavement resurfacing of Van Ness Avenue from curb to curb, reconstruction of curb and gutters (including curb bulbs), replacement of the sewer pipeline, reconfiguration of the median, construction of BRT stations, replacement of the OCS support poles/streetlights system, replacement of traffic signal infrastructure, and associated utility relocations. BRT station construction would involve installing components such as platforms, canopies, ticket vending equipment, railings, lighting, signage, and station furniture.

Project construction is anticipated to last a period of 20 months for the LPA. With the exception of replacement of the overhead contact system support poles/streetlights and equipment staging and transport, all construction activities would occur within the existing Van Ness Avenue right-of-way. There would be no complete sidewalk closures, and merchant access would be maintained throughout construction. Two traffic lanes would remain open in each direction during peak periods, although additional closures may be necessary during off-peak hours. The preferred construction approach is to have three-block segments of Van Ness Avenue in spaced out locations in the corridor under construction at time, limiting the disruption to particular businesses. In other words, construction activities would primarily occur on multiple 3-block segments on Van Ness Avenue at one time. Thus, multiple construction crews would be working at different 3-block segments along the corridor at one time. This approach would stagger the impacts of construction along the corridor and minimize the duration of the disruption at any one location, although it would involve the most intensive environmental impacts (i.e. traffic, parking and air quality) at one location. The preferred construction approach would be the most efficient approach in terms of resource management and mobilization and would minimize the effect of delays at one location greatly impacting the entire project schedule.

During construction, temporary conversion of existing parking lanes to mixed-flow traffic lanes would be implemented on the three-block segments where construction is taking place, resulting in removal of on-street parking on both sides of Van Ness Avenue within the 3-block segments. This allows for a minimum of two lanes of traffic open in each direction while construction in the segment is underway. Parking would be maintained on the blocks where construction is not underway, aside from completed blocks where parking would be permanently removed by the project design. Temporary removal of curbside parking would include colored parking spaces, including truck and passenger loading spaces, which could affect surrounding land uses. As part of the TMP described below, the SFMTA will work with affected land uses to determine modified loading operations during construction. Sidewalks will remain open during construction, therefore, it is not anticipated that access to businesses and other properties along Van Ness Avenue would be disrupted. During construction, there would be a temporary increase in traffic, slower speeds along Van Ness Avenue, and reduced road capacity due to the closure of one southbound and one northbound traffic lane. Existing transit service would be disrupted; bus stops would be relocated along Van Ness Avenue, and buses would experience reduced speeds as well.

Lastly, the affected community would be subject to noise, dust, vibration, and air emissions from construction equipment during project construction. These impacts would cause temporary inconvenience to area residents, businesses, and people traveling through the corridor, and would therefore be considered less than significant. They could be minimized by implementing a Transportation Management Plan (TMP) and keeping the public informed about the construction schedule and activities throughout the construction period. The following mitigation measures will be implemented through the TMP:

- A TMP that includes traffic rerouting, a detour plan, and public information procedures will be developed during the design phase with participation from local agencies, other major project proponents in the area (e.g., CPMC Cathedral Hill, Hayes Two-Way Conversion, and the Geary Corridor BRT projects), local communities, business associations, and affected drivers. Early and well-publicized announcements and other public information measures will be implemented prior to and during construction to minimize confusion, inconvenience, and traffic congestion.
- As part of the TMP, construction planning will minimize nighttime construction in residential areas and minimize daytime construction impacts on retail and commercial areas.
- As part of the TMP, construction scheduling and planning in the Civic Center area will take into consideration major civic and performing arts events.
- As part of the TMP public information program, SFMTA will coordinate with adjacent properties along Van Ness Avenue to determine the need for colored parking spaces and work to identify locations for replacement spaces or plan construction activities to minimize impacts from the loss of these spaces.
- As part of the TMP public information program, SFMTA will coordinate with adjacent properties along Van Ness Avenue to ensure that pedestrian access to these properties is maintained at all times.
- As part of the TMP, the SFMTA's process for accepting and addressing complaints would be implemented. This includes provision of contact information for the Project Manager, Resident Engineer, and Contractor on project signage with direction to call if there are any concerns. Complaints are logged and tracked to ensure they are addressed.
- As part of the TMP, adequate passenger and truck loading zones would be maintained for adjacent land uses, including maintaining access to driveways and providing adequate loading zones on the same or adjoining street block face.

In addition to these measures, during construction coordination with relevant City and State agencies will occur to minimize temporary impacts to traffic, transit, parking and non-motorized users. The SFMTA would also have advisory committees throughout design and construction; these committees would have community members as business representatives present for input.

Furthermore, all construction activities would be coordinated with other projects planned in the Van Ness Avenue corridor, including the CPMC Cathedral Hill and Geary BRT projects, and repaving along Franklin, Gough and Polk streets as part of the Road Repaving and Street Safety Bond Program (including the Polk Street Corridor Improvement Project). A Project Construction Plan (PCP) has been prepared to provide detailed information, schedules, and maps on construction of the Van Ness Avenue BRT Project. This document will be kept current in coordination with the TMP. The PCP and TMP take into account potential impacts of other planned projects under construction in the general vicinity of the Van Ness Avenue BRT Project. Coordination of all planned construction activities and permanent utility relocation and modification activities with the other projects in the vicinity would minimize cumulative construction impacts. Coordination and planning efforts are facilitated through the San Francisco Committee for Utility Liaison on Construction and Other Projects (CULCOP), the San Francisco Street Construction Coordination Center which include representatives from multiple city agencies like the Planning Department and Department of Public Works, and Caltrans with the emphasis on the most efficient construction planning to minimize disruption to the community.

Master Comment #7: Tree removals and replanting opportunities

The following comments touch on the Master Comment #7 topic and express a desire for the preservation of trees, ask for more information about the quality of trees to be removed, or question the if the tree removal information is accurate: O-6a-3, I-14-1, I-15-1, I-16-1, I-36-6, I-39-4, I-40d-27, I-42-3, I-47-1, I-57-6, I-64-2, I-68-3, A-7a-2,Aa-7a-4, A-7a-29, A-7a-30, A-7a-31, A-7a-32, A-7a-35, A-7b-2, A-7c-3, A-7c-13, A-7c-15, A-7c-18, A-7c-22, A-7c-26, A-7c-31, A-7c-35, A-7c-38, A-7c-42, A-7e-2, A-7e-3, A-7f-2, A-7f-3, A-7f-4, A-7f-5, A-7f-6, A-7h-2, A-7h-12, A-7h-18, A-7h-26, A-7i-1, A-7i-4.

Master Response #7:

The effect of the proposed project on existing trees was another major concern expressed in comments. There is a strong desire among the public and local agencies to preserve existing trees. The San Francisco Department of Public Works (SFDPW) requested additional analysis be completed pertaining to removal of median trees, which is reflected in Sections 4.4.2.5 and 4.4.3.4 of this document.

Thus in response to comments received and developments in project design explained below, a more comprehensive Tree Removal Evaluation and Planting Opportunity Analysis was undertaken in 2012 to identify the maturity and health of trees in the corridor and therefore better understand the impacts of tree removal and the opportunities for preserving trees, and the parameters of new tree plantings (BMS, 2013). This analysis was undertaken for all of the build alternatives, including the LPA. The 2012 survey took into account the following factors that were not taken into account in the 2009 survey, the results of which were presented in the Draft EIS/EIR:

- In October 2012, Caltrans issued a design requirement for the project that new tree plantings must be set back by 35 feet from each intersection. This 35-foot setback must be applied to all new, or replacement, tree plantings and is not being applied to existing trees. In other words, existing median trees must not be removed to achieve the 35-foot setback. The 35-foot setback reduces the number of replacement trees that can be planted under all of the build alternatives, including the LPA.
- Sidewalk trees that would be removed under Build Alternative 2 were quantified, as well as locations where median trees would need to be removed to accommodate turn pockets.
- The maturity and condition of all median trees, as well as each sidewalk tree that would be removed under build Alternative 2, were evaluated to better understand the biological and aesthetic value of these trees and the impacts that would result from removal of existing trees under each build alternative, including the LPA. This evaluation informed impacts, as well as opportunities, for tree preservation reported in Sections 4.4 and 4.13.
- A 15-foot separation etween existing trees to be preserved and new trees to be planted was assumed in determining the number of new trees that could be planted.

A certified arborist evaluated each median tree on Van Ness Avenue within the project limits for tree health and condition, using a scale of 1 to 5, which is defined in Table 4.4-2 in Section 4.4.2 (BMS, 2013). Sidewalk trees that would be removed under Build Alternative 2 were also evaluated for health/condition. The planting opportunity analysis, including the list of potential replacement trees, took into consideration the OCS clearance requirements of 5 feet between the OCS wires and a tree, and 5 feet between the top of the OCS wires and a tree canopy. These OCS setbacks require the bottom of a tree canopy to be a minimum of 23 feet from the ground or a tree of any height to have a tree canopy narrower than 11 feet. Thus, some existing median trees may need to be removed because they could not survive the pruning that would be required to provide the needed OCS clearance, even if they were able to survive construction vibrations. The OCS clearance also informs the list of potential replacement trees because replacement trees must be able to grow to maturity given the required pruning. While removal and replanting of trees provide urban design opportunities that support City planning goals, the preservation of trees is considered of greater value than the value of the aforementioned urban design opportunities. Existing trees are scenic and biological resources; therefore, preservation of trees has been a design priority for each build alternative, including the LPA. The tree surveys and evaluations conducted in 2009 and 2012, and documented in the technical report, Tree Removal and Planting Opportunity Evaluation (BMS 2013) have supported design efforts to reduce removal of existing trees under each build alternative, including the LPA.

Table MR7-1 provides a breakdown of existing median trees by health/condition that would be removed by each alternative, including the LPA. Mature trees of healthy condition 4 or 5 are considered to be of the greatest biological value and visual quality due to their health, height, and the mature canopies they provide. It would also require a longer period of time for replacement trees to grow to equivalent size as mitigation for their removal, and replacement trees would have a narrower canopy than many removed trees. Thus, removal of mature, healthy trees is considered of greater impact than removal of young trees or trees in fair or poor health. There are 28 median trees in the project corridor that are mature and of healthy condition 4 or 5, which represents 27 percent of trees in the corridor.

Table MR7-1: Removed Trees Summarized by Tree Health and Condition

BUILD ALTERNATIVE[1]	TREES TO BE REMOVED			
	MATURE TREES CONDITION 4 OR 5	YOUNG TREES CONDITION 4 OR 5	TOTAL TREES CONDITION 4 OR 5	MATURE & YOUNG TREES CONDITION 1-3
Existing Conditions/ No Build Alternative	0	0	0	0
Alternative 2	6	30	36	22
Alternative 3	28	50	78	24
Alternative 4	11	40	51	13
LPA[2]	23	44	67	23

Implementation of Design Option B would not appreciably change the impacts to landscape and trees under Build Alternatives 3 and 4.

The existing conditions for Build Alternative 2 differ from that of the other build alternatives and LPA because affected sidewalk trees were evaluated. No sidewalk trees would be impacted under the other build alternatives, including the LPA.

The LPA is a combination and refinement of the center-running alternatives with limited left turns (Build Alternatives 3 and 4 with Design Option B). Incorporation of the Vallejo Northbound Station Variant in the LPA design would not affect tree removal or planting opportunities under the LPA.

Source: Van Ness BRT Tree Removal Evaluation and Planting Opportunity Analysis performed by BMS Design Group (BMS, 2013).

Table MR7-1 provides an overview of the anticipated number of trees that would be removed under each build alternative, including the LPA, and the number of replacement and infill trees that could be planted based on the spacing assumptions explained above.[5] The greatest number of existing trees would be preserved under Build Alternative 2, while it is assumed that no median trees would be preserved under Build Alternative 3. The number of trees that would be preserved under Build Alternative 4 and the LPA fall within the range of that for Build Alternatives 2 and 3. All of the build alternatives, including the LPA, would result in a substantial net gain of trees in the corridor when new planting opportunities are considered. Each of the build alternatives, including the LPA, would result in new tree plantings at locations of removed sidewalk bus shelters as feasible. In addition,

5 With different assumptions (closer spacing), more trees could be planted. This would be determined during final design, and a conservative scenario is evaluated in this analysis.

under each of the build alternatives, including the LPA, trees would be planted in areas of the median where trees do not currently exist, and where existing trees would require removal because they would not survive project construction. Increased sidewalk and median tree plantings over existing conditions would improve the visual setting, with improvements growing over time as plantings mature, resulting in long-term, beneficial effects. At the same time, however, there would be a plant establishment period lasting for several years for new trees to reach maturity. This would be a period of reduced benefits compared with the benefits offered by mature trees and their canopies. The trade-offs between increased plantings in the corridor and the loss of existing trees is discussed for each build alternative, including the LPA, in Section 4.4.3.4 of this document.

Master Comment #8: Calculating and Modeling Existing and Future Traffic, Including Traffic Diversions

The following comments touch on the Master Comment #8 topic: O-1-3, O-2-8, O-7-3, O-9-1, I-8-3, I-31b-1, I-31b-4, I-31b-5, I-31b-7, I-32-1, I-32-2, I-38-5, I-38-10, I-40d-6, I-40d-10, I-40d-11, I-40d-13, I-40d-16, I-40d-19, I-40d-24, I-40d-34, I-55-3, I-67-2, and I-69-1.

Due to the complexity and large scale of the traffic study area, a multi-step process was used to calculate and model changes in traffic volumes that would result from the implementation of BRT, including the diversion of traffic from Van Ness Avenue onto other streets, as well as to calculate the associated transportation impacts. An overview of the process is shown in the bullet points below, and is further described through this response, Master Response #10, and in greater detail in the Vehicular Traffic Analysis Technical Memorandum (CHS, 2011):

1. Traffic turning movement counts were collected at 91 of the 139 intersections in the traffic study area (see Figure 3.3-1 of the Final EIS/EIR for a map of traffic study area) in the spring of 2007. The counts were collected at all intersections on Gough, Franklin, and Van Ness Avenue within the traffic study area and an additional 11 intersections on Polk, Larkin and Hyde streets within the traffic study area.
2. The specific turning movement counts collected as part of Step 1 were used, along with a signal timing plan provided by the SFMTA, to calibrate the existing conditions (2007) Synchro traffic analysis model.
3. Separately, 24-hour traffic counts were collected in March 2007 at five locations along Van Ness Avenue and one location each along Franklin and Gough streets. These locations were selected because they represent blocks in the traffic study area with arterial roads as cross streets in the northern, middle, and southern sections. These 24-hour counts (different than the turning movement counts taken at 91 intersections) were taken to determine the peak hour to perform the intersection LOS analysis (as shown in Table 3.3.1 of the EIS/EIR), -
4. San Francisco Chained Activity Modeling Process (SF-CHAMP), San Francisco's Travel Demand forecasting model was used to predict changes in origin/destination choice, travel mode (i.e., auto, transit, bicycle, etc.) choice, and route choice for the entire San Francisco area with the implementation of anticipated land use changes (i.e., development projects) and transportation changes (i.e., Van Ness BRT and other anticipated projects such as Central Subway and the Presidion Parkway). The direction and amount of change (i.e., percent of growth or reduction) in traffic volumes were then applied to the existing traffic volumes and those volumes used in the existing conditions (2007) Synchro traffic analysis model. This provided turning movement traffic counts for every intersection in the traffic study area for the No Build Alternative and each build alternative in 2015 and 2035.
5. A series of refinements were made to the modeled intersection traffic volumes for each scenario to account for factors SF-CHAMP isn't designed to capture (e.g., grades, signal timing, etc.).
6. The final volumes for the No Build Alternative and each build alternative, in both 2015 and 2035, created through steps 1 through 5 were used as inputs to Synchro traffic analysis models which were used to calculate traffic impacts on Van Ness Avenue and five parallel streets in Chapter 3.3 of the EIS/EIR. The volumes were also used to create the inputs for the localized Air Quality and Noise and Vibration impacts analysis in Chapter 4.10 and 4.11 (see Master Responses #11 and #12).

7. The LOS analysis, based on outputs of the existing conditions Synchro model which was calibrated using the PM peak turning movement traffic counts at 91 intersections, showed that all of the intersections in the traffic study area, except for the intersection of Gough Street and Green Street, operated at LOS D or better conditions in 2007 (see Section 3.3.2.4 and Figure 3.3-2). This method is consistent with standard traffic engineering practice to evaluate LOS conditions for both existing conditions and future year baselines in NEPA and CEQA.

Use of SF-CHAMP

SF-CHAMP is the San Francisco travel demand forecasting model developed by SFCTA, and it was used to determine how the project would change traffic patterns or modes of transport as described in Chapter 3 of the EIS/EIR. SF-CHAMP is a computer-based tool that can be used to assess the impacts of land use, socioeconomic, and transportation system changes on the performance of the local transportation system. SF-CHAMP was developed to reflect San Francisco's unique transportation system and socioeconomic and land use characteristics. The relationships and parameters in SF-CHAMP were statistically estimated from San Francisco residents' observed travel patterns and then tested to make sure the model matched observed transit line boardings, roadway volumes, and numbers of vehicles. For each modeled scenario, a detailed representation of San Francisco's transportation system is used, as well as population and employment characteristics, to produce measures relevant to transportation and land use planning. Using future year transportation, land use, and socioeconomic inputs, the model forecasts future travel demand.

The SF-CHAMP Model incorporates a state-of-the-art approach to forecasting travel demand called "tour", or "activity-based travel demand modeling". This activity-based model is more sensitive than traditional four-step models to a broader array of conditions that influence travelers' choices. The federal government, as part of the Travel Model Improvement Program (TMIP), Transportation Research Board, and the Second Strategic Highway Research Program (SHRP2) has recently invested a great deal of resources to get as many metropolitan areas as possible to adopt this state-of-the-art approach (see tmiponline.org, TRB Special Report 288, and SHRP2 C10 and C46 scope of work).

SF-CHAMP has been reviewed by local, regional, and federal agencies, and published in numerous peer reviewed transportation and modeling journals, and has been approved for use on federal projects by the MTC as part of their bi-annual model consistency process. SF-CHAMP is the primary tool for travel demand forecasting in San Francisco, and is commonly used by multiple San Francisco agencies, including the SFMTA and the Planning Department's Environmental Planning section for the travel demand forecasting component of transportation impact analyses. More information on the SF-CHAMP model can be found at www.sfcta.org/modeling and a validation report can be found in Appendix 1 of the Van Ness BRT Vehicular Traffic Analysis Technical Memorandum (CHS, 2013).

For purposes of this project, SF-CHAMP incorporated projected land use growth for both the 2015 and 2035 scenarios as inputs, using ABAG 2007 projections which were used in the most recently adopted Regional Transportation Plan (RTP), Transportation 2035, for which an EIR was prepared.[6]State of California Government Code 65089 states that data bases (i.e., land use inputs) for models such as SF-CHAMP used to determine quantitative impacts of development on the circulation system "…shall be consistent with the data bases used by the regional planning agency [i.e., MTC]". For this reason, land use projections used in the SF-CHAMP model for EIRs led by the San Francisco Planning Department as well as this EIS/EIR are required to use land use projections that are within one percent of regional ABAG projections for population, employed residents, households, and employment. . The San Francisco Planning Department takes San Francisco's employment and housing growth provided by ABAG and distributes the growth to better reflect anticipated developments in San Francisco such as the California Pacific Medical Center and the Market and Octavia Area Plan. This methodology has been approved by the MTC such that the project remains federally compliant. . See Appendix 2 of the Van Ness BRT Vehicular Traffic Analysis Technical Memorandum (CHS,

[6] The land use projections used for the Van Ness Avenue BRT EIS/EIR modeling effort are discussed briefly in Section 3.1.2 of the EIS/EIR and in more detail in the Traffic Analysis Technical Memorandum (CHS, 2013),

2013) for details on how the Planning Department allocates future growth in San Francisco. SF-CHAMP also incorporates all anticipated transportation network changes separate from the Van Ness BRT Project in both the 2015 and 2035 scenarios. A list of these improvements can be found in Chapter 2 of the Final EIS/EIR.

SF-CHAMP was used as the primary technical modeling tool to predict changes in travel patterns for private vehicles with the implementation of BRT in both the near term (2015) and horizon year (2035). The SF-CHAMP model takes into account the "attractiveness" (i.e., relative capacity, driving travel time, left turn opportunities, etc.) of streets relative to each other, as well as the relative "attractiveness" of other modes (e.g., cost, travel time, frequency, etc.) when determining the changes in traveler behavior with the implementation of BRT. In other words, Van Ness Avenue would be less attractive to drivers when compared with the No Build Alternative and BRT service on Van Ness Avenue would be slightly more attractive than the 47/49 service under the No Build Alternative. SF-CHAMP does not take into account changes in signal timing (although it does take into account transit travel time improvements through the implementation of TSP) or the nuances of operations such as queuing for specific directional movements (i.e., a right turn at a specific intersection).

For the build alternatives, SF-CHAMP was coded to show one lane of mixed traffic converted to transit only in each direction, representing a reduced capacity of slightly less than 1/3 (the buses would no longer be operating in the mixed traffic lanes). SF-CHAMP was also coded to reflect the BRT benefits that are proposed as part of the project 47 and 49 with benefits meant to represent BRT (see Appendix 2 of the Vehicular Traffic Analysis Technical Memorandum, CHS, 2013). Since SF-CHAMP calculations are based on observed San Francisco traveler behavior in circumstances that reflect changes in streets' auto capacity or increases in transit performance, the outputs are representative of behavior change with the implementation of BRT.

Calculating Traffic Volumes for No Build and Build Alternatives

Traffic volumes for the existing conditions were collected based on actual field counts. Volumes for 2015 and 2035 No Build and Build Alternatives were developed based on series of modeling and manual refinement processes, as described below.

1). **Existing traffic counts**: Traffic turning movement counts were collected at 91 of the 139 intersections in the traffic study area (see Figure 3.3-1 of the EIS/EIR for a map of intersections in the traffic study area) in the spring of 2007 with a few additional intersections collected in 2008 and 2009 to better model the traffic south of Market within the traffic study area. The counts were collected at all intersections on Gough, Franklin, and Van Ness Avenue within the traffic study area and an additional 11 intersections on Polk, Larkin and Hyde streets within the traffic study area. Traffic counts were also collected at the intersection of Duboce/13th/US 101 Freeway offramp. Intersections where turning movement counts were collected can be found in Appendix 4 of the Vehicular Traffic Analysis Technical Memorandum (CHS, 2013) [7].

2) **Traffic volume balancing:** The specific turning movement counts collected as part of Step 1 were used, along with a signal timing plan provided by the SFMTA, to create the existing conditions (2007) Synchro traffic model. This original set of volumes was balanced for all 139 study area intersections between the total number of vehicles arriving at an intersection and departure from an intersection. For study area intersections along Polk, Larkin, and Hyde streets where existing conditions volumes were not collected using field counts, this balancing exercise was used to estimate the amount of traffic in the existing conditions Synchro Model. Section 2.2 of the Vehicular Traffic Analysis Technical Memorandum (CHS, 2013) describes the results of the existing conditions (2007) Synchro traffic model.

3) **2015 and 2035 traffic volume estimation:** The traffic volume estimates generated by SF-CHAMP for the near-term 2015 and long-term 2035 horizon years were used to calculate growth factors (i.e., percent change in volumes) between 2005[8] and 2015 and between 2005 and 2035 for each north-south street in four different sections of the corridor from the Duboce/13th/US 101 Freeway offramp to Lombard Street. and for the east-west streets by facility type (e.g. arterial, collector, and local streets) in the traffic study area from Mission to

[7] Please note that these intersection level traffic counts are different than the 24-hour traffic counts described in Section 3.3.2.2 (Table 3.3-1) which were used to determine the time period with peak traffic volumes in the traffic study area.
[8] SF-CHAMP represents transportation in 5-year increments. The 2005 estimates most closely match the 2007 existing conditions traffic volumes collected through field data

Lombard Street.. These growth factors were applied to the 2007 traffic volumes and the calibrated existing conditions (2007) Synchro model to estimate 2015 near-term No Build and 2035 long-term No Build traffic volumes to minimize margin of error. The initial set of future traffic volumes were balanced between the upstream departure volumes and downstream arrival volumes to ensure equilibrium of traffic volumes within the study area. Similarly, traffic volumes generated by SF-CHAMP were used to create growth factors on the parallel streets and side streets for BRT project scenarios. These growth factors were applied to the calibrated Synchro existing conditions model to estimate traffic volumes for each intersection in 2015 and 2035 for all of the build alternatives. The next two steps involved adjustments to the raw model outputs that account for differences in turning opportunities in order to more realistically represent diverted traffic within the corridor.

4) Adjustments to raw model outputs. Using the raw estimated traffic volumes created through steps 1-3 above, a series of adjustments were made based on knowledge of San Francisco traveler behavior, as described below.

4a) Incorporating differences in turning opportunities: The build alternatives would include elimination of 13 left-turn pockets along Van Ness Avenue in both northbound (6 bays) and southbound directions (7 bays) as seen in Tables MR8-1 and MR8-2 below. Also, a design variation (Design Option B,) was considered for the two center-lane BRT alternatives, under which left-turn bays would only be provided at Broadway in the southbound direction and at Lombard in the northbound direction. The LPA incorporates Design Option B. With the reduced number of left-turn opportunities, left turn volumes from the existing left turn bays were adjusted using knowledge of San Francisco and general traveler behavior, based on the assumptions below. TAC staff with San Francisco based traffic engineering experience, including the City Traffic Engineer, reviewed the assumptions for reassigning left turning vehicles.

- Approximately one-third of the left-turn traffic would be diverted to the upstream left turn bay if there is one available within two blocks of the affected intersection.
- Approximately one-third of the left-turn traffic would be diverted to the downstream left turn bay if there is one available within two blocks of the affected intersection.
- Approximately one-third of the left-turn traffic would circle the block to reach its desired destination points. Additionally, if upstream and downstream left-turn opportunities are unavailable within two blocks of the affected intersection, then all left turning traffic would circle the block.

Table MR8-1: Van Ness Avenue Northbound Left Turn Opportunities by Alternative

Northbound	Alternative 1 (No-Build)	Alternative 2 (Side Lane BRT)	Alternative 3 and 4 (Center Lane BRT)	Alternative 3 and 4 (Center Lane BRT) with Design Option B
Hayes	✓	✓	✓	
Grove	✓	✓	✓	
Turk	✓	✓	✓	
Ellis	✓			
Geary	✓			
Pine	✓	✓	✓	
Sacramento	✓			
Jackson	✓			
Pacific	✓			
Green	✓			
Union	✓	✓	✓	
Lombard	✓	✓	✓	✓

Note: The LPA incorporates Design Option B, and thus is represented in the far right column.

Table MR8-2: Van Ness Avenue Southbound Left Turn Opportunities, by Alternative

Southbound	Alternative 1 (No-Build)	Alternative 2 (Side Lane BRT)	Alternative 3 and 4 (Center Lane BRT)	Alternative 3 and 4 (Center Lane BRT) with Design Option B
Fell	✓	✓	✓	
Grove	✓			
McAllister	✓			
Golden Gate	✓	✓	✓	
Eddy	✓			
O'Farrell	✓			
Bush	✓	✓	✓	
Clay	✓			
Washington	✓			
Broadway	✓	✓	✓	✓
Filbert	✓			

Note: The LPA incorporates Design Option B, and thus is represented in the far right column.

4b) Accounting for circuitous or unlikely detours: For this step, the raw volumes created by applying growth factors provided by the SF-CHAMP model to the 2007 existing conditions volumes were refined based on professional judgment and past experience to reduce the number of trips that the model predicted would divert outside the corridor, and put them on parallel streets within the corridor (i.e., Gough, Franklin, etc.) A list of criteria was created for the manual adjustment of the traffic volumes to account for circuitous or unlikely detours projected by the SF-CHAMP model. TAC staff with San Francisco based traffic engineering experience, including the City Traffic Engineer, reviewed the methods and criteria to account for circuitous or unlikely detours. The raw outputs generated using SF-CHAMP growth factors were revised if modeled diverted vehicles were assigned to streets outside of the traffic study area that have steep slopes or numerous stop signs, to streets that are narrow and residential (e.g., northern sections of Webster Street) or to streets that are discontinuous in many sections along its routes (such as mid-section of Octavia Street). The streets meeting the criteria above are not suitable or attractive for traffic diversions. At the same time, the parallel arterial streets within the study area, such as Franklin, Gough, Hyde, and Larkin are one-way and have better signal synchronization, higher capacities, and are closer to Van Ness Avenue to accommodate diverted traffic.

Vehicles assigned to those streets with less capacity by SF-CHAMP were manually reassigned to the parallel arterial streets in the study area with more capacity. This means that the traffic impact analysis represents higher traffic volumes and more congestion when determining environmental impacts than if the growth factors from SF-CHAMP were used without any manual adjustments.

4c) Detailed, congestion-related adjustments: The third round of manual adjustments was applied to achieve an equilibrium of traffic volumes in the study area, especially for the northern portion of the traffic study area. This is necessary because the northern section of Gough Street has only one southbound lane, instead of the 3-5 southbound lanes in the southern section, and many intersections have stop signs while Van Ness Avenue has higher capacities and a lower volume to capacity ratio. Manual adjustments were made to relocate some traffic from Gough Street to Van Ness Avenue and Polk Street southbound in order to balance overall traffic demand in the southbound direction in the northern section of the study area.

This adjustment is reasonable because the roadway network in downtown San Francisco is a grid system, and driver behavior indicates that travelers in San Francisco will find the fastest alternative routes to reach their destinations if one street is overly congested. This is especially the case if the congested street is more constrained, has numerous stop signs, and has a steep grade (e.g., northern sections of Gough Street) whereas alternative streets have comparatively more lanes and capacities (e.g., Van Ness Avenue). Approximately 100 to 120 vehicles were reassigned for the 2015 build alternatives. Approximately 150 to 170 vehicles were reassigned for the 2035 build alternatives. TAC staff with San Francisco based traffic engineering experience, including the City Traffic Engineer, reviewed the methodology for making these detailed, congestion-related adjustments.

4d) Accounting for different left turning opportunities for Design Option B and the LPA: Design Option B and the LPA only have one left turn opportunity SB (Broadway) and one left turn opportunity NB (Lombard) within the BRT corridor. Based on data about the origins and destinations of left-turning drivers from SF-CHAMP, as well as the relative capacities, operations, and characteristics of the numerous intersections in the Van Ness BRT Traffic Study Area, left-turning traffic at the left turn bays for Build Alternatives 3 and 4 was reassigned to other routes within the study area to develop the 2015 and 2035 Build Alternatives 3 and 4 Design Option B (and the LPA) traffic volumes. All vehicles for each left turn opportunity were reassigned based on the likely diversion of traffic for that particular movement. Figure MR8-1 below provides an example of how the reassignment was done for NB left turns at Pine Street. Appendix 7 of the Vehicular Traffic Analysis Technical Memorandum shows how the reassignment was done for all eight remaining left turn opportunities. TAC staff, including the City Traffic Engineer, reviewed the approach to reassignment of the left turning traffic for Design Option B.

4e) Balancing: The forecast traffic volumes were then balanced between the upstream departure volumes and downstream arrival volumes to ensure equilibrium of traffic volumes within the study area for all No Build and Build alternatives.

The adjustment method described above provided the resulting changes in travel demand and vehicle traffic volumes for each No Build and build alternative in 2015 and 2035. The Vehicular Traffic Impact Analysis Technical Memorandum (CHS, 2013), Appendix 8, shows the volumes of all turning movements at all intersections in all scenarios in this EIS/EIR.

The resulting volumes indicate that on average, there would be 19 percent to 32 percent fewer private vehicles on Van Ness Avenue in 2015 with the implementation of BRT. This equates to roughly 315 to 650 fewer vehicles in each direction, depending on the location than under the No Build Alternative in 2015.[9] This also means that in almost all locations along the corridor, the majority (67%-81%) of drivers on Van Ness Avenue in the No Build Alternative would likely continue to drive on Van Ness Avenue with the implementation of BRT because it would still be the quickest/most direct route to their destinations.

[9]For Design Option B (LPA), due to the elimination of left turns along Van Ness Avenue and subsequent traffic diversions to other streets, the very southern end of the corridor near Market Street would experience a significantly greater reduction in vehicle traffic volumes on Van Ness Avenue, particularly in the NB direction (up to 965 fewer vehicles per hour than in the No Build Alternative – nearly 50%).

Figure MR8-1: Reassignment of left turn volumes for NB Pine Street for Design Option B (LPA)

Resulting Changes in Travel Demand and Vehicle Traffic Volumes

Results further indicate that the 19 percent to 32 percent of private vehicle trips that would otherwise have used Van Ness Avenue under the No Build Alternative 1 in 2015 would change their tripmaking in a number of different ways. The changes in travel behavior for the 315-650 "former Van Ness drivers" are forecast to be split between the following:

- Travelers who would continue to drive during the PM peak hour, but use one of the parallel streets in the corridor (Gough, Franklin, Polk, Larkin, or Hyde streets) instead of Van Ness Avenue;[10] or
- Travelers who would use transit; walk or bike; change the time of day of their trip; forego the trip; or continue to drive during the PM peak, but use a route through another part of the city other than Gough, Polk, Hyde, or Larkin Streets.

The resulting volumes indicate that in the 2015 PM peak, with the implementation of BRT, an average of 35 to 430 vehicles in each direction (1 to 7 vehicles per minute) could divert away from Van Ness Avenue and make their trip on a parallel street within the corridor (i.e., travel on Gough, Franklin, Polk, Larkin, and Hyde streets). The amount of additional private vehicles traffic varies widely up and down the two-mile stretch of corridor analyzed, but any given segment of Gough, Franklin, or Polk streets could experience an additional 50 to 250 vehicles during the PM peak hour (vph) in most typical locations, or roughly one to four additional vehicles per minute (source: CHS, 2013). Volumes on Franklin Street would tend to have the largest increase in traffic volumes of those three parallel streets while Polk would tend to have the lowest increase (on some segments along Gough and Polk streets, there would be no increase in traffic volumes during the PM peak hour with the implementation of BRT). Larkin and Hyde streets could also experience an increase in traffic volume of approximately 20 to 130 vph during the PM peak hour in typical locations, with Larkin experiencing higher increases in traffic volumes than Hyde Street. Some segments of Larkin and Hyde streets would experience even lower or no increases in traffic volumes during the PM peak hour with the implementation of BRT. The PM peak hour represents the worst-case traffic conditions.

As an example, Figure MR8-2 shows changes of traffic volumes in 2015 with the implementation of the LPA versus the No Build Alternative. Between Eddy and California streets, under Design Option B (LPA), approximately 540 fewer vehicles would travel on Van Ness in the SB direction and approximately 410 fewer vehicles would travel in the NB direction than under the No Build Alternative. Of the combined 950 vehicle reduction during the PM peak hour, approximately 360 (six per minute) vehicles would divert onto Gough, Franklin, Polk, Larkin, or Hyde streets. Franklin Street would have the highest increase in vehicles (160 vehicles per hour, or about three per minute), and increased traffic volumes on Polk Street would be next highest, with approximately 140 vehicles per hour. Gough, Larkin, and Hyde streets would have significantly fewer vehicles diverted from Van Ness, with less than 60 additional vehicles per hour (less than one per minute) between Eddy and California.[11]

Other drivers who would have traveled on Van Ness Avenue without the implementation of BRT would choose to drive at a different time of day, drive on a different route outside of adjacent parallel streets, or travel by

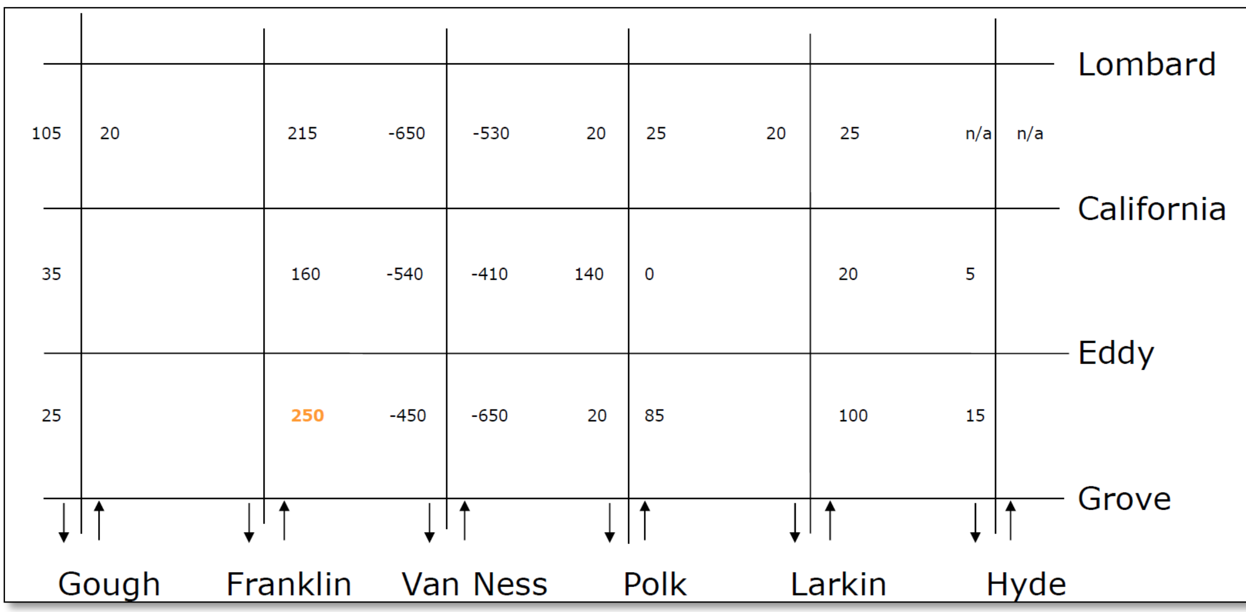
[10] SF-CHAMP includes classifications for all streets in San Francisco (e.g., arterial, major arterial, local, etc.), and incorporates the fact that Van Ness Avenue is US 101 into its calculations for whether a driver would divert. The fact that a significant number of regional auto trips already use other routes in the corridor such as Franklin and Gough (see Chapter 3.1) instead of Van Ness Avenue is an indication that a diversion of some of these drivers to other routes with the implementation of BRT is a reasonable model output.

[11] The greatest increase in traffic volumes in the study area would be on Franklin Street, north of Market Street for Design Option B and the LPA. Due in large part, to the reduction of left turn pockets along Van Ness Avenue, left turning vehicles under the Design Option B and LPA would use that segment of Franklin Street to go north. Thus, that intersection during the PM peak hour would experience an increase of up to 560 left turning vehicles in 2015 and 620 left turning vehicles in 2035 with the implementation of the LPA. These increases in traffic volumes are significantly higher than the increases at other segments along Franklin Street (more than three times the average of increased volumes at other screenline intersections along the corridor), and even higher than intersections on other parallel streets (more than five times the increase on Gough Street). The Synchro traffic analysis model incorporates these increased volumes when calculating significant traffic impacts, and shows that this change in traffic volumes causes operations at the intersection of Franklin and Market Street to perform at LOS F, with more than 100 seconds of delay for the left turn from Market Street onto Franklin Street in 2015 (see Section 3.3.3.2 and Master Response #9).

transit, because those are now more "attractive" options due to changes in travel time and reliability of these options in comparison with driving on Van Ness Avenue and the streets immediately parallel to it. These last categories of people comprise the remaining 250 to 540 travelers that would use a private vehicle on Van Avenue drivers during the PM Peak hour under the No Build Alternative.

SF-CHAMP analyzes changes to all streets in San Francisco. The "former Van Ness drivers" that continue to drive during the PM peak, but in areas outside of the immediate parallel street would have many streets to choose from when changing their routes. SF-CHAMP indicates that, with implementation of BRT, in 2015, streets outside the corridor (east of Van Ness to Embarcadero and west of Van Ness to Presidio) may see a total increase in traffic of approximately 200 vehicles in each direction with no street experiencing more than a 50 vehicles per hour increase in each direction. This increase represents a relatively small percentage of the overall volumes in these corridors, and would not constitute a significant impact.

Figure MR8-2: Changes in Traffic Volumes on Various Segments within Van Ness Avenue Corridor (Gough to Hyde Street) for LPA when Compared with the No Build Alternative in Year 2015 (source: CHS, 2013)



Master Comment #9: Calculating traffic impacts

The following comments touch on the Master Comment #9 topic, expressing concern about congestion on Van Ness Avenue, and/or congestion due to diverted traffic, and/or how are the traffic impacts determined: O-1-3, O-7-3, O-7-4, O-9-1, I-8-3, I-25-1, I-31b-1, I-31b-4, I-31b-5, I-31b-7, I-32-1, I-32-2, I-38-5, I-40b-2, I-40b-3, I-40d-6, I-40d-10, I-40d-11, I-40d-16, I-40d-24, I-40d-34, I-54-1, I-55-3, and I-69-1.

Master Response #9:

The traffic volumes generated through the process described in Master Response #8 were used to create the Synchro traffic analysis models that were used to determine traffic LOS impacts outlined in Chapter 3.3. These modeled traffic volumes were also used to create the site-specific air quality and noise impact analyses described in Chapters 4.10 and 4.11. The technique of using SF-CHAMP and making manual adjustments to derive traffic volume inputs for a traffic analysis model such as Synchro is the standard engineering method used by the San

Francisco Planning Department for environmental review. The Synchro model developed for this EIS/EIR can account for roadway striping, signal phasing and timing, pedestrian volumes, and conflicts between pedestrian crossing and turning vehicles. Its results include LOS and delay, for each movement and for the intersection as a whole, as well as vehicle queue length.

In the near term (2015), the EIS/EIR (Chapter 3.3) indicates that there would be up to four intersections in the traffic study area that would operate at LOS E or F with the implementation of BRT (the LPA represents the highest number of intersections that would operate at LOS E or F of any of the alternatives), all of which would be on streets parallel to Van Ness Avenue. In 2035, the EIS/EIR indicates that up to 12 intersections in the traffic study area would operate at LOS E or F with the implementation of BRT (the LPA represents the highest number of traffic delay intersections).

Chapter 3.3 states that there would be significant traffic delay (LOS) impacts associated with the build alternatives in both 2015 (two to three intersections, depending on the alternative) and 2035 (five to eight intersections, depending on the alternative). The EIS/EIR identifies three intersections with significant impacts in 2015 (Franklin/Market, Gough/Hayes, and Franklin/O'Farrell). These impacts would apply to the LPA may be determined to be unavoidable, as described below. The EIS/EIR identifies eight intersections with significant impacts in the long term (2035) with the implementation of BRT. These impacts would apply to the LPA and may be determined to be unavoidable, as described below:

Gough/Sacramento

Gough/Eddy

Gough/Hayes

Franklin/O'Farrell

Franklin/Eddy

Franklin/McAllister

Franklin/Market/Page

South Van Ness/Mission/Otis

There are no intersections operating at LOS E or F on Van Ness Avenue in existing conditions (2007). The perceived congestion is due mostly to operational constraints (uncoordinated signals, left turns, etc.) which can create long queuing for certain movements at certain intersections. However, the overall delay at these intersections operates at acceptable levels. Results indicate that there would be no significant traffic impacts at intersections on Van Ness Avenue in 2015 and only one (South Van Ness/Mission/Otis) in 2035. This is, in part, due to the reduction in traffic volumes. However, the remaining traffic on Van Ness Avenue would also benefit from the reduction in left turns as well as the transit signal priority, reducing delays for the north-south traffic traveling on Van Ness Avenue. These improvements, coupled with SFgo traffic signal technology on Gough Street, Franklin Street, and Van Ness Avenue, can help ensure that traffic operations in the corridor are managed such that the impacts do not exceed those identified in this EIS/EIR.

This EIS/EIR identifies mitigation measures such as restriping lane markings for additional turn lanes, changing signal timing, or adding traffic signals. However, Sections 3.3.4.1 (2015 Build Alternative) and 3.3.4.2 (2035 Build Alternative) of the EIS/EIR explain in detail that these potential mitigation measures have various problems that may result in findings of infeasibility, as summarized below::

1. Pedestrian Conflicts. At the intersections of Gough/Hayes, Van Ness/Hayes, Franklin/Pine, Franklin/Eddy, Franklin/McAllister, Gough/Sacramento, Gough/Eddy, and South Van Ness/Mission/Otis, potential mitigation measure scould include the removal of parking during peak periods to create a tow-away lane and/or creating a right-turn pocket, or changing intersection signal timing. These changes would potentially increase pedestrian safety risks by increasing traffic that would otherwise not use these intersections (induced traffic) and eliminating on-street parking, which provides a buffer between moving vehicles and pedestrians.

2. Transit Conflicts. At the intersection of Franklin/O'Farrell, a potential mitigation measure could include removing a bus-only lane along O'Farrell Street, but doing so would adversely affect bus speed and cause delays in Muni bus operations.

3. Bicycle Conflicts. At the intersection of Franklin/Market/Page, potential mitigation measures could include closing Page Street to vehicular traffic and signal timing changes that eliminate the Page Street phase from the signal, but the loss of the Page Street phase of the traffic signal would make it difficult for bicycle users, who heavily utilize Page Street bike lanes, to turn left onto Market Street bike lanes.

The EIS/EIR identifies mitigation measures and provides information about those measures. The decision to adopt mitigation measures will be made by the decision-makers (i.e., the Authority Board). Decision-makers will consider the Final EIS/EIR prior to deciding whether to approve the project. As part of that process, decision-makers will make any required findings, and, for CEQA purposes, those will include determining whether mitigation measures are feasible or infeasible, considering specific economic, legal, social, technological or other considerations. If the decision-makers determine that mitigation measures or project alternatives that reduce or avoid significant impacts are feasible, they will be adopted and incorporated into the project. If the decision-makers determine that mitigation measures are infeasible and that significant and unavoidable impacts will occur, decision-makers will need to adopt findings that the project will result in economic, legal, social, technological or other benefits, notwithstanding the unavoidable environmental risks of the project.

In addition to the mitigation measures discussed above involving intersection reconfigurations, both the Draft and Final EIS/EIR discuss traffic management strategies that, while not reducing intersection traffic impacts to less than significant levels, may improve traffic management in the study area. These strategies, which are included in mitigation measure M-Traffic Management Toolbox, described in Section 3.3.4.2, include such actions as:

- Providing guidance to drivers regarding alternate routes through signage and wayfinding guides. Such strategies are part of mitigation measures TR-C2 and TR-C5 (See Final EIS/EIR Section 4.15.1.2). The SFMTA would continue to monitor traffic after construction and during project operation. If the above mentioned construction measures prove to be helpful in minimizing traffic delay impacts, the SFMTA may choose to implement similar strategies on an as-needed basis during project operation.
- Providing information to drivers and others during project construction regarding circulation changes and alternate routes, including developing a transportation management plan during construction. Such strategies are part of mitigation measure TR-C7 (See Final EIS/EIR Section 4.15.1). These information channels could create new patterns, helping inform drivers during operations phase.
- Adding pedestrian amenities in the project area to reduce the effects of automobile traffic delays on pedestrians. These types of pedestrian improvements cannot be modeled to show a reduction in traffic on an individual project/intersection basis. Rather, shifts from driving to walking tend to occur as a network of improvements are implemented. The toolbox of improvements identified in Section 3.3.4.2 can be used to help build that network, and over the long run may reduce traffic volumes and therefore traffic impacts. In the near-term, they will not worsen traffic conditions.

The EIS/EIR and the Vehicular Traffic Analysis Technical Memorandum (CHS, 2013) have been corrected, where needed, to show that there are 139 intersections in the traffic study area. The Vehicular Traffic Analysis Technical Memorandum and the EIS/EIR explain that the LOS analysis presented in both of those documents provided the results of the model analysis for those intersections showing LOS E or F conditions, but the model analysis included all 139 intersections in the study area. The analysis showed better than LOS E or F conditions (e.g. LOS A-D conditions) at many intersections in the study area; those intersections showing LOS E or F conditions are described in the EIS/EIR and the Vehicular Traffic Analysis Technical Memorandum. Figures 3.3-2 through 3.3-10 show which of the 139 intersections in the study area would operate at LOS A-D, LOS E or LOS F for 2007 existing conditions and for each project alternative, including the No Build Alternative, in 2015 and 2035.

Master Comment #10: Calculating air quality impacts on Van Ness Avenue, Franklin Street, and Gough Street

The following comments touch on the Master Comment #10 topic: I-25-1, I-32-5, I-36-8, I-37-1, I-40d-25, I-40d-29, and I-68-1.

Master Response #10:

As explained in Master Response No. 9, implementation of the proposed project would result in changes to existing traffic conditions with regards to traffic flow and circulation. Changes to traffic setting would directly impact localized air quality. Therefore, air quality impacts associated with changes to traffic conditions are discussed in Section 4.10, Air Quality of both the Draft and Final EIS/EIR and reiterated below. Implementation of the proposed project would result in a diversion of automobile travelers from Van Ness Avenues to parallel street (e.g., Franklin Street). Consequently, traffic volumes on Franklin Street are anticipated to increase, resulting in slower travel speeds. Baseline traffic volumes were obtained from the SYNCHRO traffic operations model were used as inputs for the location-based air quality impact analysis. Increased traffic volumes on parallel streets would potentially increase localized pollutant concentrations. As discussed in Section 4.10, pollutant concentrations were assessed using CALINE4 estimated for 3,443 vehicles that would be diverted onto Franklin Street. This volume included baseline traffic volumes and then considered increased traffic looking ahead to the year 2035, both with and without the proposed BRT project. As shown in Table MR 10-1, under year 2035 with BRT traffic conditions, CO, NO_2, PM_{10} and $PM_{2.5}$ concentrations along Franklin Street would be well below State standards.

Therefore, the proposed project would result in a less-than-significant impact related to localized pollutant concentrations associated with traffic diversion onto parallel streets.

Table MR 10-1: Localized Operational Concentrations, 2035 with BRT

POLLUTANT	CONCENTRATION AT NEAREST SENSITIVE RECEPTOR	STATE STANDARD	SIGNIFICANT IMPACT ?
CO (1-Hour)	0.5 ppm	20 ppm	No
CO (8-Hour)	0.35 ppm	9.0 ppm	No
NO_2 (1-Hour)	<0.009 ppm	0.18 ppm	No
PM_{10} (24-Hour)	14 $\mu g/m^3$	50 $\mu g/m^3$	No
PM_{10} (Annual)	2.8 $\mu g/m^3$	20 $\mu g/m^3$	No
$PM_{2.5}$ (Annual)	1.2 $\mu g/m^3$	12 $\mu g/m^3$	No

SOURCE: Terry A. Hayes Associates Inc., *Van Ness BRT Project Air Quality Impact Report Addendum*, 2013.

An increase in traffic volumes on parallel streets would potentially increase vehicle idling. Section 4.10, *Air Quality* evaluated localized air emissions associated with the potential increase in vehicle idling. An idle emissions analysis was completed using the CAL3QHC dispersion model at intersections that would experience the highest vehicle delay in the long-term, horizon year of 2035. This was identified as the Gough Street/Hayes Street intersection with a PM peak hour volume of 3,954 vehicles and an average delay of 195 seconds per vehicle. CAL3QHC incorporates methods for estimating queue lengths and the contribution of emissions from idling vehicles. The model permits the estimation of total air pollution concentrations from both moving and idling vehicles. The model calculates CO and PM concentrations. As shown in Table MR 10-2, under year 2035 with BRT traffic conditions, emissions associated with idling vehicles would be well below State standards.

Table MR10-2: Idle Emissions, 2035 with BRT

POLLUTANT	SIDEWALK CONCENTRATIONS	STATE STANDARD	SIGNIFICANT IMPACT ?
CO (1-Hour)	0.1 ppm	20 ppm	No
CO (8-Hour)	0.07 ppm	9.0 ppm	No
PM_{10} (24-Hour)	4 μg/m^3	50 μg/m^3	No
PM_{10} (Annual)	0.8 μg/m^3	20 μg/m^3	No
$PM_{2.5}$ (Annual)	0.3 μg/m^3	12 μg/m^3	No

SOURCE: Terry A. Hayes Associates Inc., *Van Ness BRT Project Air Quality Impact Report Addendum*, 2013.

Moreover, localized CO concentrations, known as hotspots, were assessed due to associated heavy traffic congestion, which most frequently occurs at signalized intersections of high-volume roadways. The Bay Area Air Quality Management District (BAAQMD) has developed the following screening criteria for determining whether a project should be further analyzed for localized CO impacts:

- The project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour; and
- The project traffic would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).

The proposed project would not increase traffic volumes at any intersections in the traffic study area (including Van Ness Avenue and five parallel streets: Gough, Franklin, Polk, Larkin, and Hayden) to more than 24,000 vehicles per hour.. For example, the maximum PM peak hour volumes on Franklin Street with the proposed project would be approximately 3,023 and 3,443 vehicles in 2015 and2035, respectively. As a result, the proposed project would be consistent with the criteria above and further analysis of CO concentrations is not required. Therefore, the proposed project would result in a less-than-significant impact related to localized CO concentrations.

Master Comment #11: Calculating noise and vibration impacts on Van Ness Avenue, Franklin Street, and Gough Street

The following comments touch on the Master Comment #11 topic: A-5a-4, A-5a-8, , A-5a-9, I-25-1, I-32-4, I-40d-26, I-40d-29, and I-68-1.

Master Response #11:

Traffic impacts related to traffic diversion are discussed in Chapter 3.3, while noise and vibration impacts related to traffic diversion are discussed in Chapter 4.11 of the both the Draft and Final EIS/EIR.

The criteria in the federal *Transit Noise and Vibration Impact Assessment* guidelines (FTA, 2006) were used to assess existing ambient noise levels and future noise impacts from BRT operations. They are founded on well-documented research on community reaction to noise and are based on change in noise exposure using a sliding scale. The amount that transit projects are allowed to change the overall noise environment is reduced with increasing levels of existing noise. The noise impact criteria for human annoyance are based on a comparison of the existing outdoor noise levels and the future outdoor noise levels from a proposed transit project. They incorporate activity interference caused by the transit project alone and annoyance due to the change in the noise environment caused by the project. There are two levels of impact included in the FTA criteria, as shown in Figure 4.11-3. The interpretations of these two levels of impact are summarized as follows:

- **Severe Impact.** Project noise above the upper curve is considered to cause Severe Impact because a significant percentage of people would be highly annoyed by the new noise.
- **Moderate Impact.** The change in the cumulative noise level is noticeable to most people, but it may not be sufficient to cause strong, adverse reactions from the community. In this transitional area, other project-specific factors must be considered to determine the magnitude of the impact and the need for mitigation, such as the existing level, predicted level of increase over existing noise levels, and the types and numbers of noise-sensitive land uses affected.

The evaluation of vibration impacts can be divided into two categories: (1) human annoyance, and (2) building damage. Generally, human annoyance criteria are used to assess potential impacts associated with operational vibration, whereas building damage criteria are used to estimate vibration impacts due to construction activities.

Noise monitoring was conducted at various sites along Van Ness Avenue to assess the existing noise conditions throughout noise-sensitive regions in the project area. The monitoring sites include noise-sensitive locations, such as residences, a concert hall, and a hotel. The primary objectives of the measurements are to evaluate the existing noise environment and determine the appropriate impact criteria per FTA guidelines. BRT noise levels were calculated using the operation schedule, speed, and distance of the proposed project limits. The calculated noise levels were then compared to the "Moderate Impact" and "Severe Impact" criteria, established according to the ambient noise conditions. Calculation results demonstrate no anticipated noise impacts along Van Ness Avenue from the proposed BRT service.

Section 4.11.5.2 describes the noise and vibration effects of the project on parallel streets that would receive the most diverted traffic under project conditions. This analysis takes into account the diversions of private vehicles to parallel streets within the Van Ness Avenue corridor, using the Synchro numbers from Appendix 10 of the Vehicular Traffic Analysis Technical Memorandum (CHS, 2013) as inputs for location based noise and vibration impact analysis. (See Section 4.11.5.2.) The traffic related noise increases were calculated using the ratios of the existing and projected traffic volumes for the no-build alternative and the build alternatives, including the LPA, with or without the Vallejo NB station variant.

The analysis in Chapter 4.11 indicates that there would be a less than significant noise and vibration impact due to traffic diverted onto parallel streets during project operation. Noise-sensitive land uses (receivers) were analyzed along and between Franklin and Gough streets, including primarily residential buildings as well as schools, churches, hotels, and two small museums (see Section 4.11.4). Franklin and Gough streets are expected to attract more of the traffic that will divert from Van Ness Avenue with the BRT than any other routes; worst-case traffic noise levels were calculated on these streets using traffic volumes representing LOS C conditions, the loudest hour conditions (see Section 4.11.5.2). Along segments of these two roadways paralleling Van Ness Avenue, future traffic noise levels under the build alternatives are predicted to be zero to 1.5 dB higher than future no-project noise levels and, relative to existing traffic noise levels, future project traffic noise levels would increase by zero to 2.2 dB; typically, a noise level change of 3 dB or less is not noticeable (see Section 4.11.5.2). The project noise study also concluded that the potential for vibration impact from rubber-tire-fitted vehicles, such as those used in BRT projects, can be reasonably dismissed (see Section 4.11.5.3).

Master Comment #12: Incorporating CPMC into analyses, including emergency services operations and construction coordination.

The following comments touch on the Master Comment #12 topic: I-36-5, I-56-2, I-56-6, I-56-7, and O-1-4.

Master Response #12:

Traffic Analysis Incorporation of the CPMC Project

The Draft EIS/EIR traffic analysis accounted for the California Pacific Medical Center (CPMC) expansion project in the 2035 horizon year and the document identifies cumulative environmental impacts of Van Ness BRT in combination with CPMC and other planned projects consistent with regional residential and employment growth projections (see Section 5.5.1.5 of the Final EIS/EIR for a description of the updated analysis). CPMC expansion is considered a reasonably foreseeable project for purposes of the cumulative impacts analysis, with expected completion in 2016. As explained in Section 5.5 of the EIS/EIR, the travel demand forecasting model used to project traffic volumes for the 2015 opening year and 2035 horizon year included trips generated by foreseeable projects. Also, to ensure consistency between the CPMC and Van Ness BRT environmental analyses, traffic volumes for intersections in the vicinity of CPMC were modified to reflect the projected vehicle trip generation in the CPMC EIR for the 2035 alternatives.

The 2035 trip volumes accounting for CPMC were used to simulate the traffic speeds and delays presented in Section 3.3 of the EIS/EIR (since CPMC construction is not scheduled for completion until after 2016, it was not reflected in the 2015 models). That section compares the modeled 2035 build alternatives traffic speeds and delays with the baseline year (2007) as well as the 2035 No Build Alternative. Using the significance criteria specified in Section 3.3.3, it identifies cumulate traffic impacts of Van Ness BRT in combination with CPMC and other planned projects.

For more information, Section 2.7 of the EIS/EIR describes the CPMC project and other planned land use and transportation projects that could be implemented during the same timeframe but independent of Van Ness BRT in or near the project corridor. Section 3.3 and the Vehicular Traffic Impact Analysis Technical Memorandum describes the traffic analysis methodology and lists all project-specific and cumulative traffic impacts. Section 5.3 provides a full list of reasonably foreseeable projects and their expected completion dates, while Section 5.5 further explains the cumulative traffic impact analysis and summarizes cumulative impacts.

As discussed in Section 5.5.1.5, construction of multiple projects, such as CPMC and the Van Ness Avenue BRT, within close vicinity would escalate the traffic impacts during the construction period. The impacts would be adverse, but they could be lessened by closely coordinating the projects to implement a Transportation Management Plan (TMP) and to keep the public informed about the construction schedule and activities throughout the construction period. A TMP that includes traffic rerouting, a detour plan, and public information procedures will be developed during the design phase with participation from local agencies including Caltrans, other major project sponsors in the area (e.g., the CPMC and Geary Boulevard BRT projects), local communities, and affected travelers. Early and well-publicized announcements and outreach will help to minimize confusion and traffic congestion at the start of construction.

Ambulance Access to CPMC

Van Ness Avenue BRT will facilitate ambulance access to CPMC. Emergency vehicles may use transit-only lanes throughout San Francisco, and would be allowed full use of the BRT lanes on Van Ness Avenue to bypass traffic in the mixed-flow lanes. The BRT lanes in the LPA are physically separated from the mixed-flow lanes only at stations, allowing emergency vehicles to enter or exit the lanes as necessary throughout the corridor, including at every intersection, as discussed in Chapter 2 of the EIS/EIR. Thus, emergency vehicles would have access to the same number of lanes under the build alternatives as the No Build Alternative. Chapter 2 of the both the Draft and Final EIS/EIR also explains that emergency vehicles would be able to trigger Transit Signal Priority similar to the BRT vehicles.

Ambulances would not access CPMC directly from Van Ness Avenue. CPMC plans to locate the ambulance entrance on Post Street just east of Franklin Street (San Francisco, 2012).

Master Comment #13: Pedestrian crossings and safety.

The following comments touch on the Master Comment #13 topic: A-5b-1, A-5b-4, A-5b-5, A-5b-6, A-7a-6, A-7h-8, O-3-1, 0-7-3, O-7-9, I-10-1,I-10-2, I-28-3, I-57-4, and I-63-1.

Master Response #13:

As explained in Section 3.4 Non-motorized Transportation of both the Draft and Final EIS/EIR, Van Ness Avenue has relatively long crossing distances, and not all intersections currently provide median refuges for pedestrians unable to cross the entirety of Van Ness Avenue during one light cycle. To address this existing condition of pedestrian crossing distance and time, a crossing speed analysis was completed for the project to estimate how quickly pedestrians would have to cross an intersection given the allotted signal time, which is discussed in Section 3.4.3.1, Pedestrian Signals and Timing. The study found that each of the build alternatives, including Design Option B and the LPA, would improve the conditions and meet required crossing speeds for pedestrians set by the City and the Federal Highway Administration at nearly all intersections.

A center lane configuration, including the configuration identified in the LPA, would require transit patrons to cross only as far as the median to reach the station platform. The proposed project would improve crossing conditions significantly in the following ways:

1) Shortening crossing distances with provision of curb bulbs at most signalized intersections.

2) Providing consistent, ADA compliant (i.e., 6 feet wide or greater) pedestrian refuges across Van Ness Avenue with protective nose cones on east-west crossings of each intersection.

3) Installing accessible pedestrian signals (APS), which communicate when to cross the street in a nonvisual manner, on all crosswalk legs at all signalized intersections.

These improvements are in addition to the planned installation of countdown pedestrian signals at all intersections under the No Build Alternative, and would be implemented as part of BRT construction. In addition, the project will provide a landscaped buffer along the sidewalk for the blocks where there would be no parking and no striped buffer between vehicle traffic and the sidewalk (for the LPA, this would include the block between O'Farrell and Geary streets as well as the two blocks between Broadway and Green streets). The LPA will also include guardrails along the sidewalk side of the platform except at station entrances next to crosswalks, as described for Alternative 3 in both the Draft and Final EIS/EIR. This design will reduce the amount of transit riders crossing outside of crosswalks to reach the station.

The aforementioned pedestrian design features would improve crossing conditions and reduce the chance, when compared to existing conditions, for pedestrians to be caught in the crosswalk before the light changes. Also, countdown signals display the remaining seconds to cross the street and thereby provide additional information to crossing pedestrians. Lastly, pedestrian safety would be improved with the addition of a landscaped buffer for the blocks where there would be no parking.

3. Response to Comments

Approximately 86 comment letters, emails, transcribed verbal comments, and comment cards in total were submitted during the Draft EIS/EIR public review period. Within each of these, the project team identified and numbered specific comments that pertain to the information presented in the Draft EIS/EIR. Underlined text and an adjacent number indicate these individual comments within each letter, email, transcribed verbal comments or comment card. Then on the page following each numbered letter, email, transcribed verbal comment and comment card, responses to comments are provided.

In the pages that follow, the written and transcribed comments are provided and are organized according the following groups: Agencies, Organizations, and Individuals. At the beginning of each section a table is provided that lists the commenters, and the page numbers on which the commenter's comments and response to the comments may be found.